

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

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

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

**Total Extent of Cluster – 22.28.0 Ha**

**THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY**



**At**

**Project Proponent  
Thiru. K. Paramasivam,  
S/o. Krishnasamy Gounder,  
No. 135, Mullai nagar,  
Old Bus Stand Road , Perundurai,  
Erode District – 638 052.**

<b>PROJECT LOCATION</b>	<b>PROPOSED PRODUCTION</b>
<b>407/3 (Part) Extent: 1.00.0 Ha Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.</b>	<b>Reserves: 34,955m<sup>3</sup> of ROM (Granite Recovery @ 20% is 6,991m<sup>3</sup>)  Annual Peak Production Capacity - 7,270m<sup>3</sup> of ROM  Proposed Depth = 30m(2m Topsoil + 3m Weathered rock + 25m Black Granite)</b>

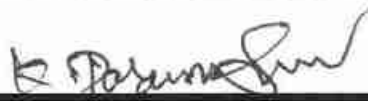
Complied as per ToR Obtained Vide

File No. 11004, Identification No. TO24B0108TN5140496N Dated: 10.08.2024

<b>Environmental Consultant</b>	<b>Laboratory</b>
 <b>GEO EXPLORATION AND MINING SOLUTIONS</b>  Old No. 260-B, New No. 17, Advaitha Ashram Road, Alagapuram, Salem – 636 004, Tamil Nadu, India  Accredited for sector 1 Category 'A' ,31 & 38 Category 'B' Certificate No: NABET/EIA/2225/RA0276 Phone: 0427-2431989, Email: ifthiahmed@gmail.com, geothagam@gmail.com Web: <a href="http://www.gemssalem.com">www.gemssalem.com</a>	<b>Laboratory</b>  <b>Laboratory</b> <b>EHS 360 LABS PRIVATE LIMITED,</b> 10/2 Ground floor, 50 <sup>th</sup> street, 7 <sup>th</sup> Avenue, Ashok Nagar, Chennai – 600 083.

Baseline Monitoring Period: MARCH to MAY 2024

**SEPTEMBER 2024**



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**UNDERTAKING**

I Thiru. K. Paramasivam given undertaking that this Draft EIA & EMP report prepared for our Black Granite Quarry situated in S.F.No 407/3 (Part) over an extent of 1.00.0 Ha in Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State based on the Transfer in ToR obtained vide issued by the State Level Environmental Impact Assessment Authority (SEIAA), Tamil Nadu vide File No. 11004, Identification No. TO24B0108TN5140496N Dated: 10.08.2024.

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

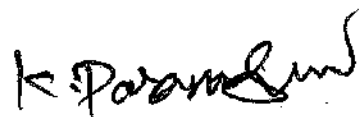
Signature of the Project Proponent

  
K. Paramasivam

Place : Villupuram

Dated :

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**DECLARATION**

I Dr. M. Ifthikhar Ahmed- EIA Co Ordinator declare that the Draft EIA & EMP report for the Black Granite Quarry situated in S.F.No 407/3 (Part) over an extent of 1.00.0 Ha in Siruvalai Village, Vikkiravandi Taluk, Viluppuram 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:

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For easy representation of Proposed Applied Quarry and Nearby Proposed Quarries in the Cluster are given unique codes and identifies and studied in this Draft EIA/EMP Report.

<b>PROPOSED QUARRY</b>				
<b>CODE</b>	<b>Name of the Owner</b>	<b>S.F. Nos</b>	<b>Extent</b>	<b>Status</b>
<b>P-1</b>	<b>Thiru. K. Paramasivam,</b> S/o. Krishnasamy Gounder, No. 135, Mullai nagar, Old Bus Stand Road , Perundurai, Erode District – 638 052.	407/3 (Part)	1.00.0	File No. 11004, Identification No. TO24B0108TN51404 96N Dated: 10.08.2024
<b>P-2</b>	Tvl. TAMIN Ltd., 37, Kamarajar Salai, Chepauk, Chennai-5	170/1 (P)	20.28.0	-
<b>EXISTING QUARRY</b>				
<b>E1</b>	<b>Thiru. K. Paramasivam,</b> S.F. No. 407/3, Siruvalai Vilage, Villupuram District.	407/3 (P)	1.00.0	09.01.2006 to 08.01.2026
		<b>Total</b>	<b>22.28.0 Ha</b>	
<b>TOTAL CLUSTER EXTENT</b>			<b>22.28.0 Ha Cluster Quarry</b>	

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

*K. Paramasivam*



### TERMS OF REFERENCE (ToR) COMPLIANCE

Thiru. K. Paramasivam,

**“File No. 11004, Identification No. TO24B0108TN5140496N Dated: 10.08.2024”**

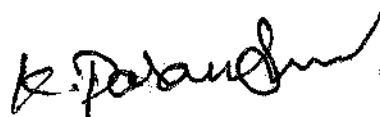
<b>SEAC CONDITIONS - SITE SPECIFIC</b>	
1	<p>The PP shall complete the withdrawal process of EC proposal applied under B2 category (File No. 10441/2023 and Online Proposal No. SIA/TN/MIN/433201/2023, Dated: 13.06.2023) in Parivesh portal.</p>
	<ul style="list-style-type: none"> <li>File No 10441 Applied for Environmental Clearance in B2 Category</li> <li>Proposal placed in the 428th SEAC Meeting Dated 08.12.2023 - (PP Advised to Submit CCR)</li> <li>Placed in the 684th SEIAA meeting (Accept the decision of SEAC – Communicates the Minutes to PP)</li> <li>Proponent given withdrawal request for the File No 10441 on 24.01.2024</li> <li>Now status in parivesh is Pending at MS for Proposal Withdraw</li> </ul>
2	<p>The PP shall obtain Certified Compliance Report (CCR) from Integrated Regional Office, MoEF&amp;CC, Chennai for the earlier Environmental Clearance obtained from DEIAA.</p>
	<p>CCR Letter No: E.P/12.1/2024-25 / SEIAA/ 12/ TN/1055 Dated: 15.07.2024</p>
3	<p>A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic &amp; scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal:</p> <p>(i) Copy of the agreement forming CMC.            (ii) The Organisation chart of the Committee with defining the role of the members            (iii) The ‘Standard Operating Procedures’ (SoP) executing the planned activities.</p>
	<p>The Cluster Management Committee (CMC) is submitted during appraisal</p>
<b>SEAC STANDARD CONDITIONS</b>	
1	<p>In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:</p> <p>(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>
	<ul style="list-style-type: none"> <li>Previously quarry operated by Thiru K.Paramasivam From 18.01.2019 to 17.01.2024</li> <li>Environmental Clearance obtained in the SEIAA vide Lr. No. SEIAA – TN/F. No. 5036/1(a)/EC. No: 3221/2016, Dated: 11.07.2016 (For the 2<sup>nd</sup> Scheme of Mining plan)</li> <li>EC Granted Depth: 27m</li> <li>Obtained Pit letter from AD mines i.e.,172m (L) *34m(W)*20m(D)</li> </ul>
2	<p>Details of habitations around the proposed mining area and latest VAO certificate regarding the location</p>
	<p>The danger zone as per the MMR 1961, is observed to be 300m and it is also certified by the</p>

*K. Paramasivam*

	of habitations within 300m radius from the periphery of the site.	VAO that there is no approved habitation within the periphery of 300m. Considering the safety of the environment and surrounding we have proposed mitigation measures in EMP and commit to follow the same
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.	The enumeration of structure is explained in Chapter 3.
4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	Detailed in Chapter 3.
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	There is no wild life Sanctuary, National Park within the radius of 500m. the area is devoid of major vegetation. The Bio Diversity study has been carried out by the inhouse expert (Ecology and Biodiversity) and the detailed report is given 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.	Nearest forest - Odayanatham R.F - 9.7Km - NW
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.	Site specific slope stability study will be conducted when it reaches 30m. Rs 2.0 lakhs is provided in the EMP budget for slope stability plan. By appointing competent persons, the above slope stability action will be monitored.
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.	Site specific slope stability study will be conducted when it reaches 30m. Rs 2.0 lakhs is provided in the EMP budget for slope stability plan. By appointing competent persons, the above slope stability action will be monitored.
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	Proponent given Affidavit stating that the blasting operation will be carried out by the competent person as per the MMR 1961.

*K. Paramasivam*

	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.	The Blasting will be carried out by controlled blasting adopting muffle blasting and line drilling. The cost for the controlled blasting is allotted in the EMP, Chapter No.10 Table No. 10.10
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.	One proposed quarry is in the proponent's name Extent: 1.00.0 Ha S. F. No: 407/3(P) Lease Period: 18.01.2019
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	• Previously quarry operated by Thiru K.Paramasivam From 18.01.2019 to 17.01.2024
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Previously quarry operated by Thiru K.Paramasivam From 18.01.2019 to 17.01.2024
14	14. Quantity of minerals mined out. <ul style="list-style-type: none"> <li>• Highest production achieved in any one year</li> <li>• Detail of approved depth of mining.</li> <li>• Actual depth of the mining achieved earlier.</li> <li>• Name of the person already mined in that leases area.</li> <li>• If EC and CTO already obtained, the copy of the same shall be submitted.</li> <li>• Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.</li> </ul>	<ul style="list-style-type: none"> <li>• Previously quarry operated by Thiru K.Paramasivam From 18.01.2019 to 17.01.2024</li> <li>• Environmental Clearance obtained in the SEIAA vide Lr. No. SEIAA – TN/F. No. 5036/1(a)/EC. No: 3221/2016, Dated: 11.07.2016 (For the 2<sup>nd</sup> Scheme of Mining plan)</li> <li>• EC Granted Depth: 27m.</li> <li>• Obtained Pit letter from AD mines i.e., 172m (L) *34m(W)*20m(D)</li> </ul>
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).	Coordinates for all the boundaries are given in the Chapter No.2 Table No.2.2.  Satellite imagery of the project site marked with Lease boundary, Safety area
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,	Drone video survey covering the Cluster, Greenbelt and fencing will be submitted during appraisal.
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.	It will be submitted during appraisal.
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.	34,955m <sup>3</sup> of ROM (6,991m <sup>3</sup> of Granite @ 20% Recovery)  Details of Reserves and methodology of mining is given in the Chapter No.2 Page No.19
19	The Project Proponent shall provide the Organization chart indicating the appointment of	Noted and agreed. Detailed under Chapter 6.



	various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act' 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	
20	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.	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 of open wells and borewells within 1km radius along with water level is given in the Chapter No.
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 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 to assess the cumulative impact of the proposed project on the environment is prepared. The details of Baseline study are given in the 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.	The Cumulative impact study due to mining operations is explained in Chapter No.7, Page No.124 to 133.
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	The rain water will be collected in the mine pit at the lower point later it will be utilized for the haul road maintenance, Greenbelt development etc.,
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.	Land use Land cover study within the radius of 10km is detailed in the Chapter No. 3 Page No.30 to 32
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, There are no wastages anticipated, the entire quarried out Rough stone material will be utilized.
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	The area is not declared as Critically polluted area, no court case pending against the project. Proponent obtained Precise area communication letter, Approval for the Mining plan.

*K. Paramasivam*

	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.	The Details are enclosed as Annexure
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 rain water collected in the pits after spell of rain will be used for greenbelt development and dust suppression.
28	Impact on local transport infrastructure due to the Project should be indicated.	There is no group of Houses, Schools in the proposed transportation route. Proposed Transportation route with mitigation measures is given in the Chapter No.2 Page No.95
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.	The Flora study in the core zone has been carried out and the details are given in the Chapter No.3
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	The mine closure plan is detailed in the Chapter No.4 Page No.110. The budget for the mine closure is included in the Environmental Management plan in Chapter No.10, Table:10.10
31	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	The Flora and Fauna study around the vicinity of the site is carried out by the Functional area experts along with Local School Students.
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.	The plantation in the project site will be carried out using native and mixed plantation. The recommended species for the plantation is given in the Chapter No.4 Table No.4.10.
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	Noted and agreed. The plantation in the project site will be carried out using native and mixed plantation. The recommended species for the plantation is given in the Chapter No.4 Table No.4.10 Page No.105.
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.	Disaster management Plan is detailed in the Chapter No.7.
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A Risk Assessment and management Plan detailed in the Chapter No.7.

K. Paramasivam

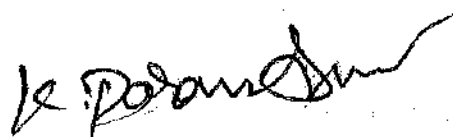
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational Health impacts of the project with mitigation measures are detailed in the Chapter No.7. Details of Periodical Medical Examination given in the Chapter No.10, Page No.143.
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.	The details of the population in the impact zone (within 500m radius) are detailed in the Chapter No.3.
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 covering 10 km radius is detailed in the Chapter No.3 Page No.78.
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 court case and litigation pending against the 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.	It is explained in Chapter -3- socio economic study
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	Not applicable, the project is fresh proposal.
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	The EMP has been prepared for the entire life of the mine. Proponent given affidavit stating the EMP will be submitted during the appraisal after completion of public hearing.
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.	Noted and agreed

## SEIAA STANDARD CONDITION

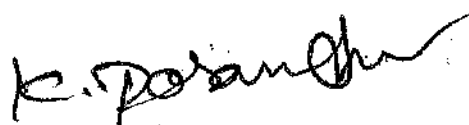
SEIAA STANDARD CONDITION		
<i>Cluster Management committee</i>		
1.	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Cluster management committee will be formed with mutual agreement with the proponents including Existing and Proposed quarry at present.
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..	As per the committee agreement proponents will co ordinate for the Greenbelt development, Water sprinkling and tree plantation activities combinedly.



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 formation of committee with list of members has been submitted to the AD mines office, Viluppuram and the same will be update in every year
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.	As per the committee agreement the blasting frequency will be discussed and carryout by the Mines Manager appointed by the proponents and the same will be updated in the committee minutes.  Transport details in chapter-2
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.	Details discussed in chapter 7 of Draft EIA report
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.	Details discussed in chapter 6 of Draft EIA report
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.	Noted & agreed
8	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.	Details discussed in chapter 7.
<b>Agriculture &amp; Agro-Biodiversity</b>		
9	Impact on surrounding agricultural fields around the proposed mining Area.	Detailed discussed in chapter 4.
10	Impact on soil flora & vegetation around the project site.	Detailed discussed in chapter 4.
11	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	The area is Existing proposed Lease & Few trees present with in lease.
12	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.	Details in Chapter 3
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted & agreed
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The project area is dry barren land no agriculture activities carried out. This is Existing/ proposed lease area.
<b>Forest</b>		
15	The project proponent shall detail study on impact of mining on Reserve forests free ranging wildlife.	Nearest Reserve Forest is Odayanatham R.F – 9.7 Km – NW

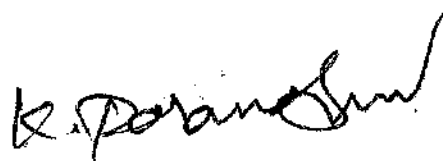


16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The area is surrounded by quarried land and Barren land. Details of flora and fauna studies given in the Chapter No.3.
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	No major trees within the project area
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	Noted & agreed. Oussudu Lake Birds Sanctuary – 34.5Km – SE
<b>Water Environment</b>		
19	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	The 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.
20	Erosion Control measures.	Noted & agreed
21	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby villages, water-bodies/ Rivers. & any ecological fragile areas.	Details in Chapter 2
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	Noted & agreed
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment by the activities.	Noted & agreed
24	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	No Archaeological site near the project area, no proposal for the disposal of mine pit water in the nearby water bodies
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil, physical, chemical components and microbial components.	Details in Chapter 3 Soil environment.
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers, streams, lakes and farmer sites.	Discussed in the Draft EIA/EMP Report in Chapter No.3
27	The EIA shall include the impact of mining activity on the following: a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams.	Noted & agreed
<b>Energy</b>		
28	The measures taken to control Noise. Air, Water. Dust Control and steps adopted to efficiently	It is explained in Chapter 4





	utilise the Energy shall be furnished.	
<b>Climate Change</b>		
29	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Details of carbon emission and mitigation activities are given in the Chapter No.4
30	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.	Noted & agreed
31	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	Noted & agreed
<b>Mine Closure Plan</b>		
32	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Details in Chapter 2 mine closure plan
<b>EMP</b>		
33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	Detailed under Chapter 10
34	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.	Project Cost = Rs 294.79 Lakhs /- CER Cost = Rs 5,00,000/ Disaster Management plan & mine closure plan is discussed in chapter no.4 & 7
<b>Risk Assessment</b>		
35	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Detailed under Chapter 7
<b>Disaster Management Plan</b>		
36	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/unfavorable accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	Details in Study 7.3 Disaster Management Plan in Chapter -7
<b>Others</b>		
37	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, Water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.	VAO certificate is attached as Annexure
38	As per the MoEF & CC office memorandum F.No.22-65/2017-1A.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



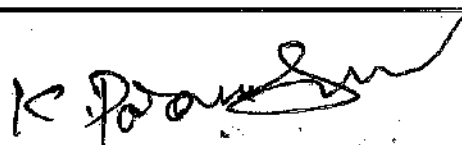
39	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	Details of carbon emission and mitigation activities are given in the Chapter No.4
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### Standard Terms of Reference for (Mining of minerals)

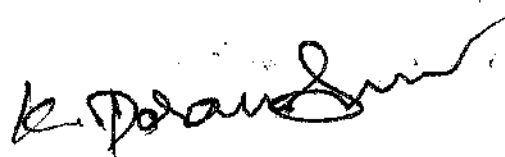
S. No	Terms of Reference	Reply
1.1	An EIA-EMP Report shall be prepared for peak capacity (MTPA) operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA	Noted and agreed
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for... MTPA of mineral production based on approved project/Mining Plan for... MTPA. Baseline data collection	Peak capacity of 7,270m <sup>3</sup> of RoM operation to cover the impacts and environment management plan in chapter- IV and Chapter 10 covered in project specific activities.  Baseline Data were collected for March – May 2024 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. III
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided.	Noted, Google earth image showing lease area with Coordinates of pillars in chapter-II.
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines, and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area	Land use and land cover of the 10km Radius of study area is discussed in Chapter No. III.  Geology map of the project area covering 10km radius Figure No. 2.7. Geomorphology of the area is given in Chapter No 2 Figure No 2.8.
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc. should be furnished.	Land use and land cover of the study area is discussed in Chapter No. III with Physical features such as waterbodies, odai, canal etc.,

*K. Paramasivam*

1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be	DEM data using Drainage pattern around 10km radius showing streams and lakes etc., discussed in Chapter No. 3.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ river let system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of length, quantity and	Drainage pattern around 10km radius showing streams and lakes etc. is discussed in Chapter No. 3.
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent	Details in chapter-2 showing the land features. And also enclosed Approved mining plan in annexure
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	<p>It is an opencast quarrying operation proposed to operate in Mechanized method. The Rough Stone quarry formation is a hard, compact and homogeneous body.</p> <p>The height and width of the bench will be maintained as 5m with 90° bench angles.</p> <p>Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate.</p> <p>Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.</p>
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing	Impact Studies and Mitigation Measures of Water Environment including Surface Water and Ground Water are discussed in Chapter 4.



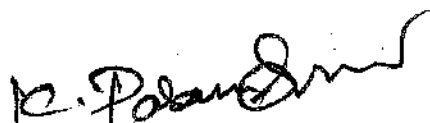
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the	Not Applicable. The details of waste dump management are given in the Chapter No. 4
1.12	Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights Area under Surface Area Under Mining Rights(ha) S.N ML/Project Land use  Area under Both (ha)  Rights(ha)  (ha)	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.
1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of	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.




1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.	Baseline Data were collected for March – May 2024 as per CPCB Notification and MoEF & CC Guidelines.  Details in Chapter No. 3.
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air) / downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.	Details in chapter-3 showing the various sampling stations As per CPCB guidelines.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e., dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided.	Air Quality Modelling and wind rose pattern for prediction of incremental GLC's of pollutant was carried out using AERMOD view 13 Model.  Details in Chapter No. 4.
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly	Traffic density survey was carried out to analyses the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details in Chapter-II.

*K. Paramasivam*

1.18	The socio-economic study to be conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need-based survey for CSR activities to be followed.	Detailed in chapter-3 socio-economic study with occupational status & economic status of the study area. The study should also include the status of infrastructural facilities and amenities present in the study area  CSR are discussed under Chapter 8.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.	Detailed Ecology and biodiversity study in chapter-3
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.	Detailed in chapter-4 population in the impact zone and measures for occupational health and safety and proposed occupational health in chapter-X
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted.	Noted and agreed
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability	The ground water table is at 50-53m bgl In these projects, ultimate depth is 35m BGL.  It is inferred the quarrying activities in the Cumulative EIA project (Quarry) will not intersect the Ground water table.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.	Detailed in Chapter-IV Anticipated and mitigation measures of in the study area.
1.24	Detailed water balance should be provided. The breakup of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.	Total Water Requirement: 2.5 KLD Discussed under Chapter 2, Table No 2.13, Page No. 26. The required water will be met from rainwater accumulated in mine pit (when available) and from the approved water vendors.



1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs	Methodology And Instrument Used for Air Quality Analysis in chapter-3 and Air Pollution control equipment (APCEs) in chapter-10 sub 10.2 Environmental policy.
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored.	Details in Machinery and equipment's details in Chapter-2
1.27	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored	Noted and agreed
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.	A Risk Assessment and Disaster Preparedness and management Plan Chapter- 7
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	Detailed in Machinery and technology used Chapter-3 Table 3.17 - Methodology and Instrument Used for Air Quality Analysis Detailed study in chapter-4 Impact of choice of mining method and impact on air quality and blasting and noise and vibrations.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.	Traffic density survey was carried out to analyses the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no much significant impact due to the proposed transportation from the project area. Details in Chapter 2.  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.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.	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
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality	Noted and agreed
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre-mining status should be provided. A Plan for the ecological restoration of the mined-out area and post mining land use should be prepared with detailed cost	Discussed under Chapter 2. Mine Closure Plan is a part of Approved Mining Plan enclosed as Annexure Volume - 1.



1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.	Greenbelt Development Plan is discussed under Chapter 4,
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.	The total cost and the details are given in the Chapter No. 10.
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio-economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the	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.
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.	CSR are discussed under Chapter 8. And specific budgetary provisions (capital and recurring) for specific activities over the life of the project in chapter-10
1.38	Corporate Environment Responsibility:	CER are discussed under Chapter 8.
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.	Noted and agreed
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any	Detailed in chapter-10 The Environment Policy
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.	Noted and agreed
1.42	d) To have proper checks and balances, the company should have a well laid down 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.	Noted and agreed
1.43	e) Environment Management Cell and its responsibilities to be clearly spelled out in EIA/ EMP report	The Environment Monitoring Cell discussed under Chapter 6
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.	Noted and agreed
1.45	Status of any litigations/ court cases filed/pending on the project should be	No litigation is pending in any court against this project
1.46	PP shall submit clarification from DFO that mine does not fall under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.	Odayanatham R.F - 9.7 Km - NW





1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval, NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable	Noted and agreed
1.48	Details on the Forest Clearance should be given as per the format given: Total ML Total Balance area for which Status of apply For Project Area Forest	Noted and agreed
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report.	Enclosed Approved mining plan in Annexure volume-I
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same. should be provided.	The outcome of public hearing will be updated in the final EIA/AMP report.
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes.	Drone video survey of proposed quarry is submitted during appraisal
	Detailed Chronology of the project starting from the first lease deed allotted/Block	Noted and agreed
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)	Noted and agreed
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter's section.	Noted and agreed

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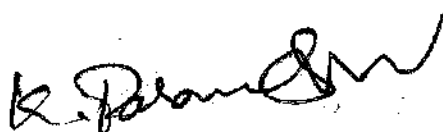
**TABLE OF CONTENTS**

<b>CHAPTER – 1: INTRODUCTION.....</b>	<b>1</b>
1.0 PURPOSE OF THE REPORT.....	1
1.1 Identification of Project and Project Proponent.....	4
1.1.2 Identification of Project .....	4
1.2 BRIEF DESCRIPTION OF THE PROJECT .....	5
1.3 THE SCOPE OF THE STUDY .....	10
<b>2. PROJECT DESCRIPTION .....</b>	<b>13</b>
2.0 TYPE OF THE PROJECT.....	13
2.1 NEED FOR THE PROJECT.....	13
2.2 LOCATION OF THE PROJECT.....	13
2.3 GEOLOGY.....	20
2.4 Resources and Reserves.....	25
2.5 Method of Mining.....	27
2.6 PROJECT DESCRIPTION.....	28
2.7 Project Requirement.....	30
2.8 Employment Requirement:.....	30
2.9 PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION .....	31
2.10 TECHNOLOGY AND PROCESS DESCRIPTION.....	31
<b>3. DESCRIPTION OF ENVIRONMENT .....</b>	<b>32</b>
3.0 General.....	32
3.1 Study Area.....	32
3.2 Study Period.....	32
3.3 Study Methodology.....	32
3.4 Land Environment.....	33
3.5 Soil Environment.....	39
3.6 Water Environment .....	44
3.7 Air Environment .....	53
3.8 Noise Environment.....	62
3.9 Biological Environment .....	65
3.10 Socio Economic Environment .....	84
<b>4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES</b> <b>.....</b>	<b>93</b>
4.0 General.....	93
4.1 Land Environment.....	93
4.2 Soil Environment .....	94
4.3 Water Environment .....	94
4.4 Air Environment .....	95
4.5 Noise Environment.....	101
4.6 Biological Environment .....	104
4.7 Socio Economic .....	107
4.8 Occupational Health and Safety.....	107
4.9 Mine Closure .....	108
<b>5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE).....</b>	<b>110</b>
5.0 DESCRIPTION OF EACH ALTERNATIVE.....	110

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5.1 SUMMARY OF ADVERSE IMPACTS OF EACH ALTERNATIVE .....	110
5.2 ANALYSIS OF ALTERNATIVE SITE .....	110
5.3 MITIGATION MEASURES PROPOSED FOR EACH ALTERNATIVE .....	110
5.4 SELECTION OF ALTERNATIVE.....	110
<b>6. ENVIRONMENTAL MONITORING PROGRAMME .....</b>	<b>111</b>
6.0 General.....	111
6.1 Methodology of Monitoring Mechanism.....	111
6.2 Implementation Schedule of Mitigation Measures .....	112
6.3 Monitoring Schedule and Frequency.....	112
6.4 Budgetary Provision for EMP .....	113
6.5 Reporting Schedules of Monitored Data .....	113
<b>CHAPTER – 7: ADDITIONAL STUDIES .....</b>	<b>115</b>
7.0 General.....	115
7.1 Public Consultation: .....	115
7.2 Risk Assessment .....	115
7.3 Disaster Management Plan.....	117
7.4 Cumulative Impact Study.....	120
7.5 PLASTIC WASTE MANAGEMENT PLAN.....	125
<b>Source: Proposed by FAE's and EC .....</b>	<b>125</b>
<b>CHAPTER – 8: PROJECT BENEFITS .....</b>	<b>126</b>
8.0 General.....	126
8.1 Employment Potential .....	126
8.2 Socio-Economic Welfare Measures Proposed.....	126
8.3 Improvement in Physical Infrastructure .....	126
8.4 Improvement in Social Infrastructure.....	126
8.5 Other Tangible Benefits .....	126
<b>CHAPTER – 9: ENVIRONMENTAL COST BENEFIT ANALYSIS .....</b>	<b>128</b>
<b>CHAPTER - 10: ENVIRONMENTAL MANAGEMENT PLAN- .....</b>	<b>129</b>
10.0 General.....	129
10.1 Environmental Policy .....	129
10.2 Land Environment Management – .....	130
10.3 Soil Management.....	130
10.4 Water Management.....	131
10.5 Air Quality Management.....	132
10.6 Noise Pollution Control.....	133
10.7 Ground Vibration and Fly Rock Control .....	133
10.8 Biological Environment Management .....	134
10.9 Occupational Safety & Health Management .....	135
10.10.: CONCLUSION – .....	141
<b>CHAPTER – 11: SUMMARY AND CONCLUSIONS .....</b>	<b>142</b>
<b>12. DISCLOSURE OF CONSULTANTS .....</b>	<b>143</b>



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**LIST OF TABLES**

TABLE 1.1: DETAILS OF PROJECT PROPONENT .....	4
Table 1.2: Resources and Reserves of Project.....	4
Table 1.3: Salient Features of the Proposed Projects.....	4
TABLE 1.4 – STRUCTURE OF THE EIA REPORT .....	11
TABLE 1.5 – ENVIRONMENT ATTRIBUTES.....	12
Table 2.1: Site Connectivity to the Project Area .....	13
Table 2.2: Boundary Co-Ordinates of Proposed Project .....	14
Table 2.3: Land Use Pattern of Proposed Project.....	19
Table 2.4: RESOURCES AND RESERVES .....	19
Table 2.5 Resources, Reserves .....	25
Table 2.6 Year wise Production for First five years plan .....	25
Table 2.7 Ultimate Pit Dimensio .....	26
Table 2.8: Machinery Details Proposed.....	28
Table.2.9: Traffic Survey Locations .....	29
Table 2.10: Existing Traffic Volume.....	29
Table 2.11: Granite Hourly Transportation Requirement.....	29
Table 2.12: Summary of Traffic Volume .....	29
Table 2.13 Water Requirement for the Project.....	30
Table 2.14: Employment Potential .....	30
Table 2.15 Expected time Schedule.....	31
Table 3.1: Monitoring Attributes and Frequency of Monitoring.....	33
TABLE: 3.2 LAND USE / LAND COVER DETAILS OF STUDY AREA.....	35
Table 3.3: Details of Environment Sensitivity around the Cluster .....	38
Table 3.3-A: NEARBY WATER BODIES FROM THE PROPOSED PROJECT SITE .....	39
Table 3.4: Soil Sampling Locations.....	39
Table 3.5: Methodology of Sampling Collection .....	40

---



Table 3.6: Soil Quality of the Study Area .....	43
Table 3.7: Water Sampling Locations .....	45
Table 3.8: Ground Water Sampling Results .....	46
Table 3.9: Surface Water Sampling Results .....	48
Table 3.10: Details of Borewell & Water Level In 1km Radius .....	49
Table 3.11: Details of Open well & Water Level in 1km Radius.....	50
Table 3.12: Rainfall Data.....	53
Table 3.13: Meteorological Data Recorded at Site.....	54
Table 3.14: National Ambient Air Quality Standards .....	55
Table 3.15: Ambient Air Quality (AAQ) Monitoring Locations AAQ1-AAQ7.....	56
Table 3.16: Abstract of Ambient Air Quality Data .....	57
Table 3.17: Summary of Ambient Air Quality Data (AAQ1-AAQ7).....	57
Table 3.18: Average Fugitive Dust Sample Values In mg/m <sup>3</sup> .....	60
Table 3.19 : Fugitive Dust sample values in µg/m <sup>3</sup> .....	61
Table 3.20: Details of Noise Monitoring Locations .....	62
Table 3.21: Ambient Noise Quality Result.....	64
Table No: 3.22. Flora in the Core zone of Siruvalai Village, Black granite quarry (Primary data) .....	67
Table No: 3.23. Tree survey around 300m radius from the proposed project site. ....	68
Table No: 3.24. Flora in Buffer Zone of Siruvalai Village, Black granite quarry Villupuram District, Tamil Nadu (Primary data & Secondary data) .....	69
Table No 3.25: Number of floral life forms in the Study Area .....	74
Table No: 3.26. Fauna in the Core zone of Siruvalai Village, Black granite quarry (Primary data) .....	76
Table No 3.27. List of Fauna & Their Conservation Status, Mammals: (*directly sighted animals & Secondary data).....	77
Table No 3.28. Listed birds (*directly sighted animals & Secondary data).....	77
Table No 3.29. List of Reptiles either spotted or reported from the study area .....	78

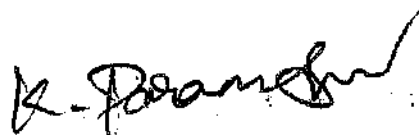


Table No 3.30. List of insects either spotted or reported from the study area.....	78
Table No 3.31. List of Butterflies identified from the project site and their conservation status (Primary and Secondary data) .....	78
Table No: 3.32 Characterization of Fauna in the Study Area (As Per W.P Act, 1972.....	80
Table No 3.33: Description of Flora & Fauna .....	80
Table No.3.34 Description of Macrophytes.....	81
Table No 3.35. List of Amphibians either spotted or reported from the study area .....	81
Table No 3.36. Based on Actual Sighting, based on inputs from locals and Perused from Secondary Data.....	82
TABLE 3.37: POPULATION DATA OF STUDY AREA.....	88
TABLE 3.38: WORKERS PROFILE OF STUDY AREA .....	89
TABLE 3.39: EDUCATIONAL FACILITIES IN THE STUDY AREA .....	90
TABLE 3.40: MEDICAL FACILITIES IN THE STUDY AREA.....	91
Table 4.1 Water Requirement for the Project .....	95
Table 4.2: ESTIMATED EMISSION RATE .....	96
Table 4.3: Incremental & Resultant GLC OF PM <sub>10</sub> .....	99
Table 4.4: Incremental & Resultant GLC OF PM <sub>2.5</sub> .....	99
Table 4.5: Incremental & Resultant GLC OF SO <sub>2</sub> .....	99
Table 4.6: Incremental & Resultant GLC OF NO <sub>x</sub> .....	100
Table 4.7: Predicted Noise Incremental Values.....	101
TABLE 4.8: PREDICTED PPV VALUES DUE TO BLASTING .....	103
Table No 4.9. List of plant species proposed for Greenbelt development.....	105
Table No 4.10. Species suitable for abatement of noise and dust pollution.....	105
Table No. 4.11. Overall Ecological impact assessments of Siruvalai Village, Vikravandi Taluk, Viluppuram District, Tamil Nadu. ....	106
TABLE 4.12: RECOMMENDED SPECIES FOR GREENBELT DEVELOPMENT PLAN .....	107
TABLE 4.13: GREENBELT DEVELOPMENT PLAN .....	107

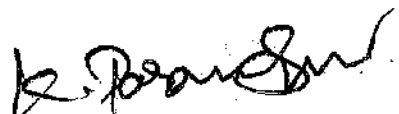
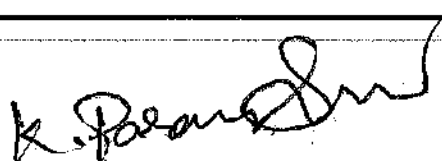


Table 6.1: Implementation Schedule .....	112
Table 6.2: Monitoring Schedule for the Project Area .....	113
Table 6.3: Environmental Monitoring Budget .....	113
Table 7.1 Risk Assessment .....	115
Table 7.2: Proposed Teams to Deal with Emergency Situation .....	118
Table 7.3: Proposed Type of Fire Extinguishers .....	119
Table 7.4: List of Quarries within 500 Meter Radius from this Proposal .....	120
Table 7.5: Salient Features of Proposed Projects "P1" .....	120
Table 7.6: Salient Features of Existing Quarry "E1" .....	121
Table 7.7: Cumulative Production Load of Granite .....	122
Table 7.9: Emission Estimation from Quarries within 500 Meter Radius .....	122
Table 7.10: Incremental & Resultant GLC within Cluster .....	123
Table 7.11: Predicted Noise Incremental Values from Cluster .....	124
Table 7.12: Socio Economic Benefits from Quarries .....	124
TABLE 7.20: EMPLOYMENT BENEFITS FROM 3 MINES .....	124
TABLE 7.21: GREENBELT DEVELOPMENT BENEFITS FROM 3 MINES .....	124
TABLE 7.22: ACTION PLAN TO MANAGE PLASTIC WASTE .....	125
TABLE 8.1 CER – ACTION PLAN .....	127
Table 10.1: Proposed Controls for Land Environment .....	130
Table 10.2: Proposed Controls for Soil Management .....	130
Table 10.3: Proposed Controls for Water Environment .....	131
Table 10.4: Proposed Controls for Air Environment .....	132
Table 10.5: Proposed Controls for Noise Environment .....	133
Table 10.6: Proposed Controls for Ground vibration & Fly rocks .....	133
TABLE 10.7: PROPOSED GREENBELT ACTIVITIES .....	134
Table 10.8: Recommended Species to Plant in the Greenbelt .....	135
TABLE 10.9. MEDICAL EXAMINATION SCHEDULE .....	135



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Table 10.10: EMP BUDGET FOR PROPOSED PROJECT..... 137

*K. Paramasivam*



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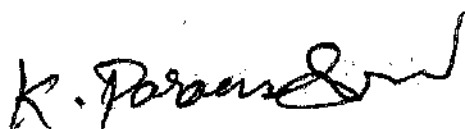
**LIST OF FIGURES**

Figure 1.0: SATELLITE IMAGERY CLUSTER QUARRIES .....	3
Figure 1.1: Key Map Showing the Location of the Project Site.....	7
Figure 1.2: Toposheet Map of the Study Area 10 Km Radius .....	8
Figure 1.3: Toposheet Map of the Study Area 2 Km Radius .....	9
Figure 2.1: TOPOGRAPHICAL VIEW OF PROJECT AREA .....	14
Figure 2.2: FENCING AND PLANTATION PHOTOGRAPHS .....	14
Figure 2.3: GOOGLE IMAGE OF THE PROJECT AREA.....	15
Figure 2.4: QUARRY LEASE PLAN / SURFACE PLAN.....	16
Figure 2.4-A: VILLAGE MAP SUPERIMPOSED ON GOOGLE EARTH IMAGE .....	17
Figure 2.5: Image Showing Surface Features Around 10 Km Radius.....	17
Figure 2.6: Image Showing Surface Features Around 5km Radius .....	18
Figure 2.7: Image Showing Surface Features Around 1 Km Radius.....	18
Figure 2.8: Regional Geology Map .....	24
Figure 2.9: Geomorphology Map .....	24
Figure 2.10: Year-Wise Development Production Plan and Section.....	26
Figure 2.11: CLOSURE PLAN AND SECTIONS .....	27
Figure. 2.12: Mineral Transportation Route Map.....	29
FIGURE 3.1: CHART SHOWING LANDUSE/LANDCOVER ANALYSIS USING LISS III Data.....	35
FIGURE 3.2: PHYSIOGRAPHIC MAP 10KM RADIUS .....	36
FIGURE 3.3: LAND USE LAND COVER MAP 10KM RADIUS.....	37
Figure 3.4: Soil Sampling Locations Around 10 Km Radius.....	41
Figure 3.5: Soil Map .....	42
Figure 3.6: Water Sampling Locations Around 10 Km Radius.....	45
Figure 3.7: Post Monsoon Water Level of Bore Well 1 Km Radius .....	50
Figure 3.8: Pre Monsoon Water Level of Open Well 1 Km Radius.....	51

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Figure 3.9: Drainage Map Around 10 Km Radius from Project Site .....	51
Figure 3.10: Ground Water Prospect Map.....	52
Figure 3.11: Windrose Diagram .....	54
Figure 3.12: Ambient Air Quality Locations Around 10 Km Radius .....	56
FIGURE 3.13: BAR DIAGRAM OF SUMMARY OF AIR QUALITY MODEL(AAQ1-AAQ7).....	58
FIGURE 3.14 : BAR DIAGRAM OF PARTICULATE MATTER (PM <sub>2.5</sub> ) .....	58
FIGURE 3.15: BAR DIAGRAM OF PARTICULATE MATTER (PM <sub>10</sub> ).....	59
FIGURE 3.16: BAR DIAGRAM OF PARTICULATE MATTER (SO <sub>2</sub> ).....	59
FIGURE 3.17: BAR DIAGRAM OF PARTICULATE MATTER (NO <sub>x</sub> ).....	60
Figure 3.18: Noise Monitoring Stations Around 10 Km Radius .....	63
Figure 3.19: Day and Night Time Noise Levels In Core And Buffer .....	64
Figure 4.1: AERMOD Terrain Map .....	97
Figure 4.2: Predicted Incremental Concentration of Fugitive Dust.....	97
Figure 4.3: Predicted Incremental Concentration of PM <sub>10</sub> .....	97
Figure No 4.4: Predicted Incremental Concentration Of PM <sub>2.5</sub> .....	98
Figure No 4.5: Predicted Incremental Concentration Of So <sub>2</sub> .....	98
Figure No 4.6: Predicted Incremental Concentration of No <sub>x</sub> .....	98
Figure No 4.7: Ground Vibration Prediction .....	103
FIGURE 6.1: PROPOSED ENVIRONMENTAL MONITORING CELL .....	112



## CHAPTER – 1: INTRODUCTION

### 1.0 PURPOSE OF THE REPORT

The project proponent Thiru. K. Paramasivam, Black Granite Quarry Extent 1.00.0 Ha in S.F.No 407/3 (Part), Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.

- Proponent applied for Black Granite Quarry on 05.10.2017.
- Lease granted vide G.O. Number G.O. (3D) No. 50 Industries (MMB.2) Dated 18.12.2018 for a period of 20 years (18.01.2019 to 17.01.2039).
- The Mining plan was prepared for the period of 5 Years. The Mining Plan was approved by the State Geology and Mining Department, Guindy, Chennai vide letter Letter Lr. No. 3645/MM5/2018 Dated 01.10.2018. The Mining plan period is 2019-20 to 2023-24.
- 1<sup>st</sup> Scheme of Quarrying approved letter RC. No. 7780/MM4/2023 Dated 16.12.2023 for a period of five years (2024-25 to 2028-29).
- The Scheme Mining plan has been approved for the quantity of 34,955m<sup>3</sup> of ROM (Granite Recovery @ 20% is 6,991m<sup>3</sup>), Granite Waste @ 80% is 27,964, 3123m<sup>3</sup> of Weathered Rock and 208m<sup>3</sup> of Topsoil up to the depth of 30m(2m Topsoil + 3m Weathered rock + 25m Black Granite).
- As per the EIA Notification, 2006 and subsequent amendments and OM The proposal falls in the B1 Category (Cluster quarries – 2 Proposed & 1 Existing quarries forming Cluster Category {Total Extent of the Cluster is 22.28.0 Ha}- Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1<sup>st</sup> July 2016).
- Proponent applied for Terms of Reference vide Proposal No. SIA/TN/MIN/460034/2024, dated: 27.01.2024 and the ToR Was Granted vide File No. 11004, Identification No. TO24B0108TN5140496N Dated: 10.08.2024.

Based on the ToR Baseline Monitoring study has been carried out for one season i.e., **March-May 2024** and this EIA and EMP report is prepared for considering cumulative impacts arising out of these projects, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) 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.

The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14<sup>th</sup> September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14<sup>th</sup> August 2018, Mining Projects are classified under two categories i.e., A (> 100 Ha) and B (≤ 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



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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.

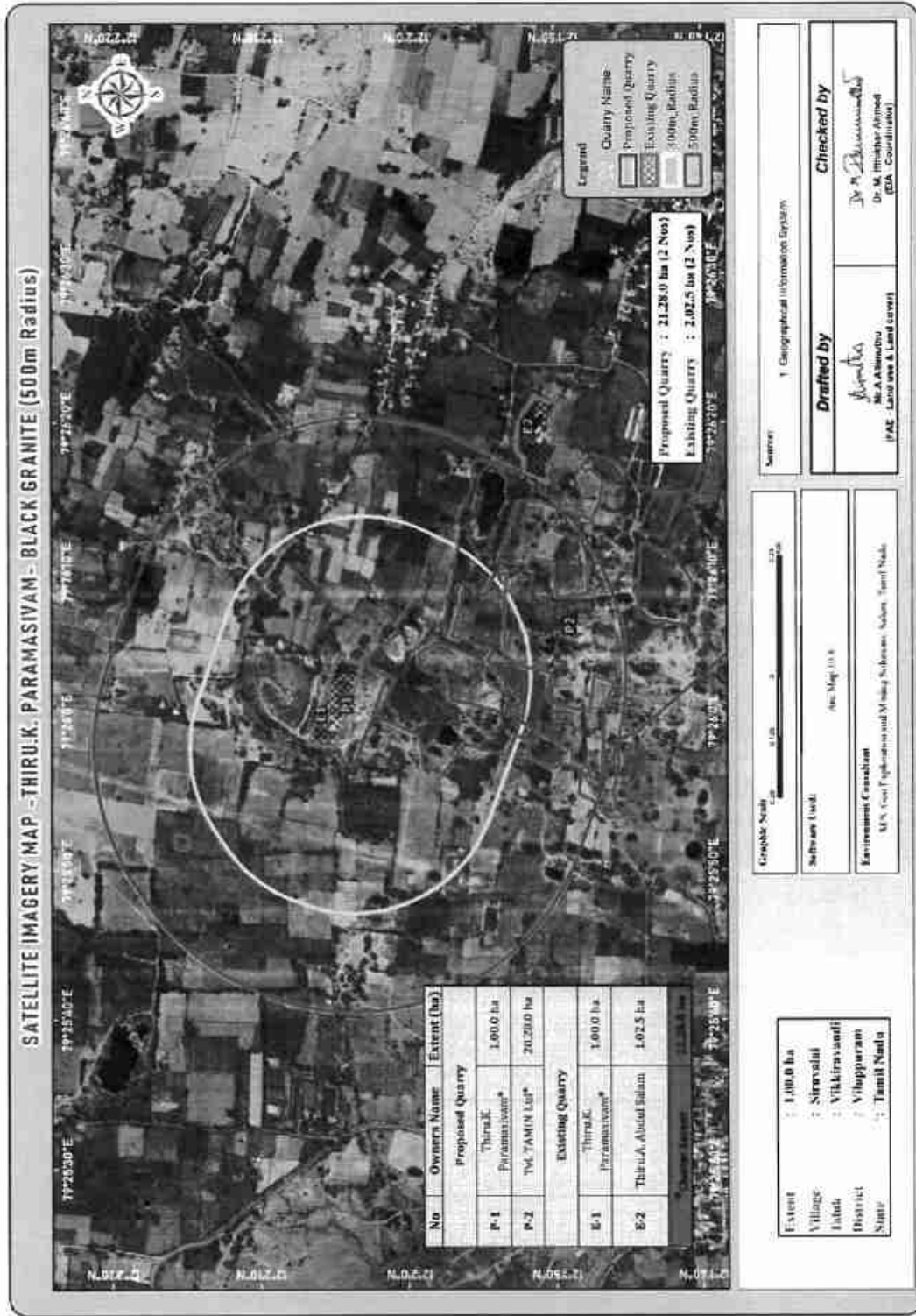
The proposed projects are categorized under category "B1" Activity 1(a) (mining lease area in cluster situation) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of Environmental Clearance.

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district was submitted vide Ref: Nil.

**"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"**

*K. Paramasivam*

Figure 1.0: SATELLITE IMAGERY CLUSTER QUARRIES



*K. Paramasivam*

## 1.1 Identification of Project and Project Proponent

## 1.1.1 Identification of Project Proponent

TABLE 1.1: DETAILS OF PROJECT PROPONENT

PROPOSAL	
Name of the Project Proponent	Thiru. K. Paramasivam,
Address	S/o. Krishnasamy Gounder, No. 135, Mullai nagar, Old Bus Stand Road , Perundurai, Erode District – 638 052..
Mobile	+91 94437 14257
E-Mail	esteemgranites@hotmail.com
Aadhar No	4018 9360 9432
Status	Individual

Source: Approved Mining Plan of the respective projects

## 1.1.2 Identification of 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 Mining Plan Period (5 years) is described below–

**Proposed Project**

Mineable ROM	=	79,280m <sup>3</sup>
Total Mineable Recoverable Reserves of Granite @ 20%	=	15,856m <sup>3</sup>
Average Production per year @ 20%	=	6,991m <sup>3</sup> /5 Years = 1,398m <sup>3</sup>
Estimated Life of the quarry	=	15,856m <sup>3</sup> / 1,398m <sup>3</sup>
Life of the quarry	=	11 Years

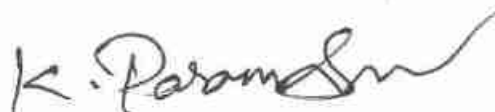
Table 1.2: Resources and Reserves of Project

Description	ROM (m <sup>3</sup> )	Granite Recovery @ 20% (m <sup>3</sup> )	Granite Waste @ 80% (m <sup>3</sup> )	Side burden (m <sup>3</sup> )	Weathered rock	Topsoil (m <sup>3</sup> )
Geological Resources	230845	46,169	1,84,676	39,625	8,081	4,114
Mineable Reserves	79,280	15,856	63,424	NA	4,366	1,140
Year wise Production for Five years	34,955	6,991	27,964	NA	3,123	208

Source: Approved First Scheme of mining plan.

Table 1.3: Salient Features of the Proposed Projects

Name of the Quarry	Thiru. K. Paramasivam Black Granite quarry
SF.no	407/3 (Part)
Extent	1.00.0 Ha
Village & Taluk	Siruvalai Village, Vikkiravandi Taluk
Lease period	20 years
1 <sup>st</sup> Scheme of Mining Plan Period	5 Years
Life of the Mine	5 years
Existing Depth	20m
Previous History and CCR	Previous Mining plan period – 2019 -20 to 2023-24



	EC.No: Lr. No. DEIAA-VPM-TN/F.No. 18015/Ec. No.02/2018 Dated 4.12.2018. CCR Letter No: E.P/12.1/2024-25/SEIAA/12/TN/1055 Dated: 15.07.2024	
Land use classification	It is a Patta land, Classified as Punjai and the entire land is covered by Granite boulders and sheet rock.	
Previous lease particulars	It is a Patta land, jointly registered in the name of Thiru. K. Paramasivam and Tmt. R. Shanthi, vide patta No. 933 both the pattadhar and lessee signed in the lease agreement while execution of lease deed.	
Proposed Depth for five years plan period	30m(2m Topsoil + 3m Weathered rock + 25m Black Granite)	
Ultimate depth of Mining	35m (2m Topsoil +3m Weathered rock + 30m Black Granite)	
Existing Pit Dimension	172m (L) X 34m (W) X 20m (D)	
Ultimate Pit Dimension	175m (L) X 43m (W) X 35m (D)	
Toposheet No	57 – P/08	
Latitude between	12°02'01.31"N to 12°02'05.11"N	
Longitude between	79°25'56.77"E to 79°26'03.51"E	
Topography	The area is situated in flat terrain. The gradient is gentle towards South Eastern side and altitude of the area is 80m above from MSL. The Black granite is covered with 2m thickness of Reddish soil.	
Ground water level	Ground water occurrence in the area is about 53m below from the ground level.	
Machinery proposed	Jackhammer	6
	Compressor	2
	Excavator	2
	Tipper	2
	Diesel Generator	2
	Diamond wire saw	1
	Crawl Crane	1
Proposed manpower deployment	35	
Project cost	Rs.2,94,79,000/-	
EMP Cost	Rs. 3,80,000/-	
Total Project Cost	Rs. 2,98,59,000/-	
CER cost	Rs. 5,00,000/-	
Nearby Water Bodies	Odai	140m - East
	Kuttai	410m - SW
	Tank	510m - NE
	Periya Eri	900m - West
	Tank	1km - East
	Tank	2.2km - SE
	Anniyur Lake	4.8km - NW
	Pambai Aaru	6.5km - SW
	Pappanapattu Eri	7.3km - SE
Nearest Habitation	530m - East	
Nearest Reserve Forest	Odayanatham R.F – 9.7 Km – NW	
Nearest Wild Life Sanctuary	Oussudu Lake Birds Sanctuary – 34.5Km – SE	

Source: Approved First scheme of mining plan.

## 1.2 BRIEF DESCRIPTION OF THE PROJECT

### 1.2.1 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 Jack Hammer Drilling & Slurry Explosive during blasting. Hydraulic Excavator and tippers are used for Loading and transportation. Rock Breakers are deployed to avoid secondary blasting.

*K. Paramasivam*

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The peak production of Black Granite is 7,270m<sup>3</sup> maximum in a year (24m<sup>3</sup> per day/ 2 Tippers per day considering 12m<sup>3</sup> per load). The depth of the mining is 30m Bgl.

### 1.2.2 Location of the Project

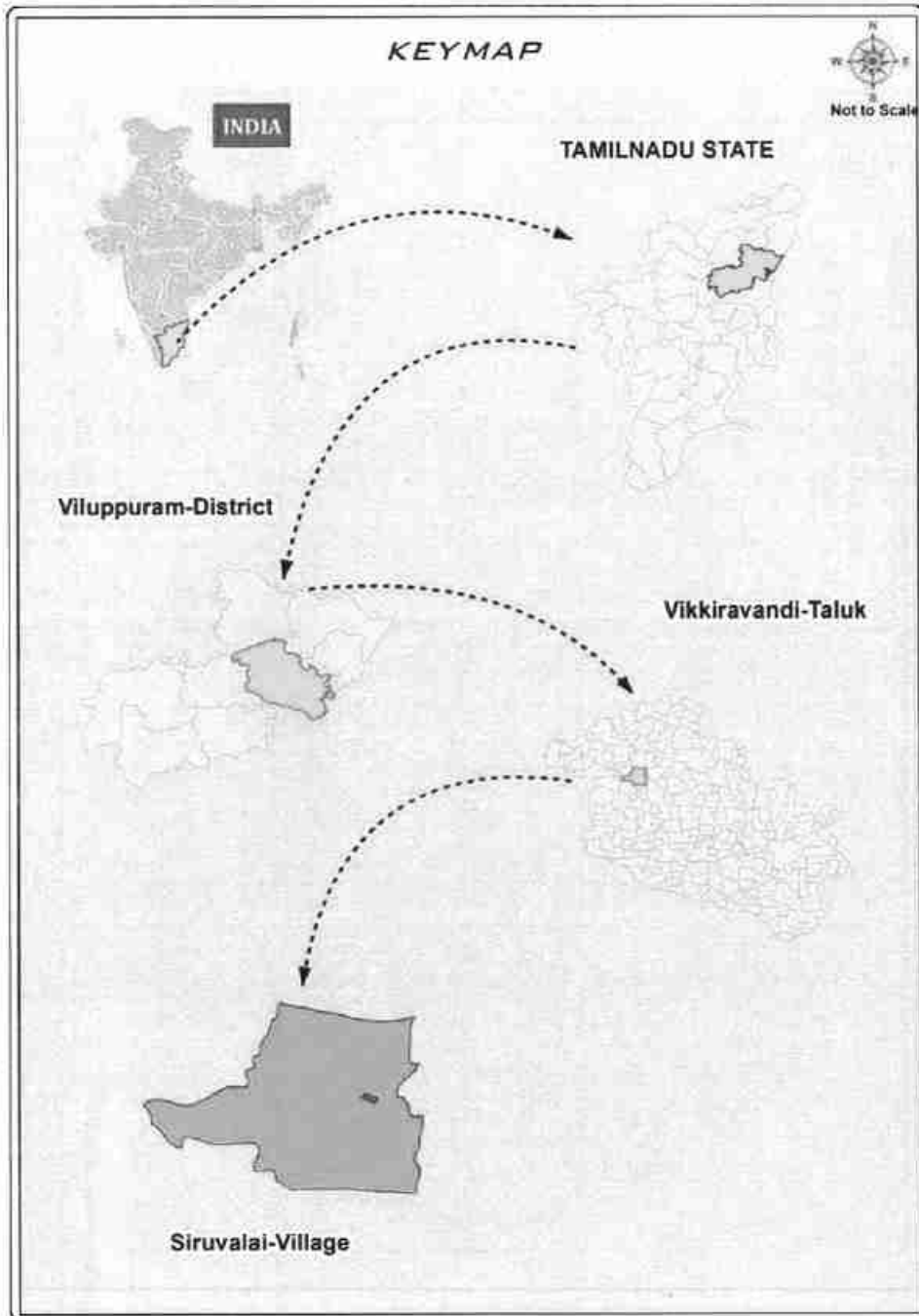
- The area is located in *S.F.Nos. 407/3 (Part) of Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamilnadu.*
- The entire quarry lease area falls in the Patta land, the area is situated in almost flat terrain.
- The Altitude of the area is ranges from 80m above from MSL
- The area is mentioned in GSI Topo sheet No. 57 – P/08
- The Latitude between of 12°02'01.31"N to 12°02'05.11"N
- The Longitude between of 79°25'56.77"E to 79°26'03.51"E on WGS 1984 datum.

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*K. Paramasivam*

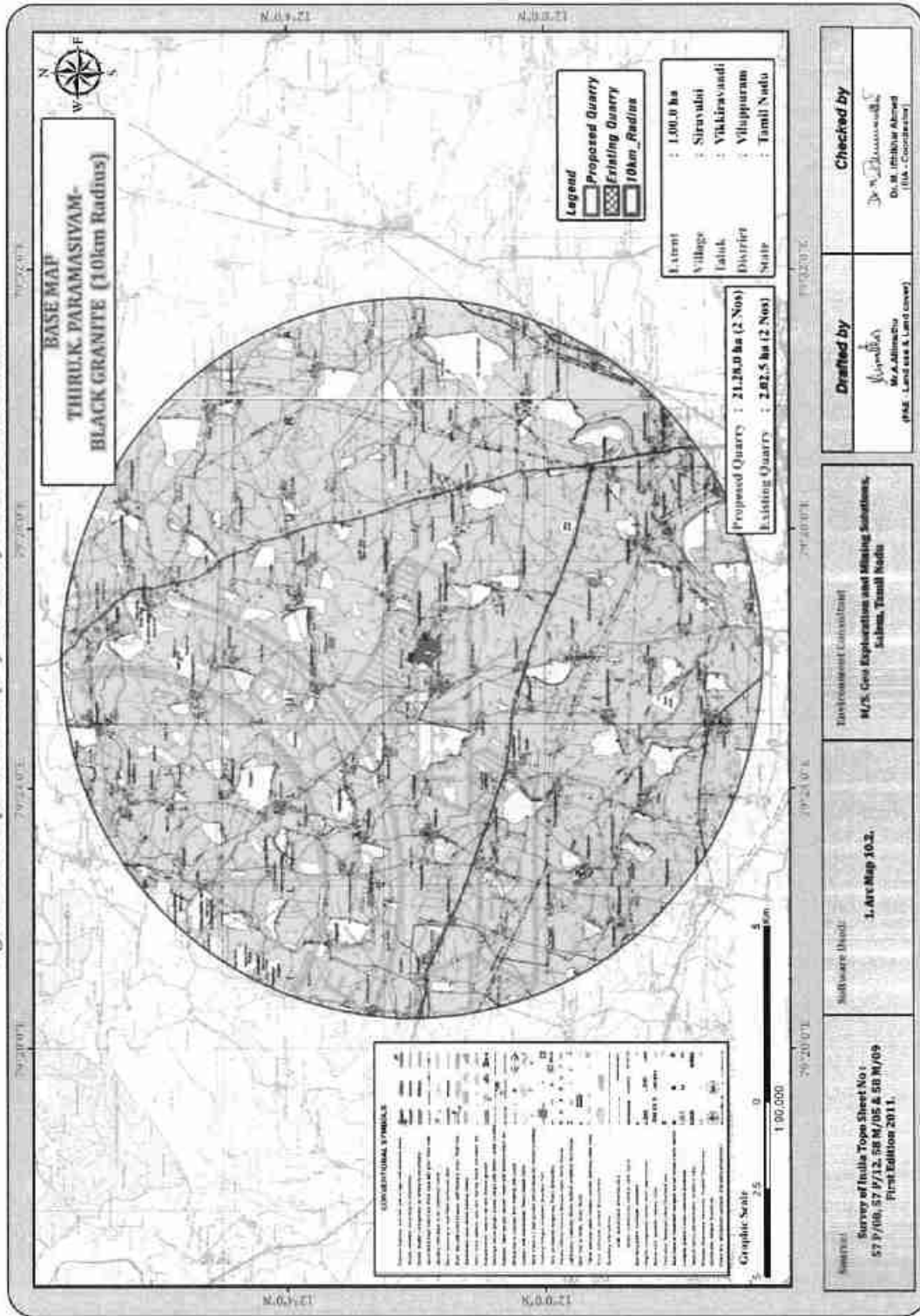


Figure 1.1: Key Map Showing the Location of the Project Site



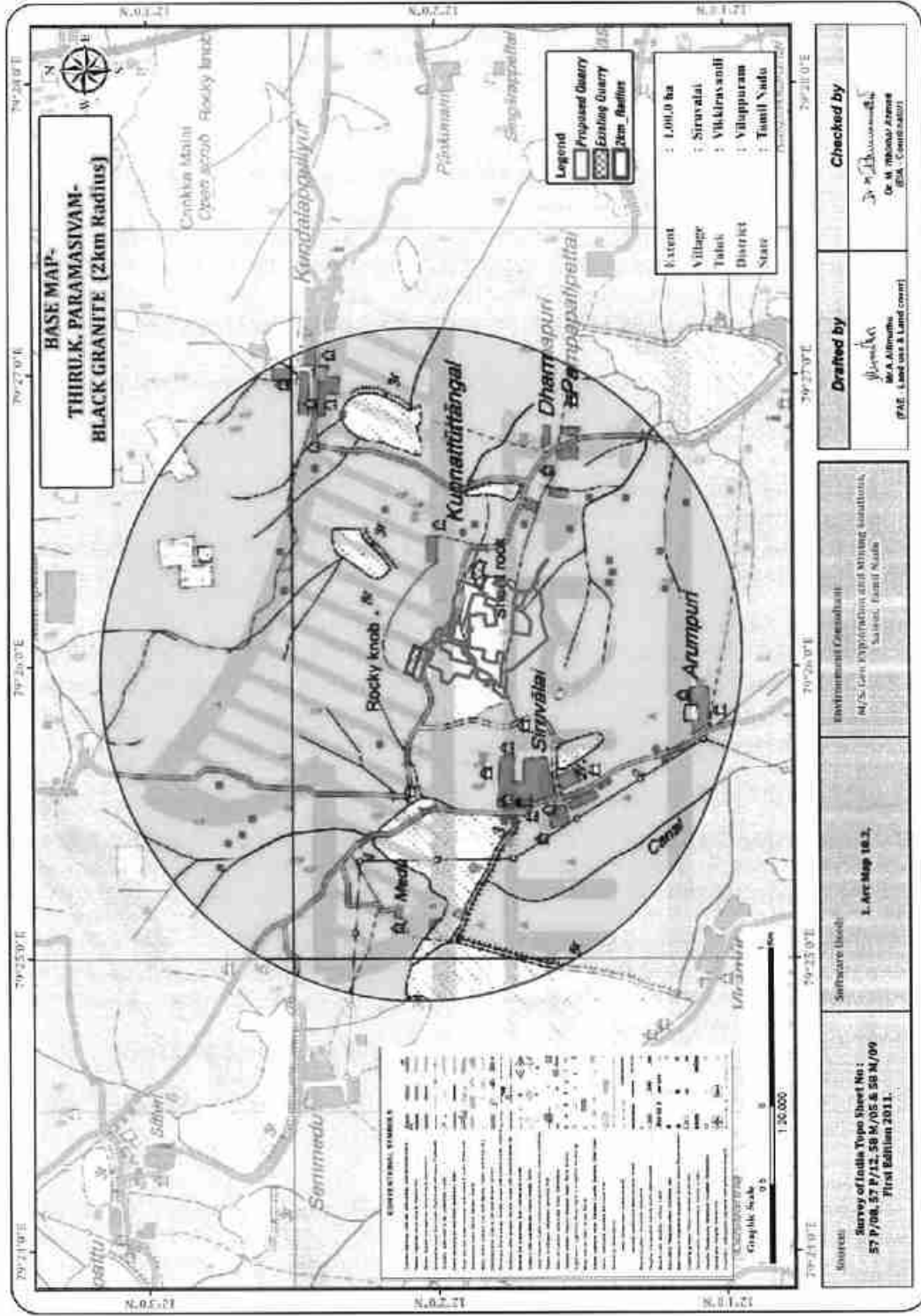
*K. Paramasivam*

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



K. Paramasivam

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



*K. Paramasivam*

### 1.3 THE SCOPE OF THE STUDY

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

- ⊗ Proponent applied for Black Granite Quarry on 05.10.2017.
- ⊗ Lease granted vide G.O. Number G.O. (3D) No. 50 Industries (MMB.2) Dated 18.12.2018 for a period of 20 years (18.01.2019 to 17.01.2039).
- ⊗ The Mining plan was prepared for the period of 5 Years. The Mining Plan was approved by the State Geology and Mining Department, Guindy, Chennai vide letter Letter Lr. No. 3645/MM5/2018 Dated 01.10.2018. The Mining plan period is 2019-20 to 2023-24.
- ⊗ 1<sup>st</sup> Scheme of Quarrying approved letter RC. No. 7780/MM4/2023 Dated 16.12.2023 for a period of five years (2024-25 to 2028-29).
- ⊗ Proponent applied for Terms of Reference vide Proposal No. SIA/TN/MIN/460034/2024, dated: 27.01.2024.

#### SCOPING

- The proposal was placed in 480<sup>th</sup> SEAC meeting held on 05.07.2024 and the committee recommended for issue of ToR.
- The proposal was considered in 741<sup>th</sup> SEIAA meeting held on 23.07.2024 & 744<sup>th</sup> SEIAA meeting held on 05.08.2024 and issued ToR vide File No. 11004, Identification No. TO24B0108TN5140496N dt: 10.08.2024.

#### 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, 14<sup>th</sup> September, 2006
- File No. 11004, Identification No. TO24B0108TN5140496N Dated: 10.08.2024
- First Scheme of 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

#### 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 1<sup>st</sup> June and 1<sup>st</sup> December of each calendar year as per MoEF & CC Notification S.O. 5845 (E) Dated: 26.11.2018.

#### 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. A brief description of each Chapter is presented in Table No. 1.6.



TABLE 1.4 – STRUCTURE OF THE EIA REPORT

S. No	Chapters	Title	Particulars
1	Chapter 1	Introduction	Presents, an Introduction along with Scope and Objective of this EIA/EMP Studies
2	Chapter 2	Project Description	Presents the Technical Details of the Project
3	Chapter 3	Description of Environment	Presents the Baseline Status for various Environmental Parameters in the Study Area for One Season (3 Months)
4	Chapter 4	Anticipated Environmental Impacts and Mitigation Measures	Presents the Identification, Prediction and Evaluation of overall Environmental Impacts due to the Proposed Projects Activities. Also presents Proposed Mitigation Measures.
5	Chapter 5	Analysis of Alternatives (Technology & Site)	Presents Analysis of alternatives with respect to site
6	Chapter 6	Environment Monitoring Programme	Present details of post project environment monitoring
7	Chapter 7	Additional Studies	Presents Public Consultation, Risk Assessment and Disaster Management Plan
8	Chapter 8	Project Benefits	Presents project benefits as: Improvements in the Physical Infrastructure, Social Infrastructure Employment Potential –Skilled; Semi-Skilled and Unskilled etc.,
9	Chapter 9	Cost Benefit Analysis	Environmental Cost Benefit Analysis has not been recommended at Scoping Stage – thus no analysis carried out separately in this EIA/EMP Report.
10	Chapter 10	Environmental Management Plan	Description of the administrative aspects to ensure the Mitigation Measures are implemented and their effectiveness monitored, after approval of the project.
11	Chapter 11	Summary & Conclusion	Summary of the EIA Report
12	Chapter 12	Disclosure of Consultants Engaged	Disclosure of the Consultants

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 for each individual lease. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the Summer season March-May 2024 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.

*K. Paramasivam*

TABLE 1.5 – ENVIRONMENT ATTRIBUTES

Sl.No.	Attributes	Parameters	Source and Frequency
1	Ambient Air Quality	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>2</sub>	24 hourly samples twice a week for three months at 7 locations
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, Perambalur.
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 collected from the Forest department.
5	Noise levels	Noise levels in dB(A)	At 8 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 assessment done for the mining associated activities

Source: Field Monitoring Data

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

Published by MoEF & CC.

### 1.3.1 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 Black granite quarry has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959
- ToR vide File No. 11004, Identification No. TO24B0108TN5140496N Dated: 10.08.2024





## 2. PROJECT DESCRIPTION

### 2.0 TYPE OF THE PROJECT

Thiru. K. Paramasivam proposed quarry in Siruvalai Village, Vikkiravandi Taluk, Viluppuram District and Tamil Nadu State falls under Cluster Situation as per MoEF & CC Notification S.O. 2269(E) Dated 1<sup>st</sup> July 2016 and the total extent of cluster is 22.28.0 ha consisting of three 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 NEED FOR THE PROJECT

The Proposed project is located in Siruvalai Village, Vikkiravandi Taluk, Viluppuram District and Tamil Nadu State. The proposed projects are site specific and there is no additional area required for this project. There is no effluent generation/discharge from the proposed quarry.

Black 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.

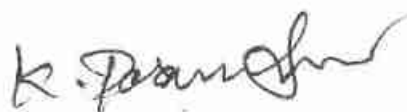
### 2.2 LOCATION OF THE PROJECT

- The area is located in *S.F.Nos. 407/3 (Part) of Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamilnadu.*
- The entire quarry lease area falls in the Patta land, the area is situated in almost flat terrain.
- The Altitude of the area is ranges from **80m above from MSL**.
- The area is mentioned in GSI Topo sheet No. **57 – P/08**
- The Latitude between of **12°02'01.31"N to 12°02'05.11"N**
- The Longitude between of **79°25'56.77"E to 79°26'03.51"E** on WGS 1984 datum.

Table 2.1: Site Connectivity to the Project Area

<b>Nearest Roadway</b>	National Highway – Viluppuram – Tiruvannamalai (NH-38) – 3km – South State Highway – Viluppuram – Gingee (SH - 4) – 4km – North East
<b>Nearest Town</b>	Viluppuram - 12km – South East
<b>Nearest Railway Station</b>	Viluppuram Railway Station – 12Km – South East
<b>Nearest Airport</b>	Chennai Airport – 131km – North East
<b>Seaport</b>	Chennai Seaport– 149km – North East
<b>Interstate Boundary</b>	Puducherry Interstate Boundary – 20.5Km – South East

Source: Survey of India Toposheet



**Table 2.2: Boundary Co-Ordinates of Proposed Project**

Boundary Pillar No.	Latitude	Longitude
1	12°02'03.82"N	79°25'56.77"E
2	12°02'04.54"N	79°25'57.09"E
3	12°02'05.11"N	79°25'58.01"E
4	12°02'02.85"N	79°26'03.51"E
5	12°02'01.31"N	79°26'02.63"E

*Figure 2.1: TOPOGRAPHICAL VIEW OF PROJECT AREA*



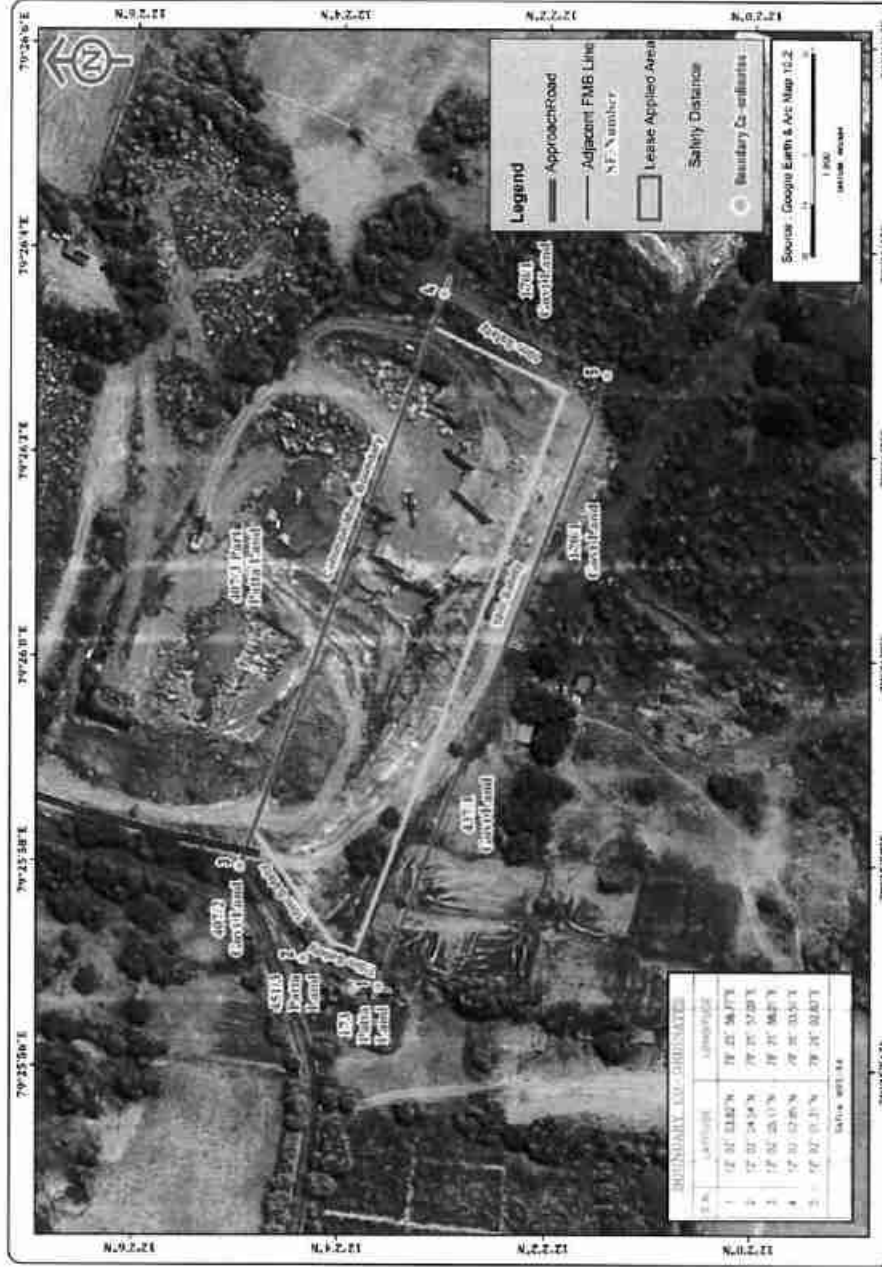
*Figure 2.2: FENCING AND PLANTATION PHOTOGRAPHS*



*K. Paramasivam*



Figure 2.3: GOOGLE IMAGE OF THE PROJECT AREA

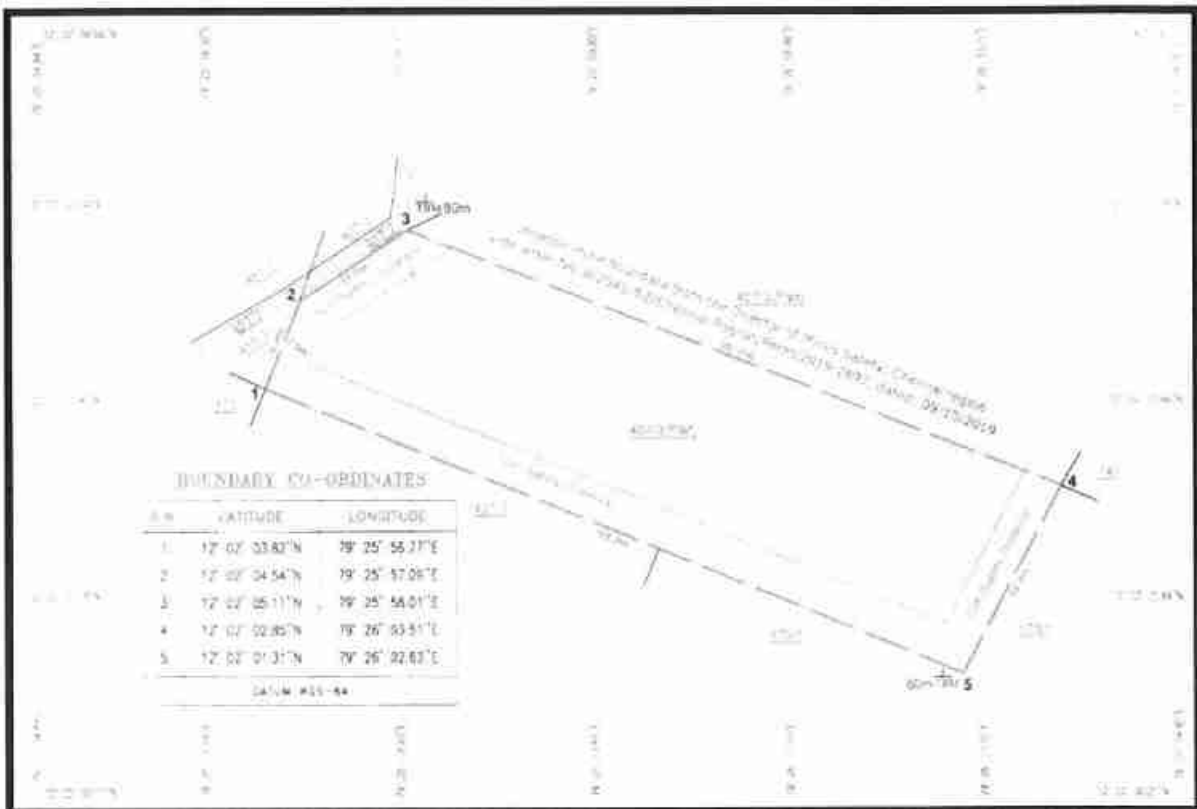


**Note:**

Lessee obtained permission under Regulation 111(3) of the MMR, 1961 for gran of relaxation to work in the common boundary from DGMS, Chennai Region No. 302445/SZ/Chennai Region/Permit/2019/2892 Dated 09.10.2019.

*K. Polansu*

Figure 2.4: QUARRY LEASE PLAN / SURFACE PLAN



Source: First Scheme of Approved mining plan.

*K. Paramasivam*

Figure 2.4-A: VILLAGE MAP SUPERIMPOSED ON GOOGLE EARTH IMAGE

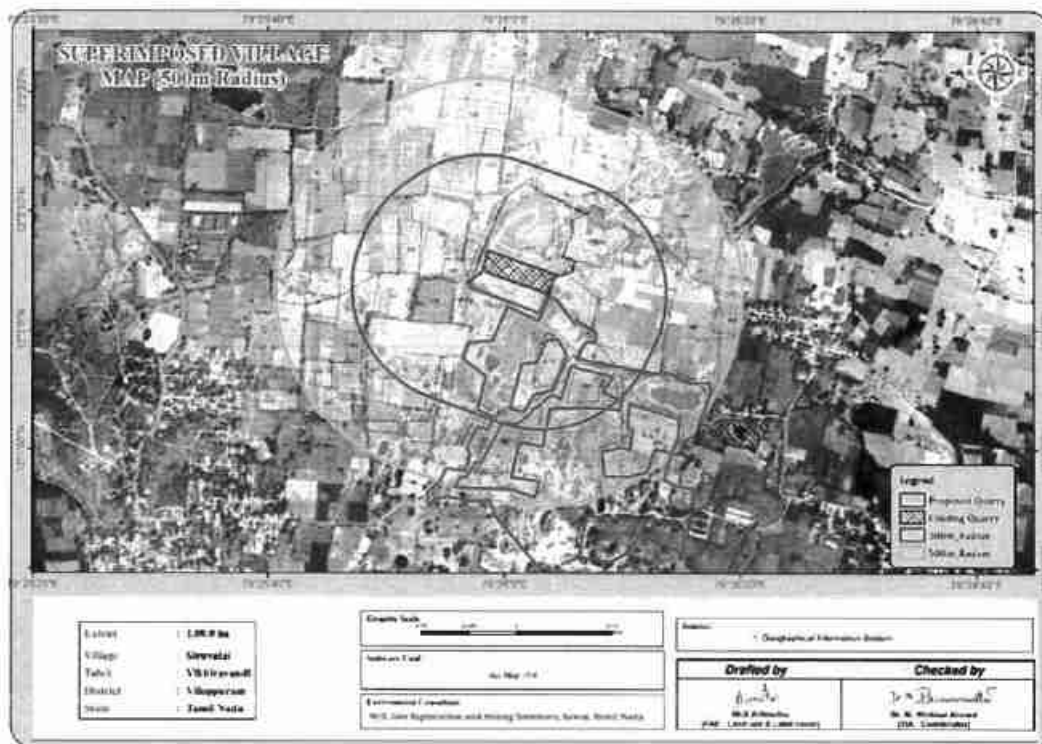
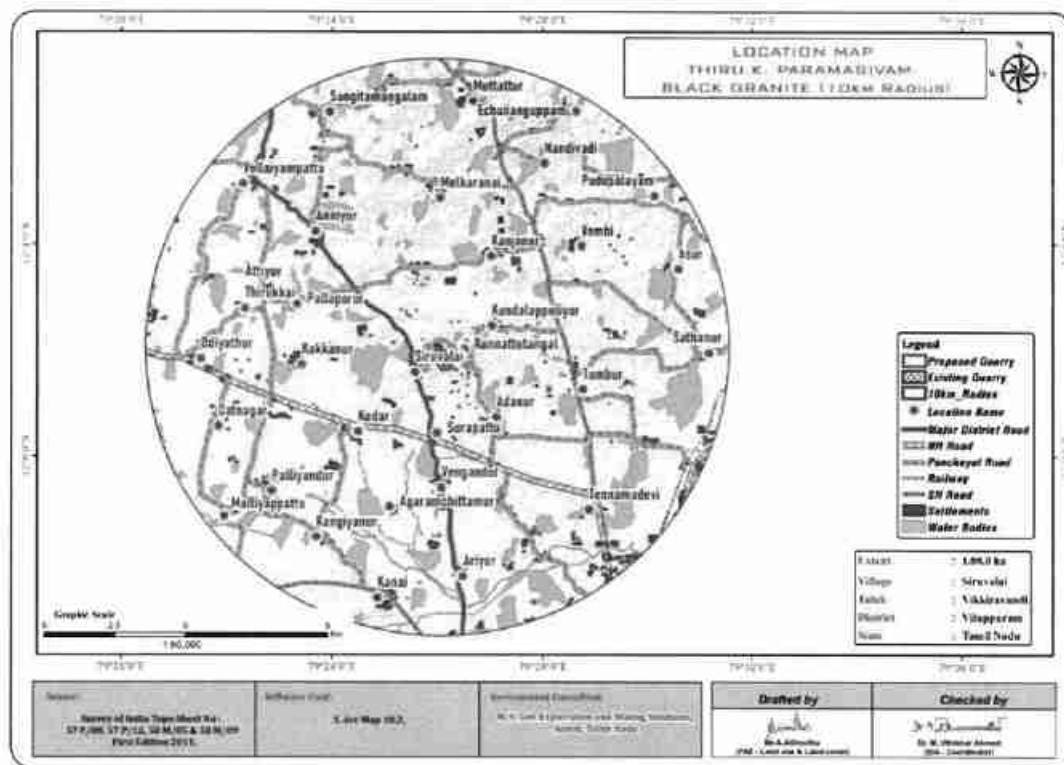


Figure 2.5: Image Showing Surface Features Around 10 Km Radius



*K. Paramasivam*

Figure 2.6: Image Showing Surface Features Around 5km Radius

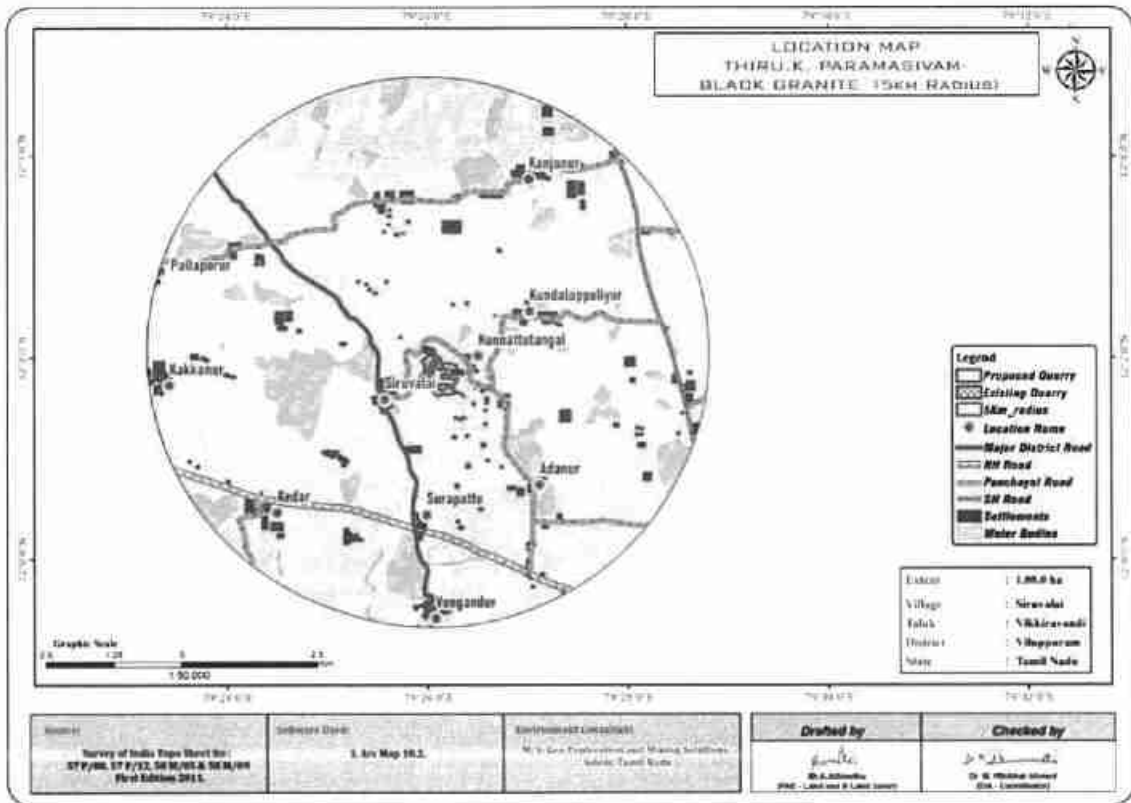
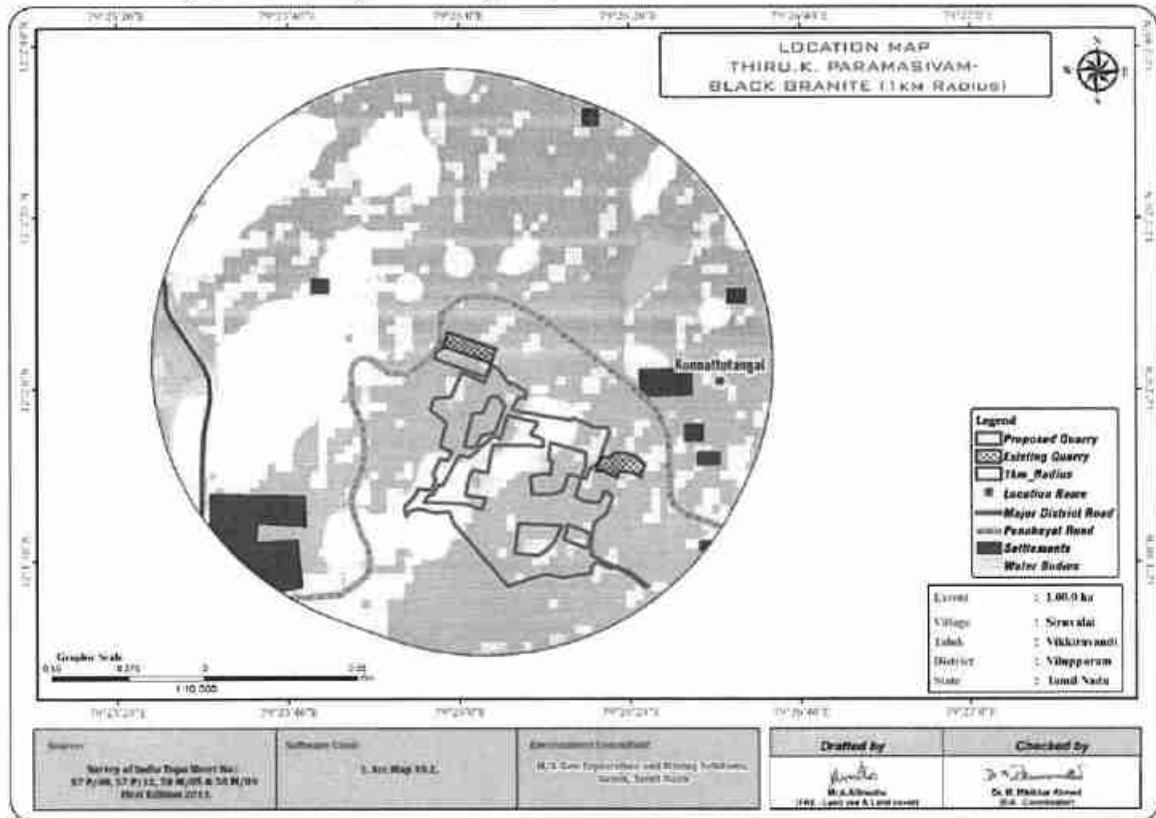


Figure 2.7: Image Showing Surface Features Around 1 Km Radius



*K. Pragasam*

### 2.2.1 Project Area

- The Topography of the Proposed Project is flat topography, 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 80m above from MSL, showing gentle gradient towards Southeastern
- There is Odayanatham R.F – 9.7 Km – NW side is a nearest forest land involved in the proposed project area.

Table 2.3: Land Use Pattern of Proposed Project

Description	Present Area (Ha)	Area to be required during this Scheme period (Ha)	Area at the end of life of quarry(Ha)
Area under Quarry	0.58.13	0.02.60	0.69.70
Waste dump	0.32.78	Nil	# Backfilled
Site Services	*Nil	*Nil	*Nil
Roads	0.02.00	Nil	0.02.00
Green Belt	Nil @ (0.02.00)	Nil @ (0.26.30)	0.28.30
Stocking Blocks	0.05.09	0.02.49	Nil
<b>Total</b>	<b>1.00.0</b>	<b>0.05.09</b>	<b>1.00.0</b>

Source: First Scheme of Approved mining plan

### 2.2.2 Size or Magnitude of Operation

Table 2.4: RESOURCES AND RESERVES

Description	Details
<b>Geological Resources ROM</b>	2,30,845
Granite Recovery (20 % in m <sup>3</sup> )	46,169
Granite Waste (80 % in m <sup>3</sup> )	1,84,676
Weathered rock(m <sup>3</sup> )	8,081
Side Burden(m <sup>3</sup> )	39,625
Top Soil in m <sup>3</sup>	4,114
<b>Mineable Reserves ROM</b>	79,280
Granite Recovery (20 % in m <sup>3</sup> )	15,856
Granite Waste (80 % in m <sup>3</sup> )	63,424
Weathered rock (m <sup>3</sup> )	4,366
Top Soil in m <sup>3</sup>	1,140
<b>Proposed Production for five years plan period ROM</b>	34,955
Granite Recovery (20% in m <sup>3</sup> )	6,991
Granite Waste (80% in m <sup>3</sup> )	27,964
Weathered rock(m <sup>3</sup> )	3,123
Top Soil in m <sup>3</sup>	208
Number of Working Days	300
Production of ROM per day in five-year plan period	24
Production of Granite per day	5
Total Waste per day (Granite waste)	19
No of Lorry Loads per day for Transportation to Granite cutting units	1
No of Lorry loads for dump	2

Source: First Scheme of Approved mining plan

K. Paramasivam

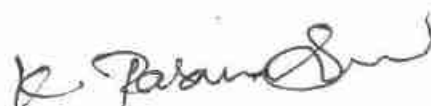
## 2.3 GEOLOGY

### 2.3.1 Regional Geology

The generalized Geology of the district is as follows:

Recent and Sub-Recent	Soil
	Alluvium
	Laterite
Mio Pliocene	Cuddalore Sandstone with intercalations of clay, shale and pebble bed
Lower Jurassic (Upper Gondwana)	Shales and sandstones
Archaean	Basic dykes, Pegmatites and Quartz veins
	Granites
	Norites
	Charnockitic rocks
	Garnet plagioclase and pyroxene plagioclase rock (Anorthosite)
	Talc Rock (altered ultrabasic rock)
	Talc-Chlorite-Epidote Rock
	Sillimanite Quartzite
	Magnetite Quartzite
Hornblende granulites and amphibolites	

A greater part of the district is covered by rocks belonging to Archaean age comprising the Charnockite Group, the Migmatite Complex, Sathyamangalam Group and the Bhavani Group and alkali complex of Proterozoic age. West of Kallakurichi (southwestern part of the district), the area comprises the Charnockite Group of rocks viz. charnockite, pyroxene- granulite and garnetiferous gabbro. West of Tirukoilur (central part of the district) and east of the charnockite terrain (i.e., kallakurichi area) the Migmatite complex is made up of Hornblende-biotite gneiss, Pink augen gneiss and pink migmatite with younger intrusions of Tindivanam and Gingee Granites (2250 Ma) and basic dykes (Proterozoic). The Migmatite Complex forms the major country rock of the area covering more than sixty percent and extending towards east upto Vikravandi, South of Gingee. Epidote-hornblende gneiss (Proterozoic age) occurs as small isolated outcrops. Dolerite dykes form the youngest basic intrusives traversing both Charnockite as well as the migmatite country equally. Overlying the Archaeans are the marine fossiliferous Upper, Cretaceous and Palaeogene Formations occurring in two separate sub-basins separated by thick cover of alluvial sediments deposited by Gadilam and Pennaiyar rivers. The two sub-basins are recognized as Vridhachalam sub-basin and Pondicherry sub-basin. In Vridhachalam sub-basin, the marine Upper Cretaceous sediments are divisible into four formations viz., Parur Formation, Patti Formation, Mattur Formation and Alladi Formation. The Parur Formation is not exposed in the district. The Patti Formation comprises fossiliferous sandy limestone and Calcareous shale. Mattur Formation and Aladi Formation are chiefly composed of argillaceous sandstone and shales with pockets of fossiliferous limestone. The Pondicherry sub-basin is partly exposed in the eastern part of viluppuram district and the Upper Cretaceous sediments are divisible into Vanur Formation, comprising argillaceous sandstone with hard bands of calcareous sandstone and Nesal Formation comprising fossiliferous shale, siltstone and bands of shell limestone. The Palaeocene rocks, overlying the Upper Cretaceous Formations, are divided into Karasur Formation comprising fossiliferous limestone with calcareous shale and Manaveli Formation comprising siltstone and fine grained argillaceous sandstone and recognized as Putturai Group. The Tertiary rocks



comprises the Cuddalore Formation, consisting of cobbly and pebbly sandstone, mottled sandstone, ferruginous sandstone with bands and lenses of clay besides lignite seams. This formation contains large quantities of fossil wood around Thiruvakkarai which have been declared and maintained as National Fossil wood Park by G.S.I. These are overlain by the Quarternary fluvial, marine and Aeolian formations along the coast as well as river courses.

The terrain displays much structural complexity due to the multiple deformation it has suffered.. A number of prominent shear zones have been recognised viz., N-S shear zone, east of Gingee town and NNE-SSW to ENE-WSW among which the one trending NNE-SSW near the eastern foot of the Kalrayan hills SW of Kallakurichi is the most striking. (GSI- Viluppuram District Resource Map).

### **Mineral Wealth**

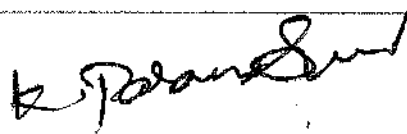
The occurrences of limestone, limeshells, clay and reh salt are reported from the district. The polymetal sulphide deposit occurrence, eleven kilometers southwest of Mamandur, in the granulite terrain has been extensively studied by way of mapping, sampling, geophysical surveys and drilling by GSI, BGML and by Tamil Nadu Government (UNDP Programme). The polymetal deposit includes ores of copper, lead and silver. The district forms the hub for exploitation of dimensional stone viz., granite deposit in the country. The world famous black granite. Dykes of Kunnam area, Vanur taluk are rated at par with the Swedish "EBONY" black. WNW-ESE and NE- SW dykes swarm between Mailam- Perumbakkam- Kunnam- Thiruvakkarai- V.Parangini village is considered to be the potential zone for exploitation of industrial granites. In addition, the district is also noted for multi-coloured granite occurrences of Gingee area. Gypsum occurs in the eastern flank of Kaliveli tank near Marakkanam, Limeshells are locally recovered from the coastal lagoons of Marakkanam. Reh salt (sodium sulphate and carbonate) occur near the eastern flanks of Kaliveli near Marakkanam.

### **2.3.2 Local Geology: -**

The study area follows the regional trend and mainly comprises of Hard Rock Formation as a homogeneous formation / Batholith formation of Charnockite. The project areas are flat terrain, The project areas are covered with Gravel formation of 2m thickness; Massive Charnockite formation is found after 2m Gravel formation which is clearly inferred from the existing quarry pit.

### **2.3.3 Hydrogeology**

Viluppuram district is underlain by crystalline metamorphic complex in the western part of the district and sedimentary tract in eastern side (Plate-II). The thickness of sediments exceeds 600m near southern part of the district. Groundwater occurs under phreatic and semi-confined conditions in consolidated formations, which comprises weathered and fractured granites, gneisses and charnockites whereas in unconsolidated sedimentary rocks the groundwater occurs in phreatic, semi-confined conditions in Vanur sandstone, Kadapperi kuppam formation and Turuvai limestone. The district is having rocky outcrops in major part of Kallakurichi, Sankarapuram and Tirukoilur taluks. The weathering is highly erratic and the depth of abstraction structures is controlled by the intensity of weathering and fracturing. The depth of wells varies from 6.64 to 17 m bgl and water levels in observation wells tapping shallow aquifers varied from 0.74 to 9.7 m bgl during pre monsoon (May 2006) and it varies from 0.7 to 4.45 m



bgl during post monsoon (January 2007). During pre monsoon, the depth to water levels in the range of >2 to

5 m bgl in major part of the district, in the range of >5 - 10 m bgl in western and southeastern parts of the district and range of 0-2 m bgl were recorded in two isolated pockets. During post monsoon the depth to water levels range of >2 to 5 bgl exists in major part of the district, range of 0 - 2 m bgl prevails in central and northeastern parts of the district and range of >5 - 10 m bgl were recorded in two isolated pockets in the southwestern and north western parts of the district. The depth to piezometric surface ranged from 2.8 to 11.25 m bgl during Pre monsoon and 0.5 to 6.35 m bgl during post monsoon. The ground water is being developed by means of dug wells, bore wells and tube wells. The diameter of the well is in the range of 7 to 10 m and depth of dug wells range from 15 to 18 m bgl depending on the weathered thickness and joints. The dug wells yield up to 1 lps in summer months and few wells remains dry. The yield is adequate for irrigation for one or two crops in monsoon period. The yield of bore wells in favorable locations vary from <1 to 6 lps. The valley fills, intersection of lineaments, particularly, in the western part along the foot hills of Kalrayan hills are reported to have potential pockets suitable for dug wells and bore wells. The area of contact between crystalline and sedimentary formations has variable yield prospects. The cretaceous formations are very compact and yield prospects are low. The dug wells of 6 m diameter and 10 m bgl depth in sandy tracts give about 3.5 lps. The yield of tube wells in the sedimentary formation ranges from 2.4 to 37 lp.

#### 2.3.3.1 Aquifer Systems:

Occurrence and storage of groundwater depend upon three factors viz., Geology, Topography and rainfall in the form of precipitation. Apart from Geology, wide variation in topographic profile and intensity of rainfall constitutes the prime factors of groundwater recharge. Aquifers are part of the more complex hydro geological system and the behaviour of the entire system cannot be interpreted easily. In hard rock terrain the occurrence of Ground Water is limited to top weathered, fissured and fractured zone which extends to maximum 30 m on an average it is about 10-15 m in Viluppuram District.

In Sedimentary formations, the presence of primary inter granular porosity enhances the transmitting capacity of groundwater where the yield will be appreciable. The sedimentary area which occupies the eastern part of the district along the coastal tract is more favourable for groundwater recharge. Ground Water occurs both in semi confined and confined conditions. A brief description of occurrence of groundwater in each formation is furnished below.

#### 2.3.3.2 Alluvial Formations

In the river alluvium groundwater occurs under water table condition. The maximum thickness is 37 m and the average thickness of the aquifer is approximately 12 m. These formations are porous and permeable which have good water bearing zones.

#### Tertiary Cuddalore sandstone

Tertiary formations are represented by Cuddalore Sandstone and characterised as fluvial to brackish marine deposits. Predominantly this formation is divided into Lower and Upper Cuddalore formations. In





the Upper Cuddalore formations the groundwater occurs in semi confined conditions, whereas in the Lower Cuddalore the groundwater occurs in confined condition with good groundwater potential.

#### **Cretaceous Formations**

Groundwater occurring in the lens shape in the sandy clay lenses and fine sand is underlain by white and black clay beds which constitute phreatic aquifer depth which ranges 10m to 15m below ground level. Phreatic aquifer in Limestone is potential due to the presence of Oolitic Limestone.

#### **Hard Rock Formations**

Groundwater occurs under water table conditions but the intensity of weathering, joint, fracture and its development is much less in other type of rocks when compared to gneissic formation. The groundwater potential is low, when compared with the gneissic formations

#### **Granitic Gneiss**

Groundwater occurs under water table conditions in weathered, jointed and fractural formations. The pore space developed in the weathered mantle acts as shallow granular aquifers and forms the potential water bearing and yielding zones water table is shallow in canal and tank irrigation regions and it is somewhat deeper in other regions.

#### **Charnockite**

Groundwater occurs under water table conditions but the intensity of weathering, joint, fracture and its development is much less when compared to gneissic formations. The groundwater potential is low, when compared with the gneissic formations.

#### **Aquifer Parameters**

The transmissivity values of fractured aquifers range from  $< 1$  to  $141 \text{ m}^2/\text{day}$  and storativity varies between  $2.84 \times 10^{-5}$  and  $8.9 \times 10^{-3}$ . The transmissivity of sedimentary formation varies from  $21$  to  $748 \text{ m}^2/\text{day}$  and storativity is in the order of  $2.75 \times 10^{-3}$

Actual Rainfall in Mm					Normal Rainfall in Mm
2017	2018	2019	2020	2021	
1066.9	727.5	906.3	1137.7	1935.2	985

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

*K. Paramasivam*

Figure 2.8: Regional Geology Map

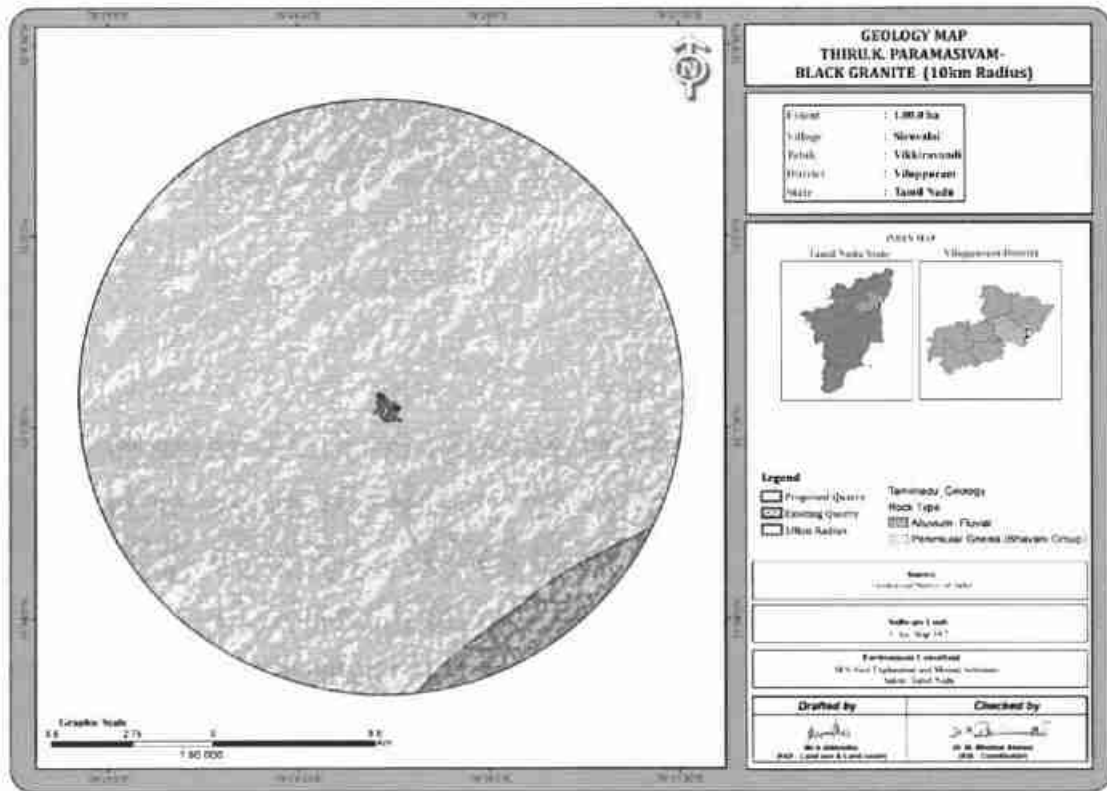
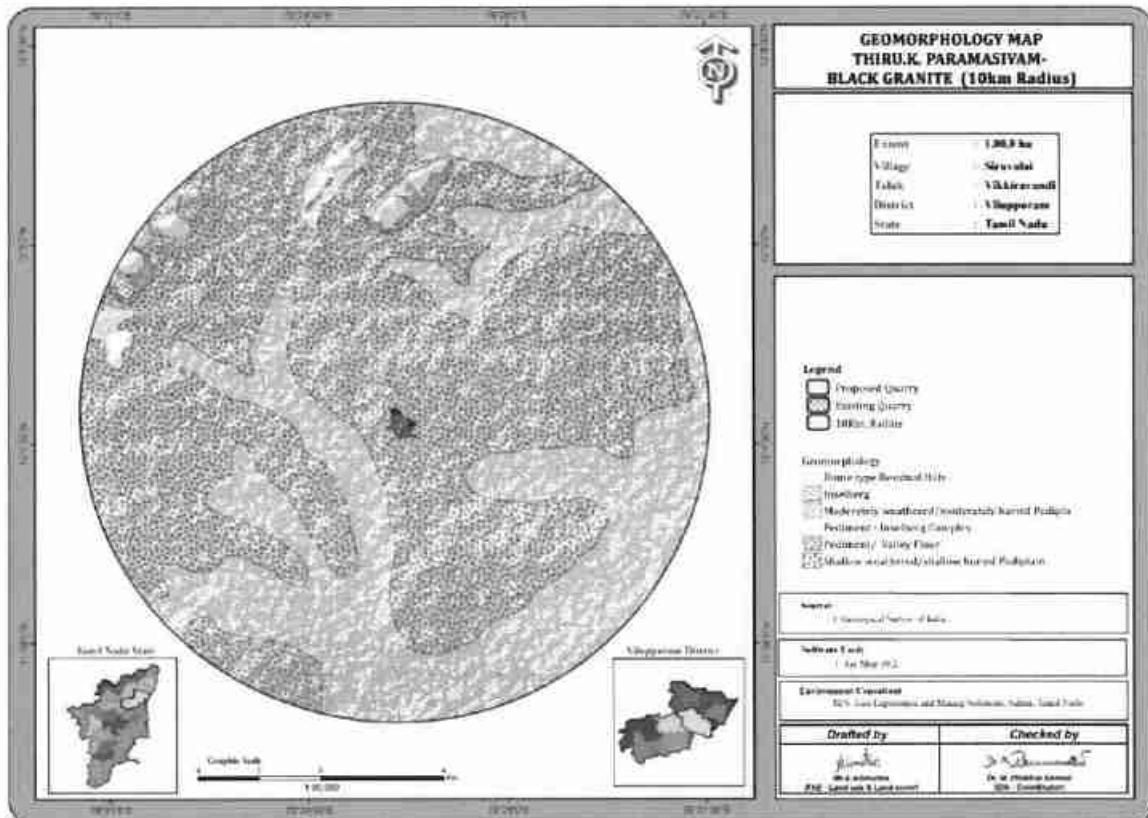


Figure 2.9: Geomorphology Map



*K. Paramasivam*

#### 2.4 Resources and Reserves

Black Granite (Dolerite) is occurring beneath the surface. Granite outcrops are visible in some places within the project area.

Table 2.5 Resources, Reserves

Details	ROM (m <sup>3</sup> )	Granite Recovery @ 20% (m <sup>3</sup> )	Granite Waste @ 80% (m <sup>3</sup> )	Side burden (m <sup>3</sup> )	Weathered rock	Topsoil (m <sup>3</sup> )
Geological Resources	230845	46,169	1,84,676	39,625	8,081	4,114
Mineable Reserves	79,280	15,856	63,424	NA	4,366	1,140

Source: First Scheme of Approved mining plan

Table 2.6 Year wise Production for First five years plan

Year	ROM (m <sup>3</sup> )	Recovery @ 20% (m <sup>3</sup> )	Granite Waste @ 80% (m <sup>3</sup> )	Weathered rock (m <sup>3</sup> )	Top soil in m <sup>3</sup>
I	6480	1296	5184	3123	208
II	7013	1403	5610	-	-
III	7017	1403	5614	-	-
IV	7175	1435	5740	-	-
V	7270	1454	5816	-	-
<b>Total</b>	<b>34,955</b>	<b>6,991</b>	<b>27,964</b>	<b>3123</b>	<b>208</b>

Source: First Scheme of Approved mining plan

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

##### Top soil:

There will be generation of topsoil is about 208m<sup>3</sup> up to depth for 2m during this Scheme period, the same will be preserved all along the safety barrier and utilized for construction of bund and afforestation purpose.

##### Granite Waste:

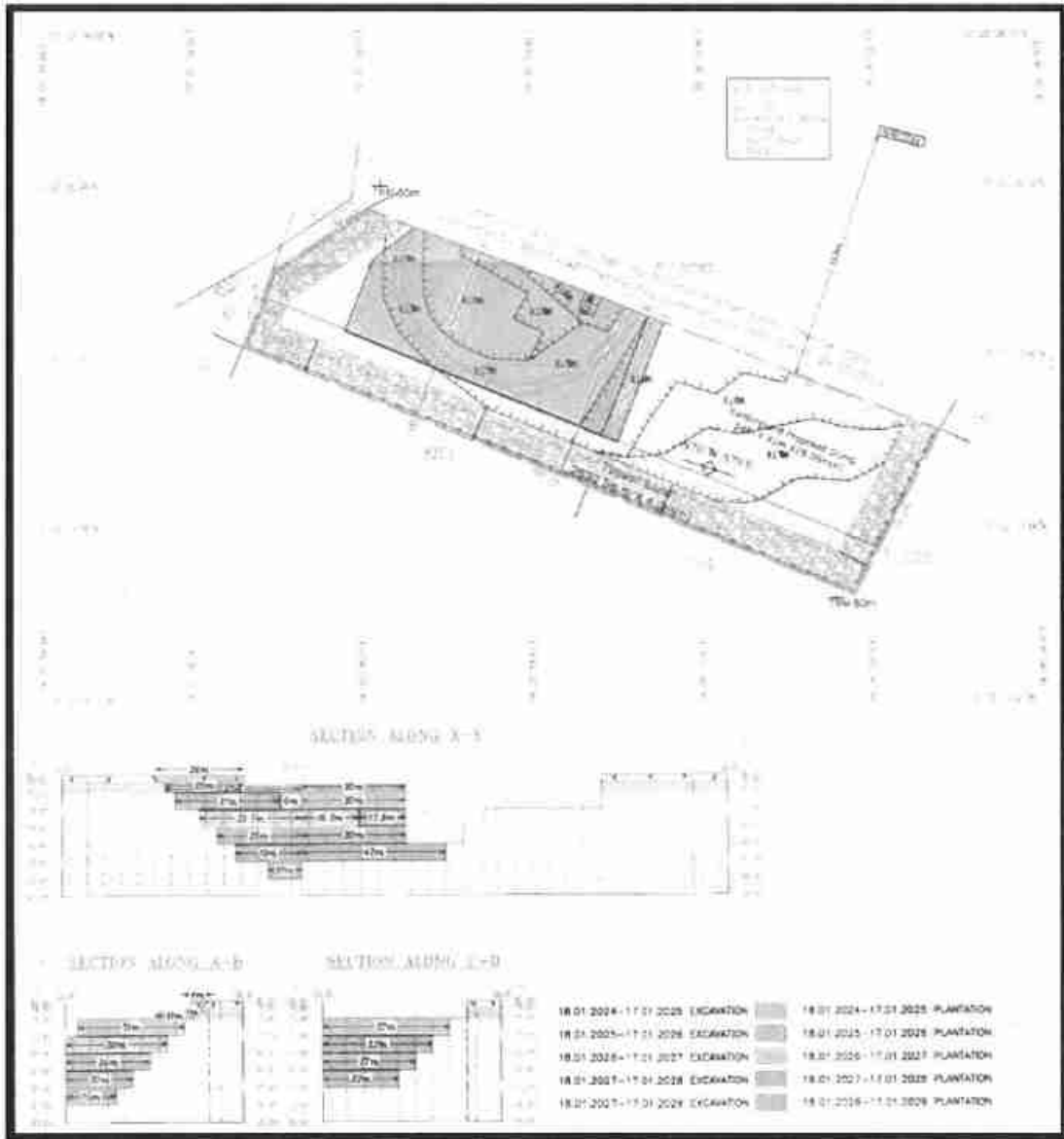
Granite waste forms nearly 80% of ROM and the total quantity of granite waste in the next five years will be around 31,087m<sup>3</sup> (Granite waste 27,964m<sup>3</sup> + Weathered rock 3,123m<sup>3</sup>) the same will be dumped on the Eastern with dimensions of 64m(L) X 42m(W) X 28.06m(H).

##### Disposal:

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.

*K. Paramasivam*

Figure 2.10: Year-Wise Development Production Plan and Section



Source: First Scheme of Approved mining plan

**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.,

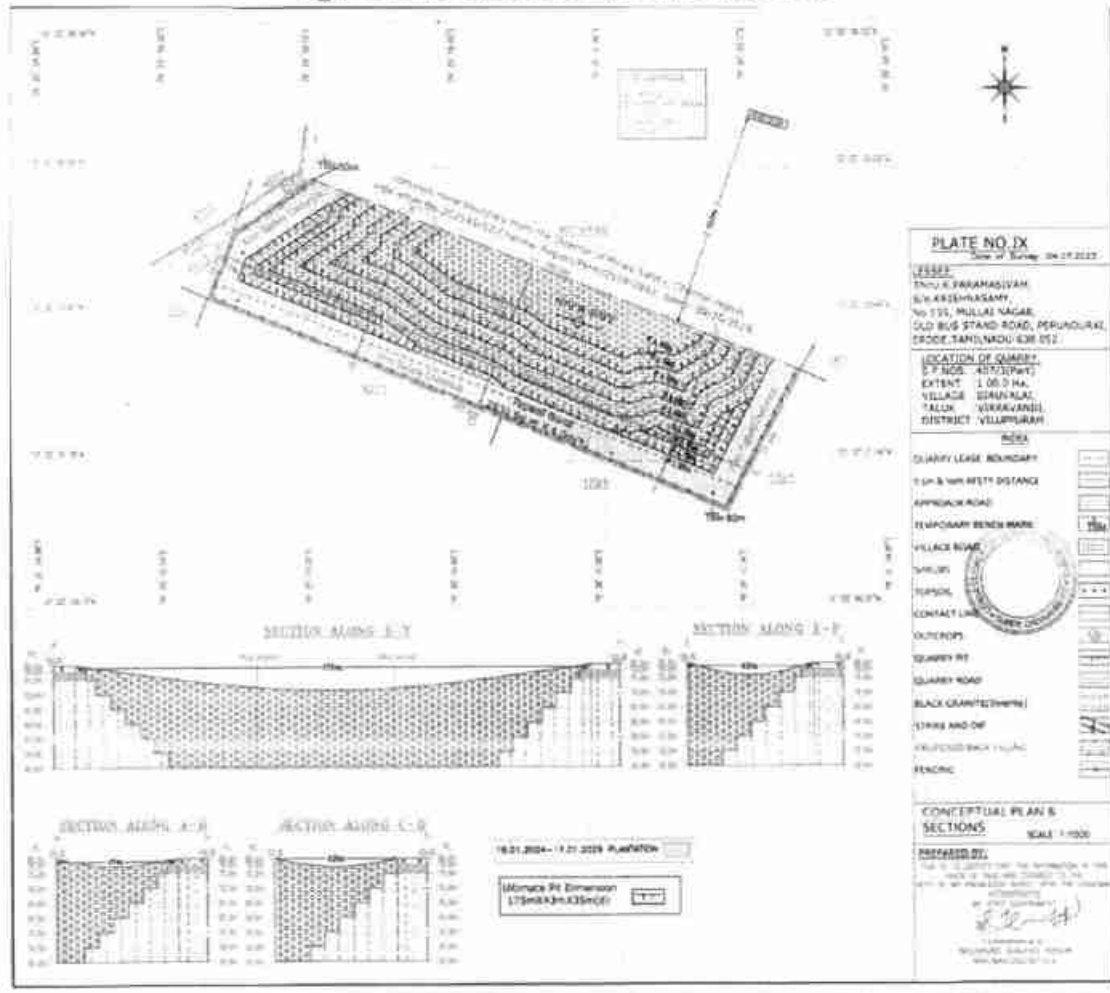
Table 2.7 Ultimate Pit Dimensio

Length in m	Width in m	Depth in m
175	43	35

Source: First Scheme of Approved mining plan

*K. Paramasivam*

Figure 2.11: CLOSURE PLAN AND SECTIONS



Source: First Scheme of Approved 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

*K. Paramasivam*

**Blasting**

Blasting will be done as per details below: -

- (i) 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 mining plan.

**2.5.2 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	6	32	1.2m to 6m	Atlas Copco	Compressed air
Compressor	2	-	450/150psa	Atlas Copco	Diesel drive
Diamond Wire Saw	1	-	20m <sup>3</sup> /day	Optima	Diesel Generator
Diesel Generator	2	-	125kva	Kirloskar	Diesel
Loading Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Crawler Crane	1	855	Tata	Diesel Drive	
Excavator	2	220	Tata Hitachi	Diesel Drive	
Haulage within the Mine & Transport Equipment					
Type	No of Unit	Capacity	Make	Motive Power	
Tipper	2	20 tonnes	Ashoke Leyland	Diesel Drive	

Source: First Scheme of Approved mining plan

**2.6 PROJECT DESCRIPTION****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**

Traffic density measurements were performed at Two locations

1. Siruvalai Panchayat Road – 350m - NW
2. Thirukkunam -Surapattu District Road – 2.5km - SW

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. 2.12: Mineral Transportation Route Map



Table.2.9: Traffic Survey Locations

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Siruvilai Panchayat Road	350m NW	Panchayat Road
TS2	Thirukkunam -Surapattu District Road	2.5km SW	District Road

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	100	300	100	100	150	60	460
TS2	175	525	150	150	200	100	775

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	3	9	9

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
Siruvilai Panchayat Road	460	9	469	1200
Thirukkunam -Surapattu District Road	775	9	784	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.

K. Paramasivam



### 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 calculation in KLD	Source
<b>Mine site (material transportation &amp; plantation)</b>		
Dust Suppression	0.9KLD	From Existing bore wells from nearby area
Green Belt	0.8KLD	From Existing bore wells from nearby area
<b>Domestic (for labors)</b>		
Sanitation & Drinking	0.7KLD	From existing, bore wells and drinking water will be sourced from Approved water vendors.
<b>Total</b>	<b>2.4 KLD</b>	

Source: Prefeasibility report

### 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

No raw material will be required for production of Black granite quarry. The final product will be sent to consumer based on their demand. The mode of transportation of raw material and finished product will be by road. Tippers/ trucks will be used for transportation to the end users.

The proposed quarrying activity requires HSD (High Speed Diesel) for machineries as per below quantum –

Per hour Excavator will consume	=	16 liters / hour
Per hour Excavator will excavate	=	10m <sup>3</sup>
For 70,375m <sup>3</sup> (for this Scheme period)	=	34,955/10
Diesel consume 7,038working hours	=	3,495.5hours x 16 liters
	=	55,928liters of HSD for five years scheme period

Source: Prefeasibility report

### 2.7.4 Project Cost

The Environmental Management plan has been prepared considering the mode of working, Safety of the employees and Monitoring periods the total Cost is 294.79Lakhs.

## 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
<b>Skilled Labour</b>		
1	Mines Manager	1
2	Mines Foreman	1
3	Machinery Operators	4





Ordinary Employees		
4	Skilled labour	5
5	Semi-skilled	18
6	Unskilled	6
<b>Total</b>		<b>35</b>

Source: First Scheme of Approved mining plan

## 2.9 PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION

The commercial 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 complied before the start of mining operation.

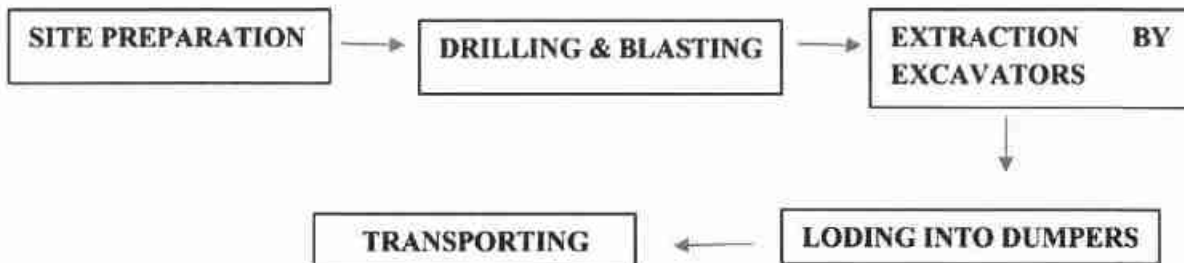
Table 2.15 Expected time Schedule

Sl.No	Particulars	Time Schedule (in month)					Remarks if any
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
1	Environmental Clearance						
2	Consent to 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

## 2.10 TECHNOLOGY AND PROCESS DESCRIPTION

The Technology used in the for the operation is Opencast Method by using drilling, Blasting and Excavation and mineral transport through tippers. The flowchart of this project is given below



### 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 **March-May 2024** with CPCB guidelines. Environmental data has been collected with reference to cluster quarries by **EHS 360 LABS PRIVATE LIMITED** for the below attributes-

for the below attributes-

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

#### 3.1 Study Area

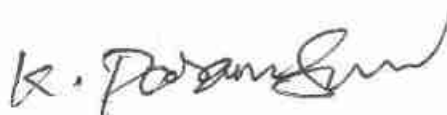
An area of 10 km radius (aerial distance) from the periphery of the cluster is considered for EIA study. The data collection has been used to understand the existing environment scenario around the cluster against which the potential impacts of the project can be assessed. The study area has been divided 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.

#### 3.2 Study Period

The baseline study was conducted during the Summer monsoon i.e., March-May 2024

#### 3.3 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, PM<sub>10</sub> and SO<sub>2</sub>, NO<sub>x</sub> with gaseous attachments & Fine Dust Samplers (FDS) for PM<sub>2.5</sub> 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 (Mar-May 2024)	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 Quadrate & Transect Study Secondary Data - Forest Working Plan
Socio Economic Aspects	Socio-Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited, in association with GEMS

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

### 3.4 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.

#### 3.4.1 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 prepare. 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 ResourceSat1 LISSIII (False Color Composite) has been used for Land Use / Land Cover study. Satellite image has been procured from National Remote Sensing Centre, Hyderabad.

## 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 Existing and 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 - 14<sup>th</sup> Sept 2022, Swath 141km wide.

SOI Toposheet No - 58J/01

Software Used - ArcGIS 10.8

The satellite image (FCC color 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.

### Resourcesat1-LISSIII SENSOR characteristics

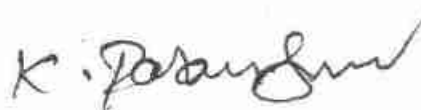
Band Number	Description	Wavelength	Resolution
Band 1	Green	0.52-0.59 $\mu\text{m}$	23.5 meters
Band 2	Red	0.62-0.68 $\mu\text{m}$	23.5meters
Band 3	NIR	0.77-0.86 $\mu\text{m}$	23.5meters
Band 4	SWIR	1.55-1.70 $\mu\text{m}$	70meters

Source: NRSC, Hyderabad

## 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 Figure 3.3

Land Use Pattern of the Buffer Zone (Study area)

Details of the same are given in Table - 3.2 and the map is shown in Figure - 3.1

TABLE: 3.2 LAND USE / LAND COVER DETAILS OF STUDY AREA

S.No	CLASSIFICATION	AREA_HA	AREA_%
<b>BUILTUP</b>			
1	RURAL	809.68	2.54
2	URBAN	47.58	0.15
3	MINING	37.58	0.12
<b>AGRICULTURAL LAND</b>			
4	CROP LAND	20892.19	65.50
5	FALLOW LAND	3433.91	10.77
6	PLANTATION	2828.35	8.87
<b>BARREN/WASTE LANDS</b>			
7	SCRUB LAND	755.02	2.37
<b>WETLANDS/ WATER BODIES</b>			
8	WATER BODIES/LAKE	3092.20	9.69
<b>TOTAL</b>		<b>31896.51</b>	<b>100.00</b>

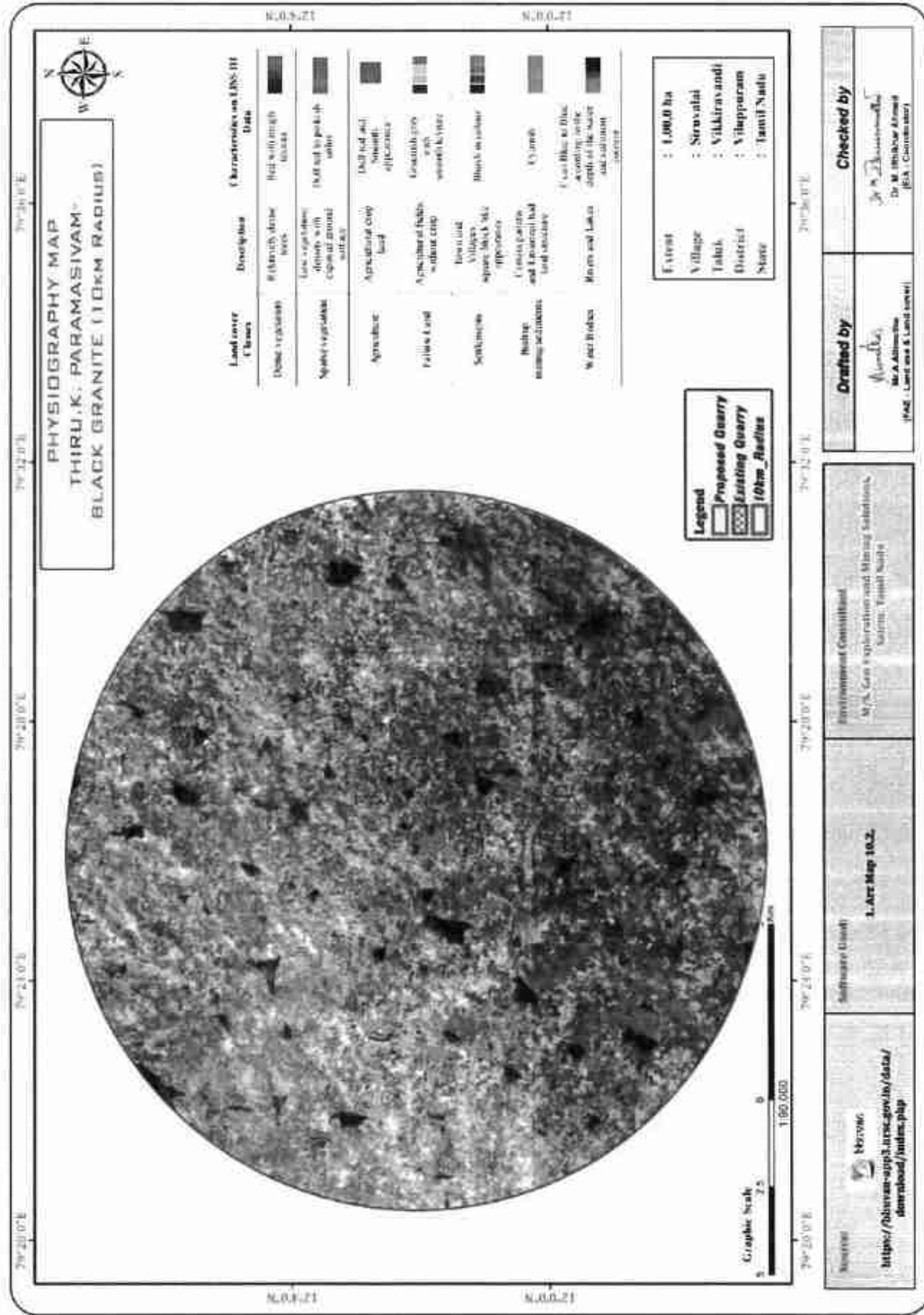
Source: Bhuvan, NRSC.

FIGURE 3.1: CHART SHOWING LANDUSE/LANDCOVER ANALYSIS USING LISS III Data



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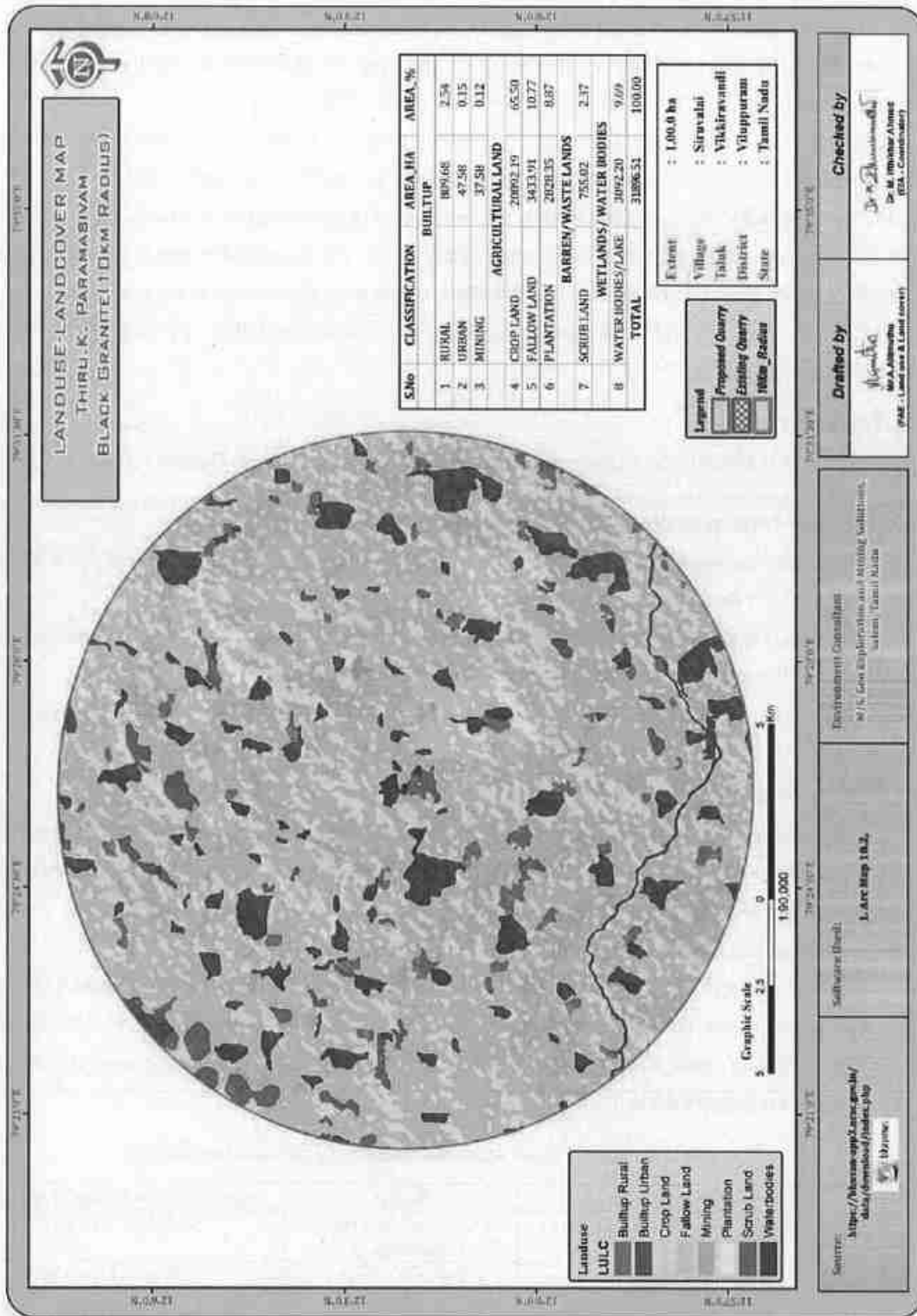
FIGURE 3.2: PHYSIOGRAPHIC MAP 10KM RADIUS



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FIGURE 3.3: LAND USE LAND COVER MAP 10KM RADIUS



*K. Paramasivam*

### Interpretation

- ⊗ The 10 km radius study area mainly comprises of Agriculture land (including Crop, Fallow & Plantation land) accounting of 85.14% of the total study area.
- ⊗ Water Bodies such as ponds/ lakes comprises of 9.69% of the core and buffer area with in 1km Odai – 140m – East, Kuttai – 410m – SW, Tank – 510m NE & Periya Eri – 90m - West.
- ⊗ The Scrub land accounts of 2.37%. 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.
- ⊗ 0.12% of the total study area is occupied by the mine area. The area occupied by Mainly Black 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.
- ⊗ 0.15% of the area is covered under the human Settlement. The nearest village is placed 530m on East side from the project site.

### 3.4.2 TOPOGRAPHY

The area exhibits flat terrain. The gradient is gentle towards South Eastern side and altitude of the area is 80m above from MSL. Applied Proposed quarry area.

### 3.4.3 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 NW to SE direction. The drainage pattern of the study area is given in Fig. 3.9.

### 3.4.4 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.

### 3.4.5 Environmental Features in the Study Area

There are no other Wildlife Sanctuaries, National Park and Archaeological monuments within cluster area. Lalapettai Reserved Forest area is involved in the study 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 3.3: Details of Environment Sensitivity around the Cluster

S.No	Sensitive Ecological Features	Name	Arial Distance in km from Cluster
1	National Park /Wild life Sanctuaries	Oussudu Lake Birds Sanctuary	34.5Km – South East
2	Reserve Forest	Odayanatham R.F	9.7Km – North West
3	Lake/Reservoir	Odai	140m East
		Kuttai	410m SW
		Tank	510m NE
		Periya Eri	900m West
		Tank	1km East

*K. Paramasivam*



		Tank	2.2km SE
		Anniyur Lake	4.8km NW
		Pambai Aaru	6.5km SW
		Pappanapattu Eri	7.3km SE
4	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	None	Nil within 10KM Radius
5	Critically Polluted Areas	SIPCOT Industrial Complex, Cuddalore	Around 51.0 km- SE
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

Table 3.3-A: NEARBY WATER BODIES FROM THE PROPOSED PROJECT SITE

Sl.No.	Water Bodies	Distance
1	Odai	140m East
2	Kuttai	410m SW
3	Tank	510m NE
4	Periya Eri	900m West
5	Tank	1km East
6	Tank	2.2km SE
7	Anniyur Lake	4.8km NW
8	Pambai Aaru	6.5km SW
9	Pappanapattu Eri	7.3km SE

Source: Village Cadastral Map and Field Survey

### 3.5 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 3.4.

#### 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

Table 3.4: Soil Sampling Locations

S. No	Location Code	Monitoring Locations	Distance (km) and Direction	Coordinates
1	S-1	Core Zone	Project Area	12° 2'4.00"N 79°25'58.14"E
2	S-2	Siruvai	1.2km SW	12° 1'31.90"N 79°25'33.33"E
3	S-3	Ulagampoondi	5.5km NE	12° 2'23.21"N 79°29'15.74"E
4	S-4	Ariyalur Tirukkai	6km SW	12° 0'56.10"N 79°22'52.88"E
5	S-5	Anniyur	5km NW	12° 3'50.54"N 79°23'53.60"E
6	S-6	Vengadanur	4.0km South	11°59'46.67"N 79°26'6.70"E

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited.



**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 3.5: Methodology of Sampling Collection**

<b>Particulars</b>	<b>Details</b>
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.

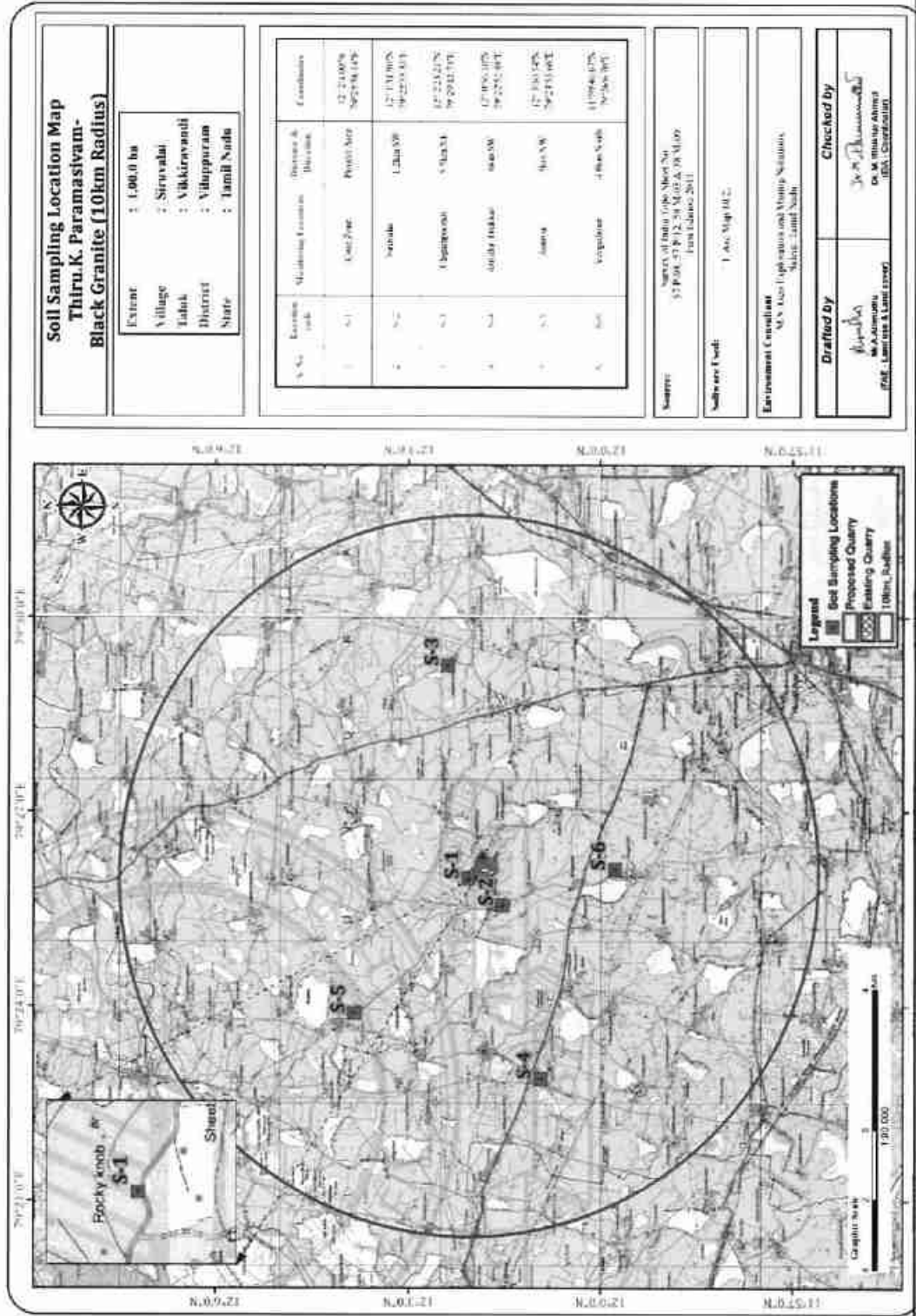
Source: On-site monitoring/sampling by EHS 360 Labs Private Limited.

**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”.

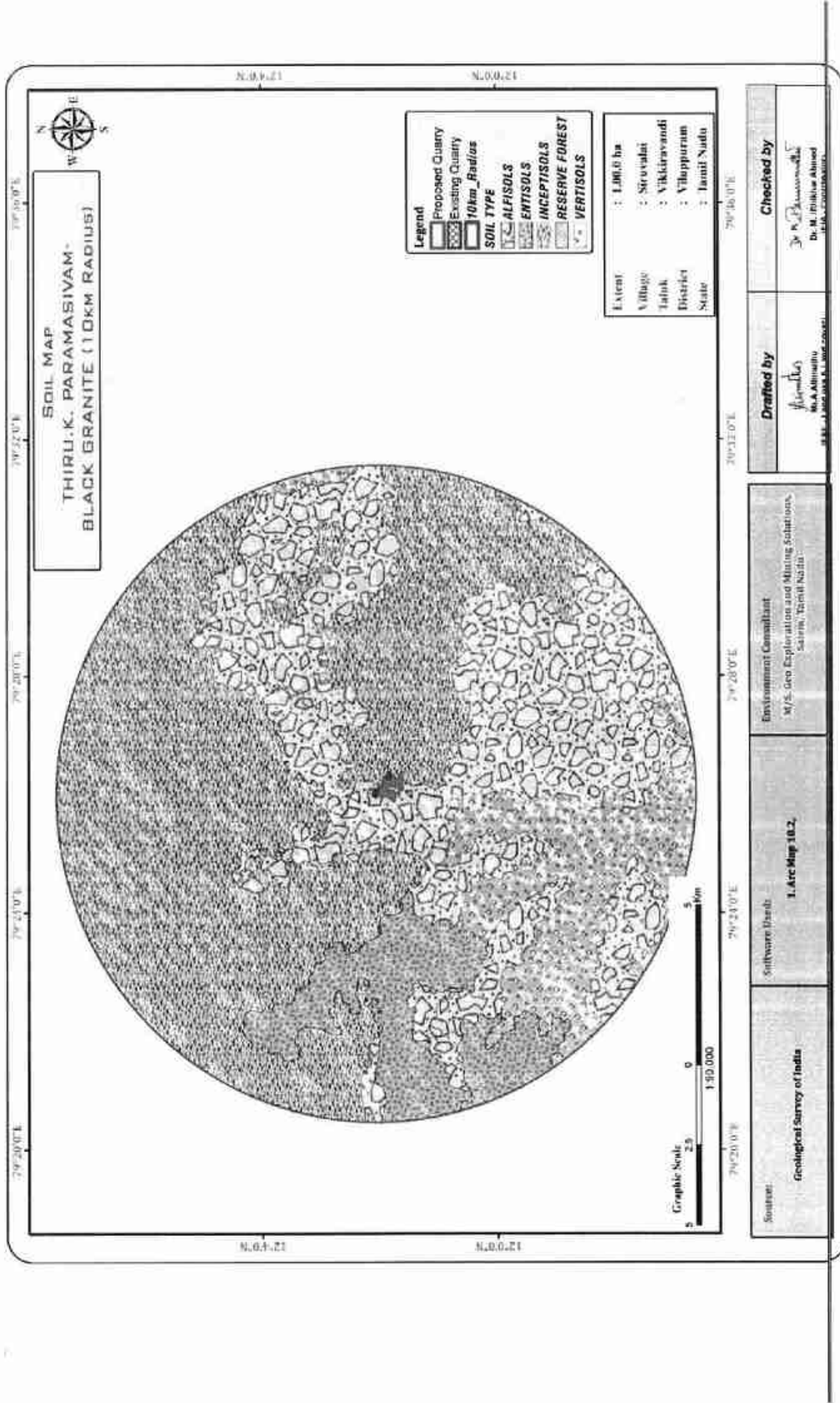


Figure 3.4: Soil Sampling Locations Around 10 Km Radius



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Figure 3.5: Soil Map



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Table 3.6: Soil Quality of the Study Area

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	S-1 Core Zone	S-2 Siruvaini	S-3 Ulagampoondi	S-4 Ariyalur Tirukkai	S-5 Anniyur	S-6 Kila Munaiyanur
1	Organic Matter	IS : 2720 Part 22	%	1.53	2.05	1.98	2.12	2.65	1.77
2	pH	IS 2720 (Part 26)	-	8.49	8.62	8.02	8.51	8.78	8.23
3	Specific Conductivity Electrical	IS 14767	µS/cm	488	450	358	550	286	416
4	Available Phosphorous	IS 10158	mg/kg	3.25	4.56	2.04	2.5	2.05	3.81
5	Available Potassium	USEPA Method	meq/l	25	32	8.15	25	0.91	18.3
6	Exchangeable Calcium (as Ca)	Food and Agriculture organization of the united Nations Rome 2007 : 2018	mg/kg	37.7	65.5	22	78.2	38.4	42
7	Exchangeable Magnesium (as Mg)		mg/kg	22.5	51	28.5	61.7	23	25.7
8	Sulphate as SO <sub>4</sub>	IS 2720 Part 27	%	0.0011	0.0011	0.0016	0.0022	0.0021	0.0013
9	Chloride	APHA 23 <sup>rd</sup> Edn 2019 4500 Cl B	mg/kg	35	16.4	18	31	18.41	30
10	Cation Exchange Capacity	USEPA 9080 – 1986	mcc/10 Og	41.4	37.2	47.3	35	41	49
11	Bulk Density	By Cylindrical Method	g/cm <sup>3</sup>	1.09	1.11	0.99	1.02	1.08	1.6
12	Texture: Sand	Gravimetric Method	%	29.4	32.2	32.3	31	32.9	30.6
13	Texture: Silt	Gravimetric Method	%	37.7	36	32.2	36.5	36.9	38.2
14	Texture: Clay	Gravimetric Method	%	32.9	31.8	35	32.5	30.2	31.2
15	Water Holding Capacity	Gravimetric Method	%	47.3	46.3	42.2	48.3	47.5	46.7
16	Available Nitrogen as N	IS 14684 : 1999	mg/kg	470.1	410.5	415	421	410	456.23
17	Permeability	By Gravimetric Method	%	45.8	45.7	45.9	45.8	44.5	42.5
18	Exchangeable Manganese	USEPA Method	mg/kg	9.52	18.5	19	20.2	9.15	20.8
19	Exchangeable Zinc	USEPA Method	mg/kg	2.15	6.5	3.5	5.5	1.05	3.01
20	Cadmium as Cd	USEPA Method	mg/kg	BDL (DL: 1.0 mg/kg)	BDL (DL: 1.0 mg/kg)	BDL (DL: 1.0 mg/kg)	BDL (DL: 1.0 mg/kg)	BDL (DL: 1.0 mg/kg)	BDL (DL: 1.0 mg/kg)
21	Chromium as Cr	USEPA Method	mg/kg	1.02	BDL (DL: 1.0 mg/kg)	1.03	3.11	2.55	6.67
22	Copper as Cu	USEPA Method	mg/kg	BDL (DL: 1.0 mg/kg)	BDL (DL: 1.0 mg/kg)	BDL (DL: 1.0 mg/kg)	BDL (DL: 1.0 mg/kg)	BDL (DL: 1.0 mg/kg)	BDL (DL: 1.0 mg/kg)
23	Lead as Pb	USEPA Method	mg/kg	0.66	1.71	1.53	1.12	2.03	2.05
24	Iron as Fe	USEPA Method	mg/kg	3.58	1.06	5.41	2.06	7.53	3.15
25	Organic Carbon	IS : 2720 Part 22	mg/kg	0.89	1.19	1.15	1.23	1.54	1.03
26	Boron as B	USEPA Method	%	2.02	1.15	3.12	1.08	2.37	0.88

Source: Sampling Results by EHS 360 Labs Private Limited



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### Interpretation & Conclusion

The physical properties of the soil samples were examined for texture, bulk density and water holding capacity. The Bulk Density of Soils in the study area varied between 0.99 to 1.11 g/cm<sup>3</sup>. The Water Holding Capacity between 42.2-48.3%.

- The nature of soil is slightly alkaline to strongly alkaline with pH range 7.65 to 8.21
- The available Nitrogen content range between 410 – 470.1 mg/kg
- The available Phosphorus content range between 2.04 – 4.56 mg/kg
- The available Potassium range between 0.91-32 meq/l
- Whereas, the micronutrient as zinc (Zn) and iron (Fe) were found in the range of 1.05-5.5 mg/kg; 1.06-7.53mg/kg.

#### 3.6 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.

##### 3.6.1 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.

##### 3.6.2 Ground Water Resources:

Groundwater occurs in all the crystalline formations of oldest Achaeans and Recent Alluvium. The occurrence and behaviour of groundwater are controlled by rainfall, topography, geomorphology, geology, structures etc., The weathering is controlled by the intensity of weathering and fracturing. Dug wells as wells as bore wells are more common ground water abstraction structures in the area. The diameter of the dug well is in the range of 7 to 10 m and depth of dug wells range from 7.2 to 13 m bgl. The dug wells yield up to 1 lps in summer months and few wells remains dry. The yield is adequate for irrigation for one or two crops in monsoon period.

##### 3.6.3 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 3.6.



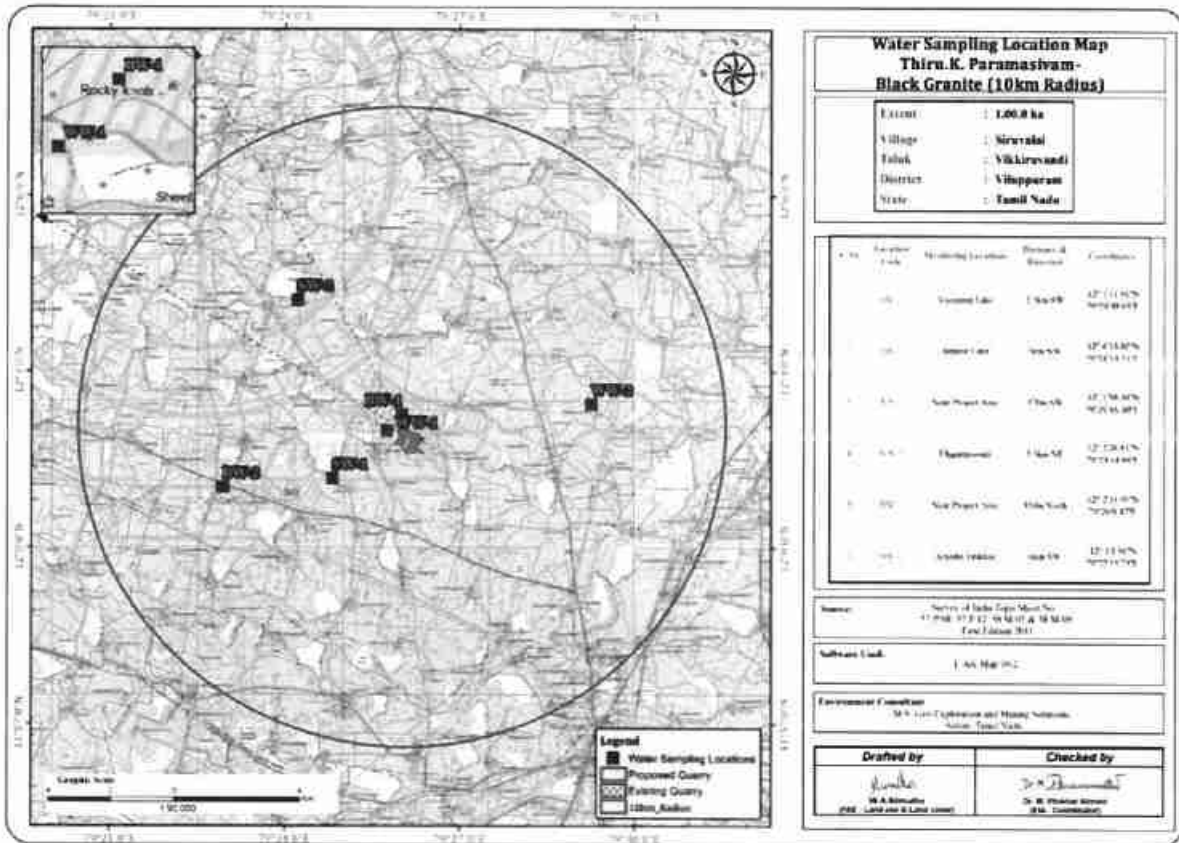


Table 3.7: Water Sampling Locations

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	SW-1	Veeramur Lake	2.5km SW	12° 1'11.01"N 79°24'49.03"E
2	SW-2	Anniyur Lake	5km NW	12° 4'13.02"N 79°24'13.11"E
3	WW-1	Near Project Area	370m SW	12° 1'59.24"N 79°25'45.30"E
4	WW-2	Ulagampoondi	5.5km NE	12° 2'26.81"N 79°29'14.98"E
5	BW-1	Near Project Area	350m North	12° 2'15.95"N 79°26'0.47"E
6	BW-2	Ariyalur Tirukkai	6km SW	12° 1'1.91"N 79°22'55.75"E

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited.

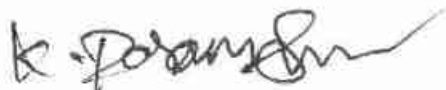
Figure 3.6: Water Sampling Locations Around 10 Km Radius



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Table 3.8: Ground Water Sampling Results

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	WW-1 Near Project Area	WW-2 Ulagampoondi	BW-1 Near Project Area	BW-2 Ariyalur Tirukkai
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 PART 11	-	6.97	7.97	7.75	7.59
4	Electrical Conductivity	IS 3025 PART 14	µS/cm	1049	1006	854	893
5	Turbidity	IS 3025 PART 10	NTU	1	1	1	1
6	Total Dissolved Solids	IS 3025 PART 16	mg/l	619	594	504	527
7	Total Suspended Solids	IS 3025 Part 29	mg/l	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)
8	Total Alkalinity	IS 3025 PART 23	mg/l	206	177	191	163
9	Total Hardness as CaCO <sub>3</sub>	IS 3025 PART 21	mg/l	195.47	185.38	169.26	167.17
10	Calcium as Ca	IS 3025 PART 40	mg/l	35.5	30.3	30.6	29.1
11	Magnesium as Mg	IS 3025 PART 46	mg/l	26	26.7	22.6	23
12	Chloride as Cl <sup>-</sup>	IS 3025 PART 32	mg/l	125	122	66.4	112
13	Sulphate as SO <sub>4</sub>	IS 3025 PART 24	mg/l	79.2	65.2	55	61.7
14	Iron as Fe	IS 3025 PART 53	mg/l	0.26	0.35	0.25	0.19
15	Boron as B	IS 3025 Part 65	mg/l	BDL(DL : 0.05)	BDL(DL : 0.05)	BDL(DL : 0.05)	BDL(DL : 0.05)
16	Free Residual Chlorine as Cl <sub>2</sub>	IS 3025 PART 26	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
17	Fluoride as F	APHA 23rd Edn. 2017:4500 F.D	mg/l	0.22	0.11	0.31	0.22
18	Nitrate as NO <sub>3</sub>	IS 3025 PART 34	mg/l	6.51	6.51	4.65	5.1
19	Manganese as Mn	IS 3025 PART 65	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
20	Total Coliforms	APHA 23rd Edn. 2017:9221B	Per 100ml	155 MPN	95 MPN	100.5 MPN	130 MPN
21	Escherichia coli	APHA 23rd Edn. 2017:9221F	Per 100ml	< 1.8 MPN	< 1.8 MPN	< 1.8 MPN	< 1.8 MPN
22	Arsenic as As	IS 3025 Part 34	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
23	Ammonia (NH <sub>3</sub> )	IS 3025 Part 58	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
24	Zinc as Zn	IS 3025 Part 65	mg/l	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)
25	Aluminium as Al	IS 3025 Part 65	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
26	Cadmium as Cd	IS 3025 Part 65	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
27	Molybdenum as Mo	IS 3025 Part 65	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
28	Selenium	IS 3025 Part 65	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
29	Lead as Pb	IS 3025 Part 65	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
30	Barium as Ba	IS 3025 Part 44	mg/l	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)
31	Anionic Detergents	IS 13428 - 2005	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
32	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
33	Phenolic Compounds	IS 3025 PART 43	mg/l	BDQ(DL:0.0005)	BDQ(DL:0.0005)	BDQ(DL:0.0005)	BDQ(DL:0.0005)





34	Chromium as Cr6+	IS 3025 Part 65	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
35	Sulphide	IS 3025 Part 38	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
36	Copper as Cu	IS 3025 PART 65	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
37	Mercury as Hg	USEPA 200.8	mg/l	BDL(DL:0.0005)	BDL(DL:0.0005)	BDL(DL:0.0005)	BDL(DL:0.0005)
38	Mineral Oil	IS 3025 Part 39	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)

Source: Sampling Results by EHS 360 Labs Private Limited.

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Table 3.9: Surface Water Sampling Results

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	SW-1 Veeramur Lake	SW-2 Anniyur Lake
1	Color	IS 3025 PART 4	Hazen	5	5
2	Odor	IS 3025 PART 5		Agreeable	Agreeable
3	pH	IS 3025 PART 11		7.05	7.88
4	Conductivity	IS 3025 PART 14	µs/cm	764	857
5	Turbidity	IS 3025 PART 10	NTU	5.4	4.8
6	Total Dissolved Solids	IS 3025 PART 16	mg/l	451	506
7	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 PART 23	mg/l	140	173
8	Total Hardness as CaCO <sub>3</sub>	IS 3025 PART 21	mg/l	152.84	189.64
9	Calcium as Ca	IS 3025 PART 40	mg/l	25.5	30.2
10	Magnesium as Mg	IS 3025 PART 46	mg/l	21.7	27.8
11	Chloride as Cl <sup>-</sup>	IS 3025 PART 32	mg/l	73.5	80.2
12	Sulphate as SO <sub>4</sub> <sup>2-</sup>	IS 3025 PART 24	mg/l	51.5	45
13	Iron as Fe	IS 3025 PART 53	mg/l	0.21	0.22
14	Boron as B	IS 3025 Part 65	mg/l	BDL (DL:0.05)	BDL (DL:0.05)
15	Free Residual Chlorine as Cl <sub>2</sub>	IS 3025 PART 26	mg/l	BDL (DL:0.1)	BDL (DL:0.1)
16	Fluoride as F <sup>-</sup>	APHA 23rd Edn. 2017-4500 F.D	mg/l	0.19	0.19
17	Manganese as Mn	IS 3025 PART 65	mg/l	BDL (DL:0.02)	BDL (DL:0.02)
18	Nitrate as NO <sub>3</sub>	IS 3025 PART 34	mg/l	9.2	9.52
19	Dissolved Oxygen	IS 3025 PART 38	mg/l	5.3	5.1
20	Bio-Chemical Oxygen Demand	IS 3025 PART 44	mg/l	7.5	6.55
21	Chemical Oxygen Demand	IS 3025 PART 58	mg/l	40	50
22	Ammonia as NH <sub>3</sub>	IS 3025 PART 34	mg/l	1.12	1.21
23	Total Suspended Solids	IS 3025 PART 17	mg/l	17.5	12
24	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL (DL:0.005)	BDL (DL:0.005)
25	Anionic Detergents	IS 13428	mg/l	BDL (DL:0.01)	BDL (DL:0.01)
26	Cyanide	IS 3025 PART 27	mg/l	BDL (DL:0.01)	BDL (DL:0.01)
27	Sulphide	IS 3025 Part 29	mg/l	BDL (DL:0.01)	BDL (DL:0.01)
28	Copper as Cu	IS 3025 Part 65	mg/l	BDL (DL:0.01)	BDL (DL:0.01)
29	Mercury (Hg)	USEPA 200.8	mg/l	BDL (DL:0.0005)	BDL (DL:0.0005)
30	Cadmium as Cd	IS 3025 Part 65	mg/l	BDL (DL:0.001)	BDL (DL:0.001)
31	Selenium	IS 3025 Part 65	mg/l	BDL (DL:0.005)	BDL (DL:0.005)
32	Aluminium as Al	IS 3025 Part 65	mg/l	BDL (DL:0.005)	BDL (DL:0.005)
33	Lead as Pb	IS 3025 Part 65	mg/l	BDL (DL:0.005)	BDL (DL:0.005)
34	Zinc as Zn	IS 3025 Part 65	mg/l	BDL (DL:0.005)	BDL (DL:0.005)
35	Total Chromium as Cr	IS 3025 Part 65	mg/l	BDL (DL:0.02)	BDL (DL:0.02)
36	Barium as Ba	IS 3025 Part 65	mg/l	BDL (DL:0.05)	BDL (DL:0.05)
37	Molybdenum as Mo	IS 3025 Part 65	mg/l	BDL (DL:0.05)	BDL (DL:0.05)
38	Arsenic as As	IS 3025 Part 65	mg/l	BDL (DL:0.005)	BDL (DL:0.005)
39	Mineral Oil	IS 3025 Part 39	mg/l	BDL (DL:0.01)	BDL (DL:0.01)
40	Total Coliforms	APHA 23rd Edn. 2017-9221B	MPN/100ml	450	600
41	<i>Escherichia coli</i>	APHA 23rd Edn. 2017-9221F	MPN/100ml	130	100

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### 3.6.4 Interpretation & Conclusion

#### Surface Water

##### Ph:

The pH varied from 7.05 to 7.88 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 451 to 506mg/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 73.5 to 80.2 mg/l. Nitrates varied from 9.2 to 9.52mg/l while sulphates varied from 45 to 51.5mg/l.

#### Ground Water

The pH of the water samples collected ranged from 6.97 to 7.97 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. Total Dissolved Solids were found in the range of 504-619mg/l in all samples. Total hardness varied between 167.17 – 195.47mg/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.

### 3.6.5 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 55- 50m. 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.

#### Ground Water Resources:

Viluppuram 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 up to 5 m depending upon the topographic conditions. The study area falls in the Viluppuram which is categorized as Safe (< 70%) as per G.O (MS) No 113 dated 09.06.2016.

Table 3.10: Details of Borewell & Water Level In 1km Radius

S.No	Label	Longitude	Latitude	March 2024	April 2024	May 2024
1	BW1	12° 02' 16.1861" N	79° 26' 00.6488" E	54.3	53.9	53.5
2	BW2	12° 02' 01.1689" N	79° 26' 27.2194" E	54	53.6	53.2
3	BW3	12° 01' 42.5241" N	79° 26' 33.6748" E	53.9	53.5	53.1
4	BW4	12° 01' 39.1388" N	79° 25' 47.0765" E	53.6	53.2	52.8
5	BW5	12° 01' 58.1445" N	79° 25' 35.4272" E	55.3	54.9	54.5
6	BW6	12° 01' 29.3446" N	79° 25' 35.8261" E	54.7	54.3	53.9
7	BW7	12° 02' 30.5664" N	79° 25' 25.1871" E	54.6	54.2	53.8
8	BW8	12° 02' 37.6024" N	79° 26' 24.1988" E	54.2	53.8	53.4

Source: Data obtained by the FAE & Team Members

*K. Paramasivam*

**Table 3.11: Details of Open well & Water Level in 1km Radius**

S.No	Label	Longitude	Latitude	March 2024	April 2024	May 2024
1	OW1	12° 02' 01.2159" N	79° 26' 12.3407" E	13.6	13.2	12.8
2	OW2	12° 02' 12.2247" N	79° 25' 44.9006" E	13.5	13.1	12.7
3	OW3	12° 02' 25.3648" N	79° 26' 18.2518" E	13.2	12.8	12.4
4	OW4	12° 02' 40.3321" N	79° 26' 06.0306" E	13.7	13.3	12.9
5	OW5	12° 01' 50.1490" N	79° 26' 41.2023" E	13.3	12.9	12.5
6	OW6	12° 01' 47.1040" N	79° 26' 26.2424" E	13.2	12.8	12.4
7	OW7	12° 01' 22.0989" N	79° 26' 06.9131" E	13.1	12.7	12.3
8	OW8	12° 01' 43.4201" N	79° 25' 44.4727" E	13	12.6	12.2
9	OW9	12° 02' 17.6604" N	79° 25' 27.7090" E	13.3	12.9	12.5

*Figure 3.7: Post Monsoon Water Level of Bore Well 1 Km Radius*



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Figure 3.8: Pre Monsoon Water Level of Open Well 1 Km Radius

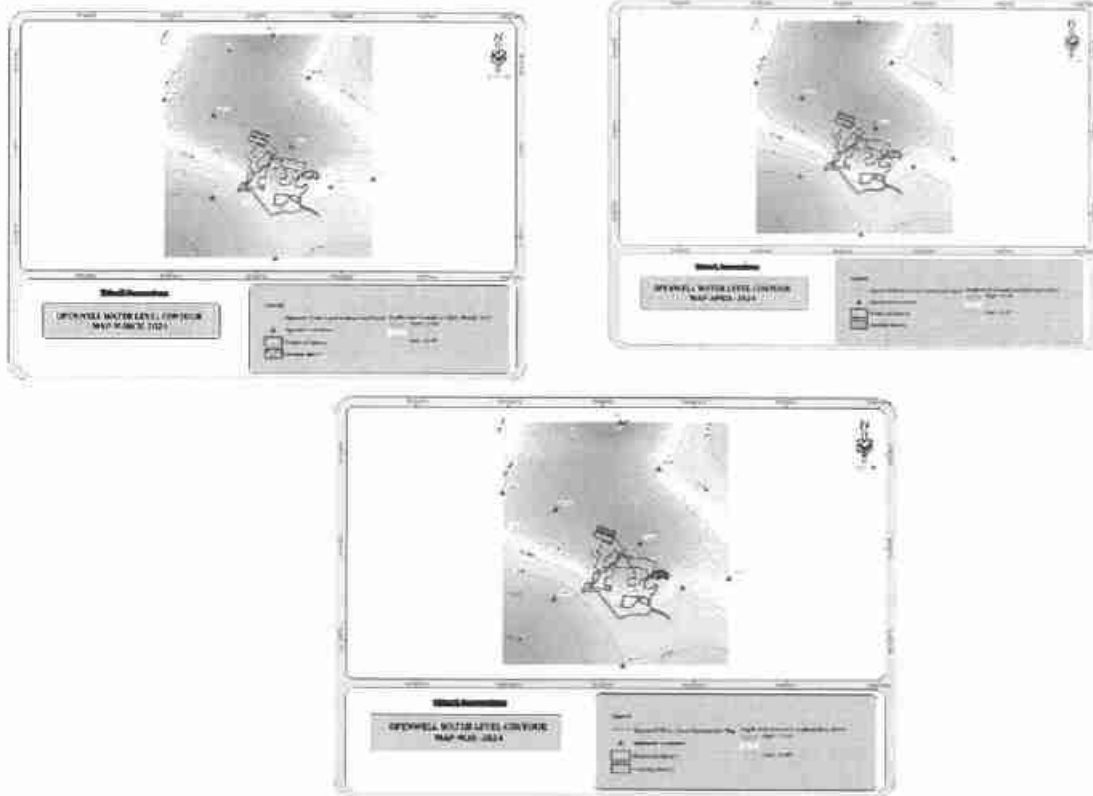
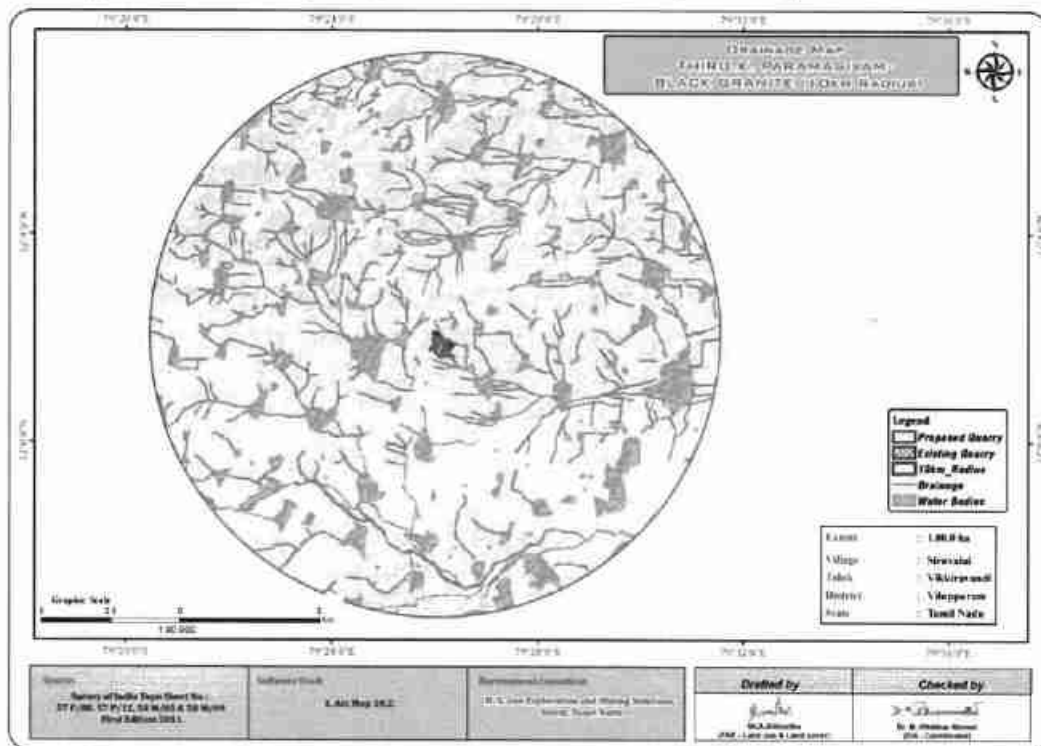
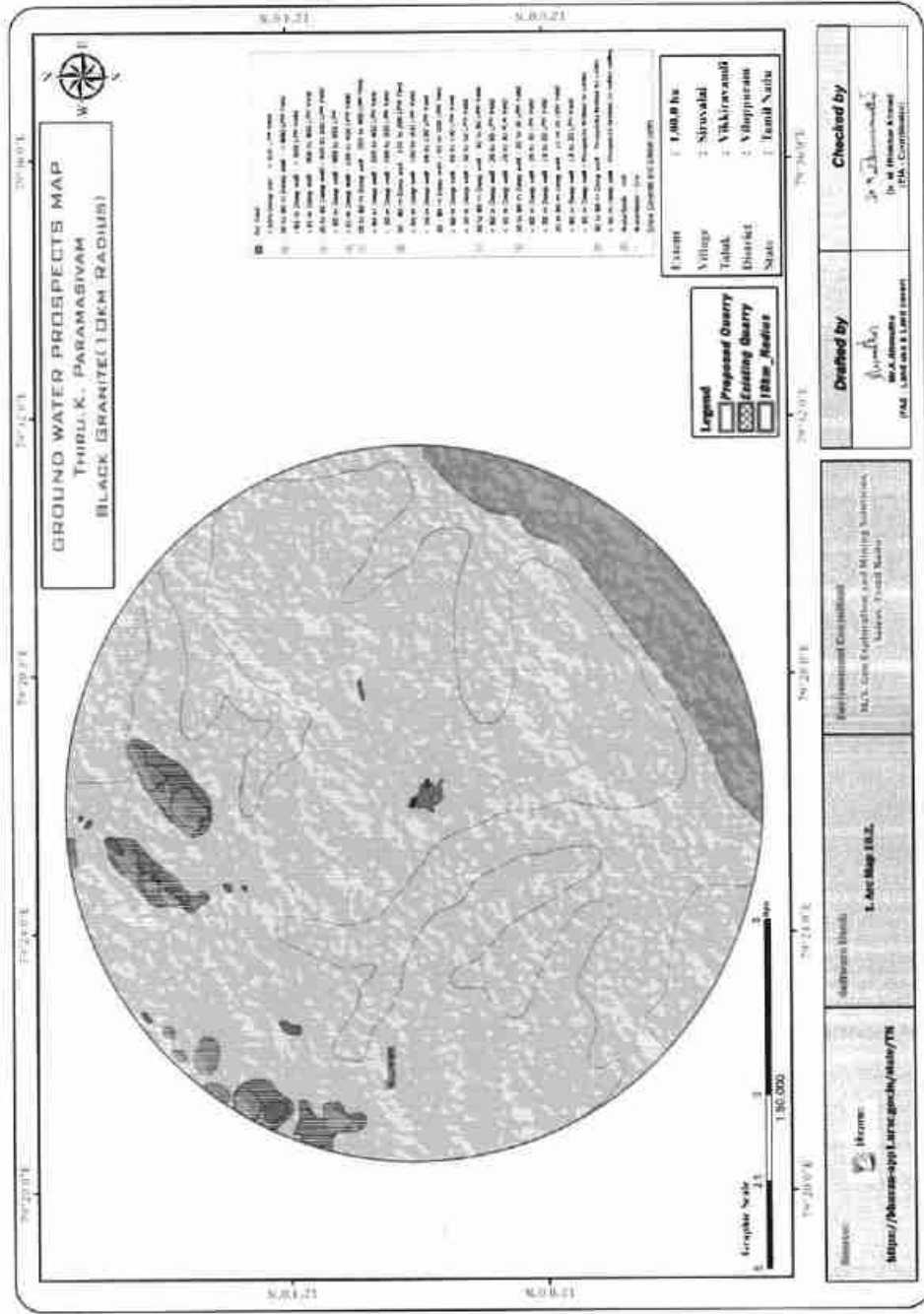


Figure 3.9: Drainage Map Around 10 Km Radius from Project Site



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Figure 3.10: Ground Water Prospect Map



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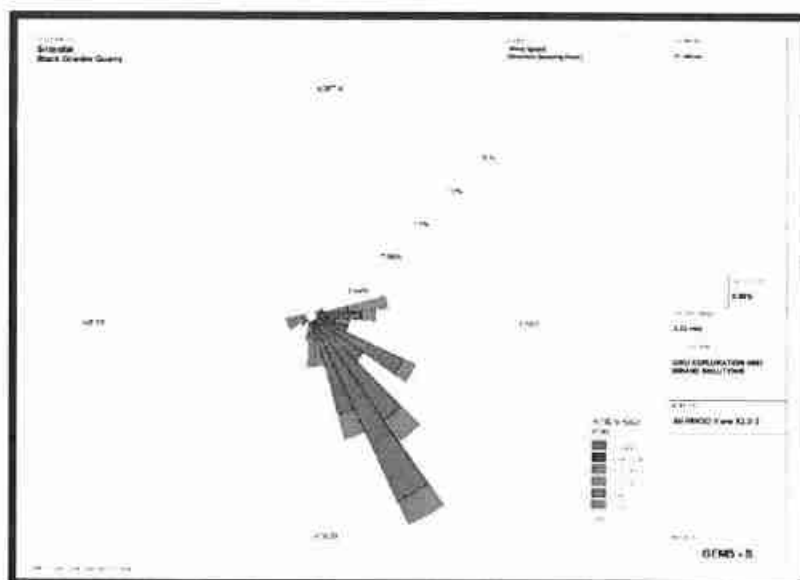
Table 3.13: Meteorological Data Recorded at Site

S.No	Parameters		Mar-2024	Apr-2024	May-2024
1	Temperature (°C)	Max	30.34	33.65	35.64
		Min	27.35	31.01	28.71
		Avg	28.84	32.33	32.17
2	Relative Humidity (%)	Avg	58.72	56.94	63.37
3	Wind Speed (m/s)	Max	4.38	4.13	5.56
		Min	2.7	2.88	1.62
		Avg	3.54	3.50	3.59
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind Direction		SE,SSE	SSE,E	S,SE

**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. 3.11. Predominant downwind direction of the area during study season is South East to East.

Figure 3.11: Windrose Diagram



Source: Wind Lake Environmental Software

Rose plot view.

In the abstract of collected data wind rose were drawn on presented in figure No.3.11 during the monitoring period in the study area

- Predominant winds were from SE,SSE, S
- Wind velocity readings were recorded between 3.5 to 3.59m/s
- Temperature readings ranging from 28.84 to 32.33°C

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### 3.7 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.

#### 3.7.1 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 -

- This city has a tropical climate. In winter, there is much less rainfall in Villupuram than in summer. This climate is considered to be Aw according to the Köppen-Geiger climate classification. The average annual temperature is 28.0 °C | 82.4 °F in Villupuram. The annual rainfall is 1040 mm | 40.9 inch.
- The location Villupuram is located in a temperate zone, making it difficult to categorize the seasons. The most opportune time to visit are January, February, March, December.
- The driest month is February, with 11 mm | 0.4 inch of rainfall. With an average of 208 mm | 8.2 inch, the most precipitation falls in October.
- The warmest month of the year is May, with an average temperature of 31.9 °C | 89.4 °F. January has the lowest average temperature of the year. It is 24.0 °C | 75.2 °F.

<https://en.climate-data.org/asia/india/tamil-nadu/villupuram-34141/>

#### Rainfall

Table 3.12: Rainfall Data

Actual Rainfall in mm					Normal Rainfall in mm
2017	2018	2019	2020	2021	
1066.9	727.5	906.3	1137.7	1935.2	985

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





- Relative humidity ranging from 56.94 to 63.37%

### 3.7.2 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.,

### 3.7.3 Sampling and Analytical Techniques

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

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

Table 3.14: 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 ( $\mu\text{g}/\text{m}^3$ )	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	Nitrogen Dioxide ( $\mu\text{g}/\text{m}^3$ )	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	Particulate matter (size less than $10\mu\text{m}$ ) PM <sub>10</sub> ( $\mu\text{g}/\text{m}^3$ )	Annual Avg. 24 hours	60.0 100.0	60.0 100.0
4	Particulate matter (size less than $2.5\mu\text{m}$ ) PM <sub>2.5</sub> ( $\mu\text{g}/\text{m}^3$ )	Annual Avg. 24 hours	40.0 60.0	40.0 60.0

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

### 3.7.4 Frequency & Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at Eight (8) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period October to December, 2020. The baseline data of ambient air has been generated for PM<sub>10</sub>, PM<sub>2.5</sub>, Sulphur Dioxide (SO<sub>2</sub>) & Nitrogen Dioxide (NO<sub>2</sub>) Monitoring has been carried out as per the CPCB, MoEF guidelines and notifications.

*K. Paramasivam*

It was ensured that the equipment was placed preferably at a height of at least  $3 \pm 0.5m$  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.

### 3.7.5 Ambient Air Quality Monitoring Stations

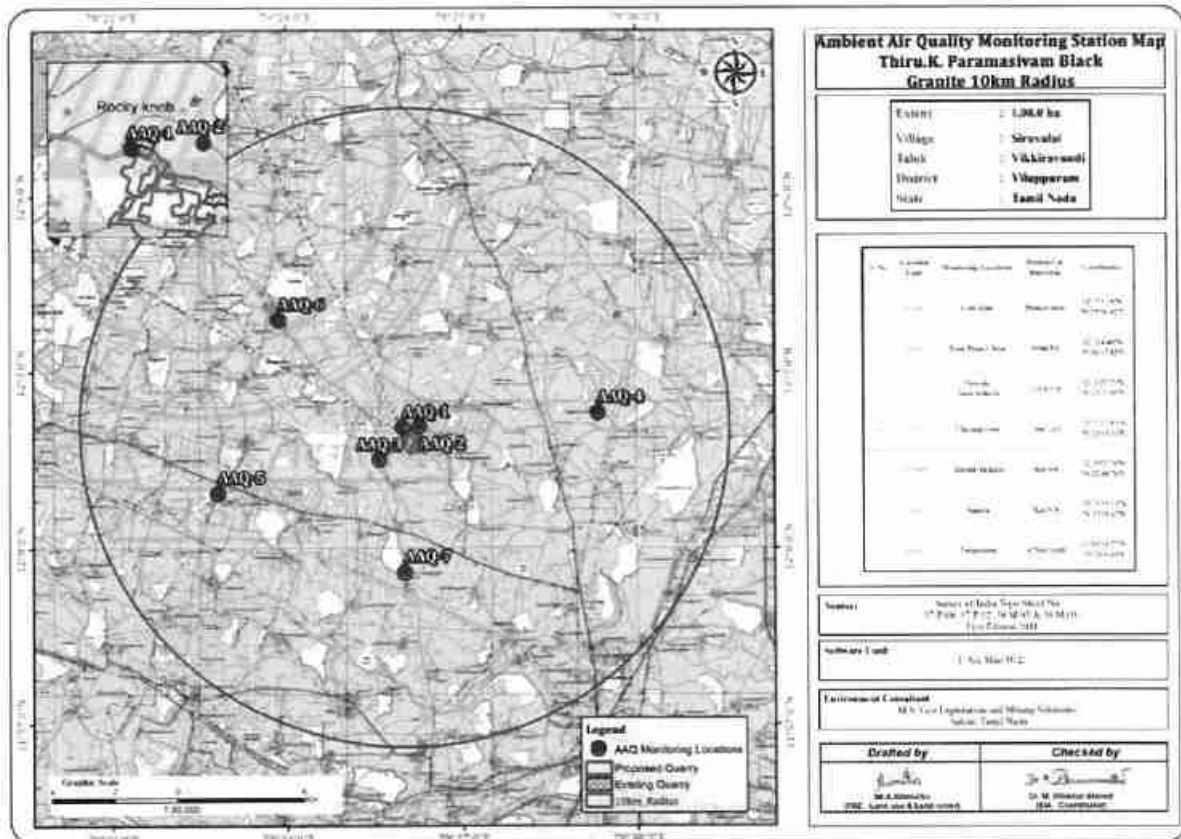
Seven (7) monitoring stations were set up in the study area as depicted in Figure 3.12 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

Table 3.15: Ambient Air Quality (AAQ) Monitoring Locations AAQ1-AAQ7

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	AAQ-1	Core Zone	Project Area	12° 2'3.14"N 79°25'58.92"E
2	AAQ-2	Near Project Area	360m NE	12° 2'4.48"N 79°26'15.82"E
3	AAQ-3	Siruvalai (Near School)	1.2km SW	12° 1'29.75"N 79°25'35.05"E
4	AAQ-4	Ulagampoondi	6km East	12° 2'17.89"N 79°29'19.39"E
5	AAQ-5	Ariyalur Tirukkai	6km SW	12° 0'55.78"N 79°22'49.74"E
6	AAQ-6	Anniyur	5km NW	12° 3'53.13"N 79°23'51.67"E
7	AAQ-7	Vengadanur	4.5km South	11°59'34.77"N 79°26'0.60"E

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited.

Figure 3.12: Ambient Air Quality Locations Around 10 Km Radius



*K. Paramasivam*

Table 3.16: Abstract of Ambient Air Quality Data

1	Parameter	PM10	PM2.5	SO <sub>2</sub>	NO <sub>2</sub>
2	No. of Observations	260	260	260	260
3	10 <sup>th</sup> Percentile Value	40.5	18.9	5.4	21.5
4	20 <sup>th</sup> Percentile Value	40.7	19.2	6.1	22.4
5	30 <sup>th</sup> Percentile Value	41.5	19.5	6.3	22.6
6	40 <sup>th</sup> Percentile Value	42.2	19.7	6.5	23.2
7	50 <sup>th</sup> Percentile Value	42.8	20.2	6.6	23.4
8	60 <sup>th</sup> Percentile Value	43.2	20.5	6.8	23.6
9	70 <sup>th</sup> Percentile Value	43.6	20.9	7.2	24.2
10	80 <sup>th</sup> Percentile Value	44.1	21.4	7.4	24.6
11	90 <sup>th</sup> Percentile Value	45.5	21.6	7.6	25.1
12	95 <sup>th</sup> Percentile Value	48.1	21.9	7.8	25.4
13	98 <sup>th</sup> Percentile Value	48.8	22.5	8.1	25.7
14	Arithmetic Mean	43.7	20.6	6.9	23.8
15	Geometric Mean	43.7	20.5	6.8	23.8
16	Standard Deviation	2.8	1.2	0.8	1.3
17	Minimum	40.5	18.9	5.4	21.5
18	Maximum	260	260	260	260
19	NAAQ Norms*	100.0	60.0	80.0	80.0
	% Values exceeding Norms*	0.0	0.0	0.0	0.0

Legend: PM<sub>2.5</sub>-Particulate Matter size less than 2.5 µm; PM<sub>10</sub>-Respirable Particulate Matter size less than 10 µm; SO<sub>2</sub>-Sulphur dioxide; NO<sub>2</sub>-Nitrogen Dioxide, CO-Carbon monoxide; O<sub>3</sub>-Ozone; NH<sub>3</sub>-Ammonia; Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C<sub>6</sub>H<sub>6</sub>-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 3.17: Summary of Ambient Air Quality Data (AAQ1-AAQ7)

PM10	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	43.9	43.0	43.8	44.4	41.0	41.1	43.4
Minimum	41.3	41.1	42.2	39.3	39.1	37.9	41.2
Maximum	45.6	44.7	45.6	49.9	42.9	44.6	44.9
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	20.2	19.7	21.4	20.4	19.6	20.0
Minimum	19.4	18.0	18.3	19.1	19.1	18.2	18.3
Maximum	22.8	24.9	21.5	22.5	21.8	21.6	21.9
NAAQ Norms	60.0	60.0	60.0	60.0	60.0	60.0	60.0
SO <sub>2</sub>	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	6.6	6.7	6.6	6.9	6.4	6.5	6.8
Minimum	5.1	5.2	6.0	5.8	5.2	5.1	6.1
Maximum	7.9	7.8	7.6	7.9	7.9	8.4	8.0
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0
NO <sub>2</sub>	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Arithmetic Mean	24.1	22.9	23.1	23.5	23.2	22.7	24.5
Minimum	22.2	21.0	20.5	20.6	21.3	20.1	23.2
Maximum	25.6	23.9	26.7	25.4	25.5	25.7	25.7
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0

K. Paramasivam

FIGURE 3.13: BAR DIAGRAM OF SUMMARY OF AIR QUALITY MODEL(AAQ1-AAQ7)

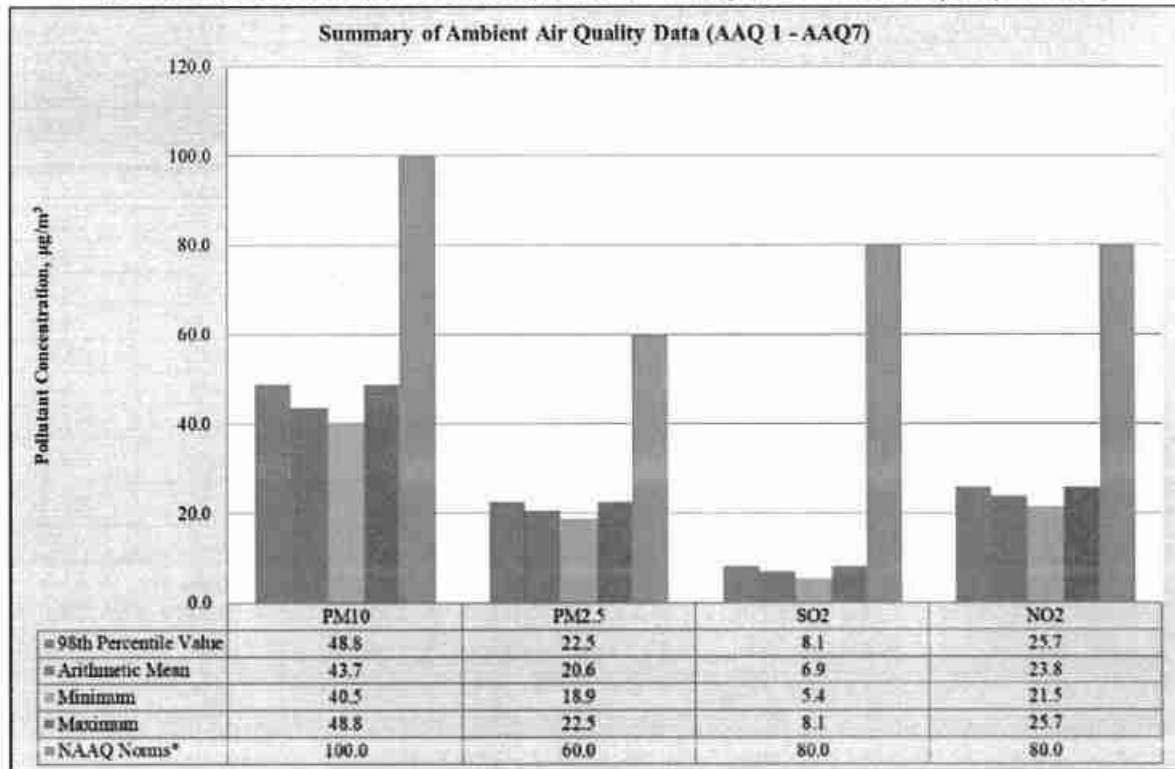
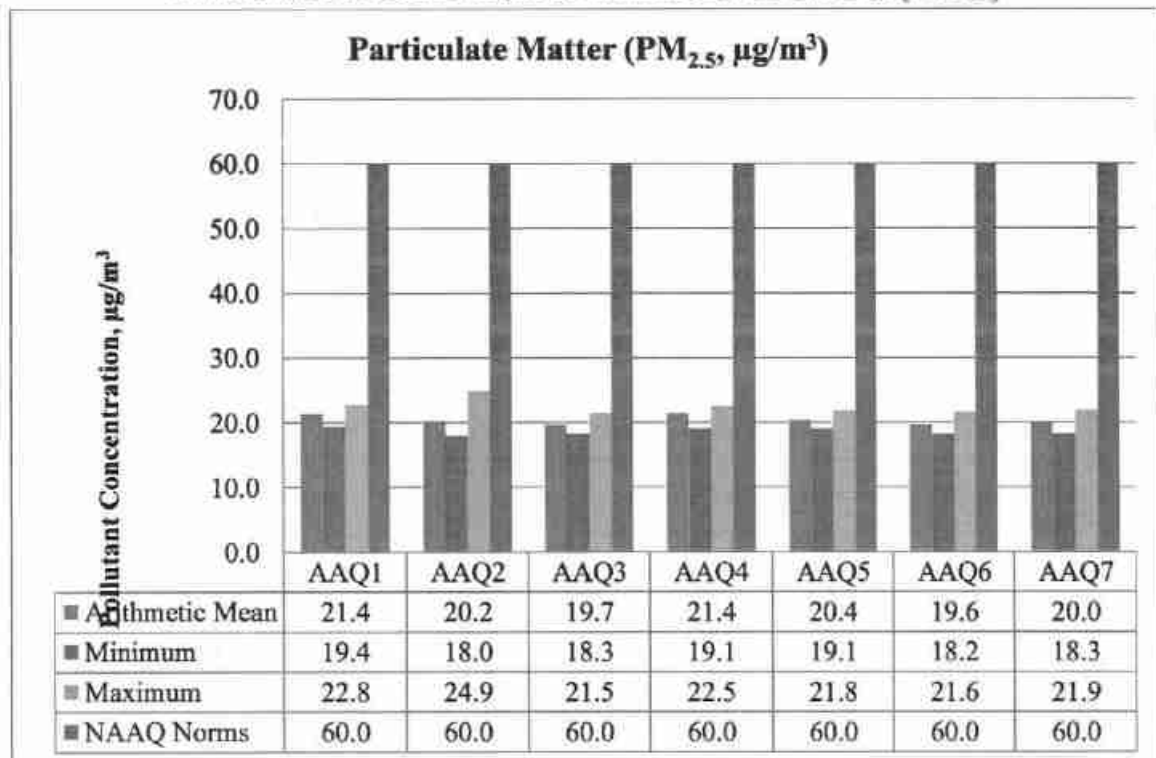


FIGURE 3.14 : BAR DIAGRAM OF PARTICULATE MATTER (PM2.5)



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FIGURE 3.15: BAR DIAGRAM OF PARTICULATE MATTER (PM<sub>10</sub>)

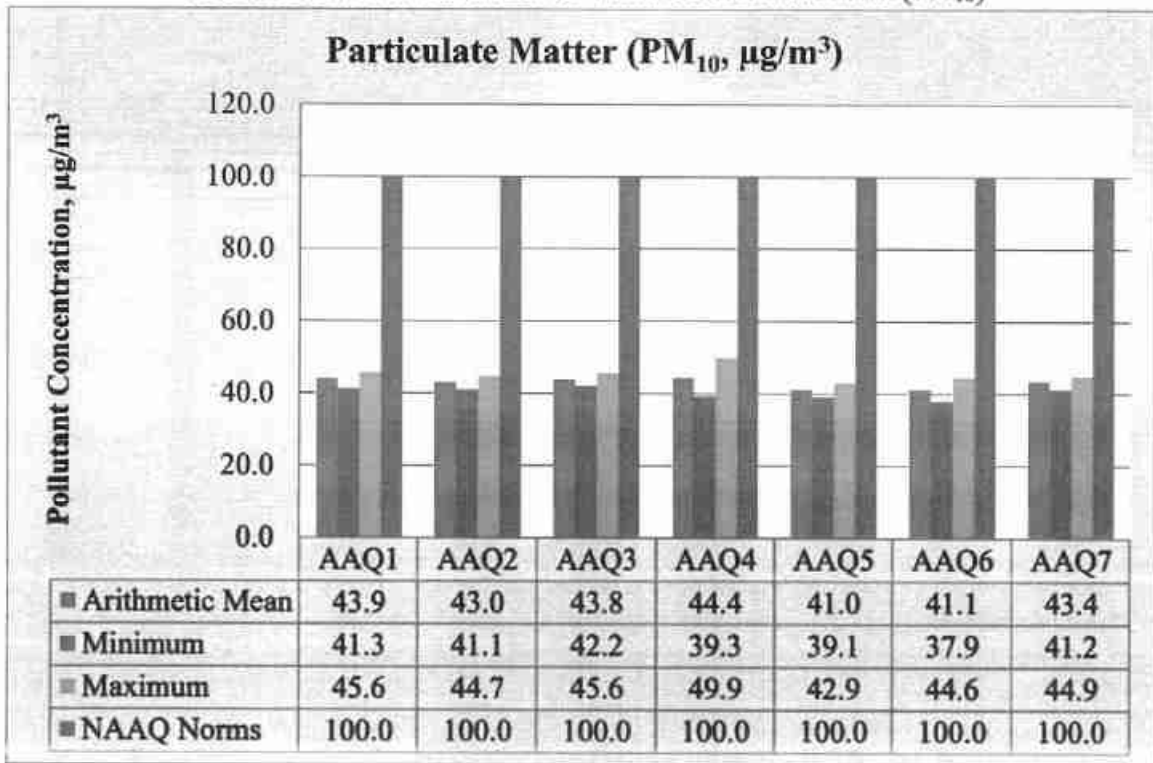
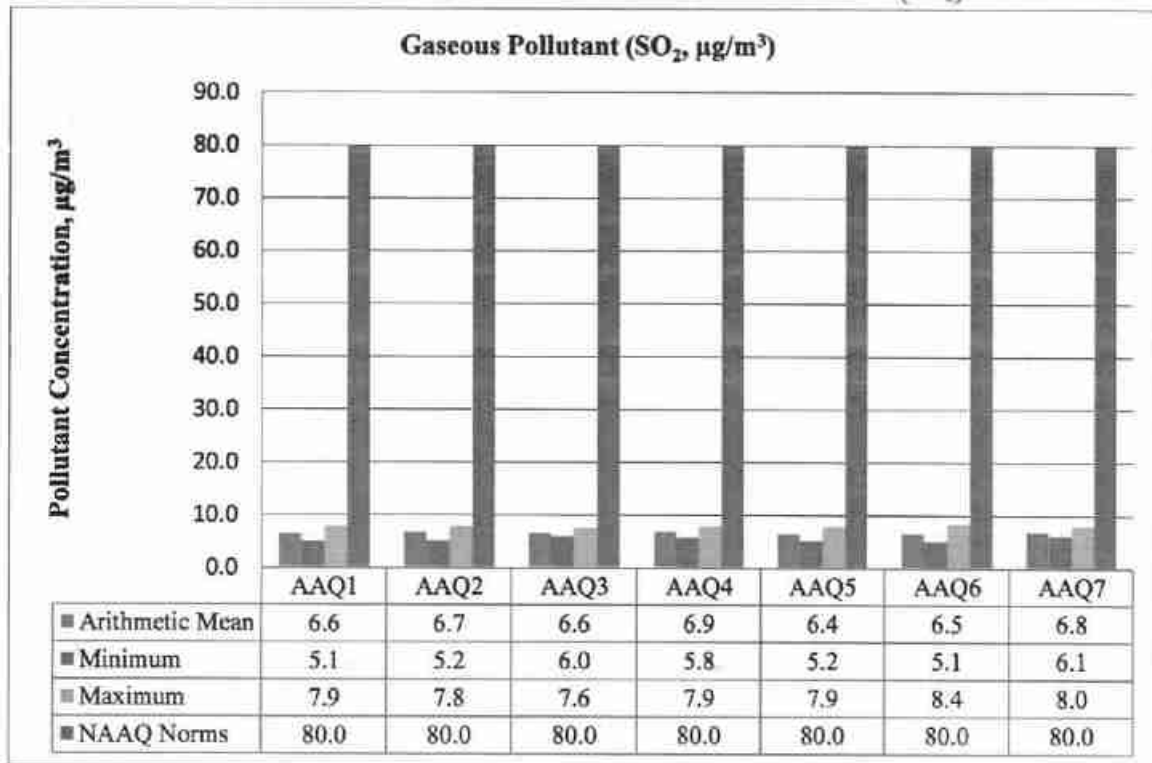
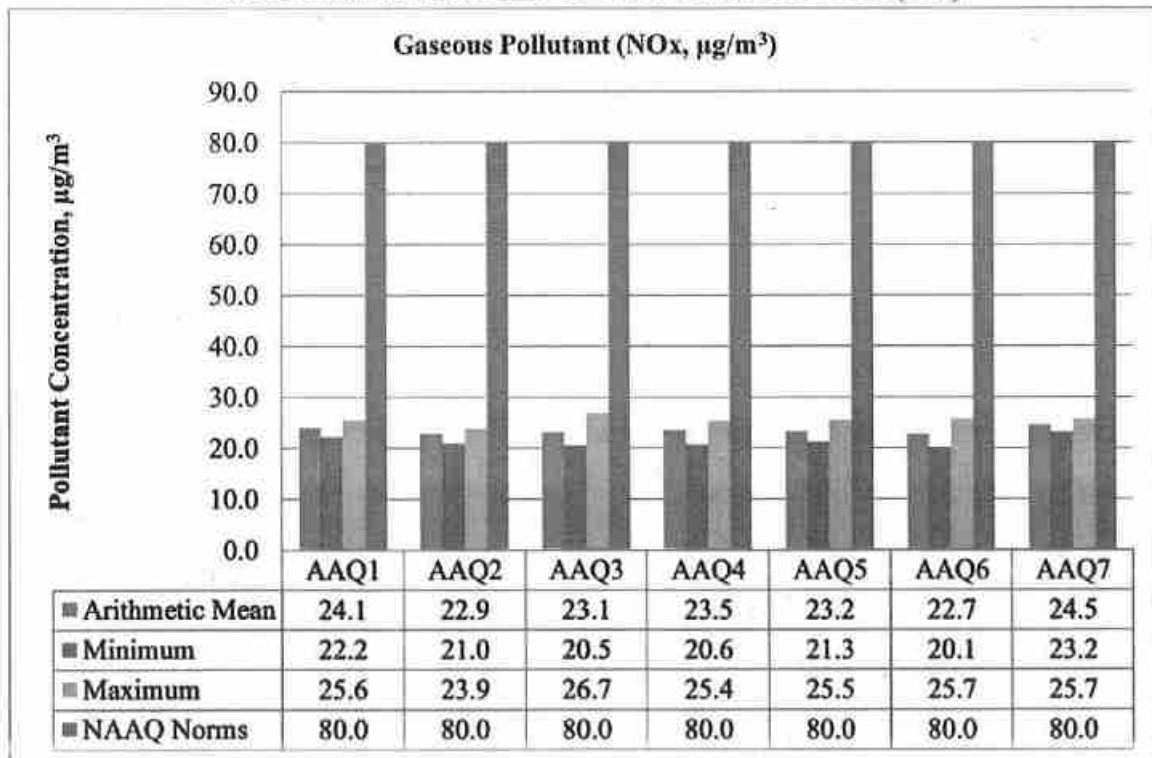


FIGURE 3.16: BAR DIAGRAM OF PARTICULATE MATTER (SO<sub>2</sub>)



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FIGURE 3.17: BAR DIAGRAM OF PARTICULATE MATTER (NO<sub>x</sub>)



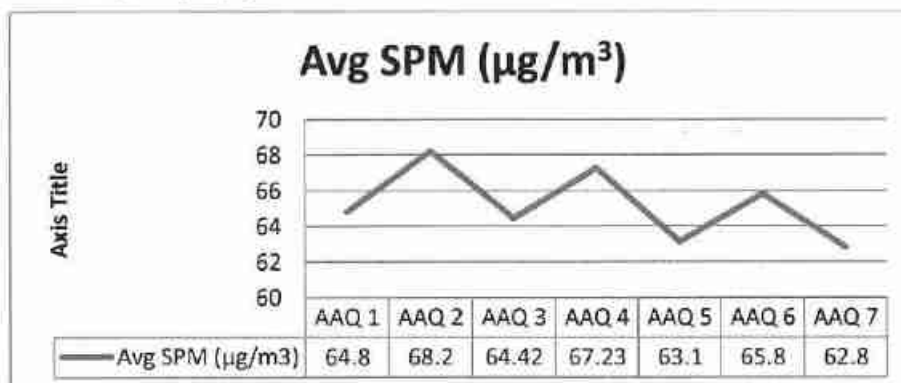
3.7.6 FUGITIVE DUST EMISSION –

Fugitive dust was recorded at 7AAQ monitoring stations for 30 days average during the study period.

Table 3.18: Average Fugitive Dust Sample Values In mg/m<sup>3</sup>

AAQ Locations	Avg SPM (µg/m <sup>3</sup> )
AAQ 1	64.8
AAQ 2	68.2
AAQ 3	64.42
AAQ 4	67.23
AAQ 5	63.1
AAQ 6	65.8
AAQ 7	62.8

Source: Onsite monitoring/ sampling by EHS 360 Labs Private Limited



Source: Line Diagram of Table 3.19

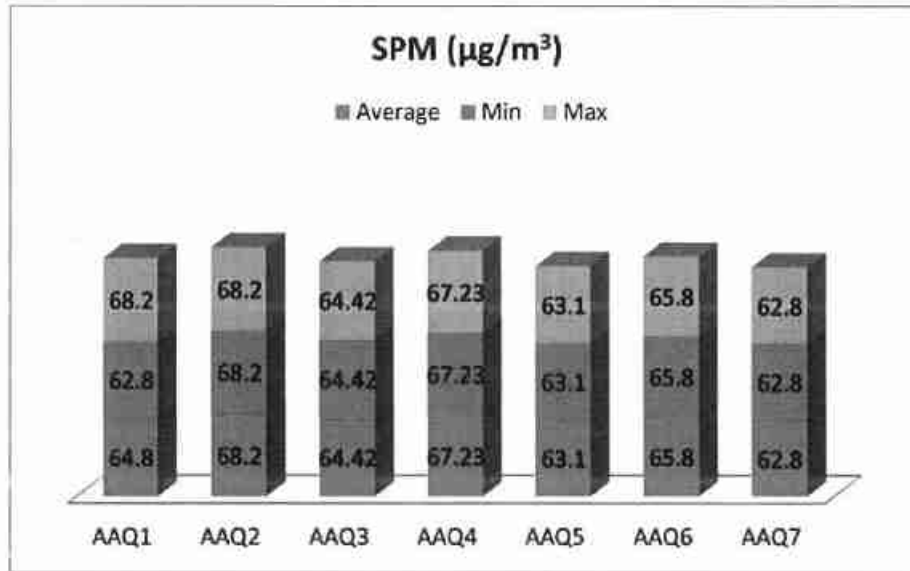
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Table 3.19 : Fugitive Dust sample values in  $\mu\text{g}/\text{m}^3$ 

SPM ( $\mu\text{g}/\text{m}^3$ )	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
<b>Average</b>	64.8	68.2	64.42	67.23	63.1	65.8	62.8
<b>Min</b>	62.8	68.2	64.42	67.23	63.1	65.8	62.8
<b>Max</b>	68.2	68.2	64.42	67.23	63.1	65.8	62.8

Source: Field Data's



Source: Bar Diagram of table 3.20

### 3.7.7 Interpretations & Conclusion

From the above data, the concentration of main criteria pollutants has been observed that maximum concentration of PM10 is  $45.6\mu\text{g}/\text{m}^3$  and minimum is  $42.2\mu\text{g}/\text{m}^3$ . The concentration of PM2.5 varies from  $19.4 - 24.9\mu\text{g}/\text{m}^3$ . SO<sub>2</sub> concentration level ranged from  $6.1 - 8.4\mu\text{g}/\text{m}^3$  and NO<sub>x</sub> concentration ranged from  $23.2 - 26.7\mu\text{g}/\text{m}^3$ . The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

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).

The four air quality categories are:

- Critical pollution (C): when EF is  $> 1.5$

*K. Paramasivam*

- ii. High pollution (H): when the EF is between  $1.0 < 1.5$   
 iii. Moderate pollution (M): when the EF between  $0.5 < 1.0$   
 iv. Low pollution (L): when the EF is  $< 0.5$

The Exceedance Factor (EF) is calculated for major pollutants as follows:

### 3.8 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.

#### 3.8.1 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	N-1	Core Zone	Project Area	12° 2'4.36"N 79°25'58.23"E
2	N-2	Near Project Area	360m NE	12° 2'4.54"N 79°26'15.72"E
3	N-3	Siruvalai (Near School)	1.2km SW	12° 1'29.76"N 79°25'34.39"E
4	N-4	Ulagampoondi	6km East	12° 2'18.39"N 79°29'19.58"E
5	N-5	Ariyalur Tirukkai	6km SW	12° 0'55.94"N 79°22'49.62"E
6	N-6	Anniyur	5km NW	12° 3'54.07"N 79°23'50.06"E
7	N-7	Vengadanur	4.5km South	11°59'34.63"N 79°26'0.27"E

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited.

#### 3.8.2 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.

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

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

T = Time interval of observation

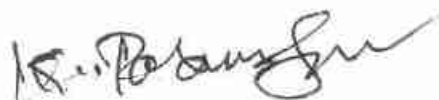
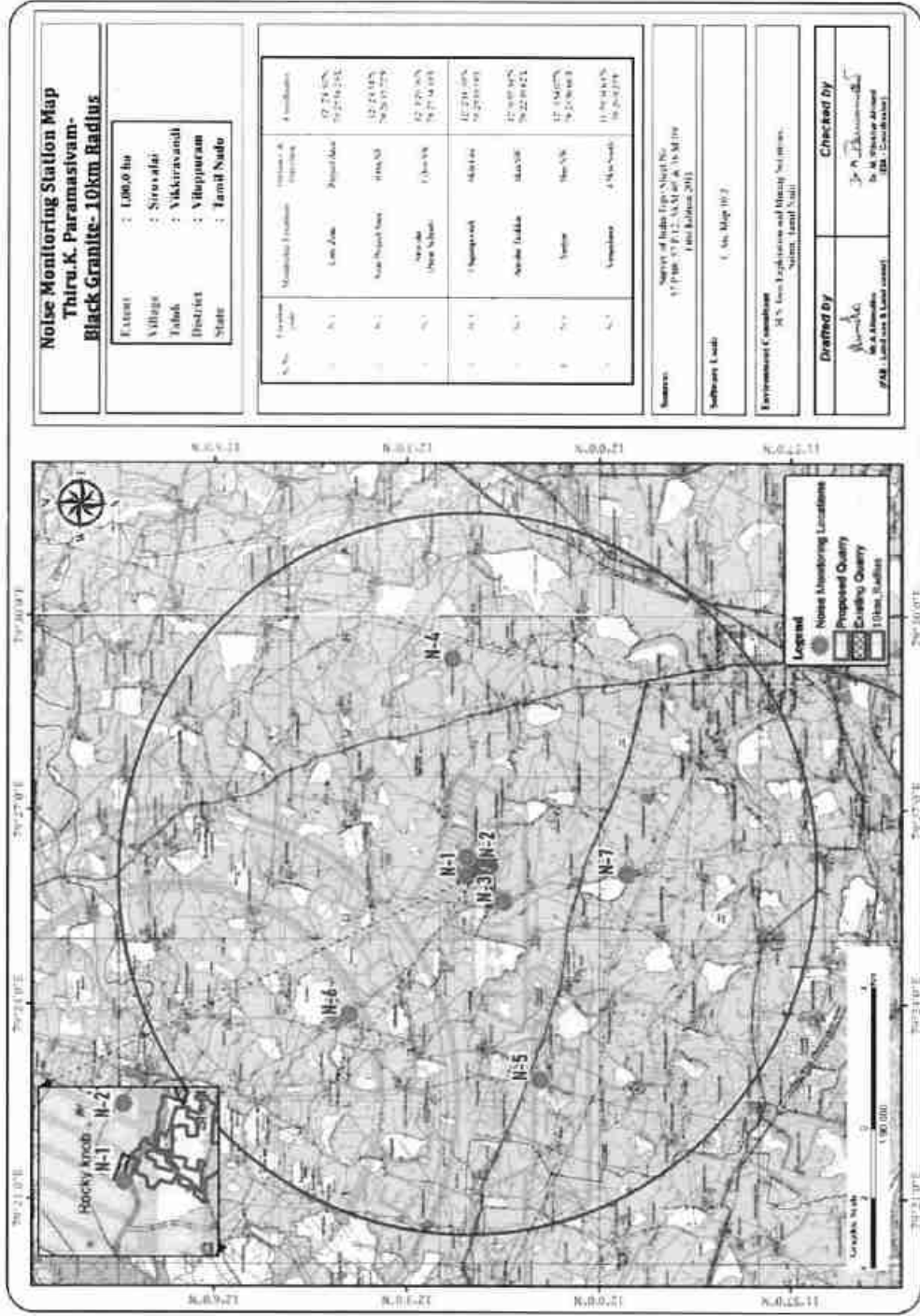




Figure 3.18: Noise Monitoring Stations Around 10 Km Radius



*K. Paramasivam*

**3.8.3 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 3.22.

Day time: 6:00 hours to 22.00 hours.

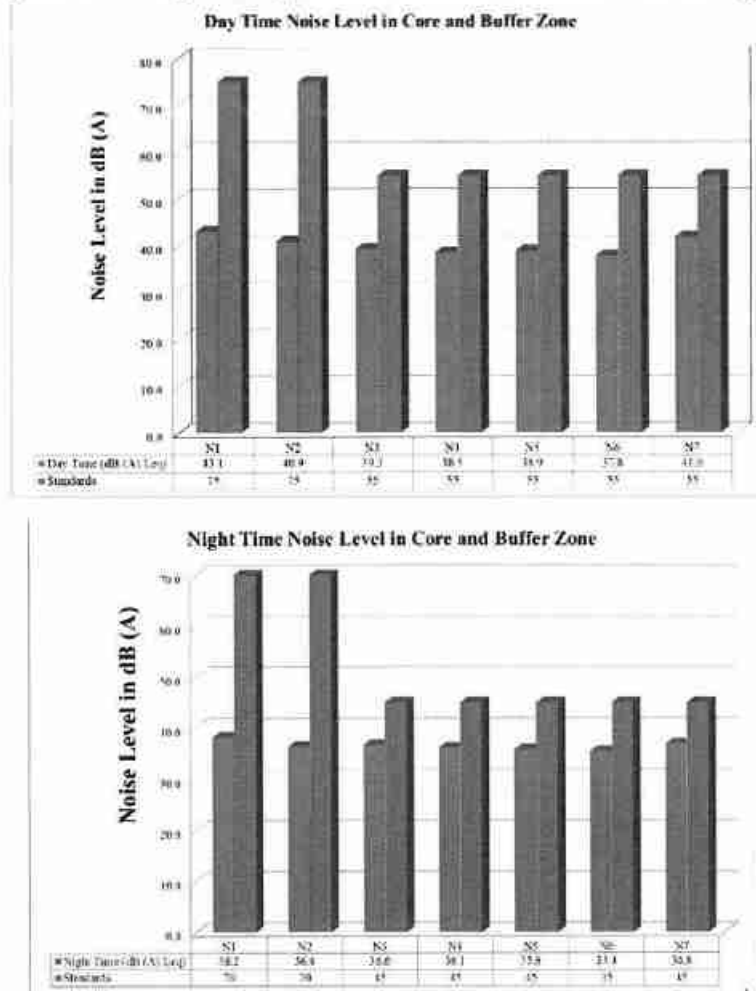
Night time: 22:00 hours to 6.00 hours.

**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	41.0	38.2	<b>Industrial</b> Day Time- 75 dB (A) Night Time- 70 dB (A)
2	Near Project Area	40.8	36.4	
3	Siruyalai (Near School)	39.3	36.6	
4	Ulagampoondi	38.5	36.2	<b>Residential</b> Day Time- 55 dB (A) Night Time- 45 dB (A)
5	Ariyalur Tirukkai	38.9	35.8	
6	Anniyur	37.8	35.4	
7	Vengadanur	41.8	36.8	

Source: On-site monitoring/sampling by EHS 360 Labs Private Limited.

*Figure 3.19: Day and Night Time Noise Levels In Core And Buffer*



*K. Paramasivam*

### 3.8.4 Interpretation & Conclusion:

Ambient noise levels were measured at 7 (Seven) locations around the proposed and existing project area. Noise levels recorded in core zone during day time were from 41.0dB (A) Leq and during night time were from 38.2dB (A) Leq. Noise levels recorded in buffer zone during day time were from 37.8-41.8dB (A) Leq and during night time were from 35.4-36.8dB (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. Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

## 3.9 Biological Environment

### 3.9.1. Study area Ecology

Ecology is a branch of science that dealing the relations and interactions between organisms and their environment. An ecological survey of the study area was conducted, 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.

### 3.9.2. Objectives of Biological Studies

- Undertake an intensive field survey to assess the status of floral & faunal component in different habitats in the core and buffer areas of the project site.
- Identification and listing of flora and fauna which are important as per the Wildlife (Protection) Act 1972.
- Suggest Wildlife conservation (species specific/habitat specific) and management plan for the threatened (critically endangered & endangered species - schedule I) faunal species if any reported within the study area.
- To identify the impacts of mining on agricultural lands and how it affects.
- Proper collection of information about wildlife Sanctuaries/ national parks/ biosphere reserves of the project area.
- Devise management & conservation measures for biodiversity.

#### 3.9.2.1. Field surveys

The field visit was carried out to understand and assess the impacts of mining activities on flora & fauna and natural habitats and prediction after the enhancement of the production capacity of the mine. We evaluated the distribution and abundance of flora and fauna in the study area through primary and secondary data sources.

#### 3.9.2.2. Floral Study

- The floral survey of the project area is based on field survey of the area.
- 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.
- 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.

### 3.9.3. Methodology of Sampling

Primary survey was conducted with established and accepted ecological methods in different habitats of study area. The field data collection mainly included biodiversity status assessment of different life forms habit of flora elements such as Trees, Shrubs, Climbers Herbs and Grass. Faunal diversity was assessed by inventorying the taxonomical groups like Mammals, Herpetofauna, birds and butterflies.

Nocturnal faunal species were searched by locating their calls during night time and by searching along the forest shrubs areas, dense dry bushes, below the stones, water bodies. During the study, to know more about the seasonal presence of flora and faunal species, information was obtained from local people and forest department.

Identification of vegetation in relation to the natural flora and crops was conducted through reconnaissance field surveys and onsite observations in core and buffer zone. The plant species identification was



done based on the reference materials and also by examining the morphological characteristics and reproductive materials i.e. flowers, fruits and seeds. Land use pattern in relation to agriculture crop varieties were identified through physical verification of land and interaction with local villagers.

Plot method is used in the floral documentation in the core and buffer zone. For trees (10x10-m), shrubs (5x5-m) and herbs (1x1-m) plots were taken. Birds and butterflies were mainly focused during faunal assessment, transect method was employed for birds and butterflies. Transect is a path along which one counts and records the occurrence of an individual for study. A straight-line walk covering desired distance, within a time span of one hour to 30 minutes was carried out in the proposed region. Bird species were recorded during the hours of peak activity. 0700 to 1100 Hrs and 1430 to 1730 Hrs (Bibby et al. 2000).

Direct observations and bird calls were used for bird documentation. Same transects were used for counting butterflies. Opportunistic observations were made for Amphibians, reptiles and ordinals. Presence of mammals was recorded by direct and indirect signs. All possible transects were taken for birds and butterflies. Birds and butterflies were classified into species level. Recorded bird species were identified to species level using standard books (Ali & Ripley 1987, Grimmett et al., 2016).

**The secondary baseline data of flora and fauna has been compiled through the following data sources:**

1. Forest working plan
2. Schedule I to V: Indian Wildlife (Protection) Act, 1972
3. Vivek Menon, Indian Mammals: A Field Guide. Hachette Book publishing India Pvt.Ltd., India.
4. Daniel J.C. The Book of Indian Reptiles and Amphibians, Bombay Natural History Society., India.
5. Ali, S and Ripley. handbook of the Birds of India and Pakistan together with those of Nepal, Sikkim and Bhutan, Oxford University Press, Bombay.
6. ENVIS Centre on Wildlife and Protected Area.
7. Birds Life Data Zone
8. Ebird.org
9. Global Biodiversity Information Facility

#### **3.9.3.1. 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.

#### **3.9.3.2. 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.

#### **3.9.3.3. 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.

#### **3.9.3.4. Observations from Sampling**

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

#### **3.9.3.5. Field Equipment's/ References**

Following tools/equipment were used for conducting phytosociological study.

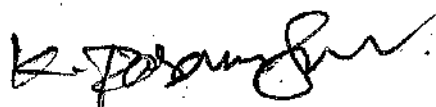
- Ballpoint pen, Field bags, Field notebooks, field shoes, gloves, GPS, Measuring tapes and scales, Plant cutters, packet lens, ropes etc.
- Canon Mark III Camera with 50-500mm lens– Snap shots taken
- Leica Binoculars (8x 20) to spot/identify species
- IUCN Red Data Book – <https://www.iucnredlist.org/species>.

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

### **3.9.4. Part I Field Sampling Techniques (Fauna Sampling)**

#### **3.9.4.1. 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.



### 3.9.4.2. 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.

### 3.9.4.3. 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).

### 3.9.4.4. 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.

### 3.9.5. Flora Composition in the Core Zone (Primary Survey)

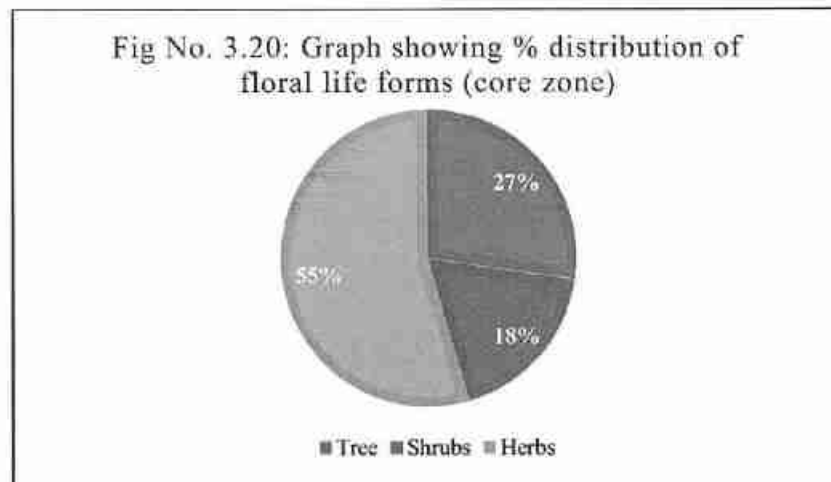
Core zone flora sampling was conducted between 8.00 am to 10.00 am in three locations. The proposed applied lease area is flat topography, we used quadrat sampling methods. Taxonomically a total of 11 species belonging to 9 families have been recorded from the core mining lease area. Based on the habitat classification of the enumerated plants the majority of species were Herbs 6 followed by trees 3, and Shrubs 2. The result of the core zone of flora studies shows that Fabaceae and Poaceae, Apocynaceae are the main dominating species in the study area mentioned in Table No.3.22. No species found as threatened category.

Table No: 3.22. Flora in the Core zone of Siruvalai Village, Black granite quarry (Primary data)

SI. No	English Name	Vernacular Name	Scientific Name	Family Name
<b>Trees</b>				
1	Velvet mesquite	Mullu Maram	Prosopis juliflora	Fabaceae
2	Neem	Vembu maram	Azadirachta indica	Meliaceae
3	Indian mulberry	Nuna maram	Morinda tinctoria	Rubiaceae
<b>Shrubs</b>				
1	Milk Weed	Erukku	Calotropis gigantea	Apocynaceae
2	Bush Morning Glory	Neiveli Kattamani	Ipomoea carnea	Convolvulaceae
<b>Herbs</b>				
1	Common leucas	Thumbai	Leucas aspera	Lamiaceae
2	Coat buttons	Thatha poo	Tridax procumbens	Asteraceae
3	Devil 's thorn	Nerunji	Tribulus terrestris	Zygophyllales
4	Indian doab	Arugampul	Cynodon dactylon	Poaceae
5	Holy basil	Thulasi	Ocimum tenuiflorum	Lamiaceae
6	Indian nettle	Nayuruvi	Achyranthes aspera	Amaranthaceae

(Sources: Species observation in the field study)





The trees surveys were conducted around 300m radius from the proposed project site.

This is the standard scientific method followed by various workers in respect of phytosociological studies (Cotton and Curtis 1956; Ralhan et al. 1982; Saxena and Sing 1982; Nayak et al. 2000; Lu et al. 2004; Nautiyal 2008). While sampling, circumference at breast Height (CBH) of tree species was measured at 1.37m from ground level, along with the name of the species, phenology (flowering, fruiting, and flushes. After surveying areas, a detailed trees inventory has been compiled. A list of all plants from the study area was prepared and their habitats were recorded. The species of trees were documented during this base line survey. The dominant plant species growing in this area were *Cocos nucifera* *Prosopis juliflora*, etc. Please refer the Table No.3.54.

Table No: 3.23. Tree survey around 300m radius from the proposed project site.

S. No	English Name	Vernacular Name	Scientific Name	Family Name	No of trees
<b>Trees</b>					
1.	Necm	Vembu maram	<i>Azadirachta indica</i>	Meliaceae	11
2.	Asian Palmyra palm	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	4
3.	Mesquite	Mullu maram	<i>Prosopis juliflora</i>	Fabaceae	53
4.	<i>Millettia Pinnata</i>	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	2
5.	Mango	Manga	<i>Mangifera indica</i>	Anacardiaceae	5
6.	Coconut	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	13

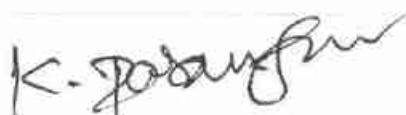
(Sources: Species observation in the field study)

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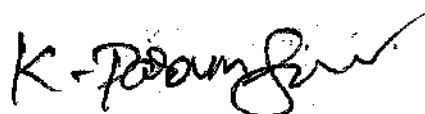


Table No: 3.24. Flora in Buffer Zone of Siruvalai Village, Black granite quarry Villupuram District, Tamil Nadu (Primary data &amp; Secondary data)

Sl. No	English Name	Vernacular Name	Scientific Name	Family Name
<b>Trees</b>				
1.	White-bark acacia	Velvelam	Acacia leucophloea	Mimosaceae
2.	Coconut	Thennai maram	Cocos nucifera	Arecaceae
3.	Neem or Indian lilac	Vembu	Azadirachta indica	Meliaceae
4.	Velvet mesquite	Mullu Maram	Prosopis juliflora	Fabaceae
5.	Frywood	Vaagai	Albizia lebbek	Mimosaceae
6.	Indian plum	Elanthai maram	Ziziphus mauritiana	Rhamnaceae
7.	Pongamia pinnata	Pongam	Millettia pinnata	Fabaceae
8.	Oil cake tree	Wunja	Albizia amara	Fabaceae
9.	Eucalyptus	Thailam maram	Eucalyptus tereticornis	Myrtaceae
10.	Velvet mesquite	Velikatthaan	Prosopis juliflora	Fabaceae
11.	River tamarind	Savunda	Leucaenaleucocephala	Fabaceae
12.	Madras thorn	Kudukapuli	Pithecellobium dulce	Fabaceae
13.	Portia tree	Poovarasam	Thespesia Populnea	Malvaceae
14.	Lemon	Ezhumuchaipalam	Citrus lemon	Rutaceae
15.	Jamun Fruit Plant	Naval maram	Syzygium cumini	Myrtaceae
16.	Gum arabic tree	Karuvellam	Vachellia nilotica	Fabaceae
17.	Kassod Tree	ManjalKonrai	Cassia siamea	Fabaceae
18.	Chinaberry	Malaivembu	Meliaazedarach	Meliaceae
19.	Sudu	Kalli	Euphorbia antiquorum	Euphorbiaceae
20.	Monkey pod tree	Kondraimaram	Samaneasaman	Fabaceae
21.	Asian Palmyra palm	Panai maram	Borassus flabellifer	Arecaceae
22.	Bamboo	Moongil	Bambusoideae	Poaceae
23.	Indian-almond	Vadamaram	Terminaliacatappa	Fabaceae
24.	Teak	Thekku	Tectona grandis	Verbenaceae
25.	Mahua	Iluppai	Bassia latifolia	Sapotaceae
26.	Indian mulberry	Nuna maram	Morinda tinctoria	Rubiaceae
27.	Banyan	Ala	Ficus benghalensis	Moraceae
28.	Yellow Flame	Iyalvagai	Peltophorumpterocarpum	Fabaceae
29.	Cashew	Munthiri	Anacardium occidentale	Anacardiaceae
30.	Common fig	Athi Maram	Ficus Carica	Anacardiaceae
31.	Horsetail She-oak	Savukku maram	Casuarina equisetifolia	Cucurbitaceae
32.	Tamarind	Puliyamaram	Tamarindus indica	Legumes
33.	Phoenix sylvestris	Pereatchai	Phoenix sylvestris	Arecaceae

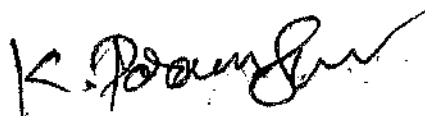


34.	Creamy peacock flower	Perungondrai	Delonix elata	Fabaceae
35.	Sapodilla	Sappotta	Manilkarazapota	Sapotaceae
36.	Indian bael	Vilvam	Aegle marmelos	Rutaceae
37.	Indian gooseberry	Nelli	Phyllanthus emblica	Phyllanthaceae
38.	Guava	Koyya	Psidium guajava	Myrtaceae
39.	Mango	Manga	Mangifera indica	Anacardiaceae
40.	Sugar apple	Sitapalam	Annona squamosa	Annonaceae
41.	Papaya	Pappali maram	Carica papaya L	Caricaceae
42.	Banana tree	Vazhaimaram	Musa acuminata	Musaceae
43.	Jack fruit	Palamaram	Artocarpus heterophyllus	Moraceae
44.	Muntingia calabura	Singapore cherry	Muntingiacalabura	Malvaceae
<b>Shrubs</b>				
1.	Bush Morning Glory	Neiveli Kattamani	Ipomoea carnea	Convolvulaceae
2.	Chinese chastetree	Nochi	Vitex negundo	Lamiaceae
3.	Indian mallow	Thuthi	Abutilon indicum	Malvaceae
4.	Black-Honey Shrub	Ink Pazham	Phyllanthus reticulatus	Phyllanthaceae
5.	Jackal jujube	Surai Iltantai	Ziziphus oenoplia	Rhamnaceae
6.	Milk Weed	Erukku	Calotropis gigantea	Apocynaceae
7.	Jungle geranium	Vedchi	Ixora coccinea	Rubiaceae
8.	Solanum pubescens	Malaisundai	Solanum pubescens Willd	Solanaceae
9.	Plumeria alba	Malaiarali	Plumeria alba	Apocynaceae
10.	Night shade plan	Sundaika	Solanum torvum	Solanaceae
11.	Pinwheelflower	Nandiar vattai	Tabernaemontana coronaria	Apocynaceae
12.	Leaf Fig	Pie Aththi	Ficus hispida	Moraceae
13.	Stachytarpheta urticifolia	Rat tai	Stachytarphetauriticifolia	Verbenaceae
14.	Great bougainvillea	Kaakithapoo	Bougainvillea spectabilis	Nyctaginaceae
15.	Indian shot	Kalvalai	Canna indica	Cannaceae
16.	Devil's trumpet	Umathai	Datura metel	Solanaceae
17.	Jhahrberi	Narielandai	Ziziphus nummularia	Rhamnaceae
18.	Castor bean	Amanakku	Ricinus communis	Euphorbiaceae
19.	Shoe flower	Chemparuthi	Hibiscu rosa-sinensis	Malvaceae
20.	Nalta jute	Perattikkirai	Corchorus olitorius	Tiliaceae
21.	Bellyache bush	Kaatamanaku	Jatropagossypifolia	Euphorbiaceae
22.	Cape jasmine	Kumba poo	Gardenia jasminoides	Rubiaceae
23.	Touch-me-not	Thottalchinungi	Mimosa pudica	Mimosaceae
24.	Indian cork tree	Kattumalli	Millingtonia hortensis	Bignoniaceae
25.	Prickly pear	Nagathali	Opuntia	Cactaceae





26.	Triangular spruce	Chaturakalli	Euphorbia antiquorum	Euphorbiaceae
27.	Indian mallow	Maanikham	Abutilon indicum	Meliaceae
28.	Apple of sodom	Vellerukku	Calotropis procera	Asclepiadaceae
29.	Rough cocklebur	Marul-umattai	Xanthium strumarium	Asteraceae
30.	Pignut	Wild thulasi	Hyptis suaveolens	Lamiaceae
31.	Avaram	Avarai	Senna auriculata	Fabaceae
32.	Wild caper bush	Kattukkathir	Capparis sepiaria	Capparaceae
33.	Indian Oleander	Arali	Nerium indicum	Apocynaceae
34.	Pencil cactus	Thirukalli	Euphorbia tirucalli	Euphorbiaceae
35.	West Indian Lantana	Unni chedi	Lantana camara	Verbenaceae
<b>Herbs</b>				
1.	Mexican prickly poppy	Kudiyotti	Argemone mexicana	Papaveraceae
2.	Purple pitcher plant	Kavali	Tephrosia purpurea	Fabaceae
3.	Red Pea Eggplant	Vellai tuduvai	Solanum trilobatum	Solanaceae
4.	Bindii	Nerunji Mull	Tribulus terrestris	Zygophyllaceae
5.	Chamber bitter	Malai Kizhanelli	Phyllanthus urinaria	Euphorbiaceae
6.	Carrot grass	Vishapoond	Parthenium hysterophorus	Asteraceae
7.	Billygoat weed	Pumpillu	Ageratum conyzoides	Asteraceae
8.	Green amaranth	Kuppaikera	Amaranthus viridis	Amaranthaceae
9.	Aloe barbadensis	Katrazhai	Aloe vera	Asphodelaceae
10.	Indian Mercury	Kuppamani	Acalypha indica	Euphorbiaceae
11.	Indian nettle	Nayuruvi	Achyranthes aspera	Amaranthaceae
12.	Indian doab	Arugampul	Cynodon dactylon	Poaceae
13.	Rushfoil	Milakai Poond	Croton sparsiflorus	Euphorbiaceae
14.	Rough cocklebur	Marul-umattai	Xanthium strumarium	Asteraceae
15.	Benghal dayflower	Kanavachai	Commelina benghalensis	Commelinaceae
16.	Septicweed	Kattuttakarai	Senna occidentalis	Fabaceae
17.	Mountain knotgrass	Sirupulai	Aerva lanata	Amaranthaceae
18.	Tickweed	Nai kadugu	Celome viscosa	Capparidaceae
19.	Egyptian senna	Mayurkondrai	Cassia tora	Caesalpinaceae
20.	Common leucas	Thumbai	Leucas aspera	Lamiaceae
21.	Fish poison	Kollukkai Vela	Tephrosia purpurea	Fabaceae
22.	Painted euphorbia	Pai perukki	Euphorbia heterophylla	Euphorbiaceae
23.	Pig weed	Mukkarattai Keerai	Boerheavia diffusa	Nyctaginaceae
24.	Asthma-plant	Amman pacharisi	Euphorbia hirta	Euphorbiaceae
25.	Poor land flatsedg	Kunnakora	Cyperus compressus	Cyperaceae
26.	Marsh Barbel	Neermulli	Hygrophila auriculata	Acanthaceae



27.	Bhringaraj	Karisalankanni	Eclipta alba	Asteraceae
28.	Spiny amaranth	Mullukkirai	Amaranthus spinosus	Amaranthaceae
29.	Holy basil	Thulasi	Ocimum tenuiflorum	Lamiaceae
30.	Indian Turnsole	Thel kodukku	Heliotropium indicum	Boraginaceae
31.	Tridax daisy	Thatha poo	Tridax procumbens	Asteraceae
32.	Globe Amaranth	Vaadamalli	Gomphrena globosa	Amaranthaceae
33.	Dwarf morning-glory	Vishnukranti	Evolvulus alsinoides	Convolvulaceae
34.	White head	Vellarugu	Enicostemma axillare	Gentianaceae
35.	Rushfoil	Reilpoondu	Croton sparsiflorus	Euphorbiaceae
36.	Negro Coffee	Payaverai	Cassia occidentalis	Caesalpinaceae
37.	Gale of the wind	Keelaneeli	Phyllanthus niruri	Phyllanthaceae
38.	Obscure Morning Glory	Chirutali	Ipomea obscura	Convolvulaceae
39.	Arrowleaf sida	Jelly Leaf	Sida rhombifolia	Malvaceae
<b>Climber</b>				
1.	Balloon vine	Mudakathan	Cardiospermum halicacabum	Sapindaceae
2.	Ivy gourd	Kovai	Coccinia grandis	Cucurbitaceae
3.	Wild water lemon	Poonai puduku chedi	Passiflora foetida	Passifloraceae
4.	Stemmed vine	Perandai	Cissus quadrangularis	Vitaceae
5.	Stinking passionflower	Poonai puduku chedi	Passiflora foetida L.	Passifloraceae
6.	Butterfly pea	Sangu poo	Clitoria ternatea	Fabaceae
7.	Rosary pea	Kundumani	abrus precatorius	Fabaceae
<b>Grass</b>				
1.	Great brome	Thodappam	Bromus diandrus	Poaceae
2.	Windmill grass	Chevvarakupul	Chloris barbata	Amaranthaceae
3.	Eragrostis	Pullu	Eragrostis ferruginea	Poaceae
4.	Watergrass	Mukkutikorei	Bulbostylis barbata	Cyperaceae
5.	Finger grass	Kuruthupillu	Chloris dolichostachya	Poaceae
6.	Umbrella-sedge	Vattakorai	Cyperus difformis	Cyperaceae
7.	Marvel grass	Marvel grass	Dichanthium annulatum	Poaceae
8.	Tropical crabgrass	Crab grass	Digetaria adscendens	Poaceae

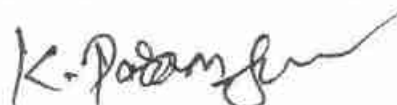
(Sources: Ethnobotanical study of medicinal plants used by traditional users in Villupuram district of Tamil Nadu, India

A Survey of Some Medicinally Important Plants in Villupuram District of Tamil Nadu India

Herbal medicines used by the local traditional healers in Villupuram district of Tamil Nadu, Southern India

Ethnobotanical study of medicinal plants used by traditional users in Villupuram district of Tamil Nadu, India

<https://identify.plantnet.org/>





a. *Opuntia dillenii*



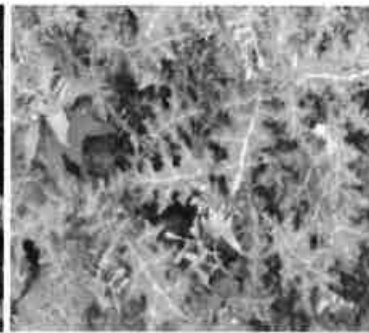
b. *Musa paradisiaca*



c. *Lantana camara*



d. *Tridax daisy*



e. *Solanum virginianum*



f. *Mangifera indica*



g. *Abutilon indicum*



h. *Coccus nucifera*



i. *Azadirachta indica*



j. *Jatropha gossypifolia*



k. *Cissus quadrangularis*



l. *Calotropis gigantea*

*K. Paramasivam*



m. Solanum nigrum

n. Parthenium hysterophorus

p. Prosopis juliflora

Fig No: 3.21. Flora species observation in the Buffer zone area

### 3.9.5.3. Cropping Pattern and Major Crops at District level

Important crops grown in the district are paddy, black gram, groundnut, cumbu, maize, kora or thenai, varaku, red gram, turmeric, guava, watermelon, tapiaco, yam (karnai), small onion, indigo dye, coleus medicine, jasmine and sugarcane. The most important cash crop in the district is sugarcane, groundnut, turmeric, non-food crops and coleus. It is cultivable under both irrigatable and rainfed condition. In terms of area, paddy occupies is 40% total cultivable area of the district which is second highest in Tamil Nadu (2016-17). Sugarcane is the most important cash crop in the district.

Source: Villupuram district diagnostic report

### 3.9.6. Flora Composition in the Buffer Zone

Buffer zone flora sampling was conducted between 10.00 am to 6.00 pm in eight different locations in 10 km radius as per the ToR. The most important and widely used methods for a general assessment is belt transect methods. The study area was divided according to habitat types followed the random sampling methods in the selected area. For plant biodiversity study in the ecosystems, the quadrat methods were followed. The proposed mine lease area is exhibiting flat topography. The buffer region has a similar type of habitat, but it has a wider variety of vegetation than the core zone area. There are 133 different species identified in the buffer zone. Among the identified, floral (133) species were 44 trees, 39 herbs, 35 shrubs, 7 climbers and 8 grasses. According to the findings of the buffer zone flora studies, the dominant species in the study area are Fabaceae, Asteraceae, and Euphorbiaceae, as shown in Table No.3.2. Apart from the proposed project area, there is agricultural land. Horticulture and agricultural land are untouched. 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. A list of floral species has been prepared based on primary survey (site observations) and discussion with local people. The total number of different plant life forms under trees, shrubs, herbs, and climbers is shown in Table 3.56 and their % distribution is shown in Figure No 3.36.

The most dominant species observed during the site survey of the study area are *Prosopis juliflora* (Velvet mesquite), *Borassus flabellifer* (Asian Palmyra palm), *Dalbergia sisso* (Tamarind), *Vachellia nilotica* (Gum arabic tree), etc. The shrubby vegetation is represented by *Opuntia* sp, *Lantana camara* (West Indian Lantana), *Vitex negundo* (Chinese chastetree), and *Parthenium hysterophorus* (Carrot grass) etc.

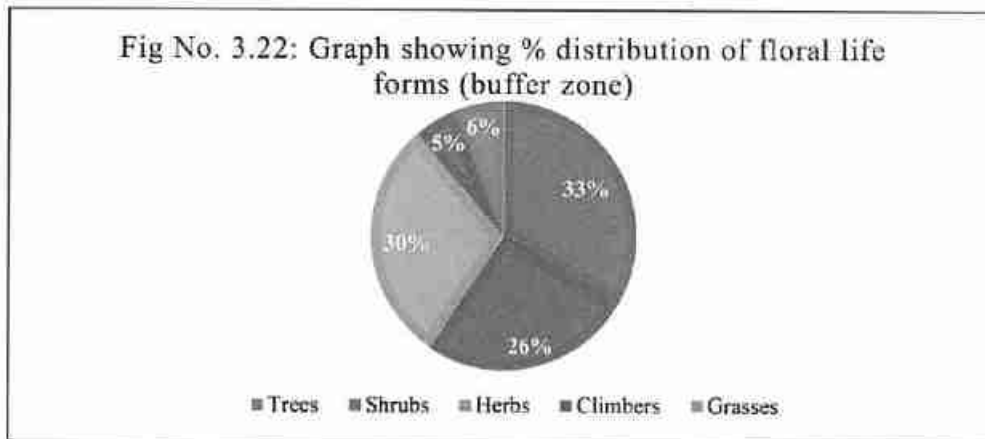
A list of floral species has been prepared based on a primary survey (site observations) and discussion with local people. The total number of different plant life forms under trees, shrubs, herbs, and climbers is shown in Table No 3.56 and their % distribution is shown in Figure No 3.34.

Table No 3.25: Number of floral life forms in the Study Area

S. No	Plant Life Form	Number of Species
1	Trees	44
2	Shrubs	35
3	Herbs	39
4	Climber	7

K. Paramasivam

5	Grasses	8
<b>Total No. of Species</b>		<b>133</b>



**3.9.6.1. 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. The Odayanatham Reserve forest location about 9.73km on the Northwest side and Oussudu lake bird Sanctuary is located about 34.5km on the Southeast side. 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. 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.

**3.9.7. Fauna**

The fauna 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.

**3.9.7.1. Fauna Composition in the Core Zone**

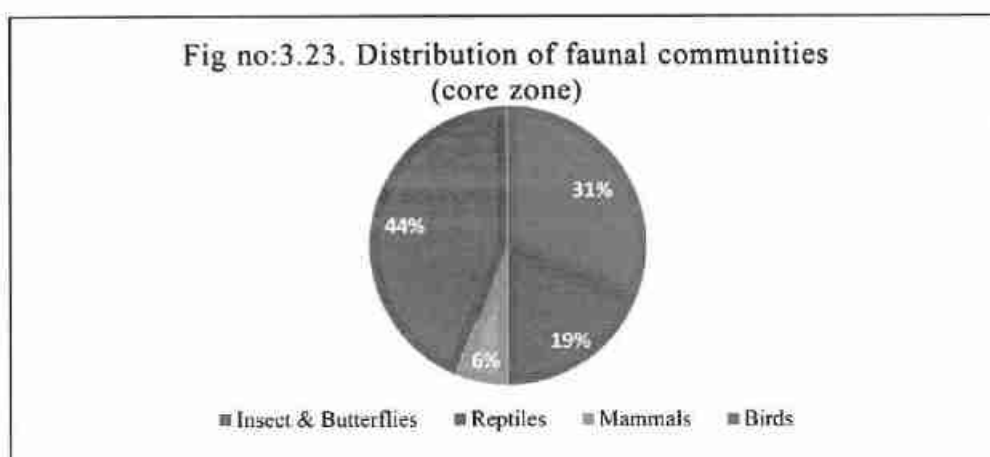
Core zone fauna samplings were conducted between 6.30 am to 8.00 am in three locations. A total of 16 varieties of species were observed in the Core zone of Siruvalai Village, Black granite quarry (Table No.3.57) among them numbers Insects/Butterflies 5, Reptiles 3, Mammals 1, and Avians 7. A total of 16 species belonging to 9 families 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 ten species are under Schedule IV according to the Indian Wildlife Act 1972. A total of 7 species of bird were sighted in the mining lease area. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

*K. Paramasivam*

Table No: 3.26. Fauna in the Core zone of Siruvalai Village, Black granite quarry (Primary data)

Sl No	Common Name	Scientific Name	Schedule list WLPA 1972	IUCN Red List data
<b>Insects/Butterflies</b>				
1.	Striped tiger	Danaus plexippus	Schedule IV	LC
2.	Grasshopper	Hieroglyphus sp	NL	LC
3.	Common Tiger	Danaus genutia	NL	NL
4.	Termite	Hamitermes silvestri	NE	LC
5.	Tawny coster	Danaus chrysippus	Schedule IV	LC
<b>Reptiles</b>				
1.	Garden lizard	Calotes versicolor	NL	LC
2.	Common skink	Mabuya carinatus	NL	LC
3.	Green vine snake	Ahaetulla nasuta	Schedule IV	NL
<b>Mammals</b>				
1.	Indian Field Mouse	Mus booduga	Schedule IV	NL
<b>Aves</b>				
1.	Common myna	Acridotheres tristis	Schedule IV	LC
2.	House crow	Corvus splendens	Schedule V	LC
3.	Koel	Eudynamys	Schedule IV	LC
4.	Alcedo atthis	Small blue kingfisher	Schedule IV	LC
5.	Asian green bee-eater	Merops orientalis	Schedule IV	LC
6.	Common quail	Coturnix coturnix	Schedule IV	LC
7.	Black drongo	Dicrurus macrocerus	Schedule IV	LC

(Sources: Species observation in the field study)



### 3.9.7.2. Fauna Composition in the Buffer Zone

As animals, especially vertebrates move from place to place in search of food, shelter, mate or other biological needs, separate lists for core and buffer areas are not feasible however, a separate list of fauna pertaining to core and buffer zone are listed separately. Though there are no reserved forest in the buffer zone. As such there are no chances of occurrence of any rare or endangered or endemic or threatened (REET) species within the core or buffer area.

K. Paramasivam



There are no Sanctuaries, National Parks, Tiger Reserve or Biosphere Reserve or Elephant Corridor or other protected areas within 10 km radius from the core area. It is evident from the available records, reports, and circumstantial evidence that the entire study area including the core and buffer areas were free from any endangered animals. There were no resident birds other than common bird species such as green bee-eaters, Indian blue robin, Common Mynas, Black drangos, Crows, etc.

List of Fauna & Their Conservation Status, Mammals: (\*directly sighted animals & Secondary data) is given in Table No.5.58. The list of bird species recorded during the field survey and literature from the study area is given in Table No 3.59. The list of reptilian species recorded during the field survey and literature from the study area are given in Table No 3.60. The list of insect species recorded during the field survey and literature from the study area are given in Table No 3.61. The list of Amphibian species recorded during the field survey and literature from the study area are given in Table No 3.66 and List of Butterflies identified from the project site and their conservation status is given in Table No.3.62. 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.

Taxonomically a total of 60 species were identified from the project site. Based on habitat classification the majority of species were birds 22, followed by butterflies 16, reptiles, 8, Mammals, 5 and Insects 5 and amphibians 4. A total of 22 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.

Dominant species are mostly birds and buffer flies, and four amphibians were observed during the extensive field visit Ranahexadactyla, and Ranatigrina and etc. There is no schedule I Species in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

Table No 3.27. List of Fauna & Their Conservation Status, Mammals: (\*directly sighted animals & Secondary data)

Sl. No	Scientific Name	Common Name	IUCN Conservation Status
1.	Funambulus palmarum	Indian palm squirrel	Schedule IV
2.	Mus booduga	Indian Field Mouse	Schedule IV
3.	Lepus nigricollis	Indian hare	Schedule IV
4.	Rattus norvegicus	Brown rat	Schedule IV
5.	Lepus nigricollis	Rabbit	Schedule IV

Table No 3.28. Listed birds (\*directly sighted animals & Secondary data)

Sl. No	Scientific Name	Common Name	IUCN Conservation Status
1.	Bubulcus ibis	Cattle Egret	Schedule IV
2.	Saxicoloidesfulvicata	Indian Robin	Schedule IV
3.	Streptopeliachinensis	Spotted Dove	Schedule IV
4.	Accipiter badius	Shikra	Schedule IV
5.	Coraciasbenghalensis	Indian Roller	Schedule IV
6.	Anthusrufulus	Paddyfield Pipit	Schedule IV
7.	Nectarinia minima	Small Sunbird	Schedule IV
8.	Acridotherestrictis	Common Myna	Schedule IV
9.	Vanellusindicus	Red-wattled Lapwing	Schedule IV
10.	Dicrurusmacrocerus	Black Drongo	Schedule IV
11.	Lonchurapunctulata	Spotted Munia	Schedule IV
12.	Dendrocittavagabunda	Indian Treepie	Schedule IV
13.	Corvussplendens	House Crow	Schedule V

K. Paramasivam

14.	<i>Eudynamys</i>	Koel	Schedule IV
15.	<i>Psittacula krameni</i>	Rose ringed parakeet	Schedule IV
16.	<i>Dicrurus macrocercus</i>	Black drongo	Schedule IV
17.	<i>Corvus splendens</i>	House crow	Schedule IV
18.	<i>Alcedo atthis</i>	Small blue kingfisher	Schedule IV
19.	<i>Cuculus canorus</i>	Common Cuckoo	Schedule IV
20.	<i>Pycnonotus cafer</i>	Red vented Bulbul	Schedule IV
21.	<i>Merops orientalis</i>	Small Bee-eater	Schedule IV
22.	<i>Halcyon smyrnensis</i>	White-breasted Kingfisher	Schedule IV

Table No 3.29. List of Reptiles either spotted or reported from the study area  
(Primary and Secondary data)

Sl. No	Scientific Name	Common Name/English Name	Schedule list WPA 1972
1.	<i>Calotes versicolor</i>	Oriental garden lizard	NL
2.	<i>Hemidactylus flaviviridis</i>	House lizards	Schedule IV
3.	<i>Ahaetulla nasuta</i>	Green vine snake	Schedule IV
4.	<i>Ptyas mucosa</i>	Rat snake	Sch IV (Part II)
5.	<i>Bungarus caeruleus</i>	Common krait	Schedule IV
6.	<i>Mabuya carinatus</i>	Common skink	NL
7.	<i>Nerodia piscator</i>	Fresh water snake	Sch III (Part II)
8.	<i>Groemyda bijuga</i>	Fresh water tortoise	Sch III (Part II)

Table No 3.30. List of insects either spotted or reported from the study area

Sl. No	Scientific Name	Common Name	IUCN Conservation Status
1.	<i>Apis cerana</i>	Indian honey bee	-
2.	<i>Hamitermes silvestri</i>	Termite	LC
3.	<i>Hieroglyphus sp</i>	Grasshopper	LC
4.	<i>Ceratogomphus pictus</i>	Dragonfly	-
5.	<i>Sympetrum fonscolombi</i>	Dragonfly	-

Table No 3.31. List of Butterflies identified from the project site and their conservation status  
(Primary and Secondary data)

Sl. No	Scientific Name	Common Name	IUCN Conservation Status
1.	<i>Danaus genutia</i>	Striped Tiger	LC
2.	<i>Danaus chrysippuschrysippus</i>	Plain Tiger	LC
3.	<i>Danaus genutia</i>	Common Tiger	LC
4.	<i>Acraea terpsicore</i>	Tawny Coster	LC
5.	<i>Papiliopolytespolytes</i>	Common Mormon	LC
6.	<i>Papiliodemoleusdemoleus</i>	Lime Butterfly	LC





7.	Hypolimnasmisippus	Danaid Eggfly	LC
8.	Catopsilia pyranthe	Mottled emigrant	LC
9.	Junoniahierta	Yellow Pansy	LC
10.	Junonialemonias	Lemon Pansy	LC
11.	Hypolimnasmisippus	Danaid Eggfly	LC
12.	Euchrysopscejus	Gram Blue	LC
13.	Euploea core	Common Crow	LC
14.	Melanitisledaleda	Common Evening Brown	LC
15.	Colotis danae	Crimson tip	LC
16.	Junonia iphita	Chocolate pansy	LC



A. *Calotes versicolor*



B. *Ceratogomphus pictus*



C. *Sympetrum fonscolombii*



D. *Psittacula krameri*



E. *Colotis danae*



F. *Catopsilia pyranthe*



G. *Danaus chrysippus*



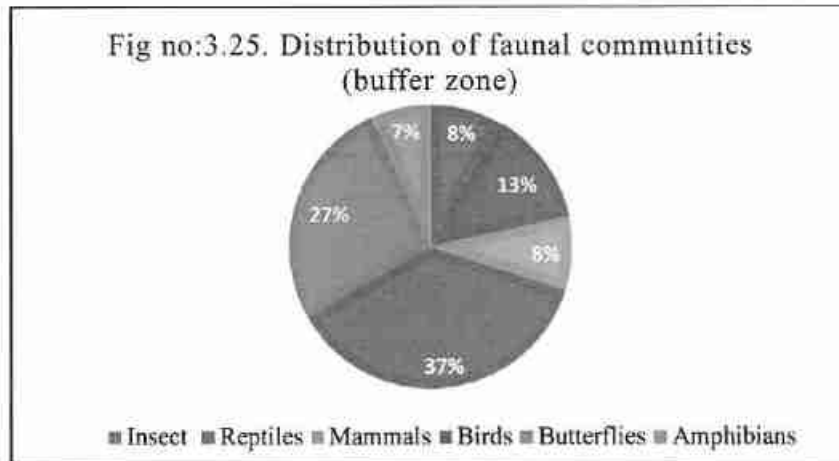
H. *Zizina Otis indica*



J. *Dicrurus macrocerus*

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Fig No: 3.32. Flora species observation in the Buffer zone area



Livestock like cattle, buffalo, goat, poultry, duck and pig are reared for dairy products, meat, and egg and for agriculture purpose. Majority of cattle and buffalo are of local variety. Backyard poultry farms are mostly common in this area; however, some commercial poultry farms are also recorded in the study area.

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 No 3.63.

Table No: 3.32 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	0	-
3.	Schedule III	2	-
4.	Schedule IV	33	-
5.	Schedule V	1	-
6.	Schedule VI	0	-

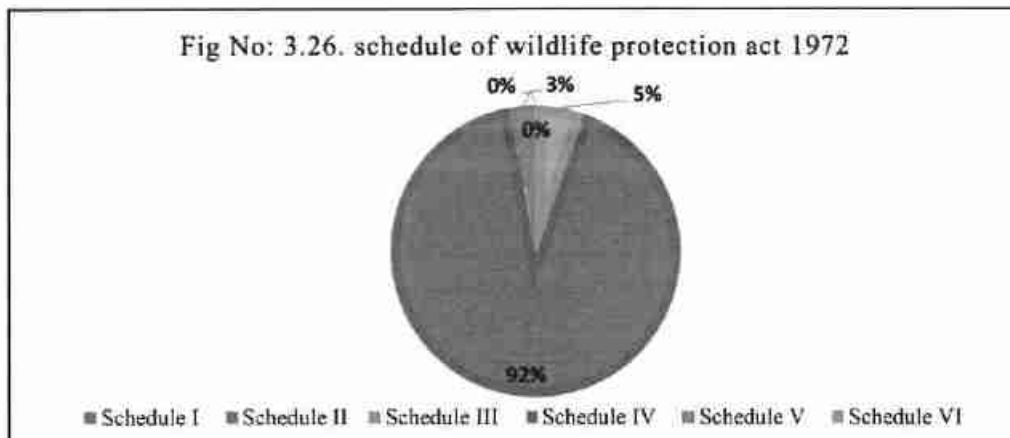


Table No 3.33: Description of Flora & Fauna

S. No	Type of Species	Name	Local Name
<b>Flora</b>			
1.	Endangered species	None	None
2.	Threatened species	None	None

*K. Palanisami*

3.	Near Threatened species	None	None
4.	Vulnerable species	None	None
<b>Fauna</b>			
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	-
11.	Invasive Alien species	None	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 wild animals and their conservation status as per Wild Life Act (1972) presented in Table No 3.64 are the species recorded/reported from the study area, out of which 2 species belong to schedule-III, 1 species belongs to Schedule-V and rest of the species belongs to schedule-IV of Wildlife Protection Act, 1972. And there is no Invasive alien species (IAP) in the study area.

### 3.9.8 Aquatic Ecology

Mining activities will not have an impact on aquatic ecosystems because no effluent discharge from the Black granite quarry is planned. There are no natural perennial surface water bodies, such as marshes, rivers, streams, lakes, or agricultural sites, inside the mining lease area. The study region contains a few seasonal bodies of water. There is no aquatic flora and, aquatic faun. Hence, it does not harbour any significant aquatic life. Therefore, the project is not likely to affect the aquatic ecology. 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.

### 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.

### 3.9.9 Macrophytes

The macrophytes observed within the study area are tabulated in Table No 3.65

Table No.3.34 Description of Macrophytes

Sl. No	Scientific name	Common Name	Vernacular Name (Famil)	IUCN Red List of Threatened Species
1.	Eichornia crassipe	Water hyacinth	Agayatamarai	NA
2.	Aponogeton natans	Floating lace plant	Kottikizhnagu	NA
3.	Nymphaea nouchali	Blue water lily	Nellambal	LC
4.	Typha angustifolia	Sambu	Narrowleaf cattail	LC
5.	Carex cruciata	Cross Grass	Koraipullu	NA
6.	Cyperus exultates	Tall Flat Sedge	Koraikizhangu	LC

Sources: Species observation in the field study

### 3.9.10. Aquatic Faunal Diversity

Amphibian species like the common Indian Burrowing frog, and green pond frog, and etc. were sighted near the water bodies located in the study area.

Table No 3.35. List of Amphibians either spotted or reported from the study area

Sl. No	Scientific Name	Common Name/English Name	Schedule list wildlife Protection act 1972
1.	Sphaerotheca breviceps	Indian Burrowing frog	Schedule IV



2.	Euphlyctis hexadactylus	Green pond frog	Schedule IV
3.	Bufo melanostictus	Indian Toad	Schedule IV
4.	Euphlyctis cynophlyctis	Skipper	Schedule IV

### 3.9.11 Fishes

Fish is commonly found in all types of natural water bodies and very common source of food in Eastern South India. The local fishermen were enquired and also the secondary resources were reviewed to collect information on the fishes found in the study area. Few common species are; Catla, Mrigal, Ticto barb, Greenstripe barb, Roho and Pool barb etc., Species of fish reported in the study area are given in table 3.67. During the field investigation, all of the lakes were quite dry. Only the lakes gather fish data.

Table No 3.36. Based on Actual Sighting, based on inputs from locals and Perused from Secondary Data

S. No	Common name	Scientific name	Family
1.	Ticto barb	Pethia ticto	Cyprinidae
2.	Rohu	Labeo rohita	Cyprinidae
3.	Catfish	Siluriformes	Diplomystidae
4.	Greenstripe barb	Puntius vittatus	Cyprinidae
5.	Pool barb	Puntius sophore	Cyprinidae

#### Sources:

#### Invasive Alien Species | IUCN

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

Ali, S and Ripley, S.D. 1969 Handbook of the Birds of India and Pakistan together with those of Nepal, Sikkim, Bhutan and Ceylon.3. Stone Curlews to Owls. Oxford University Press, Bombay. 327pp.

Bird Life International 2012. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.

<http://www.indiaenvironmentportal.org.in/files/file/wildlife%20protection%20amendment%20act%202022.pdf>

### 3.9.12. Findings/Results

The assessment was carried out during the summer 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	The Oussudu lake bird Sanctuary is located about 34.5km on the Southeast side.
2.	Reserved Forests	The Odayanatham Reserve forest location about 9.73km on the Northwest side.
3.	Wildlife Corridors & Routes	No notified wildlife corridors are present in 10 km vicinity.
4.	Wetlands / Water bodies	-
5.	Ramsar Site	Nil
6.	Important Bird Habitats	Nil
7.	Breeding/nesting areas of endangered species	Not present
8.	Mangroves	None

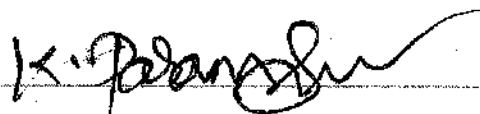
There are no critically endangered, endangered, vulnerable, and endemic species were observed. As the rainfall in the area is scanty and as no toxic wastes are produced or discharged on account of mining, the proposed mining activity is not going to have any additional and adverse impacts on these RET 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.

### 3.9.13 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



### 3.10 Socio Economic Environment

There is no habitation/ village within the radius of 10km 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 substantially improve because of this proposed project. As the proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area and, thus, improve their standard of living.

#### STRUCTURE STUDY IN 300m RADIUS



Structure Numbers	Distance & Direction from the project site	Structure Details and Usage Purpose	Type of Structure Structures (Kutchha/ Brick/ Cement/ RCC/ Framed Structures)	No.of Occupants	Structure belongs to owner (Yes/No)	Remarks
1	140m – North	Shed	Sheet Structure	Nil	Yes	Used to store Mines Purpose only – No Stay
2	160m – North	Mines Shed	Sheet Structure	Nil	Yes	Used to Store Mines Equipment's materials

*K. Paramasivan*



3	200m – North	Mines Shed	Sheet Structure	Nil	No	Used to Store Mines Equipment's materials
4	250m – SE	Gudown	Brick Cement Structure	Nil	No	Used to store waste materials
5	280m – NE	Farmhouse	Brick Cement Structure	2 Nos	No	Used to store Agriculture Goods only
6	280m - SE	Shed	Sheet shed	Nil	No	Abandoned shed not in use now

### 3.10.1 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.

### 3.10.2 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

### 3.10.3 District Profile

There are two Revenue Divisions, Nine Revenue Taluks, Two Municipalities (Viluppuram and Tindivanam), Eight Town Panchayats, 13 Panchayat Unions and 688 Village Panchayats in the District. According to 2011 census, the Viluppuram district had a population of 3,458,873 with a sex-ratio of 987 females per 1,000 males, which is well above the national average of 929. A total of 404,106 residents were under the age of six, constituting 208,246 males and 195,860 females

### 3.10.4 Study area:

#### SIRUVALAI VILLAGE

Siruvalai village is situated in Teshil Viluppuram, District Viluppuram and in State of Tamil Nadu India. Village has population of 2414 as per census data of 2011, in which male population is 1231 and female population is 1183. Total geographical area of Siruvalai village is 740.91 Hectares. Population density of Siruvalai is 3 persons per Hectares. Total number of house hold in village is 556.

#### Census Data of Village Siruvalai, Teshil Viluppuram, District Viluppuram, India –Census 2011

Population	Area (Ha)	Density (P/Ha)	Sex Ratio	Literacy
2414	740.91	3	961	70.9%

#### Demographics Population of Village Siruvalai, Teshil Viluppuram, District Viluppuram

Total Population	Male Population	Female Population
2414	1231	1183

#### Sex Ratio of Siruvalai Village -Census 2011

As per the Census Data 2011 there are 961 Femals per 1000 males out of 2414 total population of village. There are 1087 girls per 1000 boys under 6 years of age in the village.

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**Literacy of Siruvalai Village**

Out of total population total 1491 people in Siruvalai Village are literate, among them 885 are male and 606 are female in the village. Total literacy rate of of Siruvalai is 70.9%, for male literacy is 81.79% and for female literacy rate is 59.35%.

**Siruvalai Village Census 2011 Data ---Census 2011**

Description	Census 2011 Data
Village Name	Siruvalai
Teshil Name	Viluppuram
District Name	Viluppuram
State Name	Tamil Nadu
Total Population	2414
Total Area	741 (Hectares)
Total No of House Holds	556
Total Male Population	1231
Total Female Population	1183
0-6 Age group Total Population	311
0-6 Age group Male Population	149
0-6 Age group Female Population	162
Total Person Literates	1491
Total Male Literates	885
Total Female Literates	606
Total Person Illiterates	923
Total Male Illiterates	346
Total Female Illiterates	577
Scheduled Cast Persons	679
Scheduled Cast Males	348
Scheduled Cast Females	331
Scheduled Tribe Persons	59
Scheduled Tribe Males	56
Scheduled Tribe Females	59

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**Workers profile of Siruvalai Village**

Total working population of Siruvalai is 1302 which are either main or marginal workers. Total workers in the village are 1302 out of which 745 are male and 557 are female. Total main workers are 1171 out of which female main workers are 719 and male main workers are 452. Total marginal workers of village are 131.

**Siruvalai Working Population ---Census 2011**

	Total	Male	Female
Total Workers	1302	745	557
Main Workers	1171	719	452
Main Workers Cultivators	306	253	53
Agriculture Labourer	584	239	345
Household Industries	7	3	4
Other Workers	274	224	50
Marginal Workers	131	26	105
Non Working Persons	1112	486	626

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TABLE 3.3.37: POPULATION DATA OF STUDY AREA

Sno	Name	No of House Holds	Total Population	Male	Female	SC Population	ST Population	Total Literate Population	Male Literate	Female Literate
1	Adatur	954	4075	2056	2019	469	80	2651	1523	1128
2	Arniyur	1096	4780	2412	2368	963	0	2783	1606	1177
3	Aiyalur (Thirukkai)	1128	5290	2693	2597	1016	0	3871	2142	1729
4	Arumbuli	121	492	246	246	152	0	332	184	148
5	Asarakuppam	298	1228	617	611	133	0	923	514	409
6	Atiyur Thirukkai	996	4580	2316	2264	1059	0	2706	1542	1164
7	Cholaganur	445	1962	986	976	991	13	1232	686	546
8	Elusembon	595	2535	1274	1261	351	13	1654	961	693
9	Kadayam	812	3457	1754	1703	391	118	1935	1156	779
10	Kakkalur	697	3124	1574	1550	402	5	2053	1161	892
11	Kunjanur	539	2195	1082	1113	1315	128	1373	753	620
12	Kasbakaranai	506	2133	1090	1043	946	0	1331	754	577
13	Kodar	1390	5862	3008	2854	1125	68	3866	2162	1704
14	Koralur	177	720	357	363	392	123	508	277	231
15	Kundalappallyur	412	1850	930	920	947	116	1058	615	443
16	Kunnathur Thungul (I)	54	225	118	107	0	0	107	68	39
17	Melkaranai	888	3953	2014	1939	656	40	2283	1324	959
18	Narasiganur	239	1009	504	505	200	0	798	427	371
19	Olagalampundi	434	1871	951	920	395	0	1039	605	434
20	Porur	301	1351	666	685	75	71	1002	552	450
21	Pundi	368	1728	889	839	849	0	935	562	373
22	Pungunam	120	492	243	249	0	0	295	159	136
23	Semmedu	1104	4545	2289	2256	193	29	3001	1627	1374
24	Siruvai	556	2414	1231	1183	679	115	1491	885	606
25	Sitheri	197	887	446	441	190	9	650	353	297
26	Surappattu	194	838	445	393	259	0	631	354	277
27	Thumbur	777	3408	1794	1614	1056	95	2345	1358	987
28	Valappattu	343	1380	714	666	265	1	875	518	357
29	Veliyandal	445	1825	914	911	442	0	874	499	375
30	Velleriputtu	197	818	420	398	0	0	476	285	191
31	Vembi	473	1977	1013	964	983	7	1199	702	497
32	Vengandur	744	3153	1620	1533	475	174	1867	1103	764
33	Vengayakuppam	69	295	155	140	0	0	208	112	96
34	Viramar	605	2842	1401	1441	942	116	1962	1065	897

Source: www.censusindia.gov.in

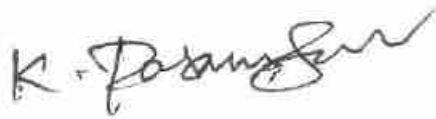


TABLE 3.38: WORKERS PROFILE OF STUDY AREA

Sno	Name	Total Workers Population	Male Workers	Female Workers	Total Main Workers	Main Workers Male	Main Workers Female	Main Cultivation Workers	Main Agriculture Workers	Main Other Workers	Non-Worker Population
1	Adannur	2288	1262	1026	1268	723	545	348	691	404	1787
2	Aamivur	2313	1333	980	1786	1149	637	838	476	516	2467
3	Aryalur (Thimkkai)	3015	1703	1312	1871	1134	737	623	804	1117	2275
4	Arumbuli	205	127	78	185	120	65	44	126	20	287
5	Asurakuppam	744	401	343	494	333	161	92	262	241	484
6	Attivur Thirukkal	2206	1269	937	760	622	138	313	246	1421	2374
7	Cholaganur	1212	642	570	1094	616	478	277	624	95	750
8	Elusembon	1392	800	592	1065	643	422	406	532	262	1143
9	Kadayan	1846	1020	826	1777	993	784	508	910	66	1611
10	Kakkannur	1545	894	651	406	266	140	79	165	973	1579
11	Kunjanur	1184	675	509	679	404	275	56	509	468	1011
12	Kasbakaramai	1183	679	504	376	329	47	77	153	806	950
13	Kedar	2694	1724	970	1463	988	475	637	354	1145	3168
14	Koralur	409	226	183	80	56	24	8	27	218	311
15	Kundalappaliyur	1006	538	468	387	227	160	106	196	617	844
16	Kumathur Thangal (I)	133	76	57	123	73	50	52	36	7	92
17	Melkaramai	2057	1194	863	2009	1170	839	385	1359	47	1896
18	Narasinganur	516	298	218	108	89	19	6	3	405	493
19	Olagalampundi	1031	581	450	758	426	332	471	200	267	840
20	Porur	719	388	331	709	381	328	150	413	10	632
21	Pundi	952	531	421	165	123	42	89	5	785	776
22	Punganam	203	135	68	157	115	42	117	0	43	289
23	Semmedu	2491	1417	1074	1424	833	591	346	515	1006	2054
24	Siruvalai	1302	745	557	1171	719	452	306	584	117	1112
25	Sitheri	427	272	155	426	271	155	139	136	1	460
26	Surappattu	315	235	80	135	124	11	89	3	179	523
27	Thumbur	1505	984	521	1155	789	366	452	447	339	1903
28	Valappattu	633	406	227	240	191	49	63	49	369	747
29	Veliyandal	992	524	468	509	340	169	171	261	281	833
30	Velleripattu	478	246	232	476	245	231	123	298	2	340
31	Vembi	897	587	310	865	565	300	47	725	26	1080
32	Vengandur	1836	995	841	1375	820	555	445	541	420	1317
33	Vengayakuppam	176	87	89	45	23	22	7	22	124	119
34	Viramur	1339	855	484	1232	817	415	395	432	100	1503

Source: www.censusindia.gov.in



TABLE 3.39: EDUCATIONAL FACILITIES IN THE STUDY AREA

Sno	Name	PPS		PS		MS		SS		SSS		DC		EC		MC		MI		PT		VTS		SSD	
		G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P
1	Adanur	1	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
2	Amyyur	1	1	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
3	Aryalur (Thirukkai)	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
4	Arumbudi	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
5	Asarakuppam	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
6	Athiyur (Thirukka)	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
7	Cholaganur	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
8	Elusembom	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
9	Kaduyattu	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
10	Kakkannur	1	1	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
11	Kanjur	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
12	Kasbakammai	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
13	Kedar	1	2	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
14	Koralar	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
15	Kundalappalyur	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
16	Kumathur Daungal (I)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
17	Melkammai	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
18	Narasanganur	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	
19	Olugalampundi	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
20	Porur	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
21	Pundi	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
22	Pungannam	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
23	Semmedu	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
24	Srivahai	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
25	Sidheri	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
26	Surappattu	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
27	Thambur	1	2	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	
28	Valappattu	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	
29	Velyandai	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
30	Velleripattu	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
31	Vembi	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
32	Vengandur	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
33	Vengayakuppam	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
34	Vinavar	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	

Abbreviations: PPS-Pre-Primary School; SSS-Senior Secondary School; DC-Degree School; PT-Polytechnic; PS-Primary School; G-Government; EC-Engineering College; VTS-Vocational School /ITI; MS-Middle School; P-Private; MC-Medical College; SSD-Special School For Disabled; SS-Secondary School; MI-Management College/Institute;

Note - 1 - Available within the village; 2 - Not available

K. Paramasivam

TABLE 3.40: MEDICAL FACILITIES IN THE STUDY AREA

Sl. No.	Village Name	CHC	PHC	PHSC	MCW	TBC	HA	HAM	D	VH	MHC	FWC	NGM-I/O
1	Adanur	0	0	1	0	0	0	0	0	0	0	0	7
2	Anniyur	1	1	1	1	1	0	0	1	1	0	1	0
3	Ariyalur (Thirukkai)	0	0	1	0	0	0	0	0	0	0	0	3
4	Arumbali	0	0	0	0	0	0	0	0	0	0	0	6
5	Asarakuppam	0	0	0	0	0	0	0	0	0	0	0	b
6	Attiyur Thirukkai	0	0	1	0	0	0	0	0	1	0	0	5
7	Cholaganur	0	0	0	0	0	0	0	0	0	0	0	a
8	Elusenban	0	0	1	0	0	0	0	0	0	0	0	2
9	Kadayam	0	0	1	0	0	0	0	0	0	0	0	3
10	Kakkanur	0	0	1	0	0	0	0	0	0	0	0	4
11	Kanjannur	0	0	1	0	0	0	0	0	0	0	0	4
12	Kashakaranai	0	0	0	0	0	0	0	0	0	0	0	2
13	Kethar	0	0	1	0	0	0	0	0	1	0	0	a
14	Koralar	0	0	0	0	0	0	0	0	0	0	0	3
15	Kundalappallyur	0	0	0	0	0	0	0	0	0	0	0	5
16	Kumathur Thargal (1)	0	0	0	0	0	0	0	0	0	0	0	4
17	Melkaranai	0	0	1	0	0	0	0	0	0	0	0	4
18	Narasingannur	0	0	1	0	0	0	0	0	1	0	0	3
19	Olagalampundi	0	0	1	0	0	0	0	0	0	0	0	3
20	Porur	0	0	0	0	0	0	0	0	0	0	0	2
21	Pondi	0	0	0	0	0	0	0	0	0	0	0	1
22	Punganam	0	0	0	0	0	0	0	0	0	0	0	3
23	Sernamedu	0	0	0	0	0	0	0	0	0	0	0	3
24	Siruvilal	0	0	1	0	0	0	0	0	0	0	0	6
25	Siherni	0	0	0	0	0	0	0	0	0	0	0	3
26	Surappattu	0	0	0	0	0	0	0	0	0	0	0	a
27	Thumbur	0	1	1	1	1	1	0	1	1	0	1	0
28	Valappattu	0	0	1	0	0	0	0	0	0	0	0	a
29	Veliyandi	0	0	0	0	0	0	0	0	0	0	0	4
30	Velliripattu	0	0	0	0	0	0	0	0	0	0	0	2
31	Vembu	0	1	1	1	1	1	0	1	0	0	1	0
32	Vengandur	0	0	1	0	0	0	0	0	0	0	0	a
33	Vengayakuppam	0	0	0	0	0	0	0	0	0	0	0	3
34	Viranur	1	1	1	1	1	0	0	1	1	0	1	0

Abbreviations: CHC-Community Health Centre; TBC-TB Clinic; VH-Veterinary Hospital; PHC-Primary Health Centre; HA-Aalopsadine Hospital; FWC-Family Welfare Centre; PHSC-Primary Health Sub Centre ;

HAM-Alternative Medicine Hospital; MH-Mobile Health Clinic; MC-W-Maternity and Child Welfare Centre; D-Dispensary; NGM-I/O-Non-Government Medical Facilities in &amp; Out Patient

Note - 1 - Available within the village; 2 - Not available

Source: www.censusindia.gov.in

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**3.10.5 Recommendation and Suggestion**

- Due to the project about 35 Nos of people will benefitted directly due to employment and more than 50 Nos of people and Crushers will benefitted through this project
- As part of CER activities proponent intends to spend Rs 5 Laksh for the improvement of School sanitation facilities, Greenbelt development and other needs.
- At the end of the life of the mine the mined-out pit will act as temporary reservoir, the collected rain water in the mine pit may utilized for the nearby agriculture lands.

**Apart from the following general activities will be conducted**

- Awareness program to be conducted to make the population aware to get education and a better livelihood.
- Vocational training programme can be organized to make the people self - employed, particularly for women and unemployed youth.
- On the basis of qualification and skills local community may be preferred. Long term and short-term employments can be generated.

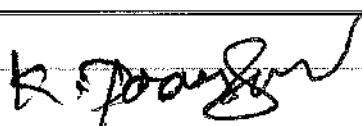
While developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans

**3.10.6 Conclusion**

To evaluate the impacts of proposed granite quarry project on the surrounding area, it is vital to assess the baseline status of the environmental quality in the locality of the site. Hence it can be concluded that the present environment status of the study area will not be affected by the project as Thiru. K. Paramasivam Black Granite Quarry will adopt adequate control measures to protect the surrounding environment and will contribute in development of the study areas.

Socio Economic/ demographic status of the study area reveals that area further require improvement in the Economy and Infrastructure Development of the area. Hence it can be concluded that the present baseline environment status of the study area will not be affected by the proposed project. The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

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## 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

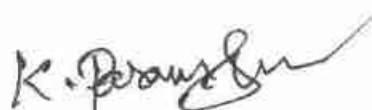
The main anticipated impact on the Land Environment due to quarrying operation is change in Landscape, change in Land – use Pattern. Thiru. K. Paramasivam Black Granite Quarry area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016) including proposed quarry. The proposed project 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 30m 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
- Top Soil will be removed and utilized for greenbelt development in the safety barrier.
- 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.

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## 4.2 Soil Environment

### 4.2.1 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).

### 4.2.2 Mitigation measures

- The top soil will be preserved in the safety barrier and kept in moisture condition. The preserved top soil will be utilized for greenbelt development in the safety barrier and utilized for plantation on the top bench.
- Garland drains will be constructed around the project area to arrest any soil from the quarry area being carried away by the rainwater. This will also avoid the soil erosion and siltation in the mining pits and maintaining the stability of the benches.

### 4.2.3 Waste Dump Management

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.

There will be generation of topsoil is about 208m<sup>3</sup> up to depth for 2m during this Scheme period, the same will be preserved all along the safety barrier and utilized for construction of bund and afforestation purpose. Granite waste forms nearly 80% of ROM and the total quantity of granite waste in the five years will be around 31,087m<sup>3</sup> (Granite waste 27,964m<sup>3</sup> + Weathered rock 3,123m<sup>3</sup>) the same will be dumped on the Eastern with dimensions of (L)64m X (W)42m X (H)28.06m.

#### 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.

## 4.3 Water Environment

### 4.3.1 Anticipated Impact

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 encountered. The maximum depth proposed out of proposed projects is 35m 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.

### 4.3.2 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	0.7KLD	From Existing, bore wells and drinking water will be sourced from Approved Water vendors.
Dust Suppression	0.9KLD	From Existing bore wells from nearby area
Green Belt	0.8KLD	From Existing bore wells from nearby area
<b>Total</b>	<b>2.4KLD</b>	

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

#### 4.4 Air Environment

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.

##### 4.4.1. Anticipated Impact

The air borne particulate matter generated by quarrying operation, and transportation. The emissions of Sulphur dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) 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 (PM<sub>10</sub>) affecting Ambient Air of the area. Prediction of impacts on air environment has been carried out taking into consideration proposed production (ROM) on air environment and net increase in emissions by Open pit source modelling in AERMOD Software.

##### 4.4.2 Modelling of Incremental Concentration from all Proposed Projects

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, meet the regulatory standards and to apply mitigation measures to reduce impact caused by quarrying activities. PM<sub>10</sub> 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 PM<sub>10</sub> was observed close to the source due to low to moderate wind speeds. Incremental value of PM<sub>10</sub> was superimposed on the base line data monitored at the proposed site to predict total GLC of PM<sub>10</sub> due to combined impacts.



#### 4.4.2.1 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.

#### 4.4.2.2 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. PM<sub>10</sub> 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 PM<sub>10</sub> was observed close to the source due to low to moderate wind speeds. Incremental value of PM<sub>10</sub> was superimposed on the base line data monitored at the proposed site to predict total GLC of PM<sub>10</sub> due to combined impacts.

Table 4.2: ESTIMATED EMISSION RATE

Emission Estimation for quarry P1				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM <sub>10</sub>	Drilling	Point Source	0.036524627	g/s
	Blasting	Point Source	0.000015723	g/s
	Mineral	Point Source	0.031382937	g/s
	Haul Road	Line Source	0.002482644	g/s/m
	Overall Mine	Area Source	0.038111681	g/s
Estimated Emission rate for SO <sub>2</sub>	Overall Mine	Area Source	3.22707E-05	g/s
Estimated Emission rate for NO <sub>x</sub>	Overall Mine	Area Source	0.000000769	g/s

Source: Emission calculator

*K. Paramasivam*

Figure 4.1: AERMOD Terrain Map

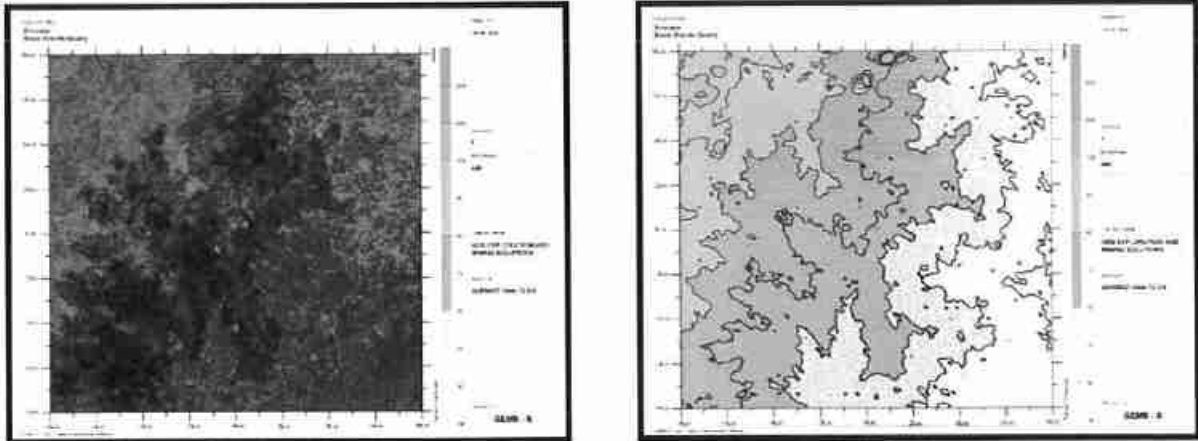


Figure 4.2: Predicted Incremental Concentration of Fugitive Dust

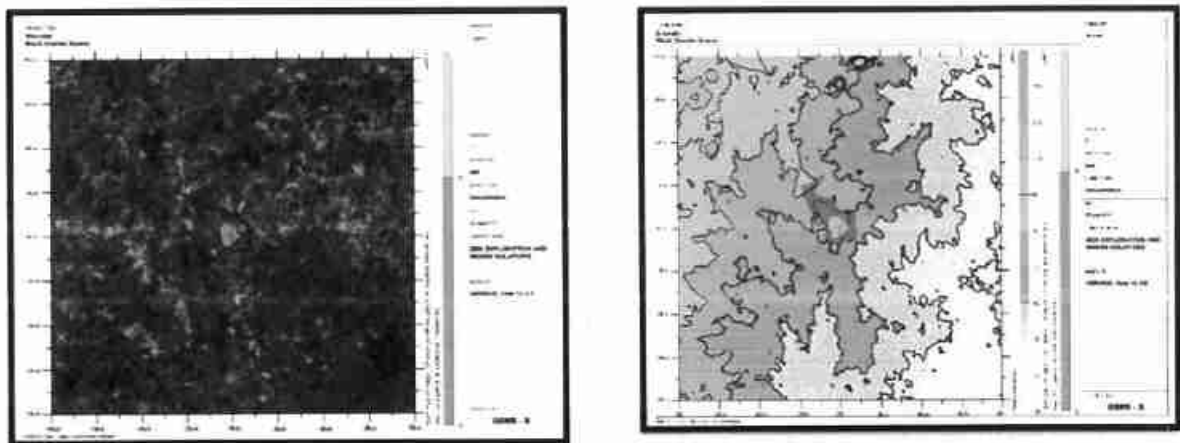
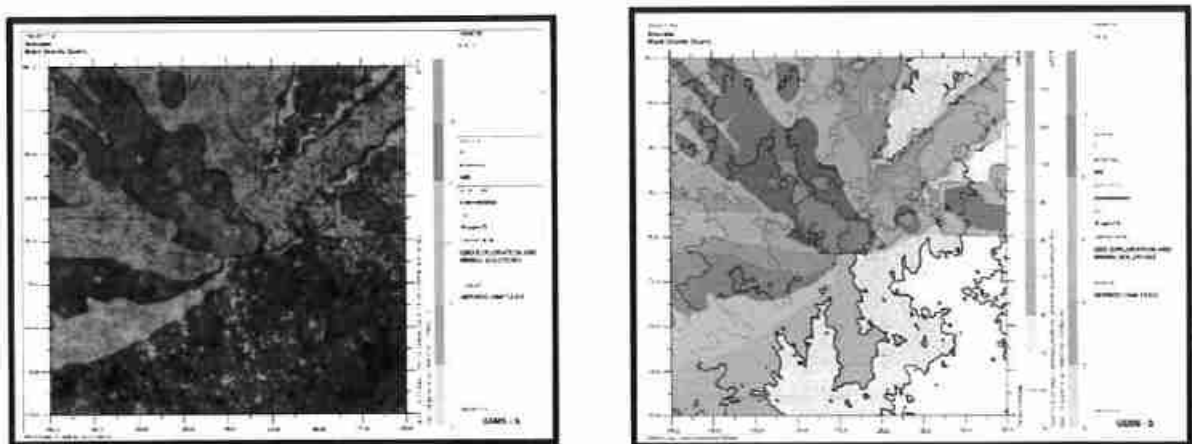


Figure 4.3: Predicted Incremental Concentration of PM<sub>10</sub>



*K. Paramasivam*

Figure No 4.4: Predicted Incremental Concentration Of  $PM_{2.5}$

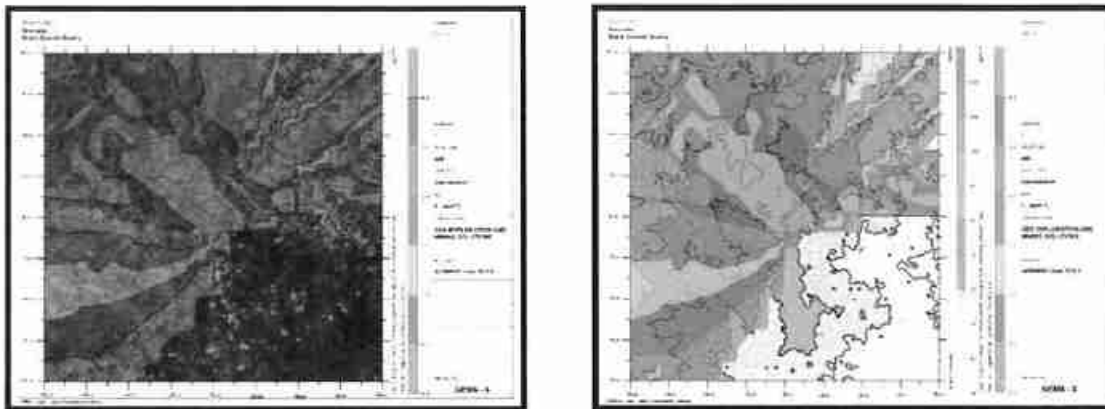


Figure No 4.5: Predicted Incremental Concentration Of  $SO_2$

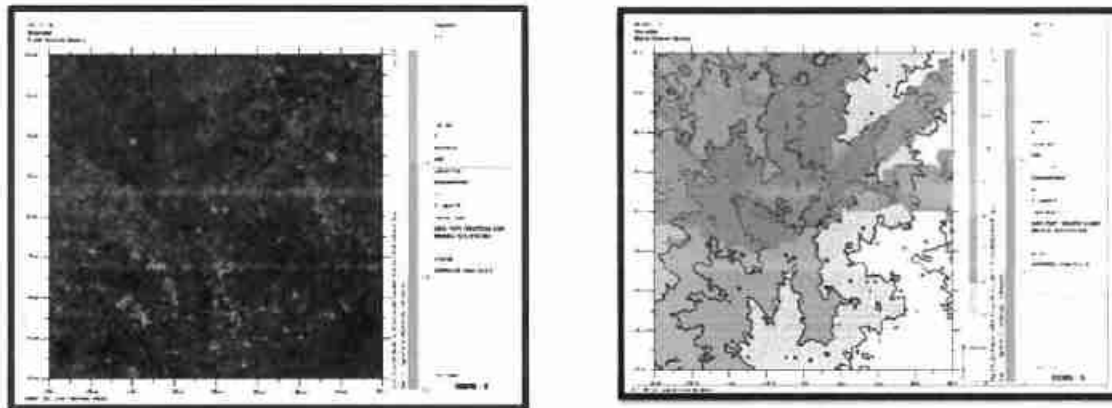
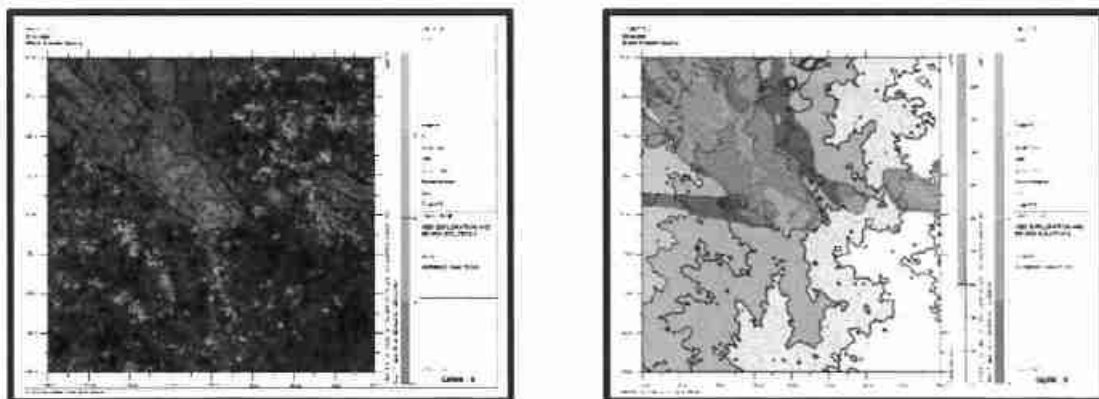


Figure No 4.6: Predicted Incremental Concentration of  $NO_x$



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#### 4.4.2.3 Model Results

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

Table 4.3: Incremental & Resultant GLC OF PM<sub>10</sub>

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM <sub>10</sub> (µg/m <sup>3</sup> )	Incremental value of PM <sub>10</sub> due to mining (µg/m <sup>3</sup> )	Total PM <sub>10</sub> (µg/m <sup>3</sup> ) (5+6)
AAQ1	12°2'3.14"N 79°25'58.92"E	-36	2	43.9	10.89	54.79
AAQ2	12°2'4.48"N 79°26'15.82"E	476	37	43.0	10.43	53.43
AAQ3	12°1'29.75"N 79°25'35.05"E	-765	-1038	43.8	5.00	48.8
AAQ4	12°2'17.89"N 79°29'19.39"E	6058	452	44.4	8.21	52.61
AAQ5	12°0'55.78"N 79°22'49.74"E	-5793	-2091	41.0	3.19	44.19
AAQ6	12°3'53.13"N 79°23'51.67"E	-3911	3391	41.1	9.54	50.64
AAQ7	11°59'34.77"N 79°26'0.60"E	13	-4588	43.4	0	43.4

Table 4.4: Incremental & Resultant GLC OF PM<sub>2.5</sub>

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM <sub>10</sub> (µg/m <sup>3</sup> )	Incremental value of PM <sub>10</sub> due to mining (µg/m <sup>3</sup> )	Total PM <sub>10</sub> (µg/m <sup>3</sup> ) (5+6)
AAQ1	12°2'3.14"N 79°25'58.92"E	-36	2	21.4	4.78	26.18
AAQ2	12° 2'4.48"N 79°26'15.82"E	476	37	20.2	4.18	24.38
AAQ3	12°1'29.75"N 79°25'35.05"E	-765	-1038	19.7	2.53	22.23
AAQ4	12°2'17.89"N 79°29'19.39"E	6058	452	21.4	3.16	24.56
AAQ5	12°0'55.78"N 79°22'49.74"E	-5793	-2091	20.4	1.75	22.15
AAQ6	12°3'53.13"N 79°23'51.67"E	-3911	3391	19.6	3.90	23.5
AAQ7	11°59'34.77"N 79°26'0.60"E	13	-4588	20.0	0	20

Table 4.5: Incremental & Resultant GLC OF SO<sub>2</sub>

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM <sub>10</sub> (µg/m <sup>3</sup> )	Incremental value of PM <sub>10</sub> due to mining (µg/m <sup>3</sup> )	Total PM <sub>10</sub> (µg/m <sup>3</sup> ) (5+6)
AAQ1	12°2'3.14"N 79°25'58.92"E	-36	2	6.6	1.44	8.04
AAQ2	12°2'4.48"N 79°26'15.82"E	476	37	6.7	1.29	7.99
AAQ3	12°1'29.75"N 79°25'35.05"E	-765	-1038	6.6	0.68	7.28
AAQ4	12°2'17.89"N 79°29'19.39"E	6058	452	6.9	1.00	7.9
AAQ5	12° 0'55.78"N 79°22'49.74"E	-5793	-2091	6.4	0	6.4
AAQ6	12° 3'53.13"N 79°23'51.67"E	-3911	3391	6.5	1.18	7.68
AAQ7	11°59'34.77"N 79°26'0.60"E	13	-4588	6.8	0	6.8

*K. Paramasivam*

Table 4.6: Incremental & Resultant GLC OF NO<sub>x</sub>

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM <sub>10</sub> (µg/m <sup>3</sup> )	Incremental value of PM <sub>10</sub> due to mining (µg/m <sup>3</sup> )	Total PM <sub>10</sub> (µg/m <sup>3</sup> ) (5+6)
AAQ1	12° 2'3.14"N 79°25'58.92"E	-36	2	24.1	7.81	31.91
AAQ2	12° 2'4.48"N 79°26'15.82"E	476	37	22.9	7.33	30.23
AAQ3	12° 1'29.75"N 79°25'35.05"E	-765	-1038	23.1	0	23.1
AAQ4	12° 2'17.89"N 79°29'19.39"E	6058	452	23.5	2.69	26.19
AAQ5	12° 0'55.78"N 79°22'49.74"E	-5793	-2091	23.2	0	23.2
AAQ6	12° 3'53.13"N 79°23'51.67"E	-3911	3391	22.7	3.85	26.55
AAQ7	11°59'34.77"N 79°26'0.60"E	13	-4588	24.5	0	24.5

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/m<sup>3</sup> for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> & NO<sub>x</sub> respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

#### 4.4.3. 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

**4.5 Noise Environment**

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

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

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

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

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

Where:

$Lp_1$  &  $Lp_2$  are sound levels at points located at distances  $r_1$  &  $r_2$  from the source.

$Ae_{1,2}$  is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$Lp_{total} = 10 \log \{10^{(Lp_1/10)} + 10^{(Lp_2/10)} + 10^{(Lp_3/10)} + \dots\}$$

**4.5.1 Anticipated Impact**

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

- Source data
- Receptor data
- Attenuation factor

Source data has been computed 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 4.7: Predicted Noise Incremental Values**

Location ID	N1	N2	N3	N4	N5	N6	N7
Maximum Monitored Value (Day) dB(A)	44.8	44.2	45.9	45.0	43.6	40.9	47.0
Incremental Value dB(A)	56.6	48.9	38.1	24.6	24.5	25.9	27.0
Total Predicted Noise level dB(A)	56.9	50.1	46.6	45.0	43.7	41.0	47.0
NAAQ Standards	Industrial Day Time- 75 dB (A) & Night Time- 70 dB (A) Residential Day Time- 55 dB (A) & Night Time- 45 dB (A)						

*K. Paramasivam*

The incremental noise level is found within the range of 56.6 dB (A) in Core Zone and 24.5- 56.6dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to 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.).

#### 4.5.2 Mitigation measures

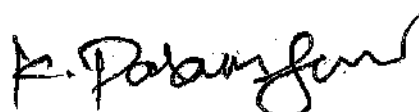
The following noise mitigation measures are proposed for control of Noise

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker 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 through training and awareness.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects

#### 4.5.3 Ground Vibrations

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 550m South 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)

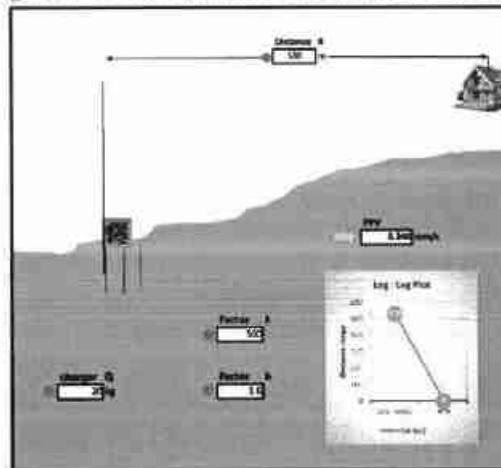
B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

TABLE 4.8: PREDICTED PPV VALUES DUE TO BLASTING

Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
20	530	0.240

Figure No 4.7: Ground Vibration Prediction



From the above graph, the charge per blast of 20kg 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

- 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, 2<sup>nd</sup> Class Mines Manager/ 1st Class Mines Manager) will be appointed.

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#### 4.6 Biological Environment

##### 4.6.1 Impact on the Biological Environment

###### Anticipated Impact on agricultural land associated with flora

1. Dust particle settle on neighbouring agricultural land it is located about 100m on the Southeast and west side. During operation and minerals are transported in approach roads.
2. 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.

##### 4.6.2 Mitigation Measures

###### 4.6.2.1 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.

###### 4.6.2.2 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.

###### 4.6.2.3 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.

###### 4.6.2.4 Selection of Plant Species for Green Belt Development

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. Green belt is plantation of trees for reducing the air pollution as they absorb both gaseous and particulate pollutant, thus removing them from atmosphere. Green plants form a surface capable of absorbing air pollutants and forming sinks for pollutants. It improves the aesthetic value of local environment. Under present project, green belts have been planned with emphasis on creating biodiversity; enhance natural surroundings and mitigating pollution. Regional tree saplings in eco-friendly bags like *Pterocarpus marsupium*, *Pongamia pinnata*, *Limonia acidissima*, and *Cassia roxburghii* will be planted along the Lease boundary and avenues as well as over non-active dumps with intervals 3m in between with the GPS Coordinates. The greenbelt development plan aims to overall improvement in the environmental conditions of the region Native plant species will be preferred.

- The species should be wind-firm and deep-rooted.
- The species should form a dense canopy.
- Fast-growing plants will be planted

- Species tolerance to air pollution like SO<sub>2</sub> and NO<sub>2</sub> should be preferred.
- Plants having large leaf area index will be considered
- Soil improving plants (Nitrogen fixing rapidly decomposable leaf litter).
- Attractive appearance with good flowering and fruit-bearing.
- Birds and insects attract tree species.
- Roadsides will be planted with local vegetation.

Table No 4.9. List of plant species proposed for Greenbelt development

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

(\*Source: Term of Reference-ToR)

Table No 4.10. Species suitable for abatement of noise and dust pollution

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

#### 4.6.3. Anticipated Impact on Fauna

- Noise generation due to vehicle may affect avifauna.
- The lease area is not inhabited by any wild life, as there is no forest cover, hence there will not be any effect on migration or extinction of wildlife.
- There is no National Park, Biosphere Reserve, Wildlife corridors, and Tiger/Elephant Reserve found within 10 km radius of the project site.

##### 4.6.3.1 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.

#### 4.6.4. Impact on Aquatic Biodiversity

- The major lake along the project sites doesn't have a rich biodiversity and almost all the species of both fauna and flora listed are either least concerned or not evaluated.
- There is no impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.

Table No. 4.11. Overall Ecological impact assessments of Siruvalai Village, Vikravandi Taluk, Viluppuram District, Tamil Nadu.

S. No	Attributes	Assessment
	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	The Odayanatham Reserve forest location about 9.73km on the Northwest side and Oussudu lake bird Sanctuary is located about 34.5km on the Southeast side.
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)

K. Paramasivam

TABLE 4.12: RECOMMENDED SPECIES FOR GREENBELT DEVELOPMENT PLAN

Sl.No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1	<i>Azadirachta indica</i>	Meliaceae	Neem, Vembu	Tree
2	<i>Albiziafalcataria</i>	Fabaceae	Tamarind, Puliyamaram	Tree
3	<i>Polyalthialongifolia</i>	Annonaceae	Kattumaram	Tree
4	<i>Borassus Flabellifer</i>	Arecaceae	Palmyra Palm	Tree

The 7.5m 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, Casuarina and Pongamia pinnata, etc. will be planted along the Lease boundary and avenue plantation will be carried out in the project site. Greenbelt development Plan is given in

TABLE 4.13: GREENBELT DEVELOPMENT PLAN

Plantation Details	No. of trees provided	1 <sup>st</sup> Year
No of plants	500	500
Yearly	100%	100%

#### 4.7 Socio Economic

##### 4.7.1 Anticipated Impact

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

##### 4.7.2 Mitigation Measures

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

#### 4.8 Occupational Health and Safety

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

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

*K. Paramasivam*

#### 4.8.1 Respiratory Hazards

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

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

#### 4.8.2 Noise

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

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

#### 4.8.3 Physical Hazards

The following measures are proposed for control of physical hazards

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

#### 4.8.4 Occupational Health Survey

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

- General physical tests
- Audiometric tests, Full chest, X-ray, Lung function tests, 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.

#### 4.9 Mine Closure

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

Objective of Mine closure

- To create a productive and sustainable after-use for the site, acceptable to mine owners, regulatory agencies, and the public
- To protect public health and safety of the surrounding habitation
- To minimize environmental damage





- To conserve valuable attributes and aesthetics
- To overcome adverse socio-economic impacts.

#### 4.9.1 Mine Closure criteria

The criteria involved in mine closure are discussed below:

##### 4.9.1.1 Physical Stability

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

##### 4.9.1.2 Chemical Stability

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

##### 4.9.1.3 Biological Stability

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

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

- Where the nutrient level of spread topsoil is lower than material in-situ e.g., for development of social forestry
- Where it is intended to grow plants with a higher nutrient requirement than those occurring naturally e.g. planning for agriculture
- Where it is desirable to get a quick growth response from the native flora during those times when moisture is not a limiting factor e.g., development of green barriers.

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*K. Paramasivam*



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## 5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

### 5.0 DESCRIPTION OF EACH ALTERNATIVE

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.

### 5.1 SUMMARY OF ADVERSE IMPACTS OF EACH ALTERNATIVE

The proposed mining lease areas have following advantages: -

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

### 5.2 ANALYSIS OF ALTERNATIVE SITE

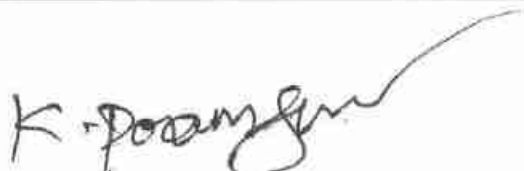
No alternatives are suggested as all the mine sites are mineral specific

### 5.3 MITIGATION MEASURES PROPOSED FOR EACH ALTERNATIVE

- The material will be loaded with the help of excavators into dumpers / trippers and transported to the needy customers.
- Semi-skilled labours fit for quarrying operations are easily available around the nearby villages.

### 5.4 SELECTION OF ALTERNATIVE

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



## 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).

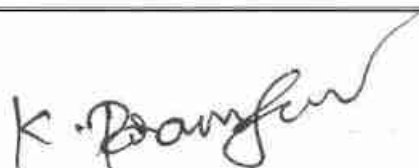
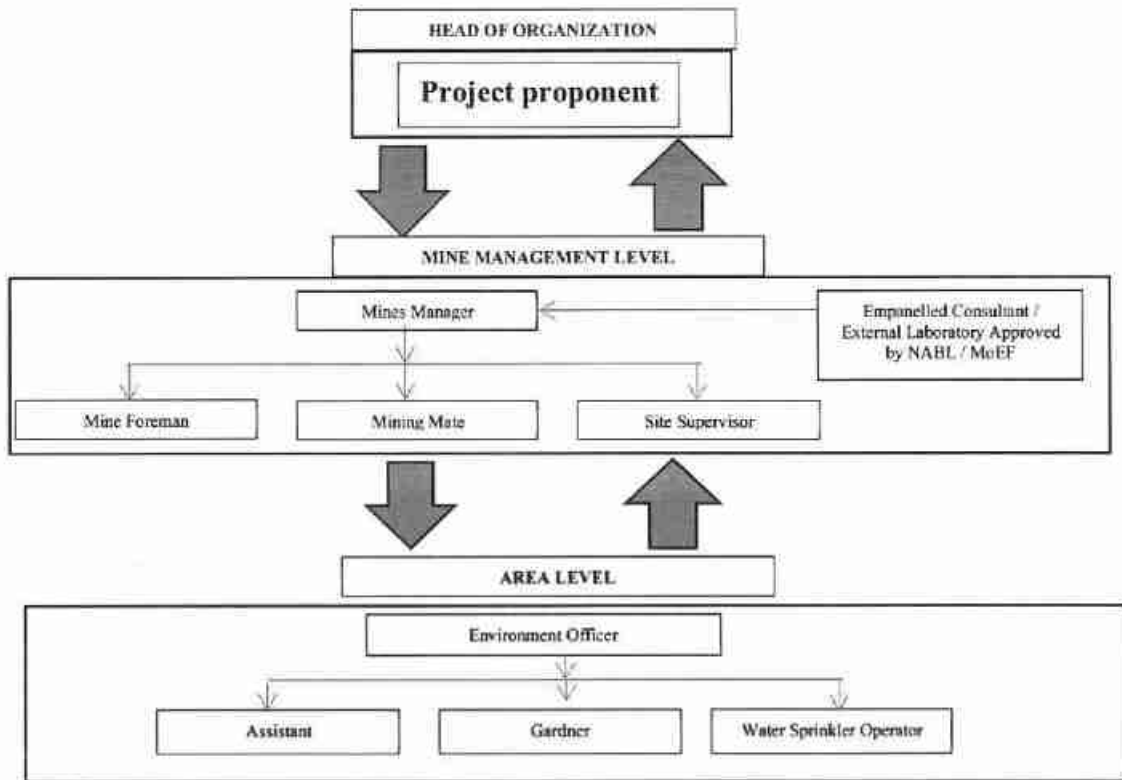


FIGURE 6.1: PROPOSED ENVIRONMENTAL MONITORING CELL



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

*K. Paramasivam*

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 are 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 (1 SW & 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 Thiru. K. Paramasivam Black 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	No of Location	Recurring Cost per annum
1	Air Quality	4	Rs 2,60,000/-
2	Noise Level	4	Rs 10,000/-
3	Ground Vibration	2	Rs 20,000/-
4	Water sampling	1	Rs 90,000/-
	<b>Total</b>		<b>Rs 3,80,000</b>

#### 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

*K. Paramasivam*

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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.

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*K. Paramasivam*

## 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 31<sup>st</sup> December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities.

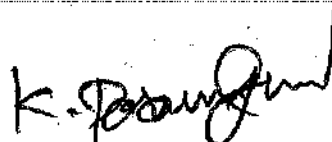
The whole quarry operation will be carried out under the direction of a qualified Competent Mine manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening. Factors of risks involved due to human induced activities in connection with mining & allied activities with detailed analysis of causes and control measures for the mine is given in below Table 7.1.

Table 7.1 Risk Assessment

S. No	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy mining machineries	Improper handling and unsafe working practice	<ul style="list-style-type: none"> <li>▪ All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations;</li> <li>▪ Entry of unauthorized persons will be prohibited;</li> <li>▪ Firefighting and first-aid provisions in the mine office complex and mining area;</li> <li>▪ Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use</li> <li>▪ Working of quarry, as per approved plans and regularly updating the mine plans;</li> <li>▪ Cleaning of mine faces shall be daily done in order to avoid any overhang or undercut;</li> <li>▪ Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager;</li> <li>▪ Maintenance and testing of all mining equipment as per manufacturer guidelines.</li> </ul>

*K. Paramasivam*

2	OB / Waste Dump	Sliding of benches Height and slope of the benches Drainage facilities	<ul style="list-style-type: none"> <li>▪ Dumps benches are maintained with proper 3 m height and 37° slope to prevent slope failure and terraced.</li> <li>▪ Dumping in the waste dump in layers and dozing daily.</li> <li>▪ Vegetation of the top and slopes of the dump to prevent erosion and providing water drainage channels</li> <li>▪ Providing proper drainage facilities in mine and dump area.</li> <li>▪ Construction of retaining wall around dump area to stop sliding of material.</li> <li>▪ Garland drain to be made around OB dump area</li> </ul>
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"> <li>▪ Safe operating procedure established for drilling (SOP) will be strictly followed.</li> <li>▪ Only trained operators will be deployed.</li> <li>▪ No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places,</li> <li>▪ Drill &amp; Wire saw operator shall examine the drilling and wire saw equipment and satisfy himself</li> <li>▪ Drilling &amp; cutting operations shall not be carried on simultaneously on the benches at places directly one above the other.</li> <li>▪ Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment and wire saw equipment as per operator manual.</li> <li>▪ All drills and wire saw unit shall be provided with wet drilling and cutting arrangement and it shall be maintained in efficient working in condition.</li> <li>▪ Operator shall regularly use all the personal protective equipment.</li> </ul>
4	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"> <li>▪ 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.</li> <li>▪ SOP for Charging, Stemming &amp; Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation</li> <li>▪ Shots are fired during daytime only.</li> <li>▪ All holes charged on any one day shall be fired on the same day.</li> <li>▪ The danger zone is and will be distinctly demarcated (by means of red flags)</li> </ul>
5	Transportation	Potential hazards and unsafe workings contributing to accident and injuries Overloading of material While reversal & overtaking of vehicle	<ul style="list-style-type: none"> <li>▪ Before commencing work, drivers personally check the dumper/truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition.</li> </ul>





		Operator of truck leaving his cabin when it is loaded.	<ul style="list-style-type: none"> <li>▪ Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle.</li> <li>▪ Concave mirrors should be kept at all corners</li> <li>▪ All vehicles should be fitted with reverse horn with one spotter at every tipping point</li> <li>▪ Loading according to the vehicle capacity</li> <li>▪ Periodical maintenance of vehicles as per operator manual</li> </ul>
6	Natural calamities	Unexpected happenings	<ul style="list-style-type: none"> <li>▪ Escape Routes will be provided to prevent inundation of storm water</li> <li>▪ Garland drains will be provided at the toe of dump</li> <li>▪ Fire Extinguishers &amp; Sand Buckets</li> </ul>
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

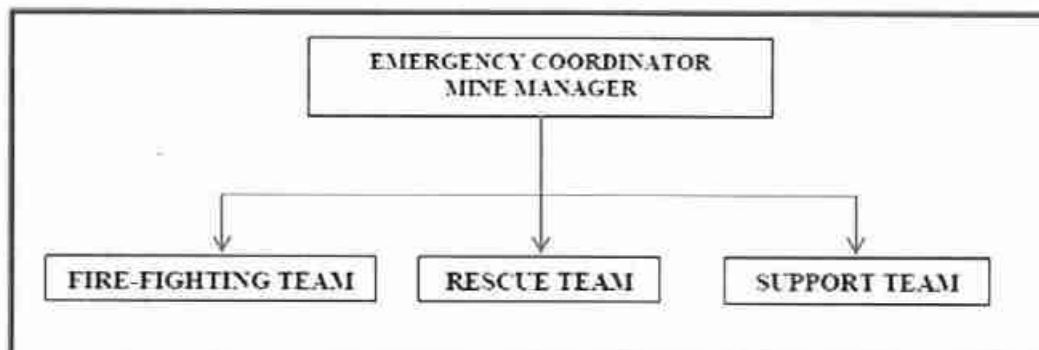
The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

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 –



*K. Paramasivam*

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 7.2.

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

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

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

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

#### Alarm system to be followed during disaster

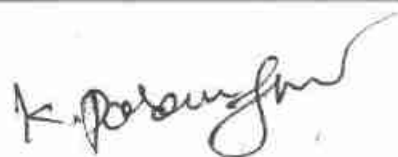
On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system.

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

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

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

- All safety precautions and provisions of Metalliferous Mines Regulations (MMR), 1961 is strictly followed during all mining operations.
- Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- Entry of unauthorized persons into mine & allied areas is completely prohibited.
- Firefighting and first-aid provisions in the mines office complex and mining area are provided.
- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring.
- Training and refresher courses for all the employees working in hazardous premises.
- Working of mine, as per approved plans and regularly updating the mine plans.
- Cleaning of mine faces is regularly done.
- 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 Proposed applied and nearby proposed quarries within a radius of 500 meters from the proposed project area. The list of quarries is as below –

Table 7.4: List of Quarries within 500 Meter Radius from this Proposal

PROPOSED QUARRY				
CODE	Name of the Owner	S.F. Nos	Extent	Status
P-1	Thiru. K. Paramasivam, S/o. Krishnasamy Gounder, No. 135, Mullai nagar, Old Bus Stand Road , Perundurai, Erode District – 638 052.	407/3 (Part)	1.00.0	File No. 11004, Identification No. TO24B0108TN51404 96N Dated: 10.08.2024
P-2	Tvl. TAMIN Ltd., 37, Kamarajar Salai, Chepauk, Chennai-5	170/1 (P)	20.28.0	-
EXISTING QUARRY				
E1	Thiru. K. Paramasivam, S.F. No. 407/3, Siruvalai Vilage, Villupuram District.	407/3 (P)	1.00.0	09.01.2006 to 08.01.2026
<b>Total</b>			<b>22.28.0 Ha</b>	
<b>TOTAL CLUSTER EXTENT</b>			<b>22.28.0 Ha Cluster Quarry</b>	

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 Projects "P1"

Name of the Quarry	Thiru. K. Paramasivam Black Granite quarry
SF.no	407/3 (Part)
Extent	1.00.0 Ha
Village & Taluk	Siruvalai Village, Vikkiravandi Taluk
Lease period	20 years
1 <sup>st</sup> Scheme of Mining Plan Period	5 Years
Life of the Mine	5 years
Existing Depth	20m
Previous History and CCR	Previous Mining plan period – 2019 -20 to 2023-24 EC.No: Lr. No. DEIAA-VPM-TN/F.No. 18015/Ec. No.02/2018 Dated 4.12.2018 CCR Letter No: E.P/12.1/2024-25/SEIAA/12/TN/1055 Dated: 15.07.2024
Land use classification	It is a Patta land, Classified as Punjai and the entire land is covered by Granite boulders and sheet rock.
Previous lease particulars	It is a Patta land, jointly registered in the name of Thiru. K. Paramasivam and Tmt. R. Shanthi, vide patta No. 933 both the pattadhar and lessee signed in the lease agreement while execution of lease deed.
Proposed Depth for five years plan period	30m(2m Topsoil + 3m Weathered rock + 25m Black Granite)
Ultimate depth of Mining	35m (2m Topsoil +3m Weathered rock + 30m Black Granite)
Existing Pit Dimension	172m (L) X 34m (W) X 20m (D)
Ultimate Pit Dimension	175m (L) X 43m (W) X 35m (D)
Toposheet No	57 – P/08
Latitude between	12°02'01.31"N to 12°02'05.11"N
Longitude between	79°25'56.77"E to 79°26'03.51"E

*K. Paramasivam*

Topography	The area is situated in flat terrain. The gradient is gentle towards South Eastern side and altitude of the area is 80m above from MSL. The Black granite is covered with 2m thickness of Reddish soil.	
Ground water level	Ground water occurrence in the area is about 53m below from the ground level.	
Machinery proposed	Jackhammer	6
	Compressor	2
	Excavator	2
	Tipper	2
	Diesel Generator	2
	Diamond wire saw	1
	Crawl Crane	1
Proposed manpower deployment	35	
Project cost	Rs.2,94,79,000/-	
EMP Cost	Rs. 3,80,000/-	
Total Project Cost	Rs. 2,98,59,000/-	
CER cost	Rs. 5,00,000/-	
Nearby Water Bodies	Odai	140m - East
	Kuttai	410m - SW
	Tank	510m - NE
	Periya Eri	900m - West
	Tank	1km - East
	Tank	2.2km - SE
	Anniyur Lake	4.8km - NW
	Pambai Aaru	6.5km - SW
	Pappanapattu Eri	7.3km - SE
Nearest Habitation	530m - East	
Nearest Reserve Forest	Odayanatham R.F – 9.7 Km – NW	
Nearest Wild Life Sanctuary	Oussudu Lake Birds Sanctuary – 34.5Km – SE	

Table 7.6: Salient Features of Existing Quarry "E1"

Name of the Quarry	Thiru. K. Paramasivam Black Granite quarry
SF.no	407/3 (Part)
Extent	1.00.0 Ha
Village & Taluk	Siruvalai Village, Vikkiravandi Taluk
Lease period	20 years
1 <sup>st</sup> Scheme of Mining Plan Period	5 Years
Life of the Mine	5 years
Existing Depth	22m (Max)
Previous History and CCR	Previous Mining plan period – 2016 -17 to 2021-22 EC.No: Lr. No. SEIAA-TN/F.No. 5036/1(a)Ec.No: 3221/2016 Dated 11.07.2016
Land use classification	It is a Patta land, Classified as Punjai and the entire land is covered by Granite boulders and sheet rock.
Previous lease particulars	It is a Patta land, jointly registered in the name of Thiru. K. Paramasivam and Tmt. R. Shanthi, vide patta No. 933 both the pattadhar and lessee signed in the lease agreement while execution of lease deed.
Proposed Depth for five years plan period	27m
Ultimate depth of Mining	27m
Ultimate Pit Dimension	156m (L) X 47m (W) X 27m (D)
Toposheet No	57 – P/08
Latitude between	12°02'03.17"N to 12°02'06.85"N
Longitude between	79°25'57.73"E to 79°26'03.97"E
Topography	The area is situated in flat terrain. The gradient is gentle towards South Eastern side and altitude of the area is 81m above from MSL. The Black granite is covered with 2m thickness of Reddish soil.





Ground water level		Ground water occurrence in the area is about 53m below from the ground level.
Machinery proposed	Jackhammer	6
	Compressor	2
	Excavator	1
	Tipper	2
	Diesel Generator	1
	Diamond wire saw	1
	Crawl Crane	1
Proposed manpower deployment		35
Project cost		Rs.2,06,29,000/-
EMP Cost		Rs. 3,80,000/-
Total Project Cost		Rs. 2,14,29,000/-
CER cost		Rs. 5,00,000/-
Nearest Habitation		530m - East

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 7.8

Table 7.7: Cumulative Production Load of Granite

Quarry	Mineable Reserves ROM in m <sup>3</sup>	Mineable Reserves of Granite	Proposed production ROM for five-year period	Production of ROM Per Day	Proposed production Granite for five-year period	Production of Granite Per day in m <sup>3</sup>	Weathered rock in Production m <sup>3</sup>	Weathered rock per day in m <sup>3</sup>	Topsoil in Production m <sup>3</sup>	Topsoil per day in m <sup>3</sup>	Number of Lorry loads per day (ROM)
P1	79,280	15,856	34,955	23	6,991	5	3,123	10	208	1	2
<b>Total</b>	<b>79,280</b>	<b>15,856</b>	<b>34,955</b>	<b>23</b>	<b>6,991</b>	<b>5</b>	<b>3,123</b>	<b>10</b>	<b>208</b>	<b>1</b>	<b>2</b>
E1	39,760	9,940	18,000	12	4,500	3	-	-	-	-	1
<b>Total</b>	<b>39,760</b>	<b>9,940</b>	<b>18,000</b>	<b>12</b>	<b>4,500</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1</b>
<b>Grand Total</b>	<b>1,19,040</b>	<b>25,796</b>	<b>52955</b>	<b>35</b>	<b>11,491</b>	<b>8</b>	<b>3,123</b>	<b>10</b>	<b>208</b>	<b>1</b>	<b>3</b>

Source: Approved mining Plan, Scheme of Approved Mining plan of Respective mines and PFR Report, form I.

On a cumulative basis considering the quarries it can be seen that the overall production of Granite ROM per day is 35m<sup>3</sup> and overall production of Granite is 8m<sup>3</sup> per day & No of Lorry loads per day is 3.

Based on the above production quantities the emissions due to various activities in the quarries 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 7.9.

Table 7.9: Emission Estimation from Quarries within 500 Meter Radius

Emission Estimation for quarry- P1				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM <sub>10</sub>	Drilling	Point Source	0.036524627	g/s
	Blasting	Point Source	0.000015723	g/s
	Mineral Loading	Point Source	0.031382937	g/s
	Haul Road	Line Source	0.002482644	g/s/m
	Overall Mine	Area Source	0.038111681	g/s
Estimated Emission rate for SO <sub>2</sub>	Overall Mine	Area Source	3.22707E-05	g/s
Estimated Emission rate for NO <sub>x</sub>	Overall Mine	Area Source	0.000000769	g/s
Emission Estimation for quarry E1				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM <sub>10</sub>	Drilling	Point Source	0.000000000	g/s

*K. Paramasivam*

	Blasting	Point Source	0.000000000	g/s
	Mineral Loading	Point Source	0.000000000	g/s
	Haul Road	Line Source	0.002482159	g/s/m
	Overall Mine	Area Source	0.038037437	g/s
Estimated Emission rate for SO <sub>2</sub>	Overall Mine	Area Source	0	g/s
Estimated Emission rate for NO <sub>x</sub>	Overall Mine	Area Source	0.000000000	g/s

Source: Emission Calculations.

Table 7.10: Incremental & Resultant GLC within Cluster

PM <sub>10</sub> in µg/m <sup>3</sup>	
Location	CORE
Background	43.9
Highest Incremental	10.89
Resultant	54.79
NAAQ standard	100 µg/m <sup>3</sup>
PM <sub>2.5</sub> in µg/m <sup>3</sup>	
Location	CORE
Background	21.4
Highest Incremental	4.78
Resultant	26.18
NAAQ standard	60 µg/m <sup>3</sup>
SO <sub>2</sub> in µg/m <sup>3</sup>	
Location	CORE
Background	6.6
Highest Incremental	1.144
Resultant	8.04
NAAQ standard	80 µg/m <sup>3</sup>
NO <sub>x</sub> in µg/m <sup>3</sup>	
Location	CORE
Background	24.1
Incremental	7.81
Resultant	31.91
NAAQ standard	80 µg/m <sup>3</sup>

#### 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:

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

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

$$Lp_{total} = 10 \log \{10^{(Lp_1/10)} + 10^{(Lp_2/10)} + 10^{(Lp_3/10)} + \dots\}$$

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.

K. Paramasivam



**Table 7.11: Predicted Noise Incremental Values from Cluster**

Location ID	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	44.8	56.6	56.9	55
Habitation Near E1	42.6	49.2	49.7	

The incremental noise level is found within the range of 42.6-44.8 dB (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. 123E, dated 14.2.2000 and subsequently amended vide S.O. 1046E, dated 22.11.2000, S.O. 1088E, dated 11.10.2002, S.O. 1569E, dated 19.09.2006 and S.O. 50E dated 11.01.2010 under the Environment (Protection) Act, 1986.).

#### **Socio Economic Environment –**

The 2 mines shall create employment to **69** people and revenue will be created to government

**Table 7.12: Socio Economic Benefits from Quarries**

Location code	Employment	Project Cost	CER
P1	35	Rs. 2,94,79,000	5,00,000
E1	34	Rs. 2,06,29,000	5,00,000
<b>Total</b>	<b>69</b>	<b>Rs. 5,01,08,000/-</b>	<b>10,00,000/-</b>

A total of 69 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 ≤ 100 crores, they shall contribute 2% of Capital Investment towards CER as per directions of EAC/SEAC and the total CER amount from these quarries is Rs 10,00,000/-

**TABLE 7.13: EMPLOYMENT BENEFITS FROM 2 MINES**

Description	Employment
P1	35
<b>Total</b>	<b>35</b>
E1	34
<b>Total</b>	<b>35</b>
<b>Grand Total</b>	<b>69</b>

A total of 35 people will get employment due to 1 proposed mines in cluster and 34 people are already employed at existing mines.

**TABLE 7.14: GREENBELT DEVELOPMENT BENEFITS FROM 2 MINES**

CODE	No of Trees proposed to be planted	Area Covered Sq.m	Name of the Species
P1	500	The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development	Neem, Pinnata, Pongamia, Ashoka etc.,
<b>Total</b>	<b>500</b>		
E1	500		
<b>Total</b>	<b>500</b>		
<b>G.Total</b>	<b>1,000</b>		

Based on the Proposed Mining Plans it's anticipated that there shall growth of native species of Neem, Pinnata et., in the Cluster of 1,000 Trees Planted over a period of 5 Years.



## 7.5 PLASTIC WASTE MANAGEMENT PLAN

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

### Objective –

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

TABLE 7.15: ACTION PLAN TO MANAGE PLASTIC WASTE

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

Source: Proposed by FAE's and EC

*K. Paramasivam*

## CHAPTER – 8: PROJECT BENEFITS

### 8.0 General

There is proposed project for Thiru. K. Paramasivam Black Granite Quarry village aims to Proposed production 34,955 (ROM for five year period) for Life of Mine of 11 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 35persons 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 and Existing mine is located in Siruvalai Village, Vikkiravandi Taluk and Viluppuram 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.,



**Corporate Social Responsibility**

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

Under this programme, the project 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

**CSR Cost Estimation**

CSR activities will be taken up in the Siruvalai 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.

**Corporate Environment Responsibility–**

Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.

As per para 6 (II) of the office memorandum, being a green field project & Capital Investment is ≤ 100 crores, Thiru. K. Paramasivam shall contribute 2% of Capital Investment towards CER as per directions of EAC/SEAC.

TABLE 8.1 CER – ACTION PLAN

Activity	CER
<ul style="list-style-type: none"> <li>• Renovation/ Construction of Existing Toilet</li> <li>• Providing Environmental Related books to the school Library</li> <li>• Carrying out plantation and maintenance in the school Ground</li> <li>• Any other requirements in consultation with the school Head master</li> </ul>	Rs 5,00,000/-



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## CHAPTER – 9: ENVIRONMENTAL COST BENEFIT ANALYSIS

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

*K. Paramasivam*

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## CHAPTER - 10: ENVIRONMENTAL MANAGEMENT PLAN-

### Thiru. K. Paramasivam

#### 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 Thiru. K. Paramasivam will –**

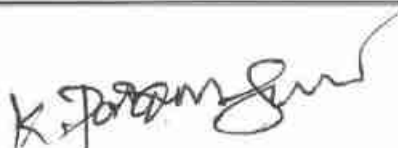
- Allocate necessary resources to ensure the implementation of the environmental policy
- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities
- Implement a program to train employees in general environmental issues and individual workplace environmental 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

#### **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 existing 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
Refueling 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

### Top Soil Management –

It is anticipated to remove 208m<sup>3</sup> of topsoil and preserve it to facilitate greenbelt development on the backfilled area during mine closure.

### Overburden / Waste and Side Burden Management –

- It is anticipating to remove 27,964m<sup>3</sup> of waste (Granite waste@ 80%) which will temporarily store at predetermined places as per mining plan and will be backfilled during mine closure.

**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 and oorani	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 access 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 Pollution Control

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting, 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

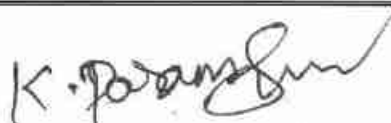
Source: Proposed by FAE's & EIA Coordinator

## 10.7 Ground Vibration and Fly Rock Control

Table 10.6: Proposed Controls for Ground vibration &amp; 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. Green Belt Development Plan

About 500 nos. of saplings is proposed to be planted for the Mining plan period in safety barrier of applied mine lease area . The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

TABLE 10.7: PROPOSED GREENBELT ACTIVITIES

Year	No. of trees proposed to be planted	Area to be covered	Name of the species
I	500	The plantation is along the safety distance, village road etc..	Neem, Pongamia, Vilvam, Ashoka etc.,

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,

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- 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.

### 10.8.2 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 10.8: Recommended Species to Plant in the Greenbelt

Sl.No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1	<i>Azadirachta indica</i>	Meliaceae	Neem, Vembu	Tree
2	<i>Albiziafalcataria</i>	Fabaceae	Tamarind, Puliyamaram	Tree
3	<i>Polyalthialongifolia</i>	Annonaceae	Kattumaram	Tree
4	<i>Borassus Flabellifer</i>	Arecaceae	Palmyra Palm	Tree

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.

TABLE 10.9. MEDICAL EXAMINATION SCHEDULE

Sl.No	Activities	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
1	Initial Medical Examination (Mine Workers)					
A	Physical Check-up					
B	Psychological Test					
C	Audiometric Test					
D	Respiratory Test					

K. Paramasivam

2	Periodical Medical Examination (Mine Workers)					
A	Physical Check – up					
B	Audiometric Test					
C	Eye Check – up					
D	Respiratory Test					
3	Medical Camp (Mine Workers & Nearby Villagers)					
4	Training (Mine Workers)					

#### 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.

#### 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 5.2 and 5.3 give overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures (including reclamation).

K. Paramasivan



Table 10.10: EMP BUDGET FOR PROPOSED PROJECT

Activities	Mitigation Measure	Provision for Implementation	Capital	Recurring
<b>Air Environment</b>	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	10000	10000
	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	0
	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 - 6 Units	150000	15000
	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 - 2 Units	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	20000
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000
<b>Noise Environment</b>	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 / Competent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	40599
	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	5000	20000
	Bio toilets will be made available outside mine lease on the land of owner itself	Installation of dust bins	5000	2000
	1. Progressive Closure Activity - Surface Runoff management	Provision made in Operating Cost	0	0
	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	10000	5000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 500 Trees - (270 Inside Lease Area & 230 Outside Lease Area)	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum Site clearance, preparation of land, digging of pits trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)	200000	10000
			54000	8100



		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	69000	6900
4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year		<p>Few activities already covered as progressive closure activities as greenbelt development, wire fencing, gariand drain.</p> <p>•For Final Closure Activities 20% of the proposed closure cost will be spent during the final mine closure stage - Last Year</p>	73000	0
5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A		<p>The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budget and not necessarily implemented in the Project Site</p>	3642311	0
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) - 35 Employees	140000	35000
Health check up for workers will be provisioned		IME & PME Health check up @ Rs. 1000/- per employee	0	35000
First aid facility will be provided		Provision of 2 Kits per Hectare @ Rs. 2000/-	0	2000
Slope stability action plan		Slope stability action plan in the end of fourth year plan period	200000	0

K. Paramasivum

	Mine will have safety precaution signages, boards, 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	Provision for signages and boards made	10000	2000
	Installation of CCTV cameras in the mines and mine entrance	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	50000	10000
	Implementation as per Mining Plan and ensure safe quarry working	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Monitoring of Granite Quarrying Operation by Anna University	Mines Manager (1 <sup>st</sup> Class / 2 <sup>nd</sup> Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR, 1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
<b>Start Rating</b>		Star Rating @ Rs. 1,00,000/- per Year will be deposited in the First Year	500000	0
<b>CER</b>	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 MoEF & CC OM	500000	0
<b>TOTAL</b>			<b>2853000</b>	<b>1150099</b>

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In order to implement the environmental protection measures, an amount of Rs. 28.53 lakhs as capital cost and recurring cost as Rs. 11.50 lakhs as recurring cost is proposed considering present market price considering present market scenario.

<b>Year Wise Break Up</b>	
<b>1<sup>st</sup> Year</b>	<b>₹ 40,03,099/-</b>
<b>2<sup>nd</sup> Year</b>	<b>₹ 12,07,604/-</b>
<b>3<sup>rd</sup> Year</b>	<b>₹ 12,67,984/-</b>
<b>4<sup>th</sup> Year</b>	<b>₹ 13,31,383/-</b>
<b>5<sup>th</sup> Year</b>	<b>₹ 14,70,953/-</b>
<b>Total</b>	<b>₹93 Lakhs</b>

Cost inflation 5% per annum

Note: This Environmental Management plan cost will vary according to the public consultation comments

#### 10.10: CONCLUSION –

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

*K. Paramasivam*

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**CHAPTER – 11: SUMMARY AND CONCLUSIONS**

Thiru. K. Paramasivam Black Granite Quarry 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 for each individual leases. 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 months March 2024 to May 2024 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.

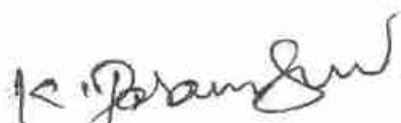
The project proponent ensures to obtain necessary clearances and quarrying will be carried out as per rules and regulations. The Mining Activity will be carried out in a phased manner as per the approved mining plan after obtaining EC, CTO from TNPCB, execution of lease deed and obtaining DGMS Permission 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 operation's 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 Grey Granite Quarry as per market demand.

Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 35 people directly in the cluster and indirectly around 100 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 Thiru. K. Paramasivam Black Granite Quarry.



## 12. DISCLOSURE OF CONSULTANTS

Thiru. K. Paramasivam Black Granite Quarry 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 for the proposed project.

Name and address of the consultancy:

### GEO EXPLORATION AND MINING SOLUTIONS

No 17, Advaita Ashram Road,

Alagapuram, Salem – 636 004

Tamil Nadu, India

Email: info@geoexploration@gmail.com

Web: [www.gemssalem.com](http://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	EB	Ecology and Bio-diversity
AEC	Associate EIA Coordinator	NV	Noise and Vibration
FAE	Functional Area Expert	SE	Socio economics
FAA	Functional Area Associates	HG	Hydrology, ground water and water conservation
TM	Team Member	SC	Soil conservation
GEO	Geology	EH	Risk assessment and hazard mitigation
WP	Water pollution monitoring, prevention and control	SHW	Solid and hazardous wastes
AP	Air pollution monitoring, prevention and control	MSW	Municipal Solid Wastes
LU	Land Use	ISW	Industrial Solid Wastes
AQ	Atmospheric air quality modeling and prediction	IHW	Hazardous Wastes

*K. Paramasivam*

### DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

This EIA/EMP for Thiru. K. Paramasivam Black Granite Quarry over an Extent of 1.00.0 ha in Siruvalai Village, Vikkiravandi Taluk, Viluppuram District of Tamil Nadu is prepared as per the Generic Structure of EIA Guidelines manual. 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:

*M. Ifthikhar Ahmed*

Period of Involvement: **Feb 2024 to till date**

**Associated Team Member with EIA Coordinator:**

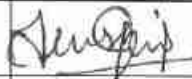

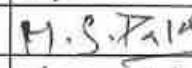
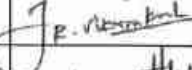

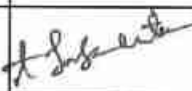

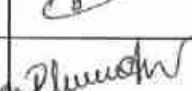
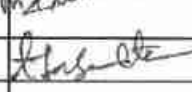
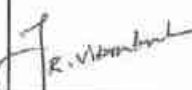
1. Mr. S. Nagamani
2. Mr.P. Viswanathan
3. Mr. M. Santhoshkumar
4. Mr. S. Ilavarasan

#### FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT


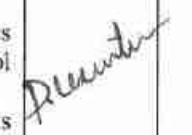
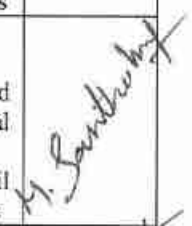
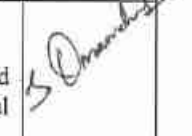
Sl. No	Functional Area	Involvement	Name of the Expert/s	Signature
1	AP	<ul style="list-style-type: none"> <li>▪ Identification of different sources of air pollution due to the proposed mine activity</li> <li>▪ Prediction of air pollution and propose mitigation measures / control measures</li> </ul>	Mr.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

*K. Paramasivam*



		<ul style="list-style-type: none"> <li>Impact of the project on flora and fauna.</li> <li>Suggesting species for greenbelt development.</li> </ul>	Mr. Alagappa Moses	
7	RH	<ul style="list-style-type: none"> <li>Identification of hazards and hazardous substances</li> <li>Risks and consequences analysis</li> <li>Vulnerability assessment</li> <li>Preparation of Emergency Preparedness Plan</li> <li>Management plan for safety.</li> </ul>	Mr. N. Senthilkumar	
			Mr. S. Pavel	
			Mr. J. R. Vikram Krishna	
8	LU	<ul style="list-style-type: none"> <li>Construction of Land use Map</li> <li>Impact of project on surrounding land use</li> <li>Suggesting post closure sustainable land use and mitigative measures.</li> </ul>	Mr. A. Allimuthu	
9	NV	<ul style="list-style-type: none"> <li>Identify impacts due to noise and vibrations</li> <li>Suggesting appropriate mitigation measures for EMP.</li> </ul>	Mr. A. Jagannathan	
10	AQ	<ul style="list-style-type: none"> <li>Identifying different source of emissions and propose predictions of incremental GLC using AERMOD.</li> <li>Recommending mitigations measures for EMP</li> </ul>	Mr. N. Senthilkumar	
11	SC	<ul style="list-style-type: none"> <li>Assessing the impact on soil environment and proposed mitigation measures for soil conservation</li> </ul>	Dr. M. Ithikhar Ahmed	
12	SHW	<ul style="list-style-type: none"> <li>Identify source of generation of non-hazardous solid waste and hazardous waste.</li> <li>Suggesting measures for minimization of generation of waste and how it can be reused or recycled.</li> </ul>	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"> <li>Site Visit with FAE</li> <li>Provide inputs &amp; Assisting FAE with sources of Air Pollution, its impact and suggest control measures</li> <li>Provide inputs on Geological Aspects</li> <li>Analyse &amp; provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures</li> </ul>	
2	Mr. Viswathanan	AP; WP; LU	<ul style="list-style-type: none"> <li>Site Visit with FAE</li> <li>Provide inputs &amp; Assisting FAE with sources of Air Pollution, its impact and suggest control measures</li> <li>Assisting FAE on sources of water pollution, its impacts and suggest control measures</li> <li>Assisting FAE in preparation of land use maps</li> </ul>	
3	Mr. Santhoshkumar	GEO; SC	<ul style="list-style-type: none"> <li>Site Visit with FAE</li> <li>Provide inputs on Geological Aspects</li> <li>Assist in Resources &amp; Reserve Calculation and preparation of Production Plan &amp; Conceptual Plan</li> <li>Provide inputs &amp; Assisting FAE with soil conservation methods and identifying impacts</li> </ul>	
4	Mr. Umamahesvaran	GEO	<ul style="list-style-type: none"> <li>Site Visit with FAE</li> <li>Provide inputs on Geological Aspects</li> <li>Assist in Resources &amp; Reserve Calculation and preparation of Production Plan &amp; Conceptual Plan</li> </ul>	
5	Mr. A. Allimuthu	SE	<ul style="list-style-type: none"> <li>Site Visit with FAE</li> </ul>	



			<ul style="list-style-type: none"> <li>▪ Assist FAE with collection of data's</li> <li>▪ Provide inputs by analysing primary and secondary data</li> </ul>	cttamm
6	Mr. S. Ilavarasan	LU; SC	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assisting FAE in preparation of land use maps</li> <li>▪ Provide inputs &amp; Assisting FAE with soil conservation methods and identifying impacts</li> </ul>	S. Ilavarasan
7	Mr. E. Vadivel	HG	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assist FAE &amp; provide inputs on aquifer characteristics, ground water level/table</li> <li>▪ Assist with methods of ground water recharge and conduct pump test, flow rate</li> </ul>	E. Vadivel
8	Mr. D. Dinesh	NV	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assist FAE and provide inputs on impacts due to proposed mine activity and suggest mitigation measures</li> <li>▪ Assist FAE with prediction modelling</li> </ul>	D. Dinesh
9	Mr. Panneer Selvam	EB	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assist FAE with collection of baseline data</li> <li>▪ Provide inputs and assist with labelling of Flora and Fauna</li> </ul>	P. Panneer Selvam
10	Mrs. Nathiya	EB	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assist FAE with collection of baseline data</li> <li>▪ Provide inputs and assist with labelling of Flora and Fauna</li> </ul>	T. Nathiya

K. Paramasivam

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**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 Draft EIA/EMP for Thiru. K. Paramasivam Black Granite Quarry (Extent 1.00.0 Ha) in Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State. It is also certified that information furnished in the EIA study are true and correct to the best of our knowledge

Signature&amp; 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 &amp; Issue Date:

**NABET/EIA/2225/RA 0276 Dated: 20-2-2023**

Validity:

**Valid till 06.08.2025**



# **ANNEXURE**

## **THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY**

S.F. No: 407/3 (Part)

Siruvalai Village, Vikkiravandi Taluk,

Viluppuram District

**EXTENT = 1.00.0 Ha**

ToR obtained

**File No. 11004, Identification No. TO24B0108TN5140496N**

**Dated: 10.08.2024**

**Project Proponent**

**Thiru. K. Paramasivam,**

S/o. Krishnasamy Gounder,

No. 135, Mullai Nagar,

Old Bus Stand Road,

Perundurai,

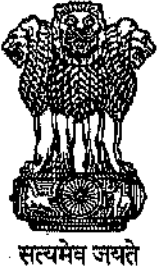
Erode District – 638 052.



**LIST OF ANNEXURES**

<b>ANNEXURES</b>	<b>DESCRIPTION</b>	<b>PAGE NOS</b>
<b>P1 K. PARAMASIVAM</b>	COPY OF TERMS OF REFERENCE	1A – 15A
	COPY OF G.O No. 50	16A – 21A
	COPY OF 500M RADIUS QUARRIES DETAILS & EXISTING PIT LETTER	22A – 24A
	COPY OF MINING PLAN APPROVED LETTER	25A – 31A
	COPY OF APPROVED MINING PLAN WITH PLATES	32A – 186A
	COPY OF 300m & VAO ATTESTATION LETTER	187A – 188A
	COPY OF HYDROGEOLOGICAL REPORT	189A – 199A
<b>E1 K. PARAMASIVAM</b>	COPY OF ENVIRONMENTAL CLEARANCE	200A – 210A
	COPY OF BASE LINE MONITORING DATA	211A – 252A
	COPY OF CONSULTANT ACCREDITATION CERTIFICATE	253A
	COPY OF CER LETTER	254A

*K. Paramasivam*



File No: 11004

Government of India

Ministry of Environment, Forest and Climate Change  
(Issued by the State Environment Impact Assessment  
Authority(SEIAA), TAMIL NADU)



\*\*\*

Dated 10/08/2024



To,

Thiru K. PARAMASIVAM  
S/o KRISHNASAMY GOUNDER  
No. 135, Mullai Nagar, Old Bus Stand Road, Perundurai, Erode District Tamil Nadu - 638 052, Erode  
, ERODE, TAMIL NADU, 638052  
kpsivam916@gmail.com

Subject:

SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Black Granite quarry over an extent of 1.00.0 Ha at S.F.No. 407/3 (Part) of Siruvalai Village, Vikravandi Taluk, Viluppuram District, Tamil Nadu by Thiru. K. Paramasivam – under project category - “B1” and Schedule S.No.1(a) – ToR issued along with Public Hearing – preparation of EIA report – Regarding.

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference under the provision of the EIA Notification 2006-regarding in respect of project Black Granite (Dolerite) Quarry Project Belongs to K. Paramasivam, Extent: 1.00.0Ha S.F.Nos. 407/3(Part) of Siruvalai Village, Vikravandi Taluk, Viluppuram District submitted to Ministry vide proposal number SIA/TN/MIN/460034/2024 dated 04/07/2024.

Ref:

1. Online Proposal No. SIA/TN/MIN/460034/2024, dated: 27.01.2024
2. Your application submitted for Terms of Reference dated: 20.06.2024
3. Minutes of the 480th SEAC meeting held on 05.07.2024
4. Minutes of the 741st SEIAA meeting held on 23.07.2024
5. Proponent reply dated: 01.08.2024
6. Minutes of the 744th SEIAA meeting held on 05.08.2024

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5140496N
(ii) File No.	11004
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals

*K. Paramasivam*



(vii) Name of Project	Black Granite (Dolerite) Quarry Project Belongs to K. Paramasivam, Extent: 1.00.0ha S.F.Nos. 407/3(Part) of Siruvalai Village, Vikravandi Taluk, Viluppuram District
(viii) Name of Company/Organization	KRISHNASAMY GOUNDER PARAMASIVAM
(ix) Location of Project (District, State)	VILLUPURAM, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the Ministry for an appraisal by the State Environment Impact Assessment Authority(SEIAA) Appraisal Committee (SEIAA) in the Ministry under the provision of EIA notification 2006 and its subsequent amendments.
4. The above-mentioned proposal has been considered by State Environment Impact Assessment Authority(SEIAA) Appraisal Committee of SEIAA in the meeting held on 05/08/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
5. The brief about configuration of plant/equipment, products and byproducts and salient features of the project along with environment settings, as submitted by the Project proponent in Form-1 (Part A, B ) presented during SEIAA are annexed to this EC as Annexure (1).
6. The SEIAA, in its meeting held on 05/08/2024, based on information & clarifications provided by the project proponent and after detailed deliberations recommended the proposal for grant of Terms of Reference under the provision of EIA Notification, 2006 and as amended thereof subject to stipulation of specific and general conditions as detailed in Annexure (2).
7. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the State Environment Impact Assessment Authority(SEIAA) Appraisal Committee hereby decided to grant Terms of Reference for instant proposal of M/s. KRISHNASAMY GOUNDER PARAMASIVAM under the provisions of EIA Notification, 2006 and as amended thereof.
8. The SEIAA/Ministry reserves the right to stipulate additional conditions, if found necessary.
9. The Terms of Reference to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
10. The TORs with public hearing prescribed shall be valid for a period of three years from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29<sup>th</sup> August, 2017
11. This issues with the approval of the Competent Authority.

**Copy To**

1. The Principal Secretary to Government, Environment, Climate Change and 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 - 110 032.
3. The Chairperson, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.

*K. Paramasivam*

5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC,  
Paryavaran Bhavan, CGO Complex, New Delhi - 110 003.  
6. The District Collector, Viluppuram District.  
7. Stock File.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Sela Specific Conditions:

S. No	Terms of Reference
1.1	<p>the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 34,955 m<sup>3</sup> ROM which includes 6991 m<sup>3</sup> of Black Granite Recovery (@20%) &amp; 27,964 m<sup>3</sup> of Granite Waste (@80%) up to this production plan ultimate depth of 30m below ground level and the annual peak production should not exceed 1454 m<sup>3</sup> of Black Granite Recovery as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC</p> <p>1. The PP shall comply with CCR reply as committed and same shall be completed within 3 months</p>

2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	<p>1. The PP shall complete the withdrawal process of EC proposal applied under B2 category (File No. 10441/2023 and Online Proposal No. SIA/TN/MIN/ 433201/2023, Dated: 13.06.2023) in Parivesh portal.</p> <p>2. The PP shall obtain Certified Compliance Report (CCR) from Integrated Regional Office, MoEF&amp;CC, Chennai for the earlier Environmental Clearance obtained from DEIAA.</p> <p>3. A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic &amp; scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal:</p> <p>(i) Copy of the agreement forming CMC.</p> <p>(ii) The Organisation chart of the Committee with defining the role of the members</p> <p>(iii) The 'Standard Operating Procedures' (SoP) executing the planned activities.</p>

3. Seac Standard Conditions

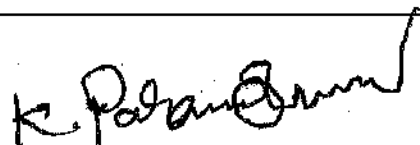
S. No	Terms of Reference
3.1	<p>1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:</p> <p>(i) Original pit dimension</p> <p>(ii) Quantity achieved Vs EC Approved Quantity</p>

K. P. S. S. S. S. S.

S. No	Terms of Reference
	<p>(iii) Balance Quantity as per Mineable Reserve calculated.</p> <p>(iv) Mined out Depth as on date Vs EC Permitted depth</p> <p>(v) Details of illegal/illicit mining</p> <p>(vi) Violation in the quarry during the past working.</p> <p>(vii) Quantity of material mined out outside the mine lease area</p> <p>(viii) Condition of Safety zone/benches</p> <p>(ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.</p> <p>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.</p> <p>3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.</p> <p>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.</p> <p>5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.</p> <p>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.</p> <p>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 &amp; 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.</p> <p>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.</p> <p>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/ Class mines manager appointed by the proponent.</p> <p>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.</p> <p>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.</p> <p>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,</p> <p>13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>14. Quantity of minerals mined out.</p> <ul style="list-style-type: none"> <li>· Highest production achieved in any one year</li> <li>· Detail of approved depth of mining.</li> <li>· Actual depth of the mining achieved earlier.</li> <li>· Name of the person already mined in that leases area.</li> </ul>

*K. P. ...*

S. No	Terms of Reference
	<p>· If EC and CTO already obtained, the copy of the same shall be submitted.</p> <p>· Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.</p> <p>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).</p> <p>16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,</p> <p>17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees &amp; safety distance between the adjacent quarries &amp; water bodies nearby provided as per the approved mining plan.</p> <p>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.</p> <p>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.</p> <p>20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping &amp; open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.</p> <p>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 &amp; flora/fauna including traffic/vehicular movement study.</p> <p>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 &amp; health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.</p> <p>23. Rain water harvesting management with recharging details along with water balance (both monsoon &amp; non-monsoon) be submitted.</p> <p>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.</p> <p>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&amp;R issues, if any, should be provided.</p> <p>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.</p> <p>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.</p> <p>28. Impact on local transport infrastructure due to the Project should be indicated.</p>



S. No	Terms of Reference
	<p>29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area &amp; 300m buffer zone and its management during mining activity.</p> <p>30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.</p> <p>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.</p> <p>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.</p> <p>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</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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&amp;CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.</p> <p>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.</p> <p>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.</p>

**4. Sela Standard Conditions:**

S. No	Terms of Reference
4.1	<p><b><u>Cluster Management Committee</u></b></p> <ol style="list-style-type: none"> <li>1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.</li> <li>2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,</li> <li>3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.</li> <li>4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.</li> <li>5. The committee shall deliberate on risk &amp; emergency management plan, fire safety &amp; evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.</li> <li>6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report.</li> <li>7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.</li> <li>8. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.</li> </ol> <p><b><u>Agriculture &amp; Agro-Biodiversity</u></b></p> <ol style="list-style-type: none"> <li>9. Impact on surrounding agricultural fields around the proposed mining Area.</li> <li>10. Impact on soil flora &amp; vegetation around the project site.</li> <li>11. Details of type of vegetation including no. of trees &amp; shrubs within the proposed mining area and if so, transplantation of such vegetation all along the boundary of the proposed mining area shall be committed mentioned in EMP.</li> <li>12. The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horti-cultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.</li> <li>13. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.</li> <li>14. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.</li> </ol> <p><b><u>Forests</u></b></p> <ol style="list-style-type: none"> <li>15. The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife.</li> <li>16. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.</li> <li>17. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.</li> <li>18. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.</li> </ol> <p><b><u>Water Environment</u></b></p> <ol style="list-style-type: none"> <li>19. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping &amp; open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.</li> <li>20. Erosion Control measures.</li> </ol>

*K. Palanivel*

S. No	Terms of Reference
	<p>21. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, &amp; any ecological fragile areas.</p> <p>22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.</p> <p>23. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.</p> <p>24. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.</p> <p>25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.</p> <p>26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.</p> <p>27. The EIA shall include the impact of mining activity on the following:</p> <ol style="list-style-type: none"> <li>a) Hydrothermal/Geothermal effect due to destruction in the Environment.</li> <li>b) Bio-geochemical processes and its foot prints including environmental stress.</li> <li>c) Sediment geochemistry in the surface streams.</li> </ol> <p><b><u>Energy</u></b></p> <p><b><u>Climate Change</u></b></p> <p>29. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.</p> <p>30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil &amp; below soil carbon stock, soil health and physical, chemical &amp; biological soil features.</p> <p>31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.</p> <p><b><u>Mine Closure Plan</u></b></p> <p><b><u>EMP</u></b></p> <p>33. Detailed Environment Management Plan along with adaptation, mitigation &amp; remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.</p> <p>34. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.</p> <p><b><u>Risk Assessment</u></b></p> <p><b><u>Disaster Management Plan</u></b></p> <p><b><u>Others</u></b></p> <p>37. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.</p> <p>38. As per the MoEF &amp; CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.</p> <p>The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic &amp; microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.</p>

Standard Terms of Reference for (Mining of minerals)

1.





S. No.	Terms of Reference
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.
1.3	Propoer KML file with pin drop and coordinate of mine at 500-1000 m interval be provided
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need eloboration in form of lengthe, quantity and quality of water to be diverted
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing though the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.

*K. Palanivel*

S. No	Terms of Reference																																																						
1.11	<p>A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.</p>																																																						
1.12	<p>Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights</p> <table border="1" data-bbox="395 712 1436 1008"> <thead> <tr> <th>S.N</th> <th>ML/Project use</th> <th>Land Area Surface Rights(ha)</th> <th>under Area Rights(ha)</th> <th>Under Mining Area (ha)</th> <th>Area under Both (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Agricultural land</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Forest Land</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>Grazing Land</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>Settlements</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>Others (specify)</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" data-bbox="395 1075 1436 1299"> <thead> <tr> <th>S.N:</th> <th>Details</th> <th>Area (ha)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Buildings</td> <td></td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td></td> </tr> <tr> <td>3</td> <td>Roads</td> <td></td> </tr> <tr> <td>4</td> <td>Others (specify)</td> <td></td> </tr> <tr> <td></td> <td>Total</td> <td></td> </tr> </tbody> </table>	S.N	ML/Project use	Land Area Surface Rights(ha)	under Area Rights(ha)	Under Mining Area (ha)	Area under Both (ha)	1	Agricultural land					2	Forest Land					3	Grazing Land					4	Settlements					5	Others (specify)					S.N:	Details	Area (ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (specify)			Total	
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1.13	<p>Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.</p>																																																						
1.14	<p>One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&amp;CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.</p>																																																						
1.15	<p>Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting</p>																																																						

*15. P. P. P. P. P.*

S. No	Terms of Reference
	sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.

S. No	Terms of Reference
1.24	Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored
1.27	PP to evaluate the green house emission gases from the mine operation and corresponding carbon absorption plan.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.

*K. Palanivel*

S. No	Terms of Reference																								
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.																								
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.																								
1.38	Corporate Environment Responsibility:																								
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.																								
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.																								
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.																								
1.42	d) To have proper checks and balances, the company should have a well laid down 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.																								
1.43	e) Environment Management Cell and its responsibilities to be clearly spelled out in EIA/ EMP report																								
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.																								
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.																								
1.46	PP shall submit clarification from DEO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.																								
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.																								
1.48	<p>Details on the Forest Clearance should be given as per the format given:</p> <table border="0"> <tr> <td>Total ML</td> <td>Total</td> <td>Date</td> <td>Extent</td> <td>of Balance</td> <td>area</td> <td>for Status of appl</td> <td>For</td> </tr> <tr> <td>Project Area</td> <td>Forest</td> <td>of FC</td> <td>Forest</td> <td>which FC</td> <td>is yet to</td> <td>be diversion</td> <td>of forest</td> </tr> <tr> <td>(ha)</td> <td>land (ha)</td> <td></td> <td>Land</td> <td>obtained</td> <td></td> <td>land</td> <td></td> </tr> </table> <p>If more than one provide details of each FC</p>	Total ML	Total	Date	Extent	of Balance	area	for Status of appl	For	Project Area	Forest	of FC	Forest	which FC	is yet to	be diversion	of forest	(ha)	land (ha)		Land	obtained		land	
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S. No	Terms of Reference
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter,s section.

#### Additional Terms of Reference

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be 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.

*K. Parameswar*

17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
  18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
  19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
  20. Likely impact of the project on air, water, land, flora-fauna and nearby population
  21. Emergency preparedness plan in case of natural or in plant emergencies
  22. Issues raised during public hearing (if applicable) and response given
  23. CER plan with proposed expenditure.
  24. Occupational Health Measures
  25. Post project monitoring plan
  26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
  27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
  28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
  29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
  30. Reserve funds should be earmarked for proper closure plan.
  31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC,2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.
- Besides the above, the below mentioned general points should also be followed:-
- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
  - b. All documents may be properly referenced with index, page numbers and continuous page numbering.
  - c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
  - d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
  - e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
- The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.

Signature Not Verified

Digitally Signed by : A P Rahul Nadh IAS  
Member Secretary SEIAA

Date: 10/08/2024

*A. P. Rahul Nadh*





**ABSTRACT**

Mines and Quarries - Minor Mineral - Black Granite - Viluppuram District - Vikravandi Taluk - Siruvalai Village - Over an extent of 1.00.0 hectare of patta land in S.F. No.407/3 (Part) - Quarry Lease Application of Thiru K. Paramasivam - Grant of quarry lease - Sanction - Accorded - Orders - Issued.

**Industries (MMB.2) Department**

**G.O. (3D) No.50**

**Dated: 18.12.2018**

விளம்பி, மார்கழி 3,  
திருவள்ளூர் ஆண்டு 2049

**Read:**

- 1) From Thiru K. Paramasivam Quarry Lease Application dated 05.10.2017.
- 2) From the District Collector, Viluppuram, Letter Rc.No.B/ G&M/ 964/2017, Dated 15.05.2018.
- 3) From the Director of Geology and Mining, Chennai, File No.3645/MM5/2018, Dated 23.06.2018.
- 4) Government Letter No.8472/MMB.2/2018-1, Dated 27.08.2018.

**Read also:**

- 5) From the Director of Geology and Mining, Chennai, Letter Rc.No.3645/MM5/2018, Dated 01.10.2018.
- 6) From the Chairman/District Collector, Viluppuram Letter No.DEIAA-VPM-TN/F.No.18015/EC No.02/2018, Dated 04.12.2018.

**ORDER:**

In his reference first read above, Thiru K.Paramasivam has applied for grant of lease for quarrying of Black Granite over an extent of 1.00.0 hectare of patta land in S.F. No.407/3 (Part) in Siruvalai Village, Vikravandi Taluk, Viluppuram District for a period of 20 years under rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959.

2. In their references second and third read above, the District Collector, Viluppuram and the Director of Geology and Mining have

*K. Paramasivam*

recommended and forwarded the Quarry lease application of Thiru K. Paramasivam to the Government for issue of Government Order.

3. Based on the reports of the District Collector, Viluppuram and the Director of Geology and Mining, the Government has considered the quarry lease application of the applicant and communicated the area recommended by the Director of Geology and Mining as precise area and requested the applicant in the reference fourth read above to furnish the approved Mining Plan as per sub-rule (13) of rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959 through the Director of Geology and Mining and to produce environment clearance from the DEIAA, Viluppuram.

4. In his letter fifth read above, the Director of Geology and Mining has approved the mining plan as per sub-rule (13) of rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959, subject to the condition that the applicant shall obtain the Environment Clearance as per the orders of the Hon'ble Supreme Court of India, dated 27.02.2012 in I.A. No.12-13/2011 in S.L.P. (C) No.19629 of 2009 and as per the Office Memorandum No.L-11011/47/2011-1A II(M), dated 18.05.2012 of Ministry of Environment and Forests, Government of India. The District Level Environment Impact Assessment Authority in their reference sixth read above have accorded Environment Clearance for mining in the above said area subject to certain conditions.

5. In the circumstances detailed above, the Government carefully considered and decided to grant lease for quarrying of Black Granite to Thiru K. Paramasivam in the above patta lands. Accordingly, in exercise of the powers conferred under Rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959, the Governor of Tamil Nadu hereby grant quarry lease to Thiru K. Paramasivam for quarrying of Black Granite over an extent of 1.00.0 hectare of patta land in S.F. No.407/3 (Part) in Siruvalai Village, Vikravandi Taluk, Viluppuram 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 sixth read above:

1. A safety zone of 7.5 meters should be left out for the adjoining patta lands and for the adjoining existing black granite quarry situated at southern side.
2. A safety distance of 10 meters should be provided for the Government Poramboke land situated on the southern and eastern side of the applied area.

*K. Paramasivam*

3. A safety distance of 10 meters should be provided for the village road passing in the patta lands on the western side of the applied area.
4. The applicant should fence the lease granted area with Barbed wire before the execution of lease deed as follows:-
  - ❖ The pillar post shall be firmly grounded with concrete foundation of height not less than 2 meters with a distance between two pillars shall not be more than 3 meters.
  - ❖ The applicant 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 CD/DVD form to the Deputy Director of Geology and Mining, Viluppuram.
  - ❖ A soft copy of the digitalized map with DGPS readings should be submitted in the CD form.
5. The applicant shall strictly adhere to the statutory and safety requirements.
6. 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.
7. The applicant shall submit scheme of mining; mine closure plan and other statutory requirements within the time stipulated for submission of the above, as per rules.
8. The child labour should not be engaged in the quarry works.
9. As per rule 12 (v) of Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant shall at his own expense, erect, maintain and keep in repair all boundary pillars.
10. No hindrance shall be caused to the adjacent patta lands and no damage shall be caused to the adjoining Government poramboke lands while quarrying and transportation of granite.
11. The waste material generated during the time of quarrying should be dumped only in the leasehold area.
12. The applicant should not cause hindrance to the adjacent pattadars while quarrying and transportation of the granite.

K. P. Prasad

13. The conditions mentioned in G.O. (Ms) No.79, Industries (MMC.1) Department, dated 06.04.2015 should be complied with.
14. The applicant should use mild explosives during quarrying,
15. The District Collector, Viluppuram shall obtain a sworn-in-affidavit from the appellant containing the above conditions before execution of lease deed and also ensure that the instructions issued in Government Letter No.12789/MMB2/2002-7, Industries Department, dated: 9.1.2003 are complied with.

6. The District Collector, Viluppuram 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 the Director of Geology and Mining.

7. The District Collector, Viluppuram is also directed to verify and furnish a certificate to the effect that all lease deed conditions and other conditions mentioned in paragraph 5 above have been complied with, duly incorporated in the lease agreement and send it to the Government. The District Collector, Viluppuram is also instructed to include all the conditions imposed by District Level Environment Impact Assessment Authority in the reference sixth read above.

**(BY ORDER OF THE GOVERNOR)**

**K. GNANADESIKAN,  
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT.**

To

Thiru K.Paramasivam,  
S.F.No.407/3,  
Siruvalai Village, Vikravandi Taluk  
Viluppuram District.

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

The District Collector, Viluppuram.

Copy to:

The Special Personal Assistant to Hon'ble Minister for Law,  
Courts and Prisons, Chennai-600 009.

The Industries (OP,II) Department, Chennai - 600 009.  
SF/SC.

// Forwarded By order //

*K.M. Sandhya*  
12/12/15  
Section Officer.

*K. Paramasivam*

**Annexure**

**G.O (3D) No.50, Industries (MMB.2) Department,**  
**Dated 18.12.2018**

1. The applicant firm 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 firm 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 firm should keep correct accounts showing the quantities and other particulars of all minerals obtained from the lands permitted to quarry.
5. The applicant firm 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 firm 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 firm 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 firm.
9. No hindrance shall be caused to the adjoining pattadars or public.
10. The applicant firm should restrict his mining operation strictly within the permitted area as defined in the sketch.

*K. Parvath*

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.
12. The applicant firm 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 firm 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 under 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.

**K. GNANADESIKAN,  
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT.**

//True Copy//

*[Handwritten Signature]*  
**Section Officer.**

*[Handwritten Signature]*

From  
Tmt.N.Vijayalakshmi, M.Sc.,  
Deputy Director,  
Department of Geology & Mining,  
Viluppuram.

To  
Thiru.K.Paramasivam,  
S.F.No.407/3,  
Siruvalai Village,  
Viluppuram District.

**Rc. No.B/G&M/964/2017 dt. .09.2023.**

Sir,

Sub: Mines and Quarries - Minor Mineral - Black Granite- Viluppuram District - Vikravandi Taluk - Siruvalai Village - S.F.No.407/3 (Part) - over an extent of 1.00.0 hecets. of patta land - Quarry lease granted to Thiru.K.Paramasivam - Details of quarries situated within 500 meter radial distance - furnished - reg.

- Ref : 1. G.O.(3D).No.50/Industries (MMB-2) Department dt.18.12.2018.  
2. Representation from Thiru.K.Paramasivam dated 11.09.2023.

\*\*\*\*\*

With reference to your letter in the reference 2<sup>nd</sup> cited, the details of existing, proposed and abandoned quarries located within 500 mts. radius from the existing Black Granite quarry, over an extent of 1.00.0 hectares of Patta land in S.F.No.407/3 (Part) of Siruvalai Village, Vikravandi Taluk, Viluppuram District are as follows.

**1. Existing other quarries:**

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Lease period	Remarks
1.	K.Paramasivam, S/o.Krishnasamy Gounder, No.460, Main Road, Perundural, Erode District.	Black Granite	Vikravandi, Siruvalai	407/3 (P)	1.00.0	9.01.2006 to 8.01.2026	-
2.	Thiru.K.Paramasivam, S.F.No.407/3, Siruvalai Village, Viluppuram District.	Black Granite	Vikravandi, Siruvalai	407/3 (P)	1.00.0	18.01.2019 to 17.01.2039	-
3.	A.Abdul salam, 118/2(A15), Kurinji Nagar, Housing board Colony, Salem-15.	Black Granite	Vikravandi, Siruvalai	156/2 157/1 157/2 157/3 157/4	0.17.0 0.23.5 0.13.5 0.26.5 0.22.0 1.02.5	25.05.2011 to 24.05.2031	-

*K. Paramasivam*



**2. Proposed Area :**

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Remarks
1.	Tvl.TAMIN Ltd., 37, kamarajar Salai, Chepauk, Chennai-5.	Black Granite	Vikravandi, Siruvalai	170/1 (P)	20.28.0	

**3. Abandoned quarries :**

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Lease period	Remarks
NIL							

*[Signature]*  
1109/2023  
Deputy Director,  
Geology and Mining,  
Viluppuram.

*MB*  
11/9/23

*K. Paranthaman*

From  
Tmt.S.Safiya, M.Sc.,  
Assistant Director,  
Department of Geology & Mining,  
Viluppuram.

To  
K.Paramasivam,  
S.F.No.407/3,  
Siruvalai Village,  
Vikravandi Taluk,  
Viluppuram District.

**Rc.No.B/G&M/967/2017 Dated 19.06.2024.**

Sub: Mines and Minerals - Minor Mineral - Black Granite -  
Viluppuram District - Vikkravandi Taluk - Siruvalai  
Village - SF.No.407/3 (p) - over an extent of 1.00.0  
Hect. - Patta lands - Quarry lease granted to  
Thiru.K.Paramasivam - Details of permit taken  
requested by the lessee - furnished -Reg.

- Ref : 1. G.O. (3D) No.50, Industries (MMB.2) Department  
dated 18.12.2018.  
2. Thiru. K.Paramasivam letter dated 12.06.2024.

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A quarry lease had been granted to Thiru. K.Paramasivam, Viluppuram  
for black Granite over an extent of 1.00.0 Hects of Patta land in  
SF.No.407/3(p) in Siruvalai Village of Vikkravandi Taluk, Viluppuram District  
for a period of twenty years vide reference 1<sup>st</sup> cited. The lease deed was  
executed on 18.01.2019 with validity of lease period up to 17.01.2039.

In this connection, Thiru.K.Paramasivam, Viluppuram has requested  
vide letter dated 12.06.2024 to issue the details of quantity of permit issued  
from 18.01.2019 to 29.02.2024 to the subject quarry for obtaining  
Environmental clearance from SEIAA.

In this regard, on perusal of this office records, it is ascertained that a  
total quantity of 3941.481 cbm has been permitted for transportation from  
the lease area as on 29.02.2024. As Requested, the existing pit dimension  
is furnished based on scheme of mining submitted by the lessee  
(Length) 172m x (Width) 34m x (Depth) 20m.

*19.06.24*  
Assistant Director,  
Geology and Mining,  
Viluppuram.

*19.6.24*

*K. Paramasivam*

**COMMISSIONERATE OF GEOLOGY AND MINING**

From  
Tmt.Pooja kulkarni, I.A.S.,  
Commissioner,  
Department of Geology and Mining,  
Guindy, Chennai - 600 032.

To  
Thiru.K.Paramasivam,  
No.135, Mullai Nagar,  
Old Bus Stand Road,  
Perundurai,  
Erode-638052

Rc. No.7780/MM4/2023, dated: 16.12.2023

Sir,

Sub: Mines and Minerals - Minor mineral - Black Granite  
- Villupuram district - Vikkiravandi taluk- Siruvalai  
village - over an extent of 1.00.0 ha of patta land -  
S.F.No. 407/3 (Part) - Quarry lease granted to  
Thiru.K. Paramasivam, Erode - Submission of  
1<sup>st</sup>Scheme of Mining for the period from 2024-25 to  
2028-29 - Recommended and forwarded by the  
Deputy Director, (G&M), Villupuram - Approval  
accorded.

Ref: 1. The Director of Geology and Mining,  
Lr.No.3645/MM5/2018, dated 01.10.2018.  
2. G.O. (3D) No.50, Industries (MMB.2)  
Department, dated.18.12.2018.  
3. First Scheme of mining plan submitted by  
Thiru.K.Paramasivam at district office on  
15.09.2023.  
4. The Deputy Director (G&M), Villupuram Lr.Rc.  
No. B/G&M/967/2017/dated 30.10..2023.

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Kind attention is invited to the references cited above.

2) The lessee Thiru.K. Paramasivam, Erode vide reference 3<sup>rd</sup> cited,  
has submitted first Scheme of Mining for the period from 2024-25 to 2028-  
29 for approval for the quarry lease granted in G.O. (3D) No.50, Industries  
(MMB.2) Department, dated.18.12.2018 for quarrying black Granite over an  
extent of 1.00.0 ha of patta land in S.F.No. 407/3 (Part) of Siruvalai village,  
Vikkiravandi taluk, Villupuram district for a period of 20 years under rule  
19-A of Tamil Nadu Minor Mineral Concession Rules 1959. The lease period  
is valid from 18.01.2019 to 17.01.2039.

3) The Deputy Director (G&M), Villupuram vide reference 4<sup>th</sup> cited has  
forwarded the First Scheme of Mining of Thiru.K. Paramasivam. On

*K. Paramasivam*

scrutinizing the first scheme of mining plan and report of the Deputy Director (G&M), viluppuram the following are observed.

- i. The mining plan for the subject black granite quarry lease was approved by the Director of Geology and Mining in letter No.3645/MM5/2018 dated: 01.10.2018.
- ii. The lessee had obtained Environment Clearance from DEIAA vide Lr.No.TN-DEIAA-VPM-TN/F.No.18015/EC No.02/2018, dated 04.12.2018 for the quantity of 7004 cbm of black granite for a depth of 20 m for a period of five years.
- iii. The lessee had obtained transport permits of 3734.135 cbm (upto 07.07.2023) as against the proposed production of 7004 cbm of Black Granite.
- iv. The lessee has submitted the 1<sup>st</sup> scheme of mining within the prescribed time as per rule 18(3) of GCDR,1999 with relevant documents.
- v. The proposed production is detailed as follows: -

Year	ROM (Cbm)	Proposed production @ 20% recovery in cbm
2024-25	6480	1296
2025-26	7013	1403
2026-27	7017	1403
2027-28	7175	1435
2028-29	7270	1454
<b>Total</b>	<b>34955</b>	<b>6991</b>

- vi. The Assistant Geologist, O/o the Deputy Director, (G&M), Viluppuram has inspected the subject quarry and reported that the 1<sup>st</sup> SOM has been verified with the ground realities and found to be correct.
- vii. As per the 1<sup>st</sup> scheme of mining plan, it is mentioned that the total mineable reserves (ROM) during the plan period is about 34,955 Cbm and the proposed recoverable reserves @ 20% during the plan period for five years' production of about 6991 cbm for a depth of 30 m.

*K. Paramasivan*

- viii. With regard to dumping of waste during the 1<sup>st</sup> scheme of mining plan period, it has been proposed to dump the waste on the existing waste dump on the eastern side of the lease granted area.
- ix. The Deputy Director Villupuram has recommended the first scheme of mining submitted by Thiru.K. Paramasivam, Erode in respect of the lease granted area over an extent of 1.74.5 ha of patta land in S.F.No 407/3 (Part) of Siruvalai village, Vikkiravandi taluk, Villupuram district.

4) Based on the recommendation of Deputy Director (G&M) Viluppuram 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 submitted for the period 2024-25 to 2028-29 by Thiru.K.Paramasivam, Erode is hereby approved subject to the following conditions in addition to the conditions stipulated in Government Order under reference 2<sup>nd</sup> 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 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. 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.



- iv. 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.
- v. A safety distance of 7.5 m should be maintained for the adjoining patta lands and for the adjoining existing Black Granite quarry situated at southern side.
- vi. A safety distance of 10 m should be maintained for the adjoining Government poramboke land situated on the southern side and eastern side of the applied area.
- vii. A safety distance of 10 m should be maintained for the village road passing in the patta lands on the western side of the applied area.
- viii. No blasting and transportation of materials in vehicles should be carried out from 6.00PM to 6.00AM.
- ix. A green belt should be constructed to prevent sound and air pollution due to the proposed quarrying activity by planting at least 250 seedlings all along the boundary the area.
- x. No hindrance shall be caused to the adjacent patta lands and Government Poramboke while quarrying and transportation of Granite.
- xi. The lessee shall strictly adhere to the statutory and safety requirements and the applicant should ensure the periodical medical checkup to the quarry workers to safeguard them from quarry related diseases.
- xii. The waste materials generated during the course of quarrying should be dumped only within the lease hold area that is earmarked for the purpose in the mining plan as per rule 31 of GCD,1999.
- xiii. The lessee shall submit scheme of mining, mine closure plan and other statutory requirements within the time stipulated for submission of the above, as per GCDR,1999 rules.

*1. K. Prasad*

- xiv. The lessee should fence the lease granted area with barbed wire before the execution of lease deed as follows: -
- The pillar post shall be firmly grounded with concrete foundation of height not less than 2mts with a distance between two pillars shall not be more than 3mts.
  - The lessee shall incorporate the DGPS readings for the entire boundary pillars of the area and the same should be clearly shown in the First Scheme of Mining.
  - A soft copy of the digitized map with DGPS readings should be submitted in the CD to the Deputy Director (G&M) Viluppuram.
- xv. The boundary stone should be fixed for the subject quarry should be fixed and the district administration / Geology and Mining Department should ensure that the quarrying operation should be restricted only within the area granted for lease.
- xvi. Environmental Clearance should be obtained from the authority in respect of the subject area as per rule 42 of the Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the notification of the Ministry of Environment and Forest and any other clearances if any.
- xvii. As per rule 12 (v) of the Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the lessee shall at his own expense, erect, maintain and keep in repair all boundary pillars.
- xviii. The conditions mentioned in G.O. (Ms) No.79, Industries (MMC.1) Department, dated 06.04.2015 should be complied with.
- xix. The lessee should use mild explosives during quarrying, and storing of explosives if required, by obtaining valid license under explosive Acts and Rules.
- xx. If any violation is found during quarrying operation, the penal provisions of the Tamil Nadu Minor Mineral Concession Rules, 1959 and other rules and act in force will attract.

K. Paramasivam



- xxi. Child labour should not be engaged in the quarry works and the quarry workers should be registered in the Tamil Nadu Construction Labour Welfare Board
- xxii. The lessee should remit the Stamp Duty as per the approved modified mining plan during the currency of the lease period.
- xxiii. The earlier instances of irregular / illegal quarrying, if any, shall not be regularized through the approval of this document.
- xxiv. The lessee shall remit the penalty / cost of mineral / other dues if any as arrived by the District Collector / Deputy Director (G&M), Villupuram District.
- xxv. Non adherence to any condition set-out above, the approval shall be deemed to have been withdrawn with immediate effect.
- xxvi. The lessee should comply with the conditions stipulated in the Government of India, Ministry of Mines order No.11/02/2020, dated 14.01.2020 issued as per the orders of the Hon'ble Supreme Court of India dated 08.01.2020 that, "the mining leaseholders shall after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to this mining activities and restore the land to a condition which is fit for growth of fodders, flora and fauna etc."
- xxvii. The lessee should carry out DGPS survey and erection of RCC boundary pillars as per the norms stipulated in the EOI notification in Rc.No.2921/MM4/2019 dated 01.02.2018 and subsequent corrigendum dated 13.08.2019, using the agencies empaneled by the CGM on 01.03.2023, 08.03.2023, 17.03.2023 and 18.03.2023.

Encl: 2 Copies of Approved  
First Scheme of Mining.

Sd/-Pooja Kulkarni  
Commissioner of Geology and Mining  
Forwarded/By Order

  
Additional Director



**Copy to:**

1. The Additional Chief Secretary  
to Government (FAC),  
Natural Resource Department,  
Secretariat, Chennai-9.
2. The Director of Mines Safety,  
3<sup>rd</sup> floor, left mining,  
New Additional Building,  
CGO complex, Shashri Bhavan,  
Nungambakkam,  
Chennai - 06.
3. The District Collector,  
Villupuram District.

*K. Pandey*

# **SCHEME OF QUARRYING ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR SIRUVALAI BLACK GRANITE**

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

Patta Land / Lease Period: 18.01.2019 to 17.01.2029

Scheme Period: 18.01.2024 to 17.01.2029

IN

## **LOCATION OF THE QUARRY LEASE AREA**

EXTENT : 1.00.0 Ha  
S.F.No. : 407/3(Part)  
VILLAGE : SIRUVALAI  
TALUK : VIKKIRAVANDI  
DISTRICT : VILUPPURAM  
STATE : TAMIL NADU

FOR

### **MINE OWNER/LESSEE**

## **THIRU. K. PARAMASIVAM**

S/o. Krishnasamy Gounder,  
No. 135, Mullai Nagar,  
Old Bus Stand Road,  
Perundurai,  
Erode,  
Tamil Nadu state - 638 052.

PREPARED BY

## **S. ILAVARASAN, M.Sc.,**

Recognised Qualified Person  
RQP/MAS/253/2013/A

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

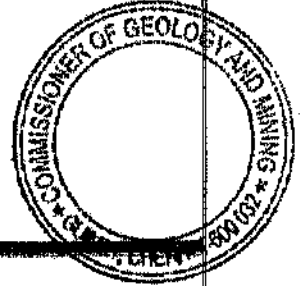
Mobile No. : +91 94422 78601, 94433 56539

E-mail Id: infogeoeexploration@gmail.com



*K. Paramasivam*

**K. Paramasivam,**  
S/o. Krishnasamy Gounder,  
No. 135, Mullai Nagar,  
Old Bus Stand Road,  
Perundural,  
Erode District,  
Tamil Nadu - 638 052.



### **CONSENT LETTER FROM LESSEE**

The Scheme of quarrying along with Progressive Quarry Closure Plan in respect of Siruvalai Black Granite quarry over an extent 1.00.0 Hectare of Patta land in S.F.No. 407/3(Part) of Siruvalai village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State has been prepared by

**S. ILAVARASAN, M.Sc.,**  
Recognised Qualified Person  
RQP/MAS/253/2013/A

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 Recognised Qualified Person at his following address.

**S. ILAVARASAN, M.Sc.,**  
No.17, Advaita Ashram Road,  
Alagapuram,  
Salem - 636 004.  
Mobile No. : +91 94433 56539, 94422 78601.

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

(K. Paramasivam)  
Proprietor

Place: Erode  
Date : 03.07.2023

**K. Paramasivam,**  
S/o. Krishnasamy Gounder,  
No. 135, Mullai Nagar,  
Old Bus Stand Road,  
Perundurai,  
Erode District,  
Tamil Nadu - 638 052.



### **DECLARATION OF MINE OWNER**

The Scheme of Quarrying along with Progressive Quarry Closure Plan in respect of Siruvalai Black Granite quarry over an extent 1.00.0 Hectare of Patta land in S.F.No. 407/3(Part) of Siruvalai village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State has been prepared in full consultation with me by

**S. ILAVARASAN, M.Sc.,**  
Recognised Qualified Person  
RQP/MAS/253/2013/A

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

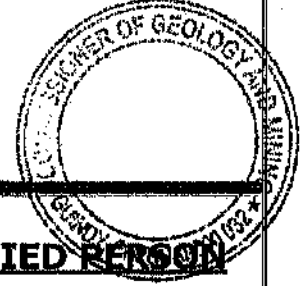
Signature of the lessee

(K. Paramasivam)  
Proprietor

Place: Erode

Date : 14.07.2023

**S. ILAVARASAN, M.Sc.,**  
No.17, Advaitha Ashram Road,  
Alagapuram,  
Salem – 636 004.  
Mobile No. : +91 94433 56539, 94422 78601.



**CERTIFICATE FROM THE RECOGNISED 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 for Siruvalai Black Granite quarry over an extent 1.00.0 Hectare of Patta land in S.F.No. 407/3(Part) of Siruvalai village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State has been prepared for

**Thiru. K. Paramasivam,**  
S/o. Krishnasamy Gounder,  
No. 135, Mullai Nagar,  
Old Bus Stand Road,  
Perundurai,  
Erode District,  
Tamil Nadu – 638 052.

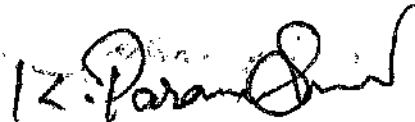
Whenever specific permissions/exemptions/ relaxations and approvals are required, the lessee will approach the concerned authorities of Department of Geology and Mining, Government of Tamil Nadu, Guindy, Chennai- 600 032 for such permissions/ exemptions/ relaxations and approvals.

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

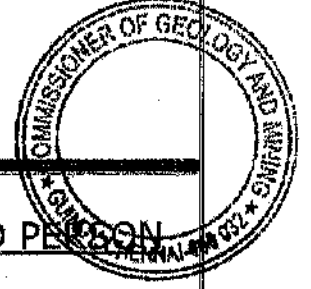
Signature of the RQP

  
S. ILAVARASAN, M.Sc.,  
RQP/MAS/253/2013/A

Place: Salem  
Date: 14.07.2023



**S. ILAVARASAN, M.Sc.,**  
No.17, Advaita Ashram Road,  
Alagapuram,  
Salem - 636 004.  
Mobile No. : +91 94433 56539, 94422 78601.



**CERTIFICATE FROM THE RECOGNISED QUALIFIED PERSON**

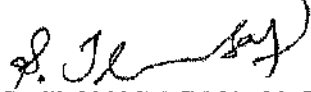
Certified that the Provisions of Mines Act, Rules and Regulations made there under have been observed in the preparation of Scheme of Quarrying along with Progressive Quarry Closure Plan for Siruvalai Black Granite quarry over an extent 1.00.0 Hectare of Patta land in S.F.No. 407/3(Part) of Siruvalai village, Vikkravandi Taluk, Viluppuram District, Tamil Nadu State has been prepared for

**Thiru. K. Paramasivam,**  
S/o. Krishnasamy Gounder,  
No. 135, Mullai Nagar,  
Old Bus Stand Road,  
Perundurai,  
Erode District,  
Tamil Nadu - 638 052.

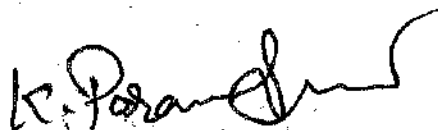
Whenever specific permissions/exemptions/ relaxations and approvals are required, the lessee will approach the concerned authorities of the Director of Mines Safety, No. 5, II<sup>nd</sup> Street, Block - AA, Anna Nagar, Chennai, Tamil Nadu for such permissions/ exemptions/ relaxations and approvals.

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 RQP

  
S. ILAVARASAN, M.Sc.,  
RQP/MAS/253/2013/A

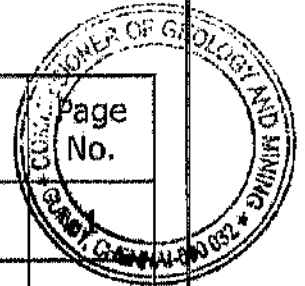
Place: Salem  
Date: 14.07.2023





## LIST OF CONTENTS

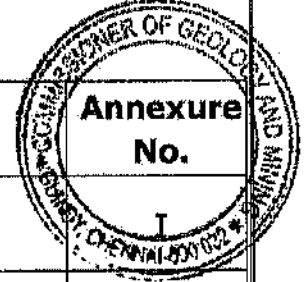
S.No.	Description	Page No.
1.	Introduction	
2.	<u>PART - I</u> Proposal under Scheme of Mining for the next five years	7
3.	Exploration and reserves	8
4.	Conceptual mining plan	19
5.	Mining	20
6.	Blasting	24
7.	Mine Drainage	24
8.	Stacking of Mineral Waste and Disposal of Waste	25
9.	Use of the granite stone	25
10.	Quality control	25
11.	Surface transport	25
12.	Site Services	26
13.	Employment potential	26
14.	Environmental Management plan	27
15.	Progressive Quarry Closure Plan	34
16.	Mineral Conservation and Development	39
17.	Statutory Provisions	40



*K. Parashuram*

## LIST OF ANNEXURES

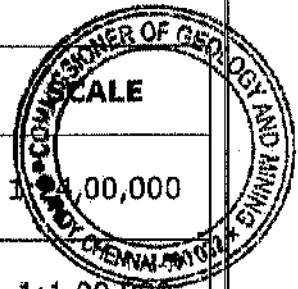
S.No.	Description	Annexure No.
1.	Copy of Government Order for Lease Grant	I
2.	Copy of FMB	II
3.	Copy of Village map	III
4.	Copy of Patta	IV
5.	Copy of Adangal	V
6.	Copy of "A" Register	VI
7.	Copy of Consent letter from Joint Pattadhar	VII
8.	Copy of Mining Plan Approval Letter	VIII
9.	Copy of Existing Environmental Clearance Certificate	IX
10.	Copy of Amalgamation letter from DGMS	X
11.	Copy of Lease deed	XI
12.	Copy of ID Proof	XII
13.	Copy of Certificate of Recognised Qualified Person	XIII



*K. Parvath*

### LIST OF PLATES

S.NO.	DESCRIPTION	PLATE Nos.	SCALE
1.	LOCATION PLAN	I	1:1,00,000
2.	KEY PLAN	IA	1:1,00,000
3.	ROUTE MAP	IB	Not to scale
4.	ENVIRONMENTAL AND LAND USE PLAN FOR 1km RADIUS	IC	1:10,000
5.	QUARRY LEASE PLAN	II	1:1,000
6.	SURFACE PLAN	III	1:1,000
7.	GEOLOGICAL PLAN AND SECTIONS	IV	1:1,000
8.	YEARWISE DEVELOPMENT AND PRODUCTION PLAN AND SECTIONS	V	1:1,000
9.	QUARRY LAYOUT AND AFFORESTATION PLAN	VI	1:1,000
10.	PROGRESSIVE QUARRY CLOSURE PLAN AND SECTIONS	VII	1:1,000
11.	ENVIRONMENTAL PLAN	VIII	1:5,000
12.	CONCEPTUAL PLAN AND SECTIONS	IX	1:1,000



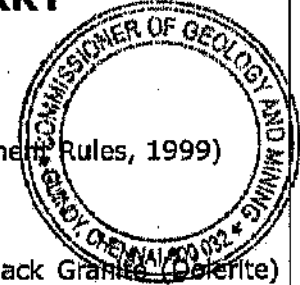
*K. Parashar*

## SCHEME OF QUARRYING ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR SIRUVALAI BLACK GRANITE (DOLERITE) QUARRY

Lease Period: 18.01.2019 to 17.01.2039

Scheme Period: 18.01.2024 to 17.01.2029

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



### 1.0 INTRODUCTION:

This Scheme of quarrying is prepared in respect of Siruvalai Black Granite (Dolerite) quarry belongs to **Thiru. K. Paramasivam**, S/o. Krishnasamy Gounder residing at No. 135, Mullai Nagar, Old Bus Stand Road, Perundurai, Erode District, Tamil Nadu - 638 052 for over an extent of 1.00.0 Hectare of Patta land in S.F.No. 407/3(Part) of Siruvalai village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.

The 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 Granite deposit on a long run with consistent Granite to waste ratio. 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 eighteen years has vast experience in safe and systematic quarrying and export of Black granite blocks.

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

The mining plan was prepared in respect of Siruvalai Black Granite (Dolerite) quarry and the same was approved by the Director, Department of Geology and Mining, Guindy, Chennai vide letter No. **3645/MM5/2018, dated: 01.10.2018** (Refer Annexure No. VIII).

As per condition prescribed in the Precise area communication letter, the lessee has obtained Environmental Clearance from the District Level Environment Impact Assessment Authority, Viluppuram District, Tamil Nadu vide Letter No. **DEIAA-VPM-TN/F.No.18015/EC.No.02/2018, Dated: 04.12.2018** (Refer Annexure No. IX).

The quarry lease was granted vide **G.O.(3D) No.50, Industries (MMB.2) Department, Dated: 18.12.2018** for a period of twenty years (Refer Annexure-I). The quarry lease was **executed on 18.01.2019** and the lease period is **valid upto 17.01.2039** (Refer Annexure No. XI). The quarry operation has commenced after the execution of lease deed i.e., 24.01.2019.

Now, this **First Scheme** of quarrying along with Progressive Quarry Closure Plan is prepared and submitted to the Department of Geology and Mining, Guindy, Chennai to obtain approval for the period of **five years** from **18.01.2024 to 17.01.2029**.

*K. Paramasivam*

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

The following leases are held by the lessee.

Table - 1

S. No.	G.O. No.	Extent (Ha.)	S.F.No.	Location	Date of Execution	Period of lease
1.	Lease grant G.O.(3D)No.123 Dated: 22.11.2005	1.00.0	407/3(P)	Siruvalai village, Vikkiravandi Taluk, Viluppuram District	09.01.2006	08.01.2026
	Lease Transfer G.O.(3D)No.33 Dated: 29.02.2016	1.00.0			03.03.2016	08.01.2026
2.	G.O.(3D) No.50 Dated: 18.12.2018	1.00.0	407/3(P)		18.01.2019	20 Years 17.01.2039

**1.3 Proposed and actual Production particulars for the Mining Plan Period:**

Table - 2

Proposed					
Year	ROM (m <sup>3</sup> )	Production @ 20%(m <sup>3</sup> )	Granite Waste @ 80%(m <sup>3</sup> )	Topsoil (m <sup>3</sup> )	Weathered rock (m <sup>3</sup> )
18.01.2019 - 17.01.2020	6500	1300	5200	3876	4860
18.01.2020 - 17.01.2021	7020	1404	5616	3672	4860
18.01.2021 - 17.01.2022	7020	1404	5616	3672	4860
18.01.2022 - 17.01.2023	7180	1436	5744	408	540
18.01.2023 - 17.01.2024	7300	1460	5840	-	-
<b>Total</b>	<b>35020</b>	<b>7004</b>	<b>28016</b>	<b>11628</b>	<b>15120</b>

Table - 2A

Achieved							
Year	ROM (m <sup>3</sup> )	Production (m <sup>3</sup> )	Despatch (m <sup>3</sup> )	Recovery (%)	Granite Waste (m <sup>3</sup> )	Topsoil (m <sup>3</sup> )	Weathered rock (m <sup>3</sup> )
18.01.2019 - 17.01.2020	6493	891.927	891.927	14	5601.073	3852	4835
18.01.2020 - 17.01.2021	6825	864.273	392.690	13	5960.727	3665	4850
18.01.2021 - 17.01.2022	7020	973.248	1,444.831	14	6046.752	3670	4860
18.01.2022 - 17.01.2023	7124	753.118	753.118	11	6370.882	251	493
18.01.2023 - 07.07.2023	5733	251.569	251.569	4	5481.431	-	-
<b>Total</b>	<b>33195</b>	<b>3734.135</b>	<b>3734.135</b>	<b>11</b>	<b>29460.865</b>	<b>11438</b>	<b>15038</b>

The proposed recovery was @ 20% but achieved an average recovery of 11% due to weathered joints and fractures of top layer of the Black granite.

**1.4.0 REVIEW OF MINING PLAN:**

- 1.4.1 Name of the quarry : Siruvalai Black Granite Quarry  
 Name of the lessee : **Thiru. K. Paramasivam,**  
 S/o. Krishnasamy Gounder  
 Address : No. 135, Mullai Nagar,  
 Old Bus Stand Road, Perundurai  
 District : Erode  
 State with Pin code : Tamil Nadu - 638 052  
 Mobile No : +91 94437 14257  
 Email ID : esteemgranites@hotmail.com  
 Aadhaar No. : 4018 9360 9432 (Refer Annexure No. XII).

*Thiru. K. Paramasivam*

**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 fulfilled during the course of quarry operation.

An adjacent black granite quarry lease held by the same lessee (Thiru. K. Paramasivam) situated on the Northern side of this lease area for an extent of 1.00.0Ha of Patta land in S.F.No. 407/3(Part). The lessee has obtained permission under Regulation 111(1) of the Metalliferous Mines Regulations, 1961 for grant of relaxation from the Director of Mines Safety, Chennai region vide **letter No.302546/SZ/Chennai Region/Perm/2019/2892, dated: 09/10/2019** to work within safety distance of 10 meters in the common mine boundary of these two lease areas (Refer annexure NO. - X). Hence, the Reserves and Resources are estimated according to the available mineable area and the same has been validated in the scheme of quarrying.

**1.5.0 REVIEW OF IMPORTANT CHAPTERS OF MINING PLAN:****1.5.1 EXPLORATION:**

The Geological Survey of India in 1966 and Department of Geology and Mining in 1992-93 have already carried out a detailed mapping in this area by the well experienced geologists. 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 the approved mining plan. The mineable Black Granite is clearly visible from the outcrop and adjacent existing quarry pit. The quarrying and recovery of the granite stone is in the form of dimensional stone of definite volume and rectangular shape, not as crushed stone. Pitting and trenching across the hard granite body and puncturing of granite body by exploratory drill holes may spoil a good portion of the granite body. Hence, future exploration has been drawn.

As far as Black Granite deposits are concerned, the only practical method is the systematic geological mapping and delineation of commercial Black Granite bodies with in the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.,. During the approved mining plan period the Black Granite stone may beyond 20m depth from the petrogenetic character of the rock, only 20m(2m Topsoil + 3m Weathered rock + 15m Black Granite) depth persistent has been taken as economically viable depth to calculate all the categories of proved, Probable and possible reserves at 20% recovery. At present the quarry attained a maximum depth of 20m.

**MINE DEVELOPMENT**

The production and development was proposed on the Western side and progressed towards Eastern side with maximum dimensions of (Length) 172m x (Width) 34m x (Depth) 20m below from existing ground profile. The quarry development and production has proposed in the approved Mining Plan and actual production is given table below.

*K. Paramasivam*

**PROPOSAL GIVEN THE MINING PLAN:****Table - 3**

<b>Proposed</b>					
<b>Year</b>	<b>ROM (m<sup>3</sup>)</b>	<b>Production @ 20%(m<sup>3</sup>)</b>	<b>Granite Waste @ 80%(m<sup>3</sup>)</b>	<b>Topsoil (m<sup>3</sup>)</b>	<b>Weathered rock (m<sup>3</sup>)</b>
18.01.2019 - 17.01.2020	6500	1300	5200	3876	4860
18.01.2020 - 17.01.2021	7020	1404	5616	3672	4860
18.01.2021 - 17.01.2022	7020	1404	5616	3672	4860
18.01.2022 - 17.01.2023	7180	1436	5744	408	540
18.01.2023 - 17.01.2024	7300	1460	5840	-	-
<b>Total</b>	<b>35020</b>	<b>7004</b>	<b>28016</b>	<b>11628</b>	<b>15120</b>

**Table - 3A**

<b>Achieved</b>							
<b>Year</b>	<b>ROM (m<sup>3</sup>)</b>	<b>Production (m<sup>3</sup>)</b>	<b>Despatch (m<sup>3</sup>)</b>	<b>Recovery (%)</b>	<b>Granite Waste (m<sup>3</sup>)</b>	<b>Topsoil (m<sup>3</sup>)</b>	<b>Weathered rock (m<sup>3</sup>)</b>
18.01.2019 - 17.01.2020	6493	891.927	891.927	14	5601.073	3852	4835
18.01.2020 - 17.01.2021	6825	864.273	392.690	13	5960.727	3665	4850
18.01.2021 - 17.01.2022	7020	973.248	1,444.831	14	6046.752	3670	4860
18.01.2022 - 17.01.2023	7124	753.118	753.118	11	6370.882	251	493
18.01.2023 - 07.07.2023	5733	251.569	251.569	4	5481.431	-	-
<b>Total</b>	<b>33195</b>	<b>3734.135</b>	<b>3734.135</b>	<b>11</b>	<b>29460.865</b>	<b>11438</b>	<b>15038</b>

The proposed recovery was @ 20% but achieved an average recovery of 11% due to weathered joints and fractures of top layer of the Black granite. The quarry operation was carried out in the top benches were more fissures and fractures are found. In deep seated conditions the fissures and fractures got much reduced, which may enhance the recovery upto 20%. At present the lessee has developed the top layer of the and carried out the quarry operation in the flawless massive sheet rock, it gives more recovery due to that portion is very hard and compact. Since, at present depth the recovery enhancement may possible. Hence, the estimated anticipated recovery would be about 20% from the R.O.M. during this present scheme period. If any substantial change in the recovery percentage during operation, it will be discuss an ensuing scheme of quarrying.

In the Interest of quarrying, the lessee worked out continuously and tried his maximum effort to market. The lessee has keen in carrying out the quarrying operations in a scientific and systematic manner to win the Black Granite in all possible means. The lessee carried out all possible ways and best efforts to develop and exploit the granite continuously.

**REVIEW OF MINING DEVELOPMENT:**

The production and development was proposed on the Western side and progressed towards Eastern side with maximum dimensions of (Length) 172m x (Width) 34m x (Depth) 20m below from existing ground profile, the lessee has carried out the quarry operation as proposed in the approved mining plan. At present there are seven different depth pits exists within the lease area. The maximum dimensions of the present pits are given table below (Please refer Plate No. III).

*K. Parameswar*



Table - 4

Existing Pit Dimension							
Pit ID	Existing R.L. (m)	Pit R.L. (m)	Area (m <sup>2</sup> )	Total Depth (m)	Formation wise Depth (m)		
					Topsoil	Weathered	Granite
D-1	80	79	188	1	1	-	-
D-2	80	78	245	2	2	-	-
D-3	80	77	551	3	2	1	-
D-4	80	75	1281	5	2	-	-
D-5	80	70	1458	10	2	-	5
D-6	80	65	1089	15	2	-	10
D-7	80	60	1001	20	2	-	15

Table - 4A

Existing Pit Volume (m <sup>3</sup> )				
Pit ID	Topsoil	Weathered	Granite	Total Excavation
D-1	188	-	-	188
D-2	490	-	-	490
D-3	1102	551	-	1653
D-4	2562	3843	-	6405
D-5	2916	4374	7290	14580
D-6	2178	3267	10890	16335
D-7	2002	3003	15015	20020
<b>Total</b>	<b>11438</b>	<b>15038</b>	<b>33195</b>	<b>59671</b>

Table - 4B

Excavated Quantity Management Details				
Total Excavation (m <sup>3</sup> )	Production (m <sup>3</sup> )	Topsoil Bund [2830m <sup>2</sup> x 4m(H)] (m <sup>3</sup> )	Waste Dump (L)64m x (W)42m x 16.5m(H) (m <sup>3</sup> )	Topsoil and Waste fragmentation and utilized for Leveling, Road and Ramp formation (m <sup>3</sup> )
<b>59671</b>	<b>3734.135</b>	<b>11,320</b>	<b>44,352</b>	<b>264.865</b>

**1.6.0 AFFORESTATION PROGRAMME:**

The safety zone along the Northern side boundary barrier has proposed to Green belt development but due to common mine boundary the lessee has carried out the green belt development in topsoil preserved area on the Southern side with neem trees. Program of Green belt as given in the approved Mining Plan period is given as under.

Table - 5

Year	Number of saplings	Name of the Species	Area to be covered in m <sup>2</sup>	Expected Survival rate %	No. of trees expected to grown	No. of trees growing
2019 - 20	20	Neem, Pongamia pinnata, Casuarina, etc.,	200	80	16	3
2020 - 21	20		200	80	16	4
2021 - 22	20		200	80	16	4
2022 - 23	20		200	80	16	5
2023 - 24	20		200	80	16	7

Nearly 1,000m<sup>2</sup> area is proposed for Green belt development with 100 numbers of tree sapling around the quarry and the survival was 80 trees mentioned during the mining plan period. The tree sapling carried out during the approved Mining Plan period is got poor survival due to failure of monsoon and water scarcity. Anyhow, the lessee ensures to compensate the Green belt during the present scheme period.

*K. Parandur*

**1.7.0 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 proposed volume of waste is about  $43,136\text{m}^3$  (Granite Waste  $28,016\text{m}^3$  + Weathered  $15,120\text{m}^3$ ) the same has proposed to dump on the South and Eastern side with maximum dimension of (Area)  $2,230\text{m}^2$  x (H)  $19.2\text{m}$  and the quarried out topsoil ( $11,628\text{m}^3$ ) has proposed to preserved all along the safety barrier and utilized for construction of bund and Green belt development purpose.

During the past five years the excavated topsoil has preserved all along the safety zone and waste has dumped in the existing pit situated on the Eastern side. The maximum dimension of the existing topsoil and waste dumps are given table below (Refer Plate No. III).

Table - 6

Dump Name	Length (m)	Width (m)	Height (m)
Topsoil	Area = $2830\text{m}^2$		4
Waste	64	42	16.5

In the approved Mining Plan only 20m (2m Topsoil + 3m Weathered rock + 15m Black granite) depth has been envisaged as workable depth for quarry operation. During the present scheme period 35m depth has been considered as economically viable for safe and systematic quarrying operations, now the quarry attained a maximum depth of 20m below from the existing ground profile in a portion of the lease area. The entire quarry area is an active. When the quarry reaches the ultimate pit limit or at the end of life of quarry, quarried out waste will be proposed to backfilled. Hence, immediate backfilling does not arise.

**1.8.0 CONTROL OF DUST, NOISE AND VIBRATION:**

The quarry operation has carried out by mechanized means and HEMM were deployed occasionally. Hence, the effects due to dust, noise and vibration were minimal. Anyhow the Ambient qualities of Air respect of dust concentration, respirable dust,  $\text{SO}_2$ ,  $\text{NO}_2$  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 quarry are Blasting site, Loading, Hauling and dumping. All such areas were closely monitored as per the guidelines.

The quarry operation was carried out by mechanized method with shallow drilling and mild 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  $< 80\text{ dB}$ . As the compressors are, keep at high levels the impact of noise to the workers is less. Expanding Chemical is used for cracking the rough blocks and therefore noise of Diamond wire saw cutting is minimal.

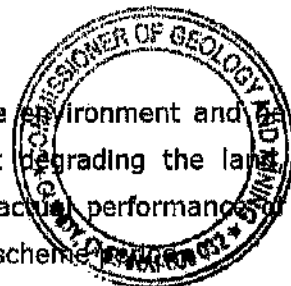
*K. Paragur*

**VIBRATION:**

Blasting induced ground vibration is the only source of vibration in quarrying area. But, chemical @ 1kg for 3 feet is used for 8 hours retention time for cracking the solid rock along the line of drilling. Vibration is observed in this quarry is negligible.

**1.9.0 SIGNIFICANT FEATURES:**

Being an individual lessee, who is much concerned about the environment and closely monitored the environmental factors systematically without degrading the land, water and air. However, tests have to be carried out to show the actual performance of quarry on environmental issues which will be compiled in the present scheme.

**PART - I****2.0 PROPOSAL UNDER SCHEME OF QUARRYING FOR THE NEXT FIVE YEARS:****2.1 NAME OF THE LESSEE WITH ADDRESS**

Name of the Lessee : **Thiru. K. Paramasivam,**  
S/o. Krishnasamy Gounder  
Address : No. 135, Mullai Nagar,  
Old Bus Stand Road, Perundurai  
District : Erode  
State : Tamil Nadu  
Pin code : 638 052  
Mobile No : +91 94437 14257  
Email ID. : esteemgranites@hotmail.com  
Aadhaar No : 4018 9360 9432 (Refer Annexure No. XII)

**2.2 NAME, ADDRESS AND REGISTRATION NUMBER OF THE RECOGNISED QUALIFIED PERSON WHO PREPARED THE SCHEME OF QUARRYING**

Name : **S. ILAVARASAN, M.Sc.,**  
Recognised Qualified Person  
Registration No. : RQP/MAS/253/2013/A  
Address : No.17, Advaltha Ashram Road,  
Alagapuram,  
Salem - 636 004,  
Tamil Nadu.  
Mobile : +91 94433 56539, 94422 78601.  
Telephone : +91 427 2431989(Office).  
E-Mail : infogeoexploration@gmail.com

(Refer Annexure No. XIII)

*K. Paramasivam*

**2.3 DETAIL OF LEASE PARTICULARS ARE GIVEN AS UNDER**

Table - 7

G.O. No.	Extent (Ha.)	Date of Execution	Period of lease	Valid Upto
G.O.(3D) No.50 Dated: 18.12.2018	1.00.0	18.01.2019	20 Years	17.01.2039

The quarry lease was granted vide G.O.(3D) No. 50 Industries (MMB.2) Department dated: 18.12.2018 for the period of 20 years (Refer annexure No. I). The Quarry lease was executed on 18.01.2019 and the lease period is valid upto 17.01.2039 (Refer Annexure No. XI).

**2.4 DETAILS OF THE AREA**

- The area is marked in the Geological Survey of India, Topo sheet no. 57- P /08.
- 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 - 8

District	Taluk	Village	S.F.No.	Area in Ha.	Patta No.	Classification
Viluppuram	Vikkiravandi	Siruvalai	407/3(P)	1.00.0	933	Patta land, Classified as Punjai (Refer annexure No. IV to VI).

The area lies between the Latitudes of 12°02'01.31"N to 12°02'05.11"N and Longitudes of 79°25'56.77"E to 79°26'03.51"E in WGS Datum-1984 (Refer Plate No. I & IA).

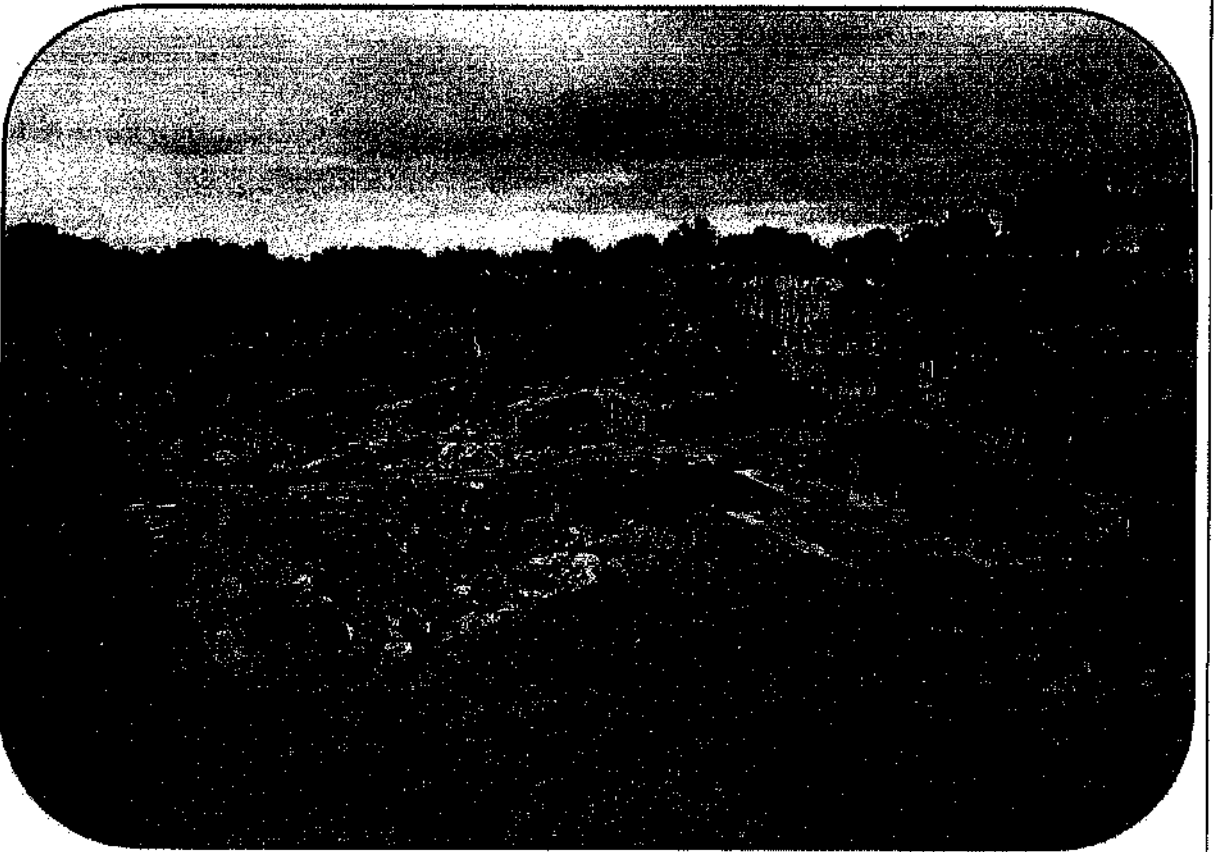
It is a patta land, jointly registered in the name of Thiru. K. Paramasivam and Tmt. R. Shanthi vide patta No. 933 (Refer annexure No. IV to VI). The lessee has obtained consent from the joint pattadhar (Refer Annexure No. VII).

**3.0 EXPLORATION AND RESERVES****3.1 Physiography**

The area is situated in flat terrain. The gradient is gentle towards Southeast and altitude of the area is 80m above from MSL. The Black granite is covered with 2m thickness of Reddish soil. The Black granite is medium to fine grained with composed laths of plagioclase embedded in the plates of Augite. The area receives an average rainfall 1012mm /annum (average for the past five years) and the ground water occurs at a depth of 53m.

*12. Paramasivam*

**TOPOGRAPHICAL VIEW OF SIRUVALAI BLACK GRANITE QUARRY LEASE AREA**



*K. P. Srinivasan*



DEPT. OF  
GEOLOGY AND MINES

**FENCING**



*(Handwritten signature)*

**SITE SERVICES**



**NOTICE BOARD**

**M/S ESTEEM-GRANITES SIRUVALAI**

**NAMES AND ADDRESS OF THE K.P.A.R.A.M.A.S.I.A.M**  
407/3 SIRUVALAI VILLAGE  
VILUPPURAM - DISTRICT

**NAMES AND ADDRESS OF THE INSPECTORS**  
**STRIKES & DISCIPLINE: QUARTER MASTER (M.S.P.)**

- DIRECTOR OF MINES SAFETY** : B.P. Srinivasan  
OFFICE: VILUPPURAM
- D.V. DIRECTOR OF MINES SAFETY** : K. Srinivasan  
OFFICE: VILUPPURAM
- REGIONAL LABOUR COMMISSIONER** : S. Srinivasan  
OFFICE: VILUPPURAM
- ASSISTANT LABOUR COMMISSIONER** : V.K. Srinivasan  
OFFICE: VILUPPURAM
- LABOUR ENFORCEMENT OFFICER** : S. Srinivasan  
OFFICE: VILUPPURAM

**M/S ESTEEM GRANITES SIRUVALAI**

**LEASE HOLDER NAME AND ADDRESS** : K. P. Srinivasan  
S/O M/S ESTEEM GRANITES SIRUVALAI  
407/3 SIRUVALAI VILLAGE  
VILUPPURAM - DISTRICT

**GOVT. ORDER No.PIT 1** : GO (30) NO. 2.5 INDUS/1983  
(M.M.B. DEPARTMENT BANGALORE)

**LEASE PERIOD** : 20 YEARS, VALID FROM 01/01/1984

**COLLECTOR ORDER No.** : 3/76-11/1980, 2004 D.V.P. 0001

**GOVT. ORDER NO.PIT 2** : GO (37) NO. 80, INDUS/1989  
(M.M.S. DEPARTMENT CHENNAI)

**LEASE PERIOD** : 20 YEARS,  
FROM 01/01/90 TO 31/01/2010

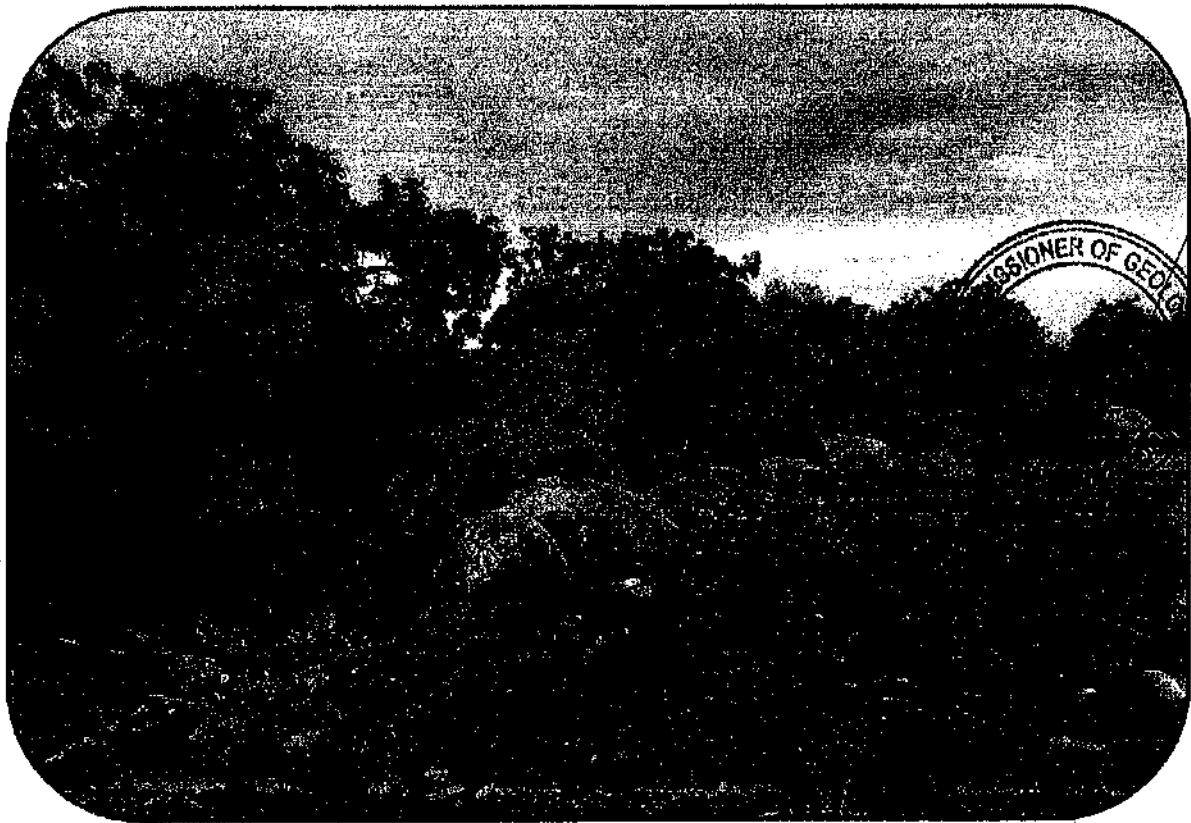
**COLLECTOR ORDER NO.** : 2/8 - 11/1987/2007 D.V.P. 12 0113

**QUARRY LOCATION** : SF NO 407/30, (VILUPPURAM)  
VILLAGE: VILUPPURAM, T.K.  
VILUPPURAM - DISTRICT

**EXTEND CLASSIFICATION** : 2.000 HECTARES  
FANTA LAND

K. Palaniappan

**GREEN BELT**



**SETTLING POND FOR WATER RECYCLING**



*K. Paraman*



**Regional Geology:**

The hard rock terrain of Archaean to Late proterozoic comprises of predominantly Granite, Gneiss, Charnockite, Khondalite group of rocks and their magmatic derivatives, supracrustal sequences intruded by ultramafic complexes, basic dykes, granites

The northern part of Tamil Nadu, north of Noyil - Cauvery River is characterized by the occurrences of a number of Dolerite dykes in contrast to the areas south of Noyil - Cauvery River where the dykes are absent. The dolerite dykes in general trending is in WNW- ESE and NNE - SSE directions and rarely in N-S and NNW - SSE directions.

In central part of Tamil Nadu, ENE - WNW to NE- SW trending dolerite dykes (black granite) are seen transecting the Charnockite in Kalrayan & Kolli Hills. Palaeo magnetic studies of some of these dykes indicate Mid-Proterozoic age.

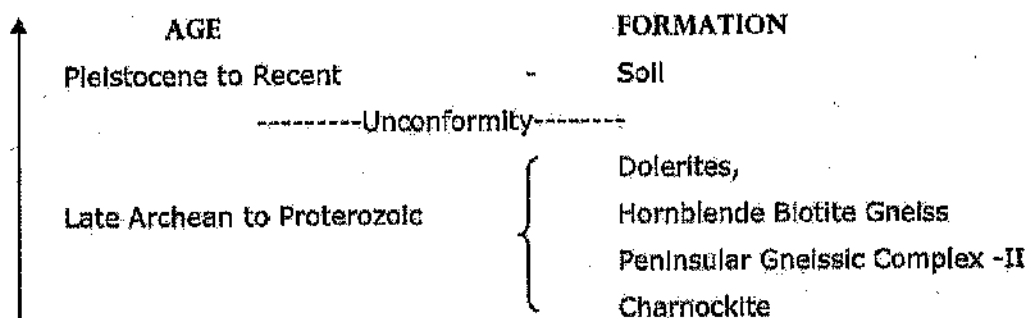
Due to emplacement of Dolerite Dykes along narrower plains of weakness, the rock on solidification develops cracks and fractures mostly along the contacts with the country rocks. The dolerite dykes are mostly emplaced as 'swarms' in an area.

Granites were formed from molten rock referred to as "Magma" formed at great depths within the crust of the earth. During the cooling process, some of the minerals grow into larger crystals of colours peculiar to those minerals or get aligned along certain preferred directions giving rise to beautiful colors and patterns. Such rocks that were formed at great depths during the Archaean age are now exposed at the surface of the earth as a result of the combined actions of wind, air, sun and water and weathering and denudation over the past several million years.

**Geology of the area**

In the Viluppuram district of Tamil Nadu is characterized by the occurrences of Numerous Dolerite dykes especially in Kunnam Black granite is a world famous. The trending of the dolerite dyke in this area is NW - SE direction.

The quarry lease area contains pre-existing country rock of Charnockite and intruded by dolerite dyke. The dyke is covered by 2m thickness of Reddish soil, 3m thickness of Weathered rock and followed by fresh marketable black granite (Dolerite). The dolerite dyke is hard, compact and sheet in nature at the middle and boundary along the contacts due to geological disturbances.

**STRUCTURAL SETTINGS OF THE AREA**

*te. Palanis*

The Charnockite is the host rock by trending NE - SW direction and dipping towards NW70°. The dolerite dyke intruded between the country rock of Charnockite with trending of N70°W - S70°E direction with vertical dipping. The **total width of the dyke is 90m** but the **lease area covered** with an average **width of 45m** which stretches about entire lease area. The black granite (dolerite) exhibits sub-ophitic texture, which is the special type of ophitic texture. The Dolerite composed of laths of plagioclase embedded in the plates of Augite. Apatite, magnetite and Ilmenite form the secondary constituents.

The color of the rock changes depending upon the texture of the rock. The Dykes is fine grained at the contact of country rock.

Strike Direction	-	N70°W - S70°E
Dip direction and amount	-	Vertical.
Strike length	-	195m
Dyke Width	-	45m

### **3.1 DETAILS OF EXPLORATION**

#### **3.1.1. ALREADY CARRIED OUT**

As far as Black granite deposits are concerned, the only practical method is the systematic geological mapping and delineation of commercial black 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.

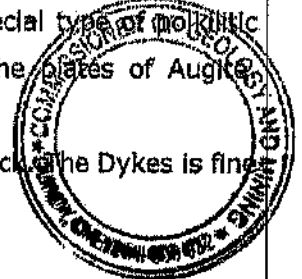
Based on the valuable geological information and by the field experience, the estimation of geological resources, mineable reserve is arrived at considering to waste and market potential.

#### **3.1.2. PROPOSED STUDY TO BE CARRIED OUT**

Even though the depth persistence of the Black granite stone may be beyond 35m depth (2m topsoil + 3m Weathered rock + 30m Black granite) from the Petrogenetic character of the rock, only 35m depth persistent has been taken as economically viable depth to calculate categories of proved, probable, and possible reserves.

The recovery of saleable Black granite stones has been taken as 20% and if the granite formation is good, recovery percentage 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.



*K. Durairaj*

**3.2 METHOD OF ESTIMATION OF RESERVES**

The geological plan demarcating the commercially viable granite body has been prepared in 1:1000 scale (Plate No. IV). Totally four sections have been drawn, one along the strike direction as (X-Y) length wise and other three cross sections are drawn perpendicular to strike as (A-B, C-D and E-F) width wise which is suitably chosen to cover the maximum area at the scale of 1:1000 (Plate No. IV).

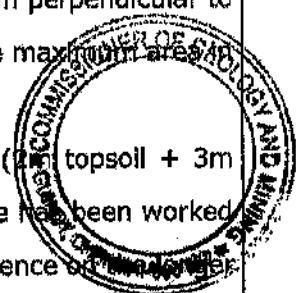
The cross sectional area for the proved depth persistence of 35m (2m topsoil + 3m Weathered rock + 30m black granite) below from the existing ground profile has been worked out for each section. The cross sectional area multiplied by its length of influence on the X-Y axis gives the volume (Insitu) in the cross sectional area. The sum total of the insitu reserves available within the individual cross sectional area gives the Geological Resources of the leasehold area.

The granite recovery percentage has been considered @ 20% during this scheme period. 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 more than 20%. During the operation the method of quarry, deployment of men and machineries will not have any significant impact on the Environment. It is worth mentioning 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 may not be 100% of the R.O.M.

From the total Geological Insitu resources, the quantity of saleable granite stones and quantity of granite rejects and waste generation are computed by applying recovery factor at 20% by its volume.

As the salable black 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). Both geological resources and mineable reserves are categorized as proved under UNFC code 111.



*K. Palanivel*

**3.3 ESTIMATION OF GEOLOGICAL RESOURCES (REASSESSED ON 04.07.2023):**

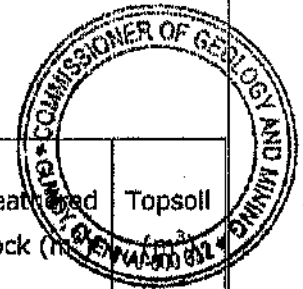
Maximum Length : 195m

Maximum Width : 53m (Black Granite + Side burden)

Maximum Depth : 35m

Table - 9

Section	Bench	Length (m)	Width (m)	Depth (m)	ROM (m <sup>3</sup> )	Recovery @ 20% (m <sup>3</sup> )	Granite Waste @ 80% (m <sup>3</sup> )	Side Burden (m <sup>3</sup> )	Weathered Rock (m <sup>3</sup> )	Topsoil		
										(m <sup>3</sup> )	(m <sup>3</sup> )	
XY-AB	i	53	15	2	-	-	-	-	-	-	1590	
	ii	53	15	1	-	-	-	-	795	-	-	
		70	25	2	-	-	-	-	3500	-	-	
	iii	70	41	5	14350	2870	11480	-	-	-	-	
		70	7	5	-	-	-	2450	-	-	-	
	iv	70	45	5	15750	3150	12600	-	-	-	-	
		70	7	5	-	-	-	2450	-	-	-	
	v	70	45	5	15750	3150	12600	-	-	-	-	
		70	7	5	-	-	-	2450	-	-	-	
	vi	70	45	5	15750	3150	12600	-	-	-	-	
		70	7	5	-	-	-	2450	-	-	-	
	vii	70	45	5	15750	3150	12600	-	-	-	-	
		70	7	5	-	-	-	2450	-	-	-	
	viii	70	45	5	15750	3150	12600	-	-	-	-	
		70	7	5	-	-	-	2450	-	-	-	
	<b>Total</b>					<b>93100</b>	<b>18620</b>	<b>74480</b>	<b>14700</b>	<b>4295</b>	<b>1590</b>	
	XY-CD	i	30	10	2	-	-	-	-	-	-	600
		ii	30	10	1	-	-	-	-	300	-	-
30			10	2	-	-	-	-	600	-	-	
iii		30	45	5	6750	1350	5400	-	-	-	-	
		30	7	5	-	-	-	1050	-	-	-	
iv		30	45	5	6750	1350	5400	-	-	-	-	
		30	7	5	-	-	-	1050	-	-	-	
v		30	45	5	6750	1350	5400	-	-	-	-	
		30	7	5	-	-	-	1050	-	-	-	
vi		47	45	5	10575	2115	8460	-	-	-	-	
		47	7	5	-	-	-	1645	-	-	-	
vii		47	45	5	10575	2115	8460	-	-	-	-	
		47	7	5	-	-	-	1645	-	-	-	
viii		47	45	5	10575	2115	8460	-	-	-	-	
		47	7	5	-	-	-	1645	-	-	-	
<b>Total</b>					<b>51975</b>	<b>10395</b>	<b>41580</b>	<b>8085</b>	<b>900</b>	<b>600</b>		



*K. Palanichandran*

XY-EF	I	37	26	2	-	-	-	-	-	1924	
	II	37	26	3	-	-	-	-	2886	-	
	III	37	18	5	3330	666	2664	-	-	-	
		37	8	5	-	-	-	1480	-	-	
	IV	72	34	5	12240	2448	9792	-	-	-	
		72	8	5	-	-	-	2880	-	-	
	V	78	45	5	17550	3510	14040	-	-	-	
		78	8	5	-	-	-	3120	-	-	
	VI	78	45	5	17550	3510	14040	-	-	-	
		78	8	5	-	-	-	3120	-	-	
	VII	78	45	5	17550	3510	14040	-	-	-	
		78	8	5	-	-	-	3120	-	-	
	VIII	78	45	5	17550	3510	14040	-	-	-	
		78	8	5	-	-	-	3120	-	-	
	<b>Total</b>					<b>85770</b>	<b>17154</b>	<b>68616</b>	<b>16840</b>	<b>2886</b>	<b>1924</b>
	<b>Grand Total</b>					<b>230845</b>	<b>46169</b>	<b>184676</b>	<b>39625</b>	<b>8081</b>	<b>4114</b>

Total Geological Resource In ROM	=	2,30,845m <sup>3</sup>
Total Recoverable Reserves @ 20%	=	46,169m <sup>3</sup>
Granite Waste @ 80%	=	1,84,676m <sup>3</sup>
Side burden (SB)	=	39,625m <sup>3</sup>
Weathered Rock (WR)	=	8,081m <sup>3</sup>
Total Waste (Granite Waste + SB + WR)	=	2,32,382m <sup>3</sup>
Topsoil	=	4,114m <sup>3</sup>
Granite: Waste ratio	=	1:5

The geological resources computed based on the geological cross sections up to the economically workable depth of 35m depth below the existing ground profile at the rate of 20% recovery yields 46,169m<sup>3</sup> and 2,30,845m<sup>3</sup> of ROM. **The total geological resources has been calculated after depleting the existing quarry pit (Plate No. IV).**

*K. Paranjay*

**3.4 ESTIMATION OF MINEABLE RESERVES (REASSESSED ON 04.07.2023):**

Total Length : 175m

Maximum Width : 42m

Maximum Depth : 35m

Table - 10

Section	Bench	Length (m)	Width (m)	Depth (m)	ROM (m <sup>3</sup> )	Recovery @ 20% (m <sup>3</sup> )	Granite Waste @ 80% (m <sup>3</sup> )	Weathered Rock (m <sup>3</sup> )	Topsoil (m <sup>3</sup> )
XY-AB	I	45	4	2	-	-	-	-	-
	II	42	1	1	-	-	-	42	-
		58	11	2	-	-	-	1276	-
	III	55	31	5	8525	1705	6820	-	-
	IV	50	30	5	7500	1500	6000	-	-
	V	45	25	5	5625	1125	4500	-	-
	VI	40	20	5	4000	800	3200	-	-
	VII	35	15	5	2625	525	2100	-	-
VIII	30	10	5	1500	300	1200	-	-	
<b>Total</b>					<b>29775</b>	<b>5955</b>	<b>23820</b>	<b>1318</b>	<b>360</b>
XY-CD	II	30	37	2	-	-	-	2220	-
	III	30	37	5	5550	1110	4440	-	-
	IV	30	32	5	4800	960	3840	-	-
	V	30	27	5	4050	810	3240	-	-
	VI	47	22	5	5170	1034	4136	-	-
	VII	47	17	5	3995	799	3196	-	-
	VIII	47	12	5	2820	564	2256	-	-
<b>Total</b>					<b>26385</b>	<b>5277</b>	<b>21108</b>	<b>2220</b>	<b>-</b>
XY-EF	I	26	15	2	-	-	-	-	780
	II	23	12	3	-	-	-	828	-
	III	20	9	5	900	180	720	-	-
	IV	50	22	5	5500	1100	4400	-	-
	V	51	26	5	6630	1326	5304	-	-
	VI	46	21	5	4830	966	3864	-	-
	VII	41	16	5	3280	656	2624	-	-
	VIII	36	11	5	1980	396	1584	-	-
<b>Total</b>					<b>23120</b>	<b>4624</b>	<b>18496</b>	<b>828</b>	<b>780</b>
<b>Grand Total</b>					<b>79280</b>	<b>15856</b>	<b>63424</b>	<b>4366</b>	<b>1140</b>

Total Mineable Reserves in ROM	=	79,280m <sup>3</sup>
Total Recoverable Reserves @ 20%	=	15,856m <sup>3</sup>
Granite Waste @ 80%	=	63,424m <sup>3</sup>
Weathered Rock (WR)	=	4,366m <sup>3</sup>
Total Waste (Granite Waste + WR)	=	67,790m <sup>3</sup>
Topsoil	=	1,140m <sup>3</sup>
Granite: Waste ratio	=	1:4.3

The mineable reserves have been computed as 15,856m<sup>3</sup> at the rate of 20% recovery with 79,280m<sup>3</sup> of ROM. The mineable reserves are calculated by deducting the mineral locked up area under safety distance, bench loss and existing quarry pit. Proved & possible reserves are categorized upto 35m depth below from the existing ground profile (Plate No. IV).

*K. Parasuram*

The Black Granite body occurring in this area exhibits more or less uniform colour, texture and sold in Par with commercial granite deposit. If any variation occurs during quarrying, such as cracks, joints, patches, colour variations etc., the defective area will be removed during dressing and marketed. The formation is uniform and no gradational change noticed except some patches, shears and cracks.

#### **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 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.

The ultimate pit dimensions of the quarry are given below.

**Table - 11**

ultimate pit Dimensions in meters (Maximum)		
Length	Width	Depth
175	43	35

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 84,786m<sup>3</sup> (ROM 79,280m<sup>3</sup> + Weathered Rock 4,366m<sup>3</sup> + Topsoil 1,140m<sup>3</sup>) to a depth of 35m. The generation of total waste is estimated about 67,790m<sup>3</sup> (Granite Waste 63,424m<sup>3</sup> + Weathered Rock 4,366m<sup>3</sup>) and marketable Black granite is 15,856m<sup>3</sup> for the remaining lease period.

During this scheme period, excavated waste (31,087m<sup>3</sup>) will be proposed to dump over the existing waste dump situated on the Eastern side with dimension of (L)64m x (W)42m x (H)28.06m, which will be act as temporary waste dump.

After expiry of the 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 from concerned authorities, the waste material will be supplied to needy crusher for converting building and road construction material after paying the senorage fee and obtained necessary clearance and approval from concerned department for handling the waste. After completion of quarry operation, the quarried out pit will be allowed to collect seepage and rainwater, the water storage will be act as temporary reservoir for charging the nearby wells also the water utilized for nearby agricultural fields.

When the entire mineral reserves will be completely exhausted if permission not obtained for handling the waste, backfilling will be carried out nearly existing ground profile and spread out the preserved topsoil over the backfilled area to develop green belt. The Conceptual Mining is based upon the entire ROM proposed for the life of the Mine.

The quarry area fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle (Refer plate Nos. VII & IX).

*K. Palanichamy*

**5.0 MINING**

No change in the method of mining. The same open cast mechanized mining with 5m vertical bench with a bench width of 5m has been followed.

Under the regulation 106 (2) (b) of the Metalliferous Mines Regulation 1961, in open cast mining, the bench height should not exceed 5m 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, relaxation of the provisions of Regulation 106(2) (b) is available with Director of Mines Safety. If the lessee intends to modify the dimensions of benches, relaxation and permission are available with Director General of Mines Safety under 106 (2) (b) of Metalliferous Mines Regulations, 1961. In such a scenario if there is any drastic change in the Resources and Reserves a modified plan will be submitted to the concerned authority for necessary relaxation, clearance and permission.

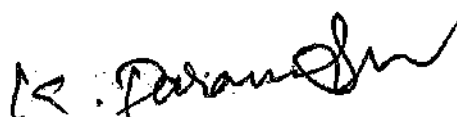
The production of Black granite dimensional stone in this quarry involves the following method typical for granite stone mining in contrast to other major mineral mining. Splitting of rock mass of considerable volume from the parent sheet rock is carefully removed by avoiding any kind of damage in the 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 Crawler Crane.

Removing the defective portion and dressing into the dimensional blocks are done manually using feather, wedges, and chiselling 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 personnel of the lessee.

The waste material generated during quarrying activity includes rock fragments of different sizes and waste chips during dressing of the blocks.

These waste materials are taken in tippers by loading machines and dumped in the respective places ear-marked for the purpose (Plate No. V and VI). After completion of quarry operation quarried out waste will be backfilled.





**5.1 YEAR WISE DEVELOPMENT AND PRODUCTION FOR THE NEXT FIVE YEARS:**

Total Length : 85m

Maximum Width : 42m

Maximum Depth : 30m

Table - 12

Year	Section	Bench	Length (m)	Width (m)	Depth (m)	ROM (m <sup>3</sup> )	Recovery @ 20% (m <sup>3</sup> )	Granite Waste @ 80% (m <sup>3</sup> )	Weathered Rock (m <sup>3</sup> )	Topsoil (m <sup>3</sup> )
18.01.2024 to 17.01.2025	XY-AB	I	26	4	2	-	-	-	-	208
		II	23	1	1	-	-	-	-	-
			40	11	2	-	-	-	-	-
	XY-CD	II	30	37	2	-	-	-	2220	-
		III	30	37	5	5550	1110	4440	-	-
<b>Total</b>						<b>6480</b>	<b>1296</b>	<b>5184</b>	<b>3123</b>	<b>208</b>
18.01.2025 to 17.01.2026	XY-AB	III	31	31	5	4805	961	3844	-	-
	XY-CD	IV	13.8	32	5	2208	442	1766	-	-
<b>Total</b>						<b>7013</b>	<b>1403</b>	<b>5610</b>	-	-
18.01.2026 to 17.01.2027	XY-CD	IV	16.2	32	5	2592	518	2074	-	-
	XY-AB	IV	29.5	30	5	4425	885	3540	-	-
<b>Total</b>						<b>7017</b>	<b>1403</b>	<b>5614</b>	-	-
18.01.2027 to 17.01.2028	XY-AB	V	25	25	5	3125	625	2500	-	-
	XY-CD	V	30	27	5	4050	810	3240	-	-
<b>Total</b>						<b>7175</b>	<b>1435</b>	<b>5740</b>	-	-
18.01.2028 to 17.01.2029	XY-CD	VI	42	22	5	4620	924	3696	-	-
		VI	19	20	5	1900	380	1520	-	-
	XY-AB	VII	10	15	5	750	150	600	-	-
<b>Total</b>						<b>7270</b>	<b>1454</b>	<b>5816</b>	-	-
<b>Grand Total</b>						<b>34955</b>	<b>6991</b>	<b>27964</b>	<b>3123</b>	<b>208</b>

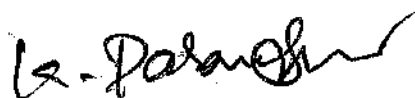
Total ROM = 34,955m<sup>3</sup>Total Recoverable Reserves @ 20% = 6,991m<sup>3</sup>Granite Waste @ 80% = 27,964m<sup>3</sup>Weathered Rock (WR) = 3,123m<sup>3</sup>Total Waste (Granite Waste + WR) = 31,087m<sup>3</sup>Topsoil = 208m<sup>3</sup>

Granite: Waste ratio = 1:4.4

**Estimated Life of the quarry**Mineable ROM = 79,280m<sup>3</sup>Mineable Recoverable Reserves @ 20% = 15,856m<sup>3</sup>Average Annual production @ 20% = 6,991m<sup>3</sup>/ 5years = 1,398m<sup>3</sup>

Estimated life of the quarry = 11 years

Except additional depth, the proposed dimensions of this scheme period are lesser than the dimensions proposed in the approved mining plan. Hence, there will not be any substantial change in the Method of quarrying, Drilling, Blasting, Wire saw cutting, Man power, Transportation and Handling of waste in the present scheme period. The proposed year wise quantum of excavation and the details of estimation of production quantity and generation of waste are furnished with reference to year wise development and production plan (Plate No. V). The average annual production per year would be 1,398m<sup>3</sup> during this scheme period considering at the rate of 20% recovery.



**5.2 PROPOSED RATE OF PRODUCTION WHEN THE QUARRY IS FULLY DEVELOPED**

The proposed rate of production when the quarry is fully developed is 1,398m<sup>3</sup> per annum @ 20% recovery. The production schedule for the subsequent five years are 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 dolerite dyke is deep seated in nature as they have been formed by basic intrusions from depth as dyke. The depth persistence of the dyke will be beyond the economically workable depth. The method of extraction of rock mass from dyke is highly expensive at greater depth at present scenario.

An optimum depth of 35m has been established as economically viable depth. Eventually this depth is optimum 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 for this Black granite quarry is thus arrived as 15,856m<sup>3</sup> at the rate of 20% recovery and 79,280m<sup>3</sup> of ROM for an assumed depth of 35m below from the existing ground profile. The details of estimation of five years development and production plan (Plate No. V).

The average rate of production of Black Granite from this quarry is 900m<sup>3</sup> per year and mineable recoverable reserves 15,856m<sup>3</sup> considering 20% recovery for the entire life of the quarry.

Based on the above, and taking into consideration of the available Mineable reserves, **the life of quarry is anticipated about 11 years** (considering all the safety factors) at 20% recovery, if the quarry is being worked continuously with an average annual production of 1,398m<sup>3</sup>. If the production may decrease the life of the quarry may increase. 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 of quarrying 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 for the development and production work at this quarry.

**I. DRILLING MACHINE**

Table - 13

S.No.	Type	Nos	Dia Hole mm	Size Capacity	Make	Motive power
1	Jack hammer	6	32	1.2m to 6m	Atlas Copco	Compressed air
2	Compressor	2	-	450/150 psa	Atlas Copco	Diesel Drive
3	Diamond Wire saw	1	-	20m <sup>3</sup> / Day	Optima	Diesel Generator
4	Diesel Generator	2	-	125kva	Kirloskar	Diesel

*K. Padanabhan*

**II. LOADING EQUIPMENT****Table - 14**

S.No.	Type	Nos	Capacity	Make	Motive Power
1	Excavator	2	220	Tata Hitachi	Diesel Drive
2	Crawler Crane	1	855	Tata	Diesel Drive

**III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT**

a)

**Table - 15**

S.No.	Type	Nos	Capacity	Make	Motive Power
1	Tippers	2	20 tonnes	Ashoke Leyland	Diesel Drive

**b) Transport from the quarry head to destination**

Transport from quarry head to destination is done by trucks or by trailers.

**c) Miscellaneous:**

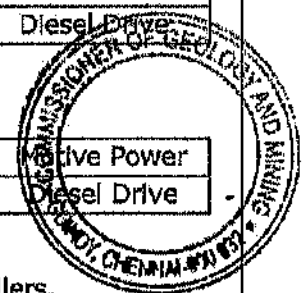
Apart from the above, the following tools and tackles are required for quarry operation.

**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 - 0.3m, 0.5m, 0.75m, 1.65m, 2.25m, 3m, 3.6m and upto 7m.
2. Steel Alloy chains of sufficient length of 12mm, 16mm, 18mm and 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, etc.
14. Stock of essential spare parts of machinery.
15. Diamond Wire required length.
16. Explosive as per the licensed quantity 'M' type portable explosive Magazine with accessories.
17. Besides diamond wire saw equipment and new innovative machine specifically designed for granite with accessories are required to liberate the rock from the parent body rapidly to minimize damage and to obtain good recovery. 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 during this scheme period.



*K. P. S. S. S.*

**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 reduced from induce fissures due to blasting. Besides those are noise free Eco friendly machines.

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 Competent Qualified Statutory personnels appointed by the lessee will maintain the records of Explosives as per the Indian Explosives Act. 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 in 53m below from general ground level as observed in nearby bore well. Working expected to well above the water table. If water is encountered at depth due to rainwater seepage, the same may be drained out by 5HP motor pumps and drained out water will be utilized for green belt development. Anyhow, Garland drain will be constructed all along the boundary to prevent surface run-off water entering into the quarry.

*K. P. S. S. S.*

**8.0 STACKING OF MINERAL WASTE AND DISPOSAL OF WASTE****a) Topsoil:**

There is 208m<sup>3</sup> of topsoil will be generated during this scheme period, the same will be preserved all along the boundary barrier and utilized for construction of bund and green belt development purpose.

**b) Granite waste and Land chosen for disposal of waste:**

The total quantity of waste produced during this scheme period will be around 31,087m<sup>3</sup> (Granite Waste 27,964m<sup>3</sup> + Weathered rock 3,123m<sup>3</sup>). The quarried waste will be proposed to dump over the existing waste dump situated on the Eastern side with dimension of (L)64m x (W)42m x (H)28.06m, which will be act as temporary waste dump.

**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 Black granite rough 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 black granite blocks is European Country, North America, Middle East, Far East, Japan, Taiwan & Canada besides catering local markets.

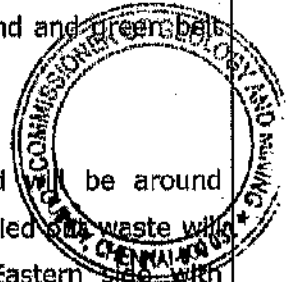
**10.0 QUALITY CONTROL**

The granite deposit occurring in this quarry shows uniform quality throughout and hence quarried and marketed as a single variety.

The excavated blocks are carefully examined for any natural defects such as joints, cracks, xenoliths growth etc., and such defects are removed manually using feather and wedges and the blocks are then shaped into perfect rectangular dimensional stone blocks by chiselling. Different price for each quality material have been fixed and the entire production quantity is marketed accordingly.

**11.0 SURFACE TRANSPORT**

The produced granite rough blocks are transported by road to the marketed to various customer destinations and granite processing units located at different parts of the country. The blocks and slabs approved for export market are shipped from Chennai Harbor to various countries and if required the blocks may be shifted to Thoothukudi Harbor depend upon the exporter's destination from time to time.



*K. Prasad*

**12.0 SITE SERVICES**

The simple methods adopted and the limited scale of activities involved in 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 day time only. Machinery repair works are attended at Viluppuram town (12km - SE) Minor repairs can be rectified at the quarry site itself by the lessee's experienced personnel.

Potable drinking water is supplied from the nearby water vendors in Viluppuram town. The quarry office, First-Aid Room, Store Room, Rest shed, Toilet etc. are already constructed in the lessee's own patta land situated on the northern side of the lease area (Plats No. - III to VII).

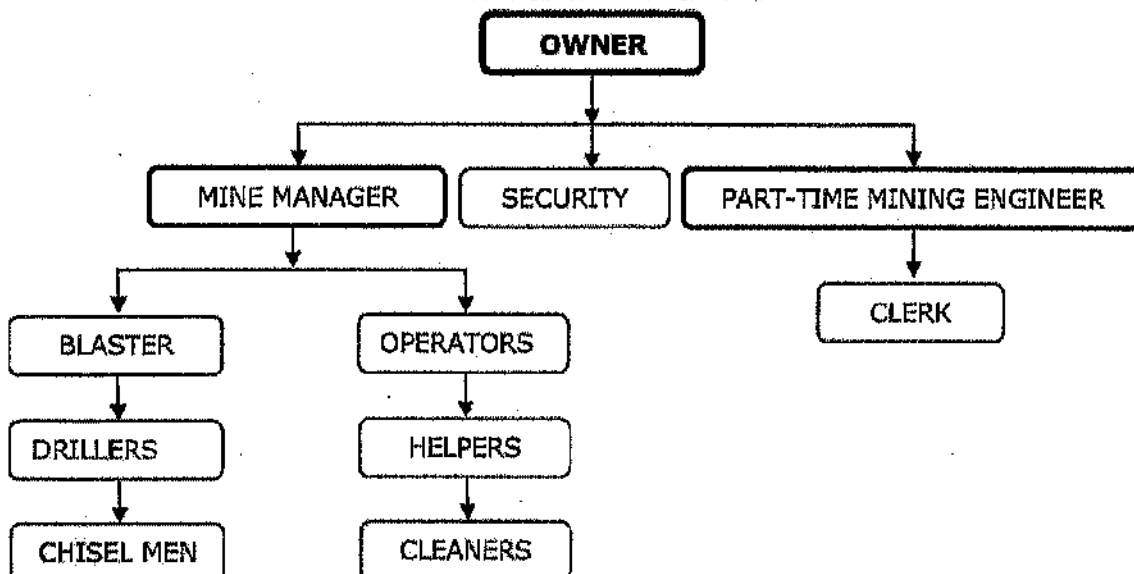
**13.0 EMPLOYMENT POTENTIAL**

The following manpower is proposed for the Black Granite quarry to look after and carryout 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) : 4

**WORKERS:**

- |    |                |             |
|----|----------------|-------------|
| a. | Skilled labour | : 5         |
| b. | Semi-skilled   | : 18        |
| c. | Unskilled      | : 6         |
|    | <b>Total</b>   | <b>: 35</b> |

**ORGANIZATION CHART**

The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Directorate of Mines Safety Regulations.

*K. Parameswari*

**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 is situated in flat terrain. The gradient is gentle towards southeast and altitude of the area is 80m above from MSL. It is a dry barren land, except quarry operation the area didn't utilized any other purpose. Agricultural activities are carried out by utilizing well water. The area experiences moderate climate and there is scanty growth of vegetation around the lease area.

Existing Land use pattern

Table - 16

Description	Present area (Ha)
Area under Quarry	0.58.13
Dump	0.32.78
Infrastructure	*Nil
Roads	0.02.00
Green Belt	Nil @ (0.02.00)
Stocking Blocks	0.05.09
<b>Grand Total</b>	<b>1.00.00</b>

- \* Site Services are already constructed on semi - permanent structures in the lessee's own patta land situated on the Northern side of the lease area (Plate No. III).
- @ The Green belt has carried out in the topsoil preserved area hence, area utilization has calculated in the waste dump area

**II. WATER REGIME:**

Ground water occurrence in this area is about 53m below from the ground level. The quarry operation confined to well above the ground 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, Canal, River or Reservoir within 50m radius. During rainy season the water table in the adjacent area may raise up. The subject area is a hard batholithic formation hence, the water table will not encounter from adjacent lands.

**III. FLORA AND FAUNA:**

The main floras are Paddy, maize, cereals, Cocos nucifera, Neem, Castor and Calotropis are observed 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 area is semi-arid with maximum temperature up to 42°C in summer and it drops down to 16°C during winter seasons. The area receives an average rainfall 1012mm /annum (average for the past five years).

*K. Prasad*

**V. HUMAN SETTLEMENT:**

There is no approved habitation located within 300m radius of the area. There are few villages located within 5km radius of the lease area. The direction, approximate distance and population are given below.

Table - 17

S. No	Name of the Village	Direction	Approximate aerial distance from the lease area	Approximate population
1.	Kanjanur	NE	4km	2,200
2.	Ezhusempon	NW	3km	2,600
3.	Adanur	SE	3km	4,100
4.	Siruvaial	SW	1km	2,500

Basic human welfare amenities such as health center, Schools, Government facilities, commercial centers etc., are available in Viluppuram located at 12km on the Southeast side of the lease area.

**VI. PUBLIC BUILDINGS, MONUMENTS AND PLACES OF WORSHIPS:**

There is no Public building, Archaeological or National Monument or places of worship situated within 300 meter radius of the quarry site.

Table - 18

Particulars	Location	Approximate aerial distance and direction from the lease area.
Nearest Post Office	Siruvaial	1km - SW
Nearest School	Siruvaial	1km - SW
Nearest Dispensary	Siruvaial	1km - SW
Nearest Police Station	Kanjanur	4km - NE
Nearest Hospital	Viluppuram	12km - SE
Nearest Town	Viluppuram	12km - SE
Nearest D.S.P. Office	Viluppuram	12km - SE
Nearest Railway Station	Viluppuram	12km - SE
Nearest National Highway	Viluppuram - Tiruvannamalai (NH - 38)	3.1km - South
Nearest State Highway	Viluppuram - Gingee (SH - 4)	4.2km - East
Nearest Airport	Chennai	146km - NE
Nearest Seaport	Chennai	146km - NE
District Head Quarters	Viluppuram	12km - SE

**VII. WEATHER THE AREA FALLS UNDER NOTIFIED AREA UNDER WATER ACT, 1974.**

The area falls under notified area under water (Prevention and Control of Pollution) Act, 1974.

**14.2 ENVIRONMENT IMPACT ASSESSMENT STATEMENT**

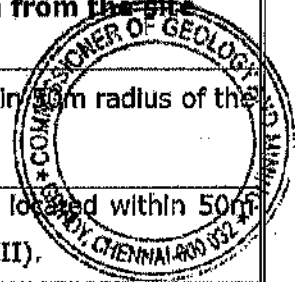
The scheme of quarrying is proposed very small production of black granite dimensional stone without involving deep hole drilling and heavy blasting. Such limited quarrying activity is not likely to cause any impact adversely on environment as far as pollution of air, water and noise is concerned. If any significant variation found during the Half year compliance, the Environment Management Plan will be altered accordingly.

*K. Palanichandran*



Table - 19

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.	Tank/Lake/Odal/ Canal/Stream/ River/Reservoir	50m	There is no water bodies located within 50m radius of the area (Refer Plate No. VIII).																							
2.	Railways/ Highways.	50m	There is no Railways and Highways located within 50m radius of the area (Refer Plate No. VIII).																							
3.	Village Road	10m	There is village road passing on the western side, a safety distance of 10m has been provided (Refer Plate No. II).																							
4.	Habitation / Public building/ Archaeological or Historical Monument	300m	None of the above situated within 300m radius of the area (Refer Plate No. VIII).																							
5.	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>407/3(P)</td> <td>Patta land- Adjacent quarry</td> <td>Common mine boundary</td> </tr> <tr> <td>East</td> <td>170/1</td> <td>Govt. Land</td> <td>10m to the Road</td> </tr> <tr> <td>South</td> <td>170/1 and 437/1</td> <td>Govt. Land</td> <td>10m to the Road</td> </tr> <tr> <td rowspan="2">West</td> <td>407/2</td> <td>Patta Land</td> <td>10m to the Village Road</td> </tr> <tr> <td>451/3</td> <td>Patta Land</td> <td>7.5m</td> </tr> </tbody> </table> <p>(Please Refer Plate No. II).</p>	Direction	S.F. No.	Classification	Safety Distance	North	407/3(P)	Patta land- Adjacent quarry	Common mine boundary	East	170/1	Govt. Land	10m to the Road	South	170/1 and 437/1	Govt. Land	10m to the Road	West	407/2	Patta Land	10m to the Village Road	451/3	Patta Land	7.5m
Direction	S.F. No.	Classification	Safety Distance																							
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West	407/2	Patta Land	10m to the Village Road																							
	451/3	Patta Land	7.5m																							
6.	Housing area, EB line (HT/LT Line)	50m	There is no LT/HT line or Housing area located within 50m radius.																							
7.	Boundaries of the permitted area	7.5m	North - S.F.No. 407/3(P) East - S.F.No. 170/1 South - S.F.Nos. 170/1 and 437/1 West - S.F.Nos. 407/2 and 451/3 (Please refer Plate No. II).																							
8.	Reserve forest	60m	The nearest Reserve Forest is Udayanatham R.F. situated at 10.1km on the Northwest side of the lease area (Refer Plate No. IA).																							
9.	Protected area / ECO sensitive area/State or International border	10Km	There is no Wildlife sanctuary/ Eco Sensitive area/ Reserved Forest/ Critically polluted area/ CRZ/ HACA/ State border located within 10km radius (Plate No. IA).																							



*K. Palaniappan*

## The Financial Estimation for Quarry operations and Environment Management Plan (EMP).

Table - 20

A. Machineries and Equipment Cost		
S.No.	Description	Approximate Cost (Rs.)
1.	Land Cost (As per Govt. Guideline value) 1.00.0Ha x Rs. 5,14,000/Ha = Rs. 5,14,000/-	5,14,000
2.	Labour Shed	5,00,000
3.	Sanitary Facility	1,00,000
4.	First aid Room and Accessories	50,000
5.	Excavator (1 No.)	1,12,00,000
6.	Crawler Crane (1 No.)	75,00,000
7.	Tipper (2 Nos.)	50,00,000
8.	Diesel Generator (1 No.)	15,00,000
9.	Wire Saw (1 No.)	4,00,000
10.	Compressor with loose tools (2 Nos.)	18,00,000
11.	Jack Hammer (6 Nos.)	3,00,000
12.	Drinking Water Facility	1,00,000
13.	Safety Kits	50,000
14.	Fencing Cost (300m length x Rs. 300/- per meter)	90,000
15.	Garland drain (250m length x Rs. 300/- per meter)	75,000
16.	Green belt development under safety zone during this scheme period (500 saplings x Rs. 200/- per sapling)	1,00,000
17.	Green belt development on haul road during first year of this scheme period (500 saplings x Rs. 200/- per sapling)	1,00,000
18.	Water sprfnkling	1,00,000
<b>Total Machineries and Equipment Cost</b>		<b>2,94,79,000</b>

K. Paranthaman

**B. Proposed financial estimate / budget for (EMP) Environmental Management Plan:**

Budget Provision for the present Scheme period

S. No.	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charges/ year	Total Charges For Mining plan/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
<b>Total EMP Cost/ year</b>					<b>76,000</b>	<b>3,80,000</b>

The EMP cost for the five year Scheme period would be around **Rs. 3,80,000/-**

<b>Total Cost of the Project including EMP Cost</b>	
Description	Amount (Rs)
<b>A. Machinerles and Equipment Cost</b>	<b>2,94,79,000</b>
<b>B. EMP Cost</b>	<b>3,80,000</b>
<b>Total Project Cost (A+B)</b>	<b>2,98,59,000</b>
1. The lessee Indents to Involve corporate Environment responsiblities (CER) activity like Water purfier, Fan, Sanitary facilities and other requirement to the Siruvalai Govt. School at 2.0% from the total project cost. The cost would be around <b>Rs. 5,98,000/-</b> .	<b>5,98,000</b>
<b>Total Cost</b>	<b>3,04,57,000</b>

(Total project cost including EMP cost is about rupees three crore four lakh and fifty seven thousand only).

**14.3 PROPOSAL FOR WASTE MANAGEMENT**

The waste in the quarry includes rock fragments, rubbles generated as waste during production work.

During the present scheme period excavated waste (31,087m<sup>3</sup>) will be proposed to dump over the existing waste dump situated on the Eastern side with dimension of (L)64m x (W)42m x (H)28.06m, which will be act as temporary waste dump.

The waste management plan with reference to the quantum of waste generated is shown in quarry layout plan (Plate No. VI).

*K. Parasuram*

#### 14.4 PROPOSAL FOR RECLAMATION OF LAND AFFECTED BY MINING ACTIVITIES DURING & AT THE END OF QUARRYING

In the scheme of quarrying proposed depth of quarrying is about 35m has been envisaged as workable depth for safe & economic quarrying. After expiry of the 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 from concerned authorities, the waste material will be supplied to ready crusher for converting building and road construction material after paying the seniorage fee and obtained necessary clearance and approval from concerned department for handling the waste. After completion of quarry operation, the quarried out pit will be allowed to collect surface and rainwater, the water storage will be act as temporary reservoir for charging the nearby wells also the water utilized for nearby agricultural fields.

When the entire mineral reserves will be completely exhausted if permission not obtained for handling the waste, backfilling will be carried out nearly existing ground profile and spread out the preserved topsoil over the backfilled area to develop green belt.

The quarry area fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle (Refer plate Nos. VII & IX).

#### 14.5 PHASED PROGRAMME OF PLANTING TREES

The safety distance along the lease boundary over the topsoil preserved area will be utilized for subsequent Afforestation. It is proposed to plan 100 tree saplings inside the quarry lease area and 500 tree saplings in the haul road during the first year of the plan period and maintain at least 800 plants at the end of this scheme period. Manuring and tree guards will be provided by the lessee to safeguard and maintain the plants. Appropriate species of Neem, Pongamia pinnata, etc., trees will be planted in a phased manner as described below.

Table - 21

Year	No. of trees proposed to be planted	Name of the species	Area to be covered in m <sup>2</sup>	Expected Survival rate %	No. of trees expected to be grown
2024-25	100	Neem	526	80%	80
2025-26	100		526	80%	80
2026-27	100		526	80%	80
2027-28	100		526	80%	80
2028-29	100		526	80%	80

Nearly 2630m<sup>2</sup> (Existing Topsoil dump) area is proposed for afforestation by planting 500 Nos. of tree saplings during this scheme period and expected growth is around 400 number of trees at a survival rate of 80%. The afforestation plan is shown in Plate No.VI.

*K. Palanichandran*

**14.6 MEASURES FOR DUST SUPPRESSION:**

As the granite stones are quarried as undamaged dimensional stones without involving deep hole drilling and blasting, fragmentation and generation of lumps, fines or dust is very limited. This quantum of quarrying activity will not cause the dust detrimental to the health of the persons employed. Nevertheless, water will be sprinkled for the suppression air borne dust from quarry 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 sprinkled through tippers to suppress dust. The drillers are provided with respirators in accordance with the Mines Safety Regulations. Care and techniques will be adopted to arrest the dust at the source as follows.

- a. Compaction, gradation and drainage on both sides for haulage road.
- b. Fixed water sprinkling arrangements by own water tankers.
- c. Wet drilling with latest eco friendly drill machine with separate dust extractor unit.
- d. Muffle blasting on Overburden and waste to control fly rocks during blasting.
- e. Enforcing speed limits of 20km/hr within quarry area.
- f. Regular monitoring of exhaust fumes as per RTO norms.
- g. All personnel protective equipment like Nose-mask, earplug/ muffs will be provided to the Workers

**14.7 MEASURES TO MINIMIZE GROUND VIBRATION DUE TO BLASTING AND CHECK NOISE POLLUTION**

Shallow holes of 32mm diameter will be drilled and conventional low explosives such as D-Cord, Gelatin Stick only 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 taken up at appointed timing and with sufficient caution to the public. The noise produced by diamond wire saw cutting will be negligible. Anyhow, the following Care and techniques will be adopted to control the Noise and Vibration.

- a. Proper maintenance at done with regular interval by the Oiling and greasing for the machineries and vehicles to control the Source of noise during operation and transportation.
- b. NONEL blasting will be practiced to control Noise, ground vibration and fly rocks for removal of Overburden and Waste rocks.
- c. Transporting vehicles are enforcing the speed limits of 20km/hr within quarry area to reduce Noise level.
- d. All personnel protective equipment like earplug/ muffs will be provided to the Workers.

**14.8 STABILIZATION AND VEGETATION OF DUMPS**

As the waste generation in the quarry includes hard rock fragments of considerable size and irregular shape with varying angularity, the waste dump will be stable on its own even at higher slopes of the sides. However, preserved topsoil will be spread out over and sides of the inactive waste dump for increasing the stability also planting tree saplings to prevent erosion during rainy season.

*K. Paramasivan*

**15.0 PROGRESSIVE QUARRY CLOSURE PLAN****15.1 Introduction**

The Progressive Quarry Closure Plan for Siruvalai Black Granite quarry lease over an extent of 1.00.0 Hectare of Patta land in S.F.No. 407/3(Part) of Siruvalai village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State has been prepared for **Thiru. K. Paramasivam, S/o. Krishnasamy Gounder, No. 135, Mullai Nagar, Old Bus Stand Road, Perundurai, Erode District, Tamil Nadu - 638 052.**

**15.2 Present Land use pattern:**

Land Use Table - 22

Description	Present area in (Ha)
Area under Quarry	0.58.13
Dumps	0.32.78
Infrastructure	*Nil
Roads	0.02.00
Green Belt	Nil @ (0.02.00)
Unutilized Area	0.05.09
<b>Grand Total</b>	<b>1.00.00</b>

\* Site services are already constructed in the lessee's own patta land situated on the Southern side of the lease area (Refer Plate No. III).

@ The Green belt has carried out in the topsoil preserved area hence, area utilization has calculated in the waste dump area.

**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 Black Granite blocks approved for export market are shipped from Chennai Port to various countries and if required the blocks may be shifted from Thoothukudi Port which depend upon the exporter's destination from time to time. No Mineral processing is involved.

**15.4 Reasons for closure:**

As 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 after expiry of the lease period. Hence, the reason for closure will be discussed 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.



*K. Paramasivam*

**15.6 Progressive quarry closure plan preparation:**

Name and address of the Recognised 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.

**S. ILAVARASAN, M.Sc.,**  
Recognised Qualified Person  
RQP/MAS/253/2013/A  
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 approved mining plan is discussed only when the working area reaches its ultimate pit limit or at the end of life of quarry, the Reclamation and Rehabilitation will be carried out. The black granite mineral reserves are available after expiry of the lease period. The entire quarry area is an active, so the lessee has not taken any action for progressive quarry closure plan. Hence, review of implementation of progressive quarry closure does not arise at present. However, if any work done for progressive quarry closure plan during this scheme period, it will be discussed in the ensuing Scheme period.

**15.8 Closure Plan:****(I) Mined Out Land:**

At the end of this scheme period, entire mineral is not going to be exhausted. 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 will be fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle.

Land use pattern

Table - 23

Description	Present Area (Ha.)	Area to be required during this Scheme period(Ha)	Area at the end of life of quarry (Ha)
Area under Quarry	0.58.13	0.02.60	0.69.70
Waste dump	0.32.78	Nil	# Backfilled
Site Services	*Nil	*Nil	*Nil
Roads	0.02.00	Nil	0.02.00
Green Belt	Nil @ (0.02.0)	Nil @ (0.26.30)	0.28.30
Stocking Blocks	0.05.09	0.02.49	Nil
<b>Total</b>	<b>1.00.00</b>	<b>0.05.09</b>	<b>1.00.00</b>

\* The Site Services are already constructed in the lessee's own patta land situated on the northern side of the lease area (Plate No. III).

@ The Green belt has carried out in the topsoil preserved area hence, area utilization has calculated in the waste dump area

# If permission is granted for disposal of waste from the State Government, the quarried out topsoil will be utilized for backfilling. If permission not obtained for disposal of waste, backfilling will be carried out with waste and spread out the preserved topsoil to facilitate afforestation in the backfilled area.

*K. Parvathiswami*

**(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 runoff rainwater entering in to the pit.
- Construction of check dams / gully plugs at strategic places to arrest the runoff from broken up area.
- Collection of surface run-off from broken up area in mine pits and settling and on 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 mine 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 208m<sup>3</sup> of topsoil will be generated during this scheme period, the same will be preserved all along the safety barrier and utilized for construction of bund and green belt development. During this scheme period, excavated waste (31,087m<sup>3</sup>) will be proposed to dump over the existing waste dump situated on the Eastern side with dimension of (L)64m x (W)42m x (H)28.06m, which will be act as temporary waste dump.

If permission is granted for removal of waste (Existing Granite Waste + proposed Granite waste) from concerned authorities, the waste material will be supplied to the needy crusher for convert to the M-Sand, building and road construction material after paying the senorage fee and obtained necessary clearance and approval from concerned department for handling the waste. After obtained permission for disposal of waste, the Topsoil only utilized for backfilling. 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 over the backfilled area to facillitate afforestation in the backfilled area.

**(v) Disposal of mining machinery:**

All the Machinerles are purchased fresh, the same has been maintained in good condition during entire life of quarry. After completion of quarry operation all the machinerles 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 to 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 also proper signal by siren alarm will be given before small amount of blasting to induct public for awareness.
- 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.
- Installation of CCTV cameras in the quarry and entrance of the quarry.
- Monitoring of Quarrying operation by external agency as directed by authorities

**(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.

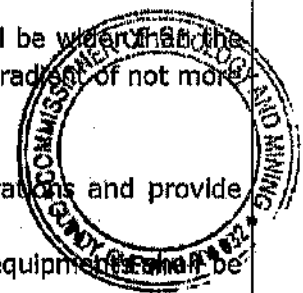
- The mechanized mining activities in the area may involve any high risk accident due to side falls/collapse.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by 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.

**Environmental Monitoring Cell:**

A dedicated team nominated by the mine manager or Agent will monitor and maintain the environmental compliances of the quarry as per the approved Environment Management Plan and report the Compliance to the Mine Manager half yearly.

**Disaster Management Cell:**

The Competent Qualified Statutory managers appointed by the company as per the Director of Mines Safety will be responsible for Disaster Management. In case of any eventualities his mobile number will be displayed and he will take all the precautions and safety measures as per Mines and Minerals (Development and Regulations) Act, 1957.



*K. Parasuraman*

**(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. 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,

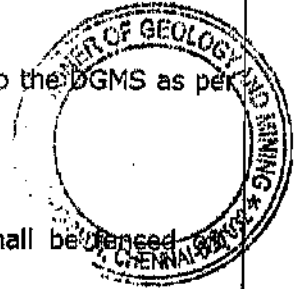
Mine office, first aid stations etc.

- 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 only. 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.



*K. Parthasarathy*

**(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.

**(xi) Abandonment Cost:**

As at present mining is not going to be closed so abandonment cost could not be assessed. If unable to excavate the entire proposed quantity of mineral, backfilling is not possible due to conservation of mineral. Hence, the abandonment cost will be assessed during submission of Final mine closure plan. However, based on the progressive quarry closure activities during the scheme period, cost is assessed as given below:

Table - 24

ACTIVITY	YEAR					RATE	AMOUNT (Rs.)	
	2024-25	2025-26	2026-27	2027-28	2028-29			
Plantation in Safety zone (Nos.)	100	100	100	100	100	Rs. 200 Per sapling	1,00,000/-	
Plantation Cost	20,000	20,000	20,000	20,000	20,000		1,00,000/-	
Plantation In Haul Road (Nos.)	500					Rs. 300 Per Meter		90,000/-
Plantation Cost	1,00,000						Rs. 300 Per Meter	75,000/-
Barbed wire fencing (In Mtrs) 300 Mtrs	90,000							
Garland drain (In Mtrs) 250 Mtrs	75,000							
<b>TOTAL</b>								<b>3,65,000/-</b>

**16.0 MINERAL CONSERVATION AND DEVELOPMENT**

This 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 Black 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 quarry, machinery and person will be ensured. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety, Chennai. Any violation pointed out by the Inspecting authorities shall be rectified as per the guidelines of the department.

I hereby ensure that the information provided is correct to best of my knowledge and experience, some of the information contained in this report has been provided by external sources and by the lessee and is presented as the form as submitted by the lessee. The information is not intended to serve as legal advice related to the individual situation. I do not owe and specifically disclaim any liability resulting from the use during the course of quarrying operations. The document may be scrutinized by the competent authority before approval.

Certified that this scheme of quarrying has been prepared in accordance with the Mines Act, Rules and Regulations and orders made there under and also in conformity with the provisions sub rule (13) of Rule 19A of Tamil Nadu Mineral Concession Rules, 1959, Rule 12,13,16 of Granite Conservation and Development rules 1999 and 13, 14 & 15 of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

Prepared by



S. ILAVARASAN, M.Sc.  
Recognised Qualified Person  
RQP/MAS/253/2013/A

Place: Salem  
Date: 14.07.2023

<b>DONATE RED</b>
<b>SPREAD GREEN</b>
<b>SAVE BLUE</b>

*14/7/23*  
**COMMISSIONER**  
**GEOLOGY AND MINING**  
GUINDY, CHENNAI-600 031

4/8

*11/12/2023*

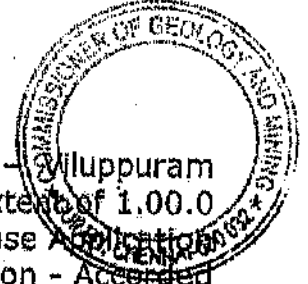
This Scheme of Mining Plan is approved  
Subject to the Conditions / Stipulation Indicate,  
in the Scheme of Mining Plan Approval

Letter No. / 7820/mms/2023 Dated: 16-12-2023



**ABSTRACT**

Mines and Quarries - Minor Mineral - Black Granite - Viluppuram District - Vikravandi Taluk - Siruvalai Village - Over an extent of 1.00.0 hectare of patta land in S.F. No.407/3 (Part) - Quarry Lease Application of Thiru K. Paramasivam - Grant of quarry lease - Sanction - Accorded - Orders - Issued.

**Industries (MMB.2) Department****G.O. (3D) No.50****Dated: 18.12.2018**

விளம்பி, மாண்குழி 3,  
திருவள்ளூர் ஆண்டு 2049

**Read:**

- 1) From Thiru K. Paramasivam Quarry Lease Application dated 05.10.2017.
- 2) From the District Collector, Viluppuram, Letter Rc.No.B/ G&M/ 964/2017, Dated 15.05.2018.
- 3) From the Director of Geology and Mining, Chennai, File No.3645/MM5/2018, Dated 23.06.2018.
- 4) Government Letter No.8472/MMB.2/2018-1, Dated 27.08.2018.

**Read also:**

- 5) From the Director of Geology and Mining, Chennai, Letter Rc.No.3645/MM5/2018, Dated 01.10.2018.
- 6) From the Chairman/District Collector, Viluppuram Letter No.DEIAA-VPM-TN/F.No.18015/EC No.02/2018, Dated 04.12.2018.

**ORDER:**

In his reference first read above, Thiru K.Paramasivam has applied for grant of lease for quarrying of Black Granite over an extent of 1.00.0 hectare of patta land in S.F. No.407/3 (Part) in Siruvalai Village, Vikravandi Taluk, Viluppuram District for a period of 20 years under rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959.

2. In their references second and third read above, the District Collector, Viluppuram and the Director of Geology and Mining have

*K. Paramasivam*

recommended and forwarded the Quarry lease application of Thiru K. Paramasivam to the Government for Issue of Government Order.

3. Based on the reports of the District Collector, Viluppuram and the Director of Geology and Mining, the Government has considered the quarry lease application of the applicant and communicated the area recommended by the Director of Geology and Mining to the applicant and requested the applicant in the reference fourth read above to furnish the approved Mining Plan as per sub-rule (13) of rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959 through the Director of Geology and Mining and to produce environment clearance from the DEIAA, Viluppuram.

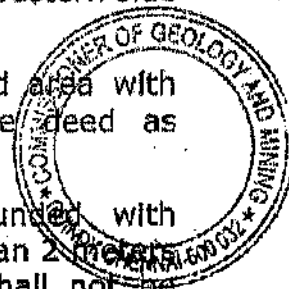
4. In his letter fifth read above, the Director of Geology and Mining has approved the mining plan as per sub-rule (13) of rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959, subject to the condition that the applicant shall obtain the Environment Clearance as per the orders of the Hon'ble Supreme Court of India, dated 27.02.2012 in I.A. No.12-13/2011 in S.L.P. (C) No.19629 of 2009 and as per the Office Memorandum No.L-11011/47/2011-1A II(M), dated 18.05.2012 of Ministry of Environment and Forests, Government of India. The District Level Environment Impact Assessment Authority in their reference sixth read above have accorded Environment Clearance for mining in the above said area subject to certain conditions.

5. In the circumstances detailed above, the Government carefully considered and decided to grant lease for quarrying of Black Granite to Thiru K. Paramasivam in the above patta lands. Accordingly, in exercise of the powers conferred under Rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959, the Governor of Tamil Nadu hereby grant quarry lease to Thiru K. Paramasivam for quarrying of Black Granite over an extent of 1.00.0 hectare of patta land in S.F. No.407/3 (Part) in Siruvalai Village, Vikravandi Taluk, Viluppuram 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 sixth read above:

1. A safety zone of 7.5 meters should be left out for the adjoining patta lands and for the adjoining existing black granite quarry situated at southern side.
2. A safety distance of 10 meters should be provided for the Government Poramboke land situated on the southern and eastern side of the applied area.

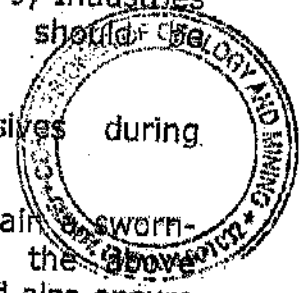
*K. Paramasivam*

3. A safety distance of 10 meters should be provided for the village road passing in the patta lands on the western side of the applied area.
4. The applicant should fence the lease granted area with Barbed wire before the execution of lease deed as follows:-
  - ❖ The pillar post shall be firmly grounded with concrete foundation of height not less than 2 meters with a distance between two pillars shall not be more than 3 meters.
  - ❖ The applicant 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 CD/DVD form to the Deputy Director of Geology and Mining, Viluppuram.
  - ❖ A soft copy of the digitalized map with DGPS readings should be submitted in the CD form.
5. The applicant shall strictly adhere to the statutory and safety requirements.
6. 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.
7. The applicant shall submit scheme of mining; mine closure plan and other statutory requirements within the time stipulated for submission of the above, as per rules.
8. The child labour should not be engaged in the quarry works.
9. As per rule 12 (v) of Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant shall at his own expense, erect, maintain and keep in repair all boundary pillars.
10. No hindrance shall be caused to the adjacent patta lands and no damage shall be caused to the adjoining Government poramboke lands while quarrying and transportation of granite.
11. The waste material generated during the time of quarrying should be dumped only in the leasehold area.
12. The applicant should not cause hindrance to the adjacent pattadars while quarrying and transportation of the granite.



*K. Palaniappan*

13. The conditions mentioned in G.O. (Ms) No.79, Industries (MMC.1) Department, dated 06.04.2015 should be complied with.
14. The applicant should use mild explosives during quarrying,
15. The District Collector, Viluppuram shall obtain in-affidavit from the appellant containing the conditions before execution of lease deed and also ensure that the instructions issued in Government Letter No.12789/MMB2/2002-7, Industries Department, dated: 9.1.2003 are complied with.



6. The District Collector, Viluppuram 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 the Director of Geology and Mining.

7. The District Collector, Viluppuram is also directed to verify and furnish a certificate to the effect that all lease deed conditions and other conditions mentioned in paragraph 5 above have been complied with, duly incorporated in the lease agreement and send it to the Government. The District Collector, Viluppuram is also instructed to include all the conditions imposed by District Level Environment Impact Assessment Authority in the reference sixth read above.

**(BY ORDER OF THE GOVERNOR)**

**K. GNANADESIKAN,  
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT.**

To

Thiru K.Paramasivam,  
S.F.No.407/3,  
Siruvalai Village, Vikravandi Taluk  
Viluppuram District.

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

The District Collector, Viluppuram,

Copy to:

The Special Personal Assistant to Hon'ble Minister for Law,  
Courts and Prisons, Chennai-600,009.

The Industries (OP.II) Department, Chennai - 600 009.  
SF/SC.

// Forwarded By order //

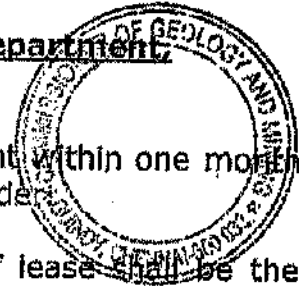
*[Signature]*  
Section Officer.

*[Signature]*  
K. Paramasivam



Annexure

G.O (3D) No.50, Industries (MMB.2) Department  
Dated 18.12.2018



1. The applicant firm 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 firm 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 firm should keep correct accounts showing the quantities and other particulars of all minerals obtained from the lands permitted to quarry.
5. The applicant firm 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 firm 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 firm 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 thereto shall be done before the execution of the agreement and registration is at the cost of the applicant firm.
9. No hindrance shall be caused to the adjoining pattadars or public.
10. The applicant firm should restrict his mining operation strictly within the permitted area as defined in the sketch.

*K. Palanisundaram*

11. The terms and conditions are also subject to such further modifications, deletion and additions alternatively be ordered by the Government to be included in the agreement to be executed for this purpose.
12. The applicant firm 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 firm 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 under 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.

**K. GNANADESIKAN,  
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT.**

//True Copy//

*[Signature]*  
Section Officer.

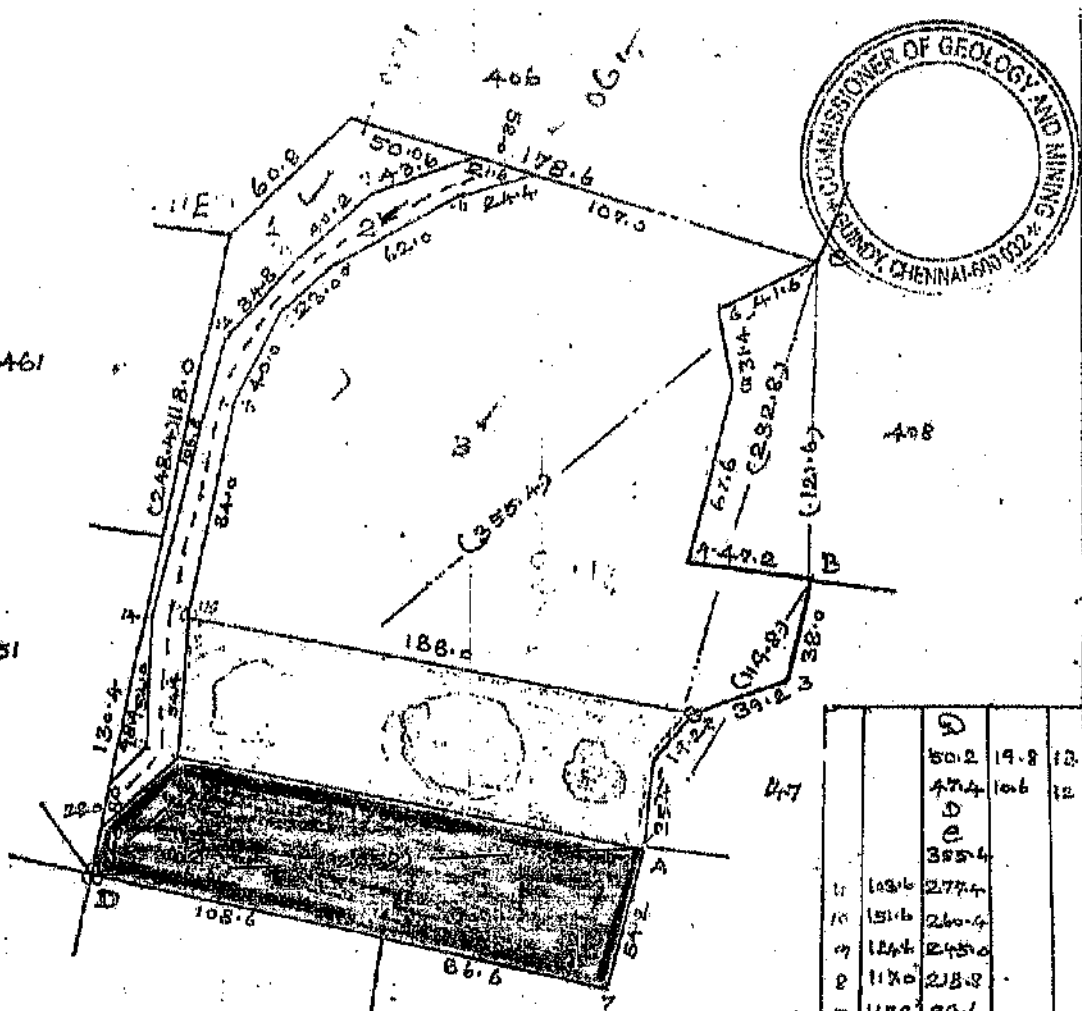
*[Signature]*

**ANNEXURE**

சான்றிதழ்: 407/3-5  
 விலை: ரூ. 5.30.5

கோடு: 14  
 திகதி: 4.07

தலை: திரு. சி. சிவசாமி  
 திகதி: 5.8.50



407/3-5.30.5 பரப்புரை மாவட்டம் விலக்கு  
 1-00-0 பரப்புரை மாவட்டம் விலக்கு  
 பரப்புரை மாவட்டம்  
 R. Shree  
 Leaser

1	103.6	277.4			
2	151.6	260.4			
3	124.4	245.0			
4	117.0	238.8			
5	142.2	99.6			
6		37.6	8.2		
7		30.6	11.8		
8		205.0			
9	51.6	16.4			
10		121.4			
11		101.0			
12		70.0			
13		4.2			
14		8			
15		113.8			
16		82.6	11.4	3	
17		51.6			
18		13.4			
19		32.6			

Assistant Director, Geology and Mining,  
 Viluppuram.

சென்னை  
 5.8.50

Lease Period  
 20 years

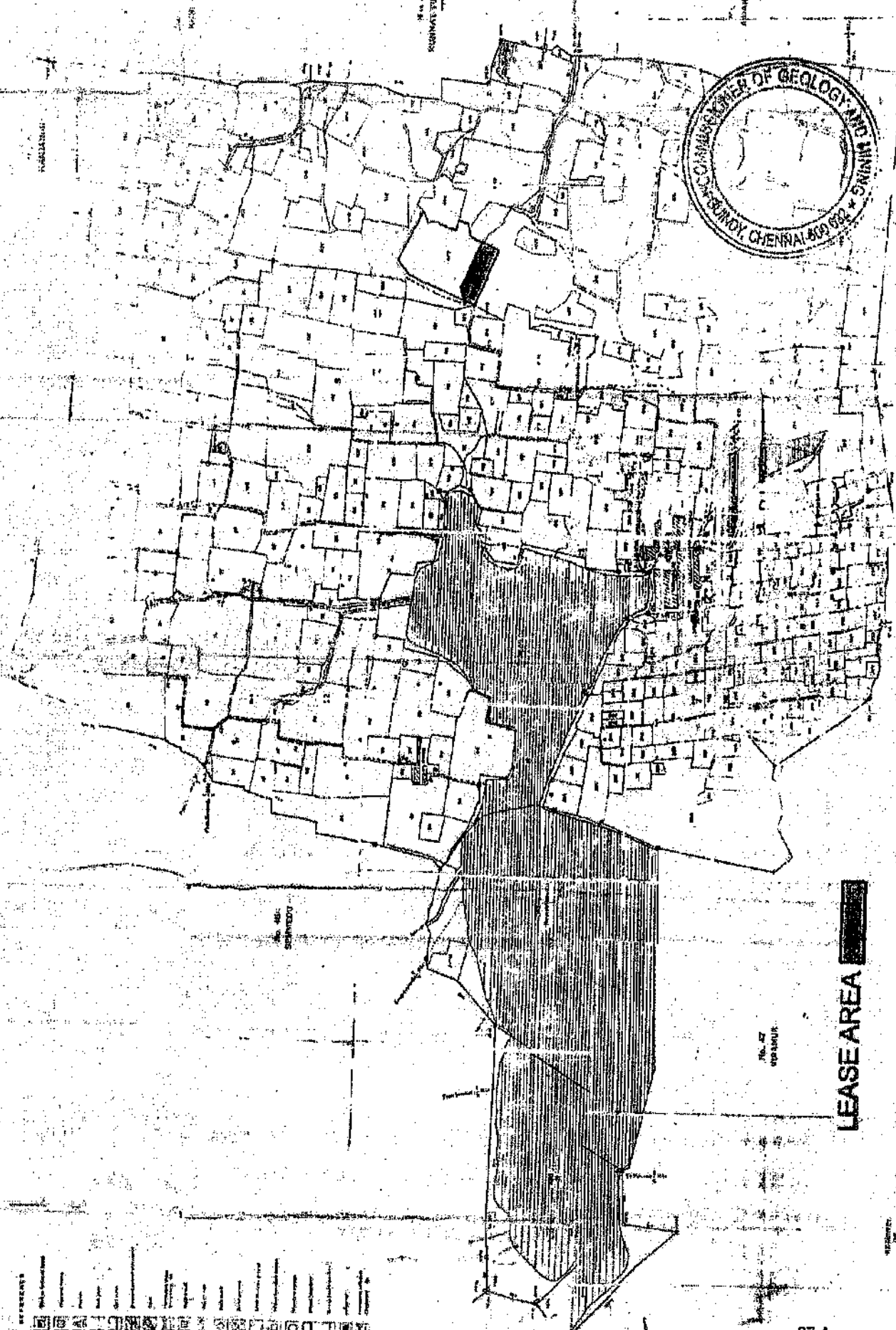
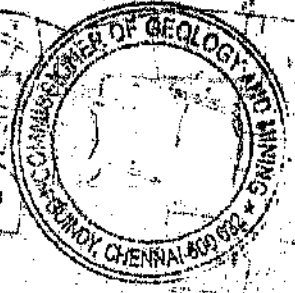
8.1.2006 to 7.1.2026

LEASE AREA XXXXXXXXXX 86 A

*C. Panichin*

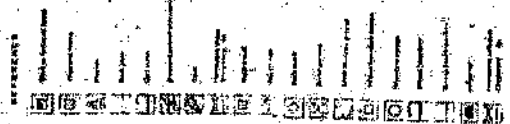
No. 12  
KUMAR ALAKHIA

No. 24  
KUMAR TIRTHA



LEASE AREA

No. 27  
SUNIL



K. Palani

ANNEXURE <sup>IV</sup>

தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பி.சி.பி

மாவட்டம் : விழுப்புரம்

வட்டம் : விக்கிரவாண்டி

வருவாய் கிராமம் : சிறுவாலை

பி.எண் : 933

உரிமையாளர்கள் பெயர்

- |                         |       |          |  |
|-------------------------|-------|----------|--|
| 1. ரமேஷ்                | கணவர் | சாந்தி   |  |
| 2. கிருஷ்ணசாமி கவுண்டர் | தந்தை | பரமசிவம் |  |

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
407	3	5 - 30.50	14.69	--	--	--	--	D7027*13*2--- -- 07-06-2000
		5 - 30.50	14.69					

குறிப்பு2 :

	1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <a href="https://eservices.tn.gov.in">https://eservices.tn.gov.in</a> என்ற இணைய தளத்தில் 07/10/045/00933/160535 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
	2. இத் தகவல்கள் 05-07-2023 அன்று 11:43:39 AM நேரத்தில் அச்சடிக்கப்பட்டது.
	3. கைப்பேசி கேமராவின் 2D barcode படப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

K. Palani

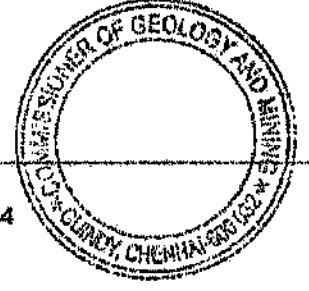


## அ-பதிவேடு விவரங்கள்

மாவட்டம் : விழுப்புரம்

வட்டம் : விக்கிரவாண்டி

கிராமம் : சிறுவாலை



1. புல எண்	407	9. மண் வயனமும் ரகமும்	8 - 4
2. உட்பிரிவு எண்	3	10. மண் தரம்	7
3. பழைய புல உட்பிரிவு எண்	-3	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	5 - 30.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	14.69
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	933
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.சாந்தி 2.பரமசிவம்

## குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 110535 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

*Le Param...*



தமிழ்நாடு தமிழ்நாடு TAMIL NADU

43AR 771958

15086  
08/08/17

S. கருணாநிதி,  
முத்திரைத்தாள் கிற்பனையைமார்,  
பெருந்தூறை டைர்.  
உரிமம் எண்: 16/20081 ரேசோடு.  
பெருந்தூறை, தமிழ்நாடு.



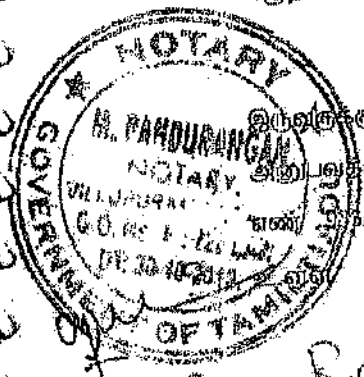
R. பரமசிவம்  
சம்மதப் பத்திரம்

சம்மதப் பத்திரம்

2017ம் ஆண்டு ஆகஸ்ட் மாதம் 8ம் தேதி புதுவை மாநகராட்சி, காவலர்கள், மஸ்தான்பள்ளி வீதி, நெ.9 முகவரியில் வசிக்கும் ரமேஷ் அனந்தசுந்தரன் மனைவி R.சாந்தி ஆகிய நான்.

சுரோடு மாவட்டம், பெருந்தூறை வட்டம், கண்டா டைரின் டிரோடு, நெ.460-ல் வசிக்கும் கிருஷ்ணசாமிக்க கவுண்டர் குமாரர் K.பரமசிவம் என்பவரோடு எழுதி கொடுக்கும் சம்மதப்பத்திரம் என்னவென்றால்.

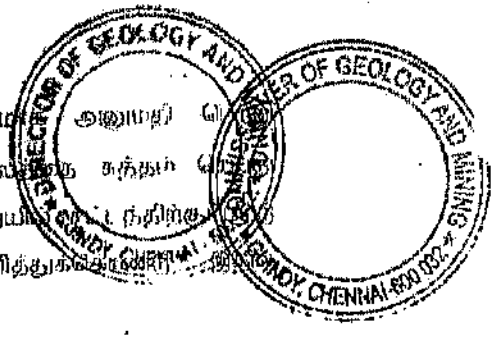
மேற்படி திரு.K.பரமசிவம் மற்றும் திருமதி R. சாந்தி ஆகிய எங்கள் இருவருக்கும் சம்பராஜ்ஜய பாத்தியப்பட்டுதம் நாவது தேர்த் காவலில் எங்களுக்கு இருந்தா எருகின்ற விஷயமும் மாவட்டம், சிறுமாவை கழகம் வட்டா எண் 907/3-ல் 13 ஆக்டர் 10 மாவை கிளத்தில் கிராண்டை கற்பகையையும் பாதை பாத்தியப்பட்டுதம் திரு.K.பரமசிவம்



K. Palanivel




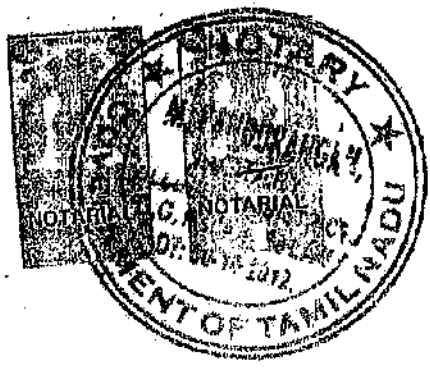
அவர்களுக்கு விழுப்புரம் மாவட்ட கனிமவள துறை மூலம் அனுமதி செய்து உரிய வரி வகையறா தீர்வைகளை செலுத்தி, மேற்படி நிலத்தை கட்டுமான அபிவிருத்தி செய்வதற்காக அபிவிருத்தி அனுமதி பெற்றுக் கொள்ள உரிய முறையில் அனுமதி பெற்றுக் கொள்ள உரிய முறையில் செயல்பட நான் எனது முழு சம்மதத்தை தெரிவித்துக்கொள்கிறேன்.

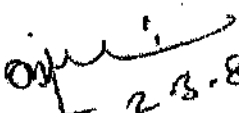


R. Shanthi

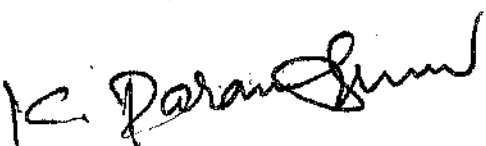
சாட்சிகள் :

1.   
P. Balasubramanian, S/o. M. Palani,  
303/Parumal Kovil St, Perumbakkam,  
Villupuram,
- 2.



  
23.8.17

LION. M. PANDURANGAN,  
ADVOCATE & NOTARY,  
VILLUPURAM DISTRICT,  
GOVERNMENT OF TAMILNADU.  
G.O. MS. No: 728 LAW. Dt: 30-10-2012,  
No: 16/68, V.O.C. STREET,  
VILLUPURAM - 605 002.  
CELL: 94433 49769.



## DEPARTMENT OF GEOLOGY AND MINING

From  
Thiru K.Vivekanandan, I.A.S.,  
Director of Geology and Mining,  
Industrial Estate,  
Guindy, Chennai - 600 032.

To  
The Additional Chief Secretary  
to Government,  
Industries Department,  
Secretariat,  
Chennai - 600 009.



Rc. No. 3645/MM5/2018, dated 01.10.2018

Sir,

**Sub:** Mines and Minerals - Minor Minerals - Black Granite - Viluppuram district - Vikravandi Taluk - Siruvalai village - over an extent of 1.00.0 hecta. of patta land - S.F.Nos. 407/3 (P) - Quarry lease application preferred by Thiru K.Paramasivam S/o. Krishnasamy - Precise area communication issued by the Government - Approved Mining Plan called for - Mining Plan submitted for approval - Approval accorded - Reg.

- Ref:**
- 1) Quarry lease application preferred by Thiru K.Paramasivam S/o.Krishnasamy dated 05.10.2017.
  - 2) District Collector, Viluppuram letter in Rc. No. B/G&M/964/2017, dated 15.05.2018.
  - 3) The Director of Geology and Mining recommendations made in File No. 3645/MM5/2018 Dated 23.06.2018.
  - 4) Government letter No.8472/MMB.2/2018-1 dated 27.08.2018.
  - 5) Thiru K.Paramasivam S/o. Krishnasamy submitted Mining Plan to the Assistant Director (G&M), Viluppuram vide letter dated 10.09.2018.
  - 6) The Assistant Director, Geology and Mining, Viluppuram letter Roc.No.B/G&M/964/2017 dated 25.09.2018.

Kind attention is invited to the references cited.

2) The Government in the reference 4<sup>th</sup> cited have communicated the precise area to the applicant Thiru K.Paramasivam S/o. Krishnasamy with a direction to produce an Approved Mining Plan in respect of the area applied for grant of quarry lease for quarrying Black Granite over an extent of 1.00.0

*K. Paramasivam*

hects in patta land S.F.No.407/3 (P) in Siruvalai Village of Vikravandi Taluk, Viluppuram District for a period of 20 years 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 09.08.2018.

3) In response to the precise area communication issued by the Government vide in the reference 4<sup>th</sup> cited, the applicant has submitted 6 copies of draft mining plan duly prepared by the Qualified Person for approval vide in the reference 5<sup>th</sup> cited.

4) The Assistant Director, Geology and Mining, Viluppuram in the reference 6<sup>th</sup> cited has forwarded the draft mining plan for approval and 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. Further the special conditions imposed in the precise area communication have also been incorporated in the mining plan. The reserves @ 20% recovery to a depth of 17 mts estimated by the Assistant Director (G&M), Viluppuram is 15,514 Cbm after leaving necessary safety zone.

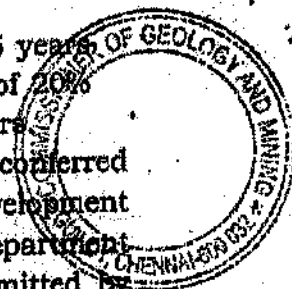
5) The draft mining plan submitted in respect of the precise area communication, the report of the Assistant Director of Geology and Mining, Viluppuram have been examined with reference to the provisions of Rule 12, 13 and 15 of Granite Conservation and Development Rules, 1999 and the followings are observed:-

- i) All the conditions stipulated in the Government letter No. 8521/MME-2/2018-1 dated 09.08.2018 have been incorporated in the mining plan.
- ii) The GPS readings for the entire boundary pillars of the area have been incorporated and shown in the mining plan.
- iii) The waste material generated during the time of quarrying should be dumped only within the lease granted area have been demarcated in the mining plan.
- iv) The total Geological reserve (ROM) in the applied area is 1,31,625 Cbm and the mineable reserve (ROM) is estimated as 37,960 Cbm and recoverable reserves @ 20% recovery is estimated as 7,592 Cbm for a depth persistence of 20 mts.

*C. Palanichamy*

- v) The total quantity of production for the first 5 years has been estimated with a proposed recovery of 20% as 7,004 cbm for a depth persistence of 20.0 mtrs.

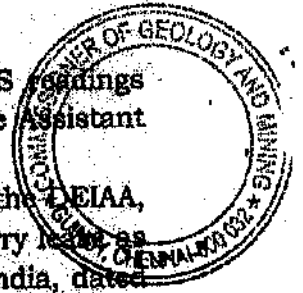
6) In the light of the above, in exercise of the powers conferred under Rules 12,13 and 15 of Granite Conservation and Development Rules, 1999 read with G.O.Ms.No.87, Industries (MMC1) Department Dated 22.2.2001, I hereby approve the mining plan submitted by Thiru K.Paramasivam subject to the following 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) A safety distance of 7.5 meters should be left out for the adjoining patta lands and for the adjoining existing Black granite quarry situated at southern side.
- v) A safety distance of 10 meters should be provided for the Government poramboke land situated on the southern and eastern side of the applied area.
- vi) A safety zone of 10 meters should be provided for the village road passing in the patta lands on the western side of the area.
- vii) The applicant 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 3mts.
  - 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.

*K. Paramasivam*

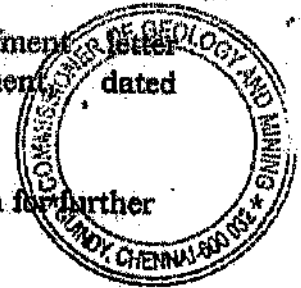
- A soft copy of the digitized map with DGPS readings should be submitted in the CD form to the Assistant Director (G&M), Viluppuram.



- viii) Environment Clearance should be obtained from the DEIAA, Viluppuram in respect of the area applied for quarry lease as per the orders of the Hon'ble Supreme Court of India, dated 27.02.2012 in IA No.12-13/2011 in SLP (C) No.19629/2009 and Office Memorandum No.L11011/47/2011-1A. II(M), dated 18.05.2012 of the Ministry of Environment & Forest, Government of India and as per Rule 42 of the Tamil Nadu Minor Mineral Concession Rules, 1959.
- ix) The applicant shall strictly adhere to the statutory and safety requirements.
- x) Quarrying shall be done as per the Approved Mining Plan and should not cross annual permitted limit 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.
- xi) 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.
- xii) The child labour should not be engaged in the quarry works.
- xiii) As per rule 12 (v) of Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant shall at his own expense, erect, maintain and keep in repair all boundary pillars.
- xiv) No hindrance shall be caused to the adjacent patta lands and no damage shall be caused to the adjoining Government poramboke lands while quarrying and transportation of granite.
- xv) The waste materials generated during the course of quarrying should be dumped only within the lease hold area.
- xvi) The applicant should not cause hindrance to the adjacent pattadars while quarrying and transportation of granite.
- xvii) The conditions mentioned in G.O No. 79 Industries Department dated 06.04.2015 should be complied with.
- xviii) The applicant should use mild explosives during quarrying.
- xix) The District Collector, Viluppuram shall obtain a sworn-in-affidavit from the applicant to adhere the above conditions scrupulously before execution of lease deed and also ensure

*K. Palaniappan*

that the instructions issued in Government Order No. 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.

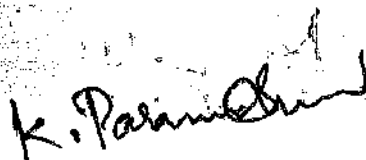
Sd/- K.Vivekanandan  
Director of Geology and Mining

Forwarded / By Order

  
Additional Director

Copy to

- 1) Thiru K.Paramasivam,  
S/o. Krishnasamy,  
No.135, Mullai Nagar, Old Bus Stand Road,  
Perundurai,  
Erode District-638 052 (with AMP).
- 2) The District Collector, Viluppuram (with AMP)
- 3) The Directorate of Mines Safety,  
Chennai-40 (with AMP).

  
K. Palaniappan

Dr. L. SUBRAMANIAN, I.A.S.,  
CHAIRMAN /  
DISTRICT COLLECTOR.

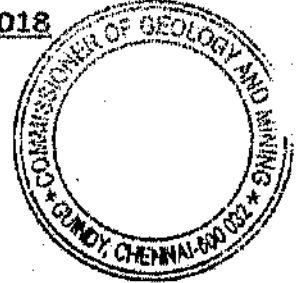


**ANNEXURE 18**  
District Level Environment Impact  
Assessment Authority,  
Viluppuram District.

**ENVIRONMENTAL CLEARANCE**

**Lr.No.DEIAA-VPM-TN/F.No.18015/Ec.No.02/2018 Dated 12/12/2018**

To  
Thiru. K. Paramasivam,  
S.F.No.407/3,  
Siruvalai Village,  
Vikravandi Taluk,  
Viluppuram District.



Sir,

**Sub:** DEIAA - Proposed Black Granite Quarry - S.F.No.407/3(Part) - over an extent of 1.00.0 Hects. of Patta land - Siruvalai Village - Vikravandi Taluk - Viluppuram District by Thiru.K. Paramasivam - Grant of Environmental Clearance - Reg.

- Ref:**
1. Your Application for Environment Clearance from DEIAA Dated 08.10.2018.
  2. Minutes of the 4<sup>th</sup> DEAC meeting held on 20.11.2018.
  3. Minutes of the 4<sup>th</sup> DEIAA meeting held on 27.11.2018.

\*\*\*\*\*

**Details of Minor mineral Activity:-**

1.	Name of Project Proponent and address	:	Thiru. K. Paramasivam, S.F.No.407/3, Siruvalai Village, Vikravandi Taluk, Viluppuram District.
2.	Location of the Proposed Activity	:	
	Survey Number	:	407/3 (Part)
	Latitude and Longitude	:	Latitude : 12°02'01.31"N to 12°02'05.11"N Longitude: 79°25'56.77"E to 79°26'03.51"E
	Village	:	Siruvalai
	Taluk	:	Vikravandi
	District	:	Viluppuram
3.	Proposed Activity	:	
	i. Minor mineral	:	Black Granite
	ii. Mining Lease Area	:	1.00.0 hecets.
	iii. Approved quantity	:	7004 M <sup>3</sup> of Black Granite

*12/12/2018*  
CHAIRMAN  
DEIAA

*K. Paramasivam*

	iv.	Depth of quarrying	:	20 m below the ground level
	v.	Type of quarrying	:	Open cast semi-mechanised
	vi.	Category (B1/B2)	:	"B2" category.
	vii.	Precise Area Communication	:	Government Letter No. 72/MMB/2018-1 dated 27.08.2018
	viii.	Mining Plan approval	:	The CGM, Chennai No. 3645/MM5/2018 dated: 01.10.2018
	ix.	Quarry lease period	:	20 Years
4.		Man Power requirement per day	:	33 Nos.
5.		Utilities		
	i.	Source of Water	:	Water vendors / Existing borehole
	ii.	Quantity of Water Requirement in KLD: a. Domestic b. Industrial c. Green Belt & Dust Suppression	:	1.5 KLD 0.5 & 1.0 KLD
	iii.	Power requirement a. Domestic purpose b. Industrial purpose	:	The Limited scale of activities adopted in Black Granite Quarrying does not require high - tension electric power supply. The quarrying operation is only for day time. The electricity will be used only for mine office and lighting around the quarry during night time. The existing electric line near the quarry site will be used. Fuels are used for operating machinery and vehicles during quarrying process and fuel required for this project life is about 56032 liters of HSD.
6.		Cost		
	i.	Project Cost	:	Rs. 2,25,50,000/-
	ii.	EMP Cost	:	Rs. 7,28,000/-
7.		Date of Appraisal by DEAC:	:	20.11.2018 4 <sup>th</sup> Meeting
8.		<b>Date of review / discussion by DEIAA and the Remarks:-</b> The proposal was placed before the 4 <sup>th</sup> DEIAA meeting held on 27.11.2018 and the Authority after careful consideration, decided to grant Environmental Clearance to the said project for quarrying of "Black Granite" subject to the terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.		

19/11/18  
  
 4/12/2018  
 CHAIRMAN  
 DEIAA

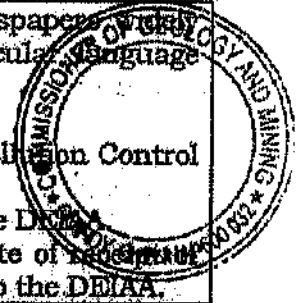
*to Palangam*



9.	<p><b>Validity:</b></p> <p>This Environmental Clearance is granted for quarrying of "Black Granite" for the production quantity of 7004 cu.m. of Black Granite for a period of "5 Year" from the date of execution of Lease Deed.</p>
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**Conditions to be Complied before commencing mining operations:-**

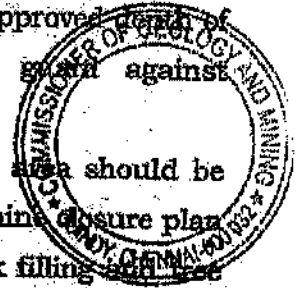
1. The project proponent shall advertise in at least two local newspapers circulated in the region, one of which shall be in the vernacular language informing the public that
  - i. The project has been accorded Environmental Clearance.
  - ii. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
  - iii. Environmental Clearance may also be seen on the website of the DEIAA.
  - 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 DEIAA.
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.



12/12/18  
 CHAIRMAN  
 DEIAA

*K. Palanichandran*

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 re-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.



15/12/18  
 CHAIRMAN  
 DEIAA

*Debraj Singh*

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 MoEF, 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.

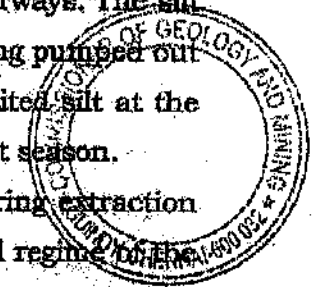
30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.

*[Signature]*  
16/12/2018  
CHAIRMAN  
DEIAA

*[Handwritten Signature]*

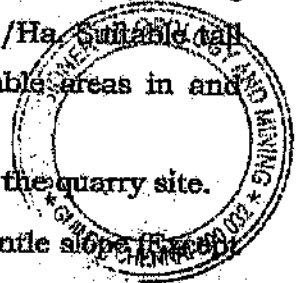
32. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing setting of soil 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. The 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, GOL.



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 CHAIRMAN  
 DEIAA

*Dr. Palaniappan*

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 leveled and sides to be sloped with gentle slope (Slopes 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 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 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.
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 equipments to be provided to all the employees.
53. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
54. 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.



18/12/18  
 CHAIRMAN  
 DEIAA

K. Palanichandran

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.
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, Viluppuram.

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 CHAIRMAN  
 DEIAA

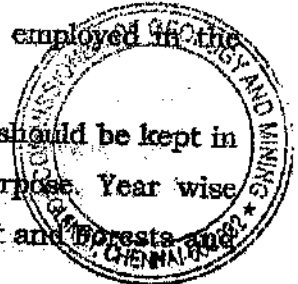
*K. Parashuram*

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 health 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 system. Loading and unloading areas including all the transfer points should also have efficient 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 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.
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


  
 29/11/16  
 4/12/2018  
 CHAIRMAN  
 DEIAA

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- workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
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 clearances from other statutory and administrative authorities.
  16. 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
  17. The DEIAA, Viluppuram may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
  18. The DEIAA, Viluppuram 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 DEIAA, VPM that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
  19. 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.
  20. 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



21/11/18  
 CHAIRMAN  
 DEIAA

*K. Parvathi Devi*



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 Court relating to the subject matter.

21. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
22. The proponent has to provide / maintain proper bench formation during mining operation.
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.



22/11/16

*[Signature]*  
4/12/2018  
CHAIRMAN  
DEIAA

Copy to:-

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary, Environment and Forest Department, Government of Tamil Nadu, Tamil Nadu.
3. The Principal Secretary to Government, Industries Department, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building 1<sup>st</sup> & 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai-34.
5. The Chairman, Tamil Nadu 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 Chairman, SEIAA, Panagal Building, Chennai.
8. The Director of Geology and Mining, Guindy, Chennai-32
9. E1 Division, Ministry of Environment and Forests Parvavaran Bhawan, New Delhi.
10. Spare.



*[Signature]*

ANNEXURE *R*

Email Letter

Letter No

302545|SZ|Chennai Region|Perm|2019|2892|PL Letter 111(1)- permission (3)-MMR|2

 सत्यमेव जयते	<p>भारत सरकार Govt. of India श्रम एवं रोजगार मंत्रालय Ministry of Labour &amp; Employment सामान्य सुरक्षा महाविदेशालय Directorate-General of Mines Safety</p>	
NO: 302545 SZ Chennai Region Perm 2019 2892		Date: 09/10/2019

From:

The Director of Mines Safety,  
Chennai Region,  
No.46 (old)/5(new), 2<sup>nd</sup> Street,  
Block 'AA', Anna Nagar,  
Chennai - 600040

To,

Sri K. Paramasivam,  
Owner: Siruvalai Black Granite Mine,  
No. 460, Main Road, Perundurai,  
Erode District (TN).

**Subject: Permission under Regulation 111(1) of the Metalliferous Mines Regulations, 1961 to change the mine boundary by amalgamating the newly obtained lease at Siruvalai Black Granite Mine of Sri K. Paramasivam.**

Dear Sir,

Please refer to your application submitted online on 23.9.2019 vide letter No. Nil dated 22.8.2019 enclosing plan No. KP/SP/PER/9/2018 on the above subject.

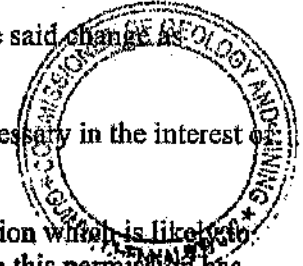
The matter has since been examined in the light of what has been stated in your application. In exercise of the powers conferred on the Chief Inspector of Mines under the provisions of Regulation 111(1) of the Metalliferous Mines Regulations, 1961 and by virtue of the authorization granted to me by the Chief

*K. Paramasivam*

Inspector of Mines (also designated as Director-General of Mines Safety) under Section 6(1) of the Mines Act, 1952, I hereby grant permission under Regulation 111(1) of the Metalliferous Mines Regulations, 1961 to change the mine boundary by amalgamating the Siruvalai Black Granite Mine demarcated as

A,B,C,D,E,A and marked in green colour and the newly acquired lease demarcated as F,G,H,I,J,F and marked in blue colour and the final boundary of Siruvalai Black Granite Mine of Sri K.Paramasivam demarcated as A,B,C,D,E,G,H,I,J,F,A and marked in red colour as shown in Plan No. KP/SP/PER/9/2018 subject to the following conditions being strictly complied with:

1. The new mine boundary shall be marked on the surface of the mine and shall also be shown on all statutory plans maintained under Regulation 61 of the Metalliferous Mines Regulations, 1961 at Siruvalai Black Granite Mine of Sri K.Paramasivam.
2. A plan showing the new boundary shall be submitted within seven days of the said change as required under Regulation 3(1) of the Metalliferous Mines Regulations, 1961.
3. This permission may be amended or withdrawn at any time, if considered necessary in the interest of safety.
4. In the event of any change in the circumstances connected with this permission which is likely to endanger the life of persons employed in the mine, the mining operations for which this permission has been granted, shall be stopped forthwith and intimation thereof shall be sent to the undersigned. The said mining operations shall not be resumed without express and a fresh written permission from this Directorate.
5. The permission is being issued under Regulation 111(1) only without prejudice to any other provisions of the law, which may be or may become applicable at any time.
6. If at any time any one of the conditions subject to which this permission has been granted is violated or not complied with, this permission shall be deemed to have been revoked with immediate effect.
7. A hard copy of this permission shall always be kept available in the office of the mine for reference.



Your Faithfully

BHUSHAN PRASAD SINGH (DIRECTOR - CHENNAI REGION)

THIS IS A SYSTEM GENERATED DOCUMENT, DOES NOT REQUIRE ANY SIGNATURE.



தமிழ்நாடு தமில்நாடு TAMILNADU

D 302887

92  
08-01-19

K. சிவசுப்பிரமணியன்  
தாண்டிபேட்டை கிராமத்தை  
சமூகவாசல.  
108/2019

க. தாமோதரன்,  
மு.தா.வி.எண்.997C1/14,  
49, வடக்கு அய்யனார் குளத்தை,  
விழுப்புரம் - 605 602.

APPENDIX - V

**FORM OF JOINT AGREEMENT FOR QUARRYING AND CARRYING MINOR MINERALS BY LESSEES IN RYOTWARI LANDS IN WHICH THE MINERALS BELONG TO GOVERNMENT.**

Anticipated seigniorage fee for 20 Years : Rs. 10,81,13,744/-

Area Assessment for 20 years : Rs. 6,000/-

Security Deposit for 20 years : Rs. 40,000/-

Sanctioned in G.O.(3D) No.50 Industries (MMB.2) Department dated 18.12.2018 for a period of twenty years from 18.01.2019 to 17.01.2039.

*R. Shetty*  
R. Shetty  
Registered holder

*Jimmi*  
18/1/2019  
District Collector  
Viluppuram.

*K. Parthasarathy*  
Lessee

Document No. 108 of 2019 of Book  
Contains 13 pages  
*K. Parthasarathy*

भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹. 25000  
पच्चीस हजार रुपये

Rs. 25000  
TWENTY FIVE THOUSAND RUPEES



தமிழ்நாடு தமிழ்நாடு TAMILNADU

D 302888

93  
08-01-19

K. பரமசிவம்  
சிவாலைய கிராமத்தில்,  
கிரவாண்டி.  
121

க. சாமிநாதர்,  
மு.நா.வி.எண். 997/C1/14,  
49, வடக்கு அய்யனார் தெருவுக்கு,  
விழுப்புரம் - 605 602.

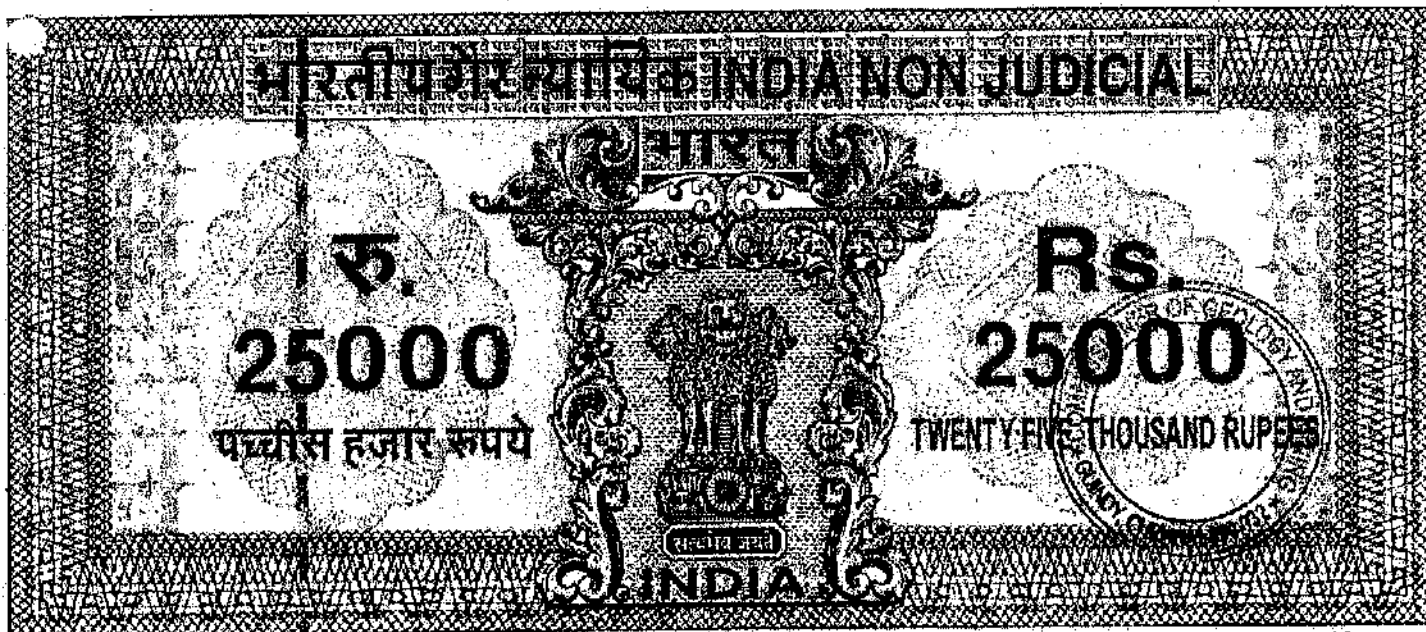
THIS AGREEMENT MADE THE 18<sup>th</sup> day of January 2019  
between Thiru. K. Paramasivam, S.F.No.407/3, Siruvalai Village,  
Siruvalai Post, Vikravandi Taluk, Viluppuram District, Tamil Nadu. and,  
Tmt.R.Santhi, W/o.Ramesh, No.9, Masthan Palli Street, Karaikkal, Puducherry State  
(hereinafter referred to as "the registered holder" which expression shall where the  
context so admits include his heirs, executors, administrators, legal representatives  
and assigns) of the first part and Thiru.K.Paramasivam, S.F.No.407/3, Siruvalai  
Village, Vikravandi Taluk, Viluppuram District (hereinafter referred to as "the lessee"

K. Paramasivam  
R. Santhi  
Registered holder

18/1/2019  
District Collector  
Viluppuram.

K. Paramasivam  
Lessee

Document No. 128 of 2019 of Book  
Contains 13 Sheets of 2 Vols  
Registering Officer



தமிழ்நாடு தமில்நாடு TAMILNADU

94  
08-01-19

K. Parasham  
சாண்டலம் கிராமத்தில்  
சீர்தயாராக.

*[Handwritten signature]*

D 302937

க. காமோதாசன்  
மு.தா.வி.எண். 897/C1/14  
49, வடக்கு அய்யனார் குளத்தெரு,  
விழுப்புரம் - 605 802.

131

which expression shall where the context so admits shall include his heirs, executors, administrators, legal representatives and assigns) of the second part and the Governor of Tamil Nadu (hereinafter referred to as the Government which expression shall where the context so admits shall include his successors in office and assigns) of third part.

*K Parasham*

R. Sheth  
Registered holder

*K Parasham*

Lessee.

*[Signature]*  
18/1/2019  
District Collector

Viluppuram.

Document No.	108	2019	of Book
Contains	63	pages	3
Registered Officer			





தமிழ்நாடு தமில்நாடு TAMILNADU

95  
08-01-19

K. பரமசிவன்  
தாண்டிமேல் கிழங்கு  
கிழங்கு -

25000  
D 302938  
க. தாமோதரன்  
மு. தா. வி. எண். 997/C1/14  
49, வடக்கு அடியனார் குளத்தை,  
விழுப்புரம் - 605 602.

141

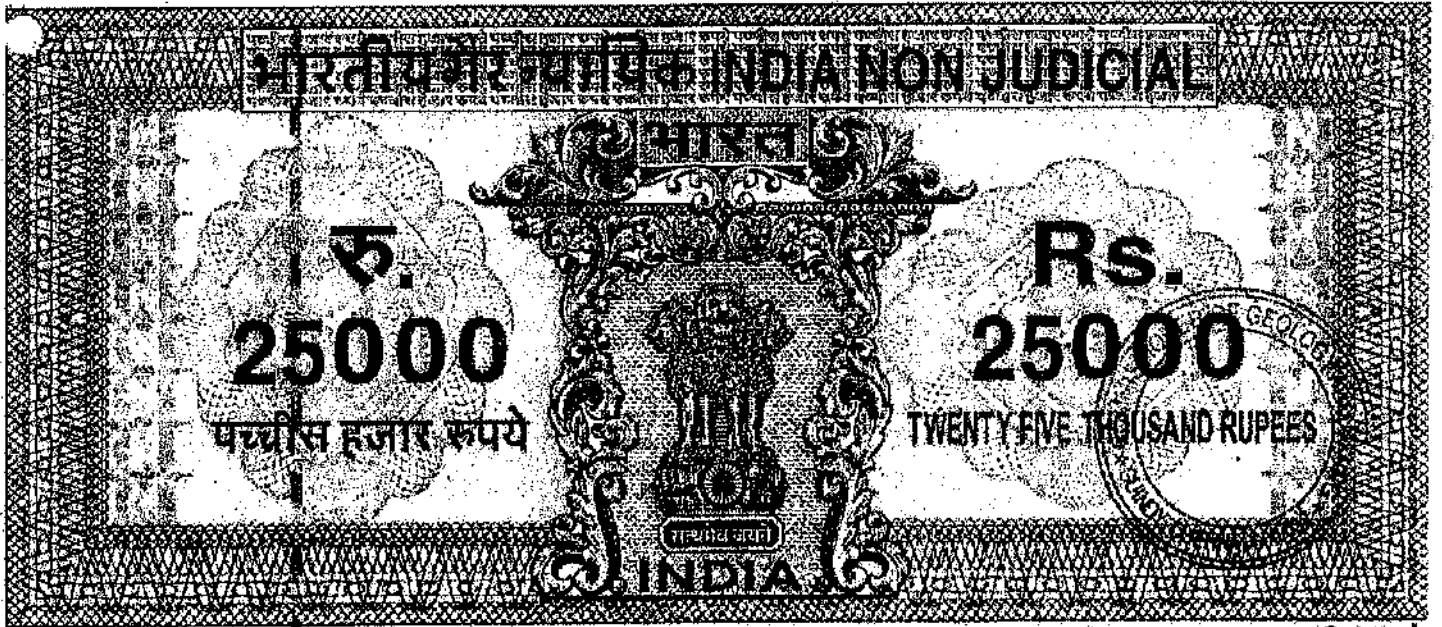
WHEREAS, the registered holder holds the lands described in the schedule hereto and intended to lease out to the lessee of the said lands for the purpose of quarrying Black Granite in the said lands and to deposit mining waste in the said lands and has lodged with the Government the lease and accurate map or sketch of the said lands.

K. Paramasivam  
R. Shakti  
Registered holder

18/1/2019  
District Collector  
Viluppuram.

K. Paramasivam  
Lessee.

Document No. 108 of 2019 of Book  
Contains 63 of 1  
K. Paramasivam  
Registering Officer



தமிழ்நாடு தமிழ்நாடு TAMILNADU

96  
08-01-19

K. Parashuram  
மாவட்டம் கிழக்கு  
சென்னை.

151

25000/  
D 302939  
க. காஜாசாமி  
மு. கா. வி. எண். 997/C/1/14  
49, வடக்கு அடியலார் குளத்தெரு,  
விழுப்புரம் - 605 602.

AND WHEREAS, the lessee or tenant of the registered holder has made application to the Government of Tamilnadu (hereinafter referred to as "the Government") seeking grant of quarrying lease for quarrying Black Granite in the said lands and to deposit mining waste in the said lands and has lodged with the Government an accurate map or sketch of the said lands.

*K. Parashuram*

R. S. S. S.  
Registered holder

*K. Parashuram*

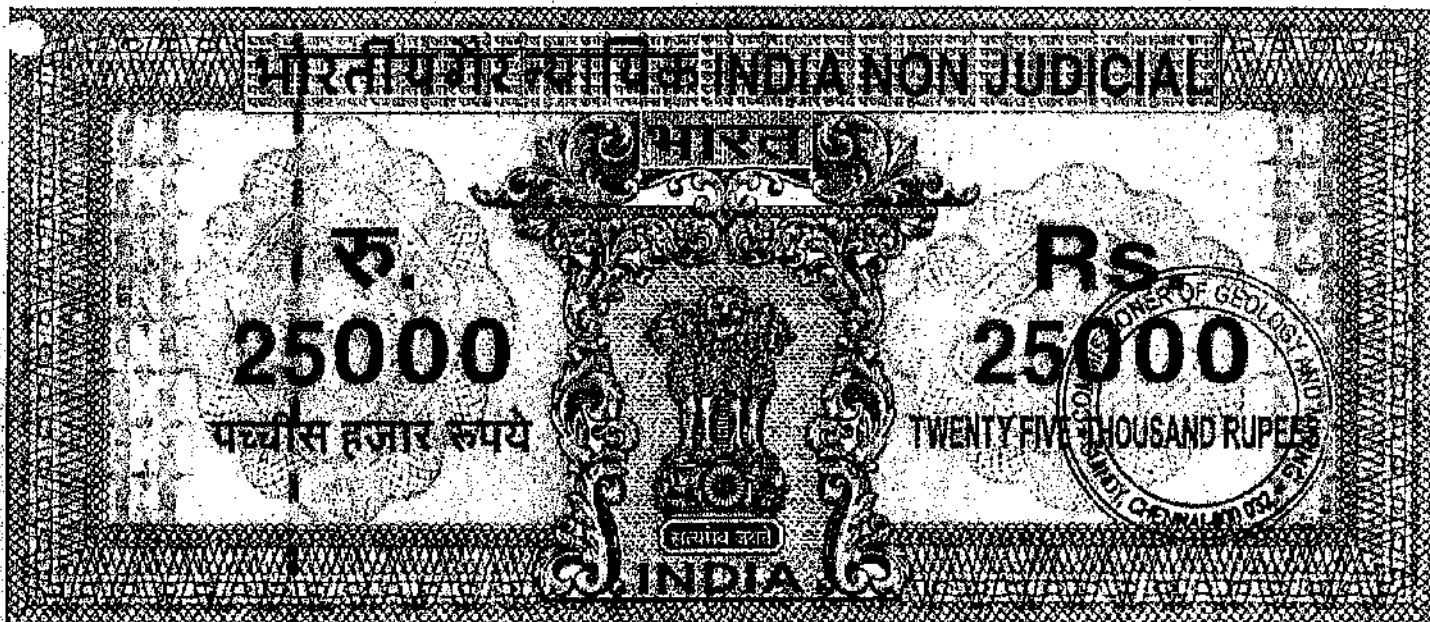
Lessee

*[Signature]*  
18/1/2019  
District Collector  
Viluppuram.

Document No. 108 / 2019 of Bank  
Contains 63 ... 5 ...  
Registered Officer

*K. Parashuram*





தமிழ்நாடு தமில்நாடு TAMILNADU

94  
08-01-19

K. Parasham  
பரிசாசம் கிராமத்திலே  
கிழவாக்கல்.

D 302940  
K. தாழேமாக்கர்,  
மு. தா. வி. எண். 997/C1/14  
43, வடக்கு அப்பளா குளத்தெரு,  
விழுப்புரம் - 605 602.

161

AND WHEREAS, the Government, has granted a quarrying lease to the lessee vide G.O.(3D)No.50 Industries (MMB.2) Department dated 18.12.2018 and allowed him to commence quarrying operations for Black Granite in the said lands and to deposit mining waste thereon by the lessee or tenant of the registered holder.]

AND WHEREAS, the Government is prepared to allow the said registered holder or lessee to commence mining operations and to deposit mining waste in or on the said lands described in the schedule for a period of twenty years from 18<sup>th</sup> day of January 2019 to 17<sup>th</sup> day of January 2039.

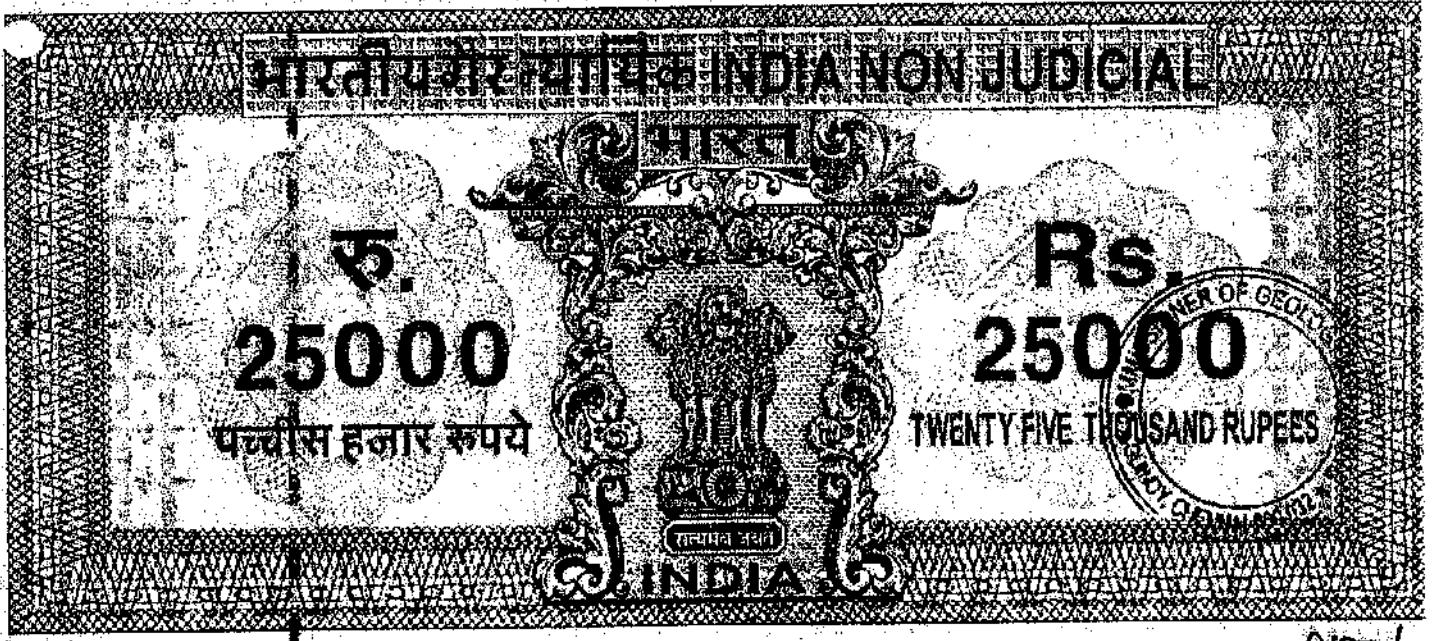
K Parasham  
R. Shanthi  
Registered holder

18/1/2019  
District Collector  
Viluppuram.

K Parasham  
Lessee

K. Parasham

Document No. 108  
2019 of Book  
Contains 23 sheets



தமிழ்நாடு தமில்நாடு TAMILNADU

98  
08-01-19

K. Parvathiam  
சீமலாம்பி கிராமத்தில்  
செய்யுமாலை.

D 302947  
க. தாமோதரன்  
மு. தா. வி. எண். 997/C/1/14  
49, வடக்கு அழகனார் குத்தகை,  
விழுப்புரம் - 605 602.

171

AND WHEREAS, the registered holder has deposited with the Collector, a sum of Rs.40,000/- (Rupees Forty thousand only) Ch.No.2, dt.10.01.2019 @ SBI, Viluppuram as security for the due performance of the covenants, agreements and provisos or damage which may be incurred by the Government by reason of any of the said lands described in the Schedule hereto being rendered unfit for cultivation by the mining operations therein or by the deposit of mining waste thereon by either the registered holder or the lessee.

K. Parvathiam  
R. Shakti  
Registered holder

18/1/2019  
District Collector  
Viluppuram.

K. Parvathiam  
Lessee

K. Parvathiam

Document No. 108  
Contains 62  
Registering Officer



தமிழ்நாடு தமில்நாடு TAMILNADU

D 302942

99  
08-01-19

K. பாலசுப்பிரமணியம்  
சாண்டலம் கிராமம்  
சிறுவாரணம்.

*Handwritten signature*

க. தாழைமாதரன்  
மு.தா.வி.எண். 997/C/1/17  
49, வடக்கு அய்யனார் குளத்திடை,  
விழுப்புரம் - 605 602.



181

AND WHEREAS, the lessee has at the request of the registered holder and in consideration of such approval by the Government of the mining operations as herein before recited agreed to join in these presents for the purpose of entering into covenants, agreements and provisos hereinafter contained as surety for the registered holder.

*K. P. Shanmugam*  
R. Shanmugam  
Registered holder

*Handwritten signature*  
18/1/2019  
District Collector  
Viluppuram.

*K. P. Shanmugam*  
Lessee

*K. P. Shanmugam*

Document No. 108	2019 of Book
Contains 63 Sheets	8 Sheets
Registering Officer.	



தமிழ்நாடு தமிழ்நாடு TAMILNADU

100  
08.01.19

K. பரமசிவன்  
மாவட்ட கிராமக்  
கிழவராகல.

க. தாமோதரன்,  
மு.நா.வி.எண்.997/04114,  
49, விடக்கு அப்பணர் குளத்தெரு,  
விழுப்புரம் - 605 602.

191

NOW THESE PRESENTS WITNESS and registered holder and the lessee do hereby jointly and severally and each of them doth individually hereby covenant and agree with the Government as follows:-

1. To carry on mining operations during the said term in a proper and workman like manner and to deposit mining waste on the lands described in the schedule hereto and to answer and to account at all reasonable times to Government for all acts and defaults committed by any servants, agents or workmen employed by the registered holder or lessee in carrying on such operations or in making such deposits.

K. Paramasivan  
R. Shafi  
Registered holder

Ammin  
16/1/2019  
District Collector  
Viluppuram.

K. Paramasivan  
Lessee

K. Paramasivan  
Document No. 102 of 2019 of Book  
+ Contains 63 Sl. Nos. 9 Sl. Nos.  
Register Office.





தமிழ்நாடு தமில்நாடு TAMILNADU

161 K. Paraiyandi  
 08-01-19 சிவசேனா கிராமம்  
 சிவசேனா கிராமம்.

Handwritten signature  
 D 302944  
**க. தாமோதரன்.**  
 மு.தா.வி.எண். 997/C/14,  
 49, வடக்கு அய்யனார் குளச்சல்,  
 விழுப்புரம் - 605 602.

/ 10 /

- To pay on the 17<sup>th</sup> day of January 2020 next and on the 17<sup>th</sup> day of January of every succeeding year so long as the operations aforesaid are carried on, into the Treasury / state Bank of India at Villupuram to the credit of the Government in addition to the land assessment for the time being payable in respect of the said lands seigniorage on the minerals mined at the rates prescribed by the Government from time to time.
- To abide by the rules prescribed by the Government from time to time regarding quarrying of minor minerals.

*K. Paraiyandi*  
 R. Shethi  
 Registered holder

*Mmm*  
 12/1/2019  
 District Collector  
 Viluppuram.

*K. Paraiyandi*  
 Lessee

*K. Paraiyandi*  
 Document No. 108 of 2019 of Book  
 Contains 63 of 10 sheet  
 Registered Officer

120 A





தமிழ்நாடு தமிழ்நாடு TAMILNADU

D 302945

102  
08.01.19

K. Palaniappan  
தலைவர் கிராமம்  
கிழங்கு

*[Signature]*  
க. தாமோதரன்,  
மு.தா.வி.எண்.99742/1/14,  
49, வடக்கு அய்யனார் சாலை,  
வீழ்ப்புரம் - 605 802.

/11/

4. To 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 or the lessee from the said lands and also the number of persons employed in carrying on the said mining operations therein and to prepare and maintain from time to time when so directed by the said Collector complete and correct plans of all mines and working in the said lands and to allow any officer thereunto authorised by the [Director of Geology and Mining], Tamil Nadu, from time to time and at all times to examine such accounts and any such plans and to supply and furnish when so required all such information and returns regarding all or any of the matters aforesaid as the Government may from time to time required and direct.

*[Signature]*  
R. Shakti  
Registered holder

*[Signature]*  
18/1/2019  
District Collector  
Viluppuram.

*[Signature]*  
Lessee

*[Signature]*

Document No. 108	of Book
Contains 63	of Pages

121 A

Registered Officer



தமிழ்நாடு தமிழ்நாடு TAMILNADU

25000  
D 302946

103  
08-01-19 K. பாராசூர்  
சாலை கிருமலை  
சிறுமலை.

க. காசிமாதவன்  
மு.தா. வி. எண். 997/C/172  
49, வடக்கு அய்யனார் குளத்தை  
விழுப்புரம் - 605 602.

/12/

5. To allow any officer authorised by the [Commissioner and Director of Geology and Mining], Tamil Nadu in that behalf from time to time and at all times to enter upon any part of the said lands where mining operations may be carried on for the purpose of inspecting the same.

K Parasuram  
R. Shaha  
Registered holder

18/1/2019  
District Collector  
Viluppuram.

K Parasuram  
Lessee

K. Parasuram  
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Contains 63 12  
Registering Officer





தமிழ்நாடு தமிழ்நாடு TAMILNADU

25000  
D 302947

104 | K. Paranduram  
08-01-19 | க. பாண்டூரம்  
சின்னம் கிளாஸ்க்  
செய்துவதால்.

*K. Paranduram*  
க. பாண்டூரம்  
மு.நா.வி.எண். 997/C 111-4  
49, வடக்கு அய்யனார் தளத்தே  
விழுப்புரம் - 605 602.

/ 13 /

6. To forthwith send to the Collector a report of any accident which may occur at or in the said land and also of the discovery therein of any minerals other than Black Granite (here enter the minerals already specified in the notice given by the registered holder).
7. Not to claim 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 timers of the assessment thereon has been deducted under proviso 2 hereunder:

*K Paranduram*  
R. Shetty  
Registered holder

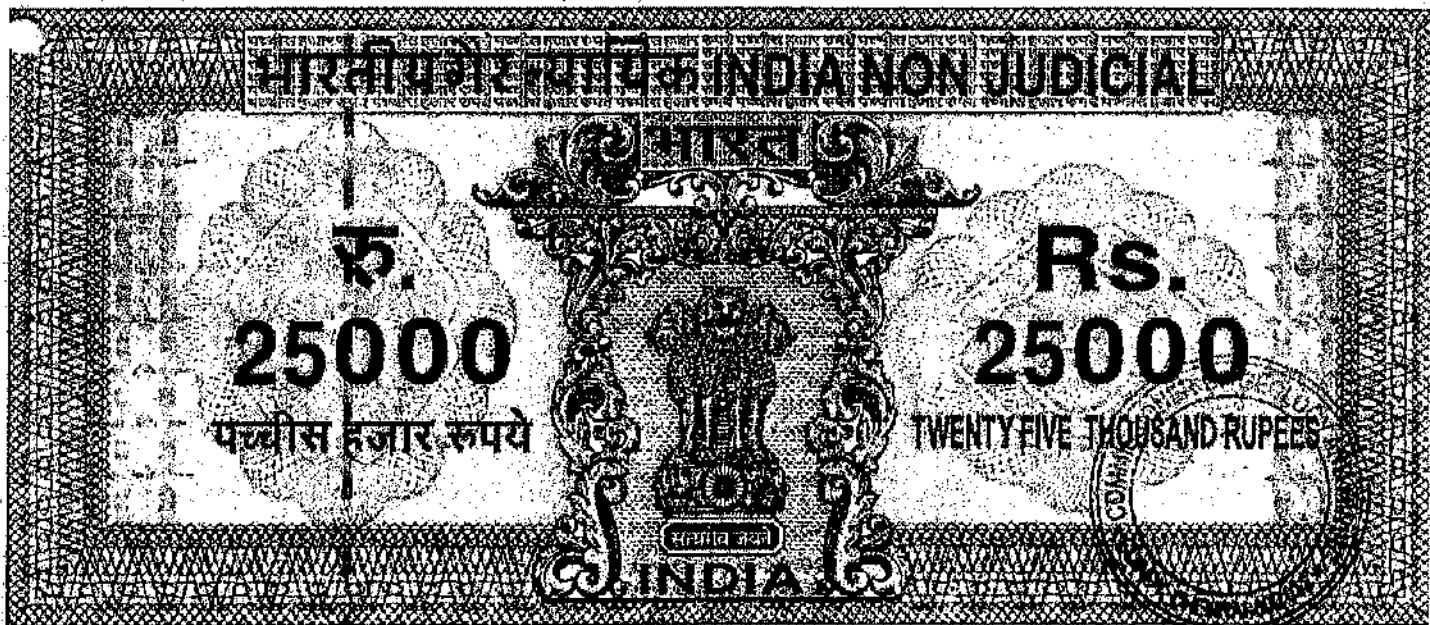
*Jmmmm*  
12/1/2019  
District Collector  
Viluppuram.

*K Paranduram*  
Lessee

*K Paranduram*  
Document No. 108 2019 of Book  
Contains 63 13  
Registry Office







தமிழ்நாடு தமிழ்நாடு TAMILNADU

25000  
D 302948

105  
08.01.19

K. பாலசுப்பிரமணியம்  
பிள்ளை கிருஷ்ணமூர்த்தி  
சிறுதாண்டவராயன்

*[Handwritten Signature]*

க. தாமோதரன்,  
மு. தா. வி. எண். 997/C/1/1,  
49, விலக்கு அபிவிருத்தி துறைமுகம்,  
விழுப்புரம் - 605 002.

/ 14 /

PROVIDED ALWAYS and it is hereby further agreed by and between the parties as follows:-

1. That it shall be lawful for the registered holder or lessee as the case may be at any time to cease mining operations under these presents provided the registered holder or lessee shall pay the Government or the Collector the land assessment, cess and seigniorage payable by the registered holder or the lessee under these presents upto to the end of the year in which the registered holder or the lessee shall cease such mining operations and shall restore the said lands fence or fill in abandoned pits and excavations therein if required by the Collector as next hereinafter provided and upon the registered holder or the lessee so doing these presents shall cease and determine.

*[Handwritten Signature]*  
R. Shethu  
Registered holder

*[Handwritten Signature]*  
12/1/2019  
District Collector  
Viluppuram.

*[Handwritten Signature]*  
Lessee

*[Handwritten Signature]*

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Contains 63	14 Sheet

Registrar Office

24 A

भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹. 25000

पच्चीस हजार रुपये

Rs. 25000

TWENTY FIVE THOUSAND RUPEES

सत्यमेव जयते

INDIA

தமிழ்நாடு தமிழ்நாடு TAMILNADU

D 302949

106  
08-01-19

K. பரமசிவன்  
சகலகாலம் கட்டி  
செய்தார்.

க. தாமோதரன்  
மு. தா. வி. எண். 997/C/19  
49, வடக்கு அய்யனார் சாத்திரம்,  
விழுப்புரம் - 605 682.

1151

2. That in case the registered holder shall relinquish the whole or part of the said lands in case of the expiry or sooner determination of this agreement then and in any such case, the registered holder in the case of relinquishment and the registered holder and the lessee in other cases shall restore said lands or the area relinquished or so much thereof as the Collector shall required to be restored to a state fit for cultivation and shall securely and permanently fence or fill in all abandoned pits and excavation therein as the Collector shall require to be so fenced or filled in and in case the registered holder or the lessee shall fail, or neglect any such lands with the registered holder or the lessee be required to restore to a state fit for cultivation or to so fence or fill in any such abandoned pit or excavation which the registered holder are the lessee shall be required to so fence are fill them and in any such case it shall be

K. Paramasivan  
R. Shodhi  
Registered holder

12/1/2019  
District Collector  
Viluppuram.

K. Paramasivan  
Lessee

K. Paramasivan

Document No. 108  
Contains 63 Sheets  
Registering Officer



தமிழ்நாடு தமில்நாடு TAMILNADU

D 302950

104  
08.01.19 K. பாலசுப்பிரமணியம்  
பிள்ளை கிராமம்  
செய்தல்.

*[Signature]*  
க. தாமோதரன்  
மு. கா. வி. எண். 997/G1/14  
49, வடக்கு அய்யலார் சாத்திரம்  
விழுப்புரம் - 605 002

/16/

lawful for the Collector to so restore any such lands or as the case may be so fence are fill in any pit or excavation at the expense of the registered holder or lessee and to apply the said sum of Rs.40,000/- (Rupees Forty thousand only) 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 or fencing or filling as the case may be or to meet thirty times the assessment of the area rendered uncultivable, it shall be lawful for the Government to recover the balance by resort to

Civil Court.

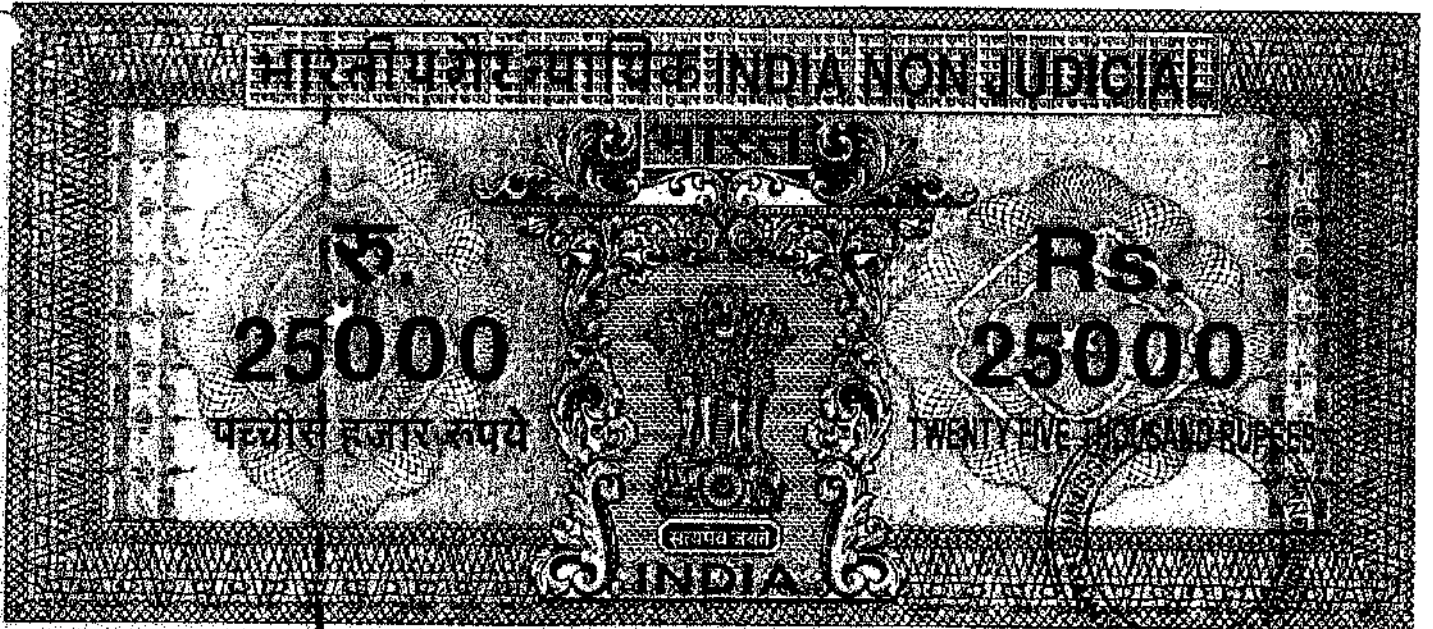
*[Signature]*  
R. Shakti  
Registered holder

*[Signature]*  
16/1/2019  
District Collector  
Viluppuram.

*[Signature]*  
Lessee

*[Signature]*  
K. Palanisami

Document No. 104 of 2019 of Book  
Contains 12 Sheets of 16 pages  
Registering Officer



தமிழ்நாடு तमिलनाडु TAMILNADU

108  
08-01-19

K. பரமசிவம்  
பிள்ளைம் கிராமம்  
கிருஷ்ணாலை.

Handwritten signature and stamp with number D 302951

க. தாமோதரன்,  
மு.கா.வி.எண்.907/C1/14  
49, வடக்கு அய்யனார் குளத்துக்கு,  
விழுப்புரம் - 605 802

/ 17 /

3. That all land assessment, cess and seigniorage payable under these presents shall be recoverable under the provisions of the Tamil Nadu Revenue Recovery Act, 1864, or any subsisting statutory modification thereof, as if the same were arrear of land revenue.

K. Paramasivam  
R. S. S. S.  
Registered holder

Handwritten signature and date 18/1/2019  
District Collector  
Viluppuram.

K. Paramasivam  
Lessee.

Handwritten signature  
Document No. 108 of 2019 of Book  
Contains 63 Pages 17  
Registering Officer





தமிழ்நாடு தமிழ்நாடு TAMILNADU

302952

109 | K. Parasham  
 03-01-19 | கி. பராமசாமி  
 சிங்கப்பட்டு

*(Signature)*  
 க. காமசுந்தரன்,  
 மு.நா.வி.எண். 997/C/14,  
 49, வடக்கு அய்யனார் தெரு,  
 விழுப்புரம் - 605 602.

/ 18 /

4. That in the event of any breach of the registered holder of any of the conditions of these presents, it shall be lawful for the Government to levy enhanced seigniorage subject to the maximum of five times the normal rate 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 registered holder in respect of any antecedent claim or breach of covenant or condition.
5. That any notice to be given to 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.

*(Signature)*  
 R. Shanthi  
 Registered holder

*(Signature)*  
 12/1/2019  
 District Collector  
 Viluppuram.

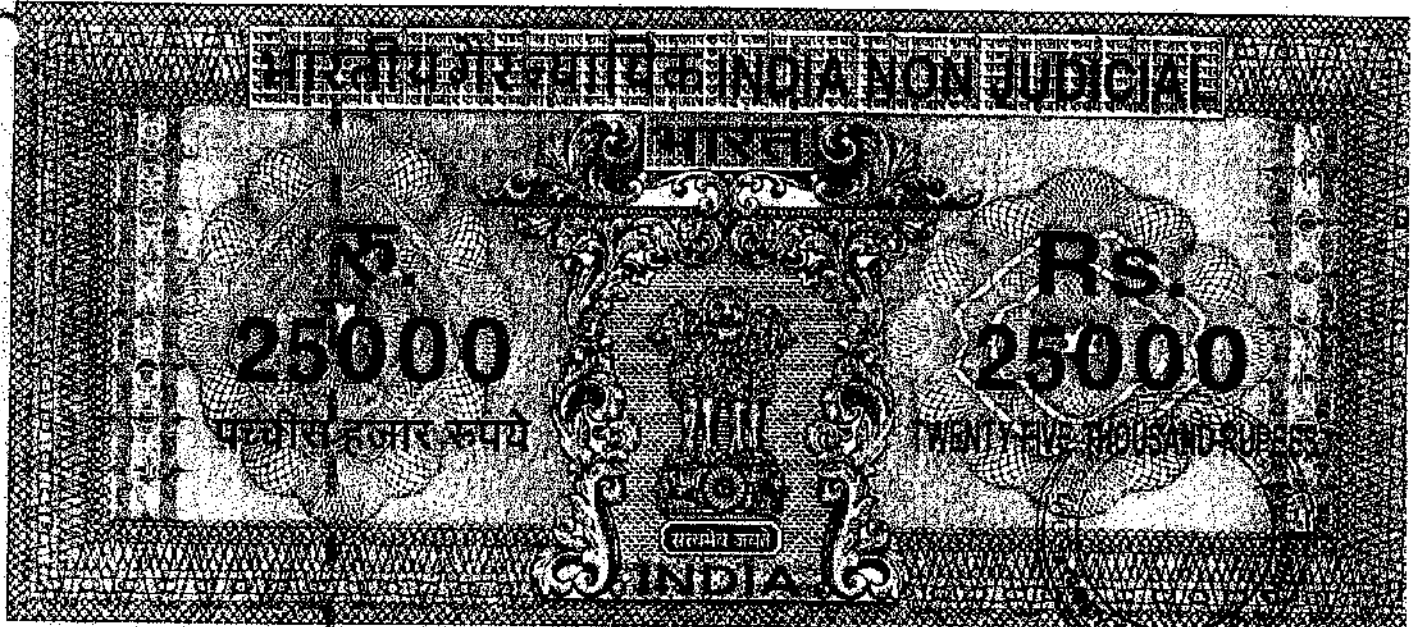
*(Signature)*  
 Lessee

*(Signature)*

Document No. 108	2019 of Book
Contains 12 sheets	18 sheets

Registering Officer

28 A



தமிழ்நாடு तमिलनाडु TAMILNADU

110 | K. பரமசிவம்  
 08-01-19 | சாண்டேர் கிராமம்.  
 சிறுவாரணம்.

*[Signature]*  
 D 302953  
 க. காழியாசாமி,  
 மு.தா.வி.எண். 997/C/1/14  
 49, வடக்கு அய்யனார் தளத்தெரு  
 விழுப்புரம் - 605 602

/ 19 /

6. Should any question or dispute arise regarding an agreement executed in pursuance of these rules or any matter or thing connected therewith or the powers of the registered holders 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 [Commissioner and Director of Geology and Mining]. In case the registered holder, lessee is not satisfied with decision of the [Commissioner and Director of Geology and Mining], the matter shall be referred to the State Government.

*[Signature]*  
 R. Sathish  
 Registered holder

*[Signature]*  
 13/1/2019  
 District Collector  
 Viluppuram.

*[Signature]*  
 Lessee

*[Signature]*  
 K. Paramasivam

Document No. 108	2019 of Book
Contains 63	Consists 19 sheets
Registering Officer	



29 A



தமிழ்நாடு தமிழ்நாடு TAMILNADU

111  
08-01-19

K. பரமசிவம்  
பாண்டிச்சேரி கிராமம்  
சிறப்பூர்.

சென்னை D 302954

க. தாமோதரன்,  
மு. தா. வி. எண். 997/C1/19  
49, வடக்கு அய்யனார் குளத்தேரு  
விழுப்புரம் - 605 602

1201

- The registered holder shall abide by the conditions laid down in the payment of Wagers 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) and Mines & Mineral (Development & Regulation) Act 1957 and the Rules and Regulations made thereunder.
- The average quantity of Black Granite that can be quarried from the leasehold area under this agreement is 28016 CBM for the entire lease period of twenty years.

K. Paramasivam  
R. Sathu

Registered holder

18/1/2019  
District Collector  
Viluppuram.

K. Paramasivam  
Lessee

K. Paramasivam

Document No. 108	of 2019 Book
Contains 63	of 20
Registering Office	



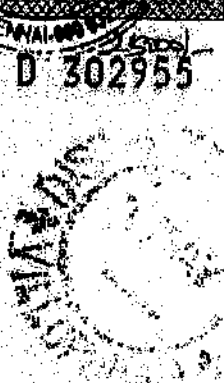
தமிழ்நாடு தமிழ்நாடு TAMILNADU

114  
09.01.19

K. பழனிசாமி  
சாண்டர் கிராமத்தில்  
கிழ்வாமலை.

*[Handwritten signature]*

க. தாமதாசர்,  
மு.தா.வி.எண். 997/C/1/14,  
49, வடக்கு அய்யனார் குளத்தை,  
விழுப்புரம் - 605 602.



/21/

9. The anticipated seigniorage fee for the total quantity of 28016 CBM of Black Granite to be quarried and transported during the entire lease period of twenty years is Rs.10,81,13,744/-. Area Assessment for the lease hold area for the entire lease period is Rs.6000/-. Security deposit deposited for this lease by the lessee is Rs.40,000/-.

*[Signature]*  
R-Shankar  
Registered holder

*[Signature]*  
18/1/2019  
District Collector  
Viluppuram.

*[Signature]*  
Lessee

*[Signature]*

Document No. 108 of 2019 of Book  
Contains 63 Sweets 21







தமிழ்நாடு தமிழ்நாடு TAMILNADU

D 302956

118  
09.01.19

K. Parasuram  
சாலைப் பிள்ளை  
பிள்ளை.

*[Handwritten signature]*

க. காசிமாதாள்,  
மு.தா.வி.எண். 997/C/1/14,  
49, வடக்கு அய்யனார் குளத்தெரு,  
விழுப்புரம் - 605 802.

1221



**SPECIAL CONDITIONS IMPOSED BY THE GOVERNMENT IN G.O.(3D).No.50 INDUSTRIES (MMB.2) DEPARTMENT DATED 18.12.2018.**

1. A safety distance 7.5 mtrs. Should be left out for the adjoining patta lands and for the adjoining existing black granite quarry situated at southern side.
2. A safety distance of 10 meters should be provided for the Government poramboke land situated on the southern and eastern side of the applied area.
3. A safety distance of 10 meters should be provided for the village road passing in the patta lands on the western side of the applied area.

*K Parasuram*  
*R. Shafi*  
Registered holder

*[Signature]*  
18/1/2019  
District Collector  
Viluppuram.

*K Parasuram*  
Lessee

*K. Parasuram*

Document No. 108 of 2019 of Book  
Contains 635 lots 22  
Registering Officer





தமிழ்நாடு தமில்நாடு TAMILNADU

302981

119  
09.01.19

K. Parasham  
தலைவர் கிராமம்  
சிறித்திரைகாவல்.

*[Handwritten Signature]*

க. தாமோதரன்,  
மு.தா.வி.எண். 997/C1/14,  
49, வடக்கு அய்யனார் குளத்தெரு,  
விழுப்புரம் - 605 602.

/23/

4. The applicant should fence the lease granted area with Barbed wire before the execution of lease deed as follows:-
1. The pillar post shall be firmly grounded with concrete foundation of height not less 2 meters with a distance between two pillars shall not be more than 3 meters.
  2. The applicant shall incorporate the DGPS reading for the entire boundary pillars of the area and the same should be clearly shown in the Mining Plan and submit in CD / DVD form to the Deputy Director of Geology and Mining, Viluppuram.
  3. A soft copy of the digitalized map with DGPS readings should be submitted in the CD form.

*[Handwritten Signature]*  
R. S. Hari  
Registered holder

*[Handwritten Signature]*  
18/1/2019  
District Collector  
Viluppuram.

*[Handwritten Signature]*  
Lessee

*[Handwritten Signature]*

Document No. L.O.B. of 2019 of Book
Contains 63 Sheets 22
Registering Officer



தமிழ்நாடு தமிழ்நாடு TAMILNADU

100  
09.01.19

K. Palaniappan  
சாலைக் கிராமம்  
சிறுமாவல.

*Signature*  
க. தாமோதரன்,  
மு.தா.வி.எண்.997/C1/14,  
49, வடக்கு அய்யனார் குளத்தேடு,  
விழுப்புரம் - 605 602.

/ 24 /

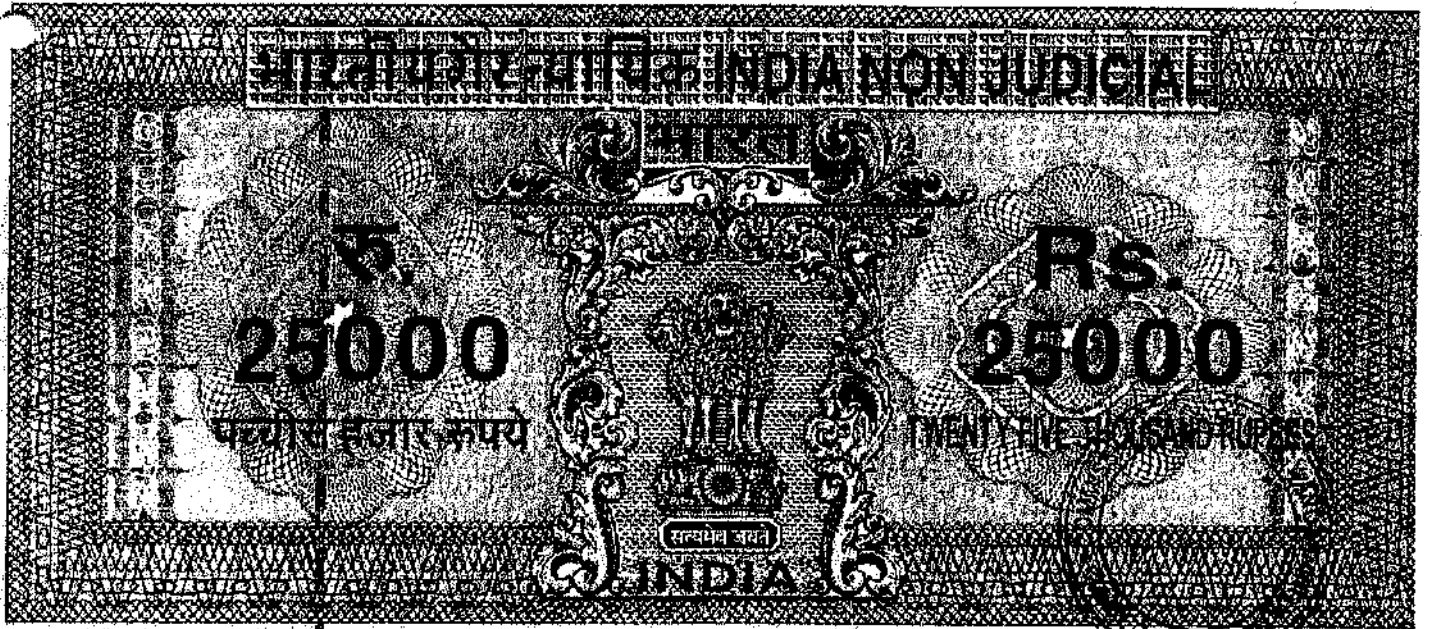
5. The lessee shall strictly adhere to the statutory and safety requirements.
6. Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
7. The lessee shall submit scheme of mining; mine closure plan and other statutory requirements within the time stipulated for submission of the above, as per rules.
8. The child labour should not be engaged in the quarry works.
9. As per rule 12(v) of Mineral (other than atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, I shall own expense, erect, maintain and keep in repair all boundary pillars.

*K. Palaniappan*  
R. Shetty  
Registered holder

*Signature*  
18/1/2019  
District Collector  
Viluppuram.

*K. Palaniappan*  
Lessee

*K. Palaniappan*  
Document No. 128 of 2019 of Book  
Contains 63 sheets 24 of 63  
Registering Office



தமிழ்நாடு தமிழ்நாடு TAMILNADU

121  
09.01.19

K. பழனிசாமி  
தலைவர் கிளாஸ்சு  
கிளாஸ்சு.

*[Handwritten signature]*

க. தாமிரகாசி.  
மு.நா.வி.எண்.997/C1/14  
49, வடக்கு அய்யனார் குளத்தே.  
விழுப்புரம் - 605 602.



1251

- 10. No hindrance shall be caused to the adjacent patta lands and no damage shall be caused to the adjoining Government Poramboke lands while quarrying and transportation of granite.
- 11. The waste material generated during the time of quarrying should be dumped only in the leasehold area.
- 12. The lessee should not cause hindrance to the adjacent pattadars while quarrying and transportation of the granite.

*[Handwritten signature]*  
R. Sathu  
Registered holder

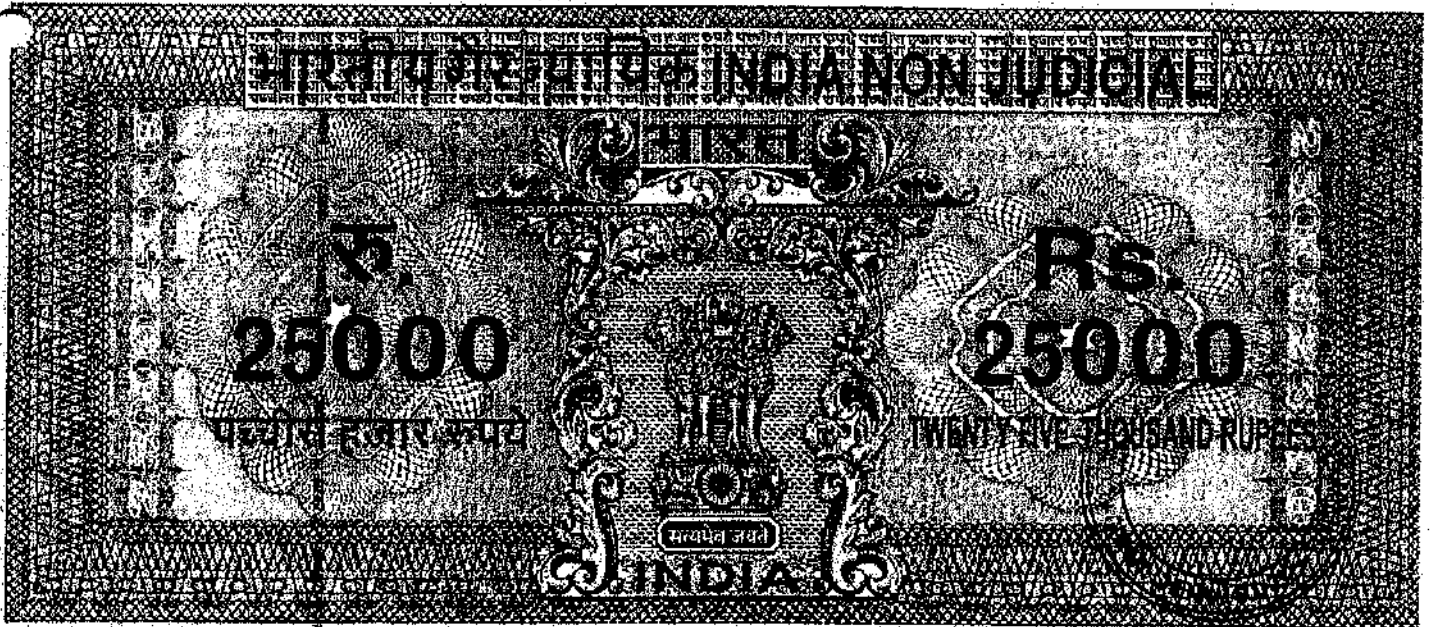
*[Handwritten signature]*  
18/11/2019  
District Collector  
Viluppuram.

*[Handwritten signature]*  
Lessee

Document No.	108	of Book	2019
Contains	63	Sheets	25
Registering Officer			







தமிழ்நாடு तमिलनाडु TAMILNADU

D 302984

122  
09.01.19

க. பழனிமூர்த்தி  
தாண்டிமேல் கிராமத்தில்  
கிழவரகால்.

க. தாமோதரன்,  
மு.நா.வி.எண். 997/C1/14,  
49, வடக்கு அய்யனார் குளத்தெரு,  
விழுப்புரம் - 605 602.

1261

13. The conditions mentioned in G.O.(Ms) No.79, Industries (MMC.I) Department, dated 05.04.2015 should be complied with.
14. The lessee should use mild explosives during quarrying.
15. The lessee should adhere all the above conditions and also follow the instructions issued in Government letter No. 12789/MMB2/2002-7 Industries Department dated 9.1.2003 as assumed by him in sworn-in-affidavit.

*K. Parasuram*

R. Shanthi

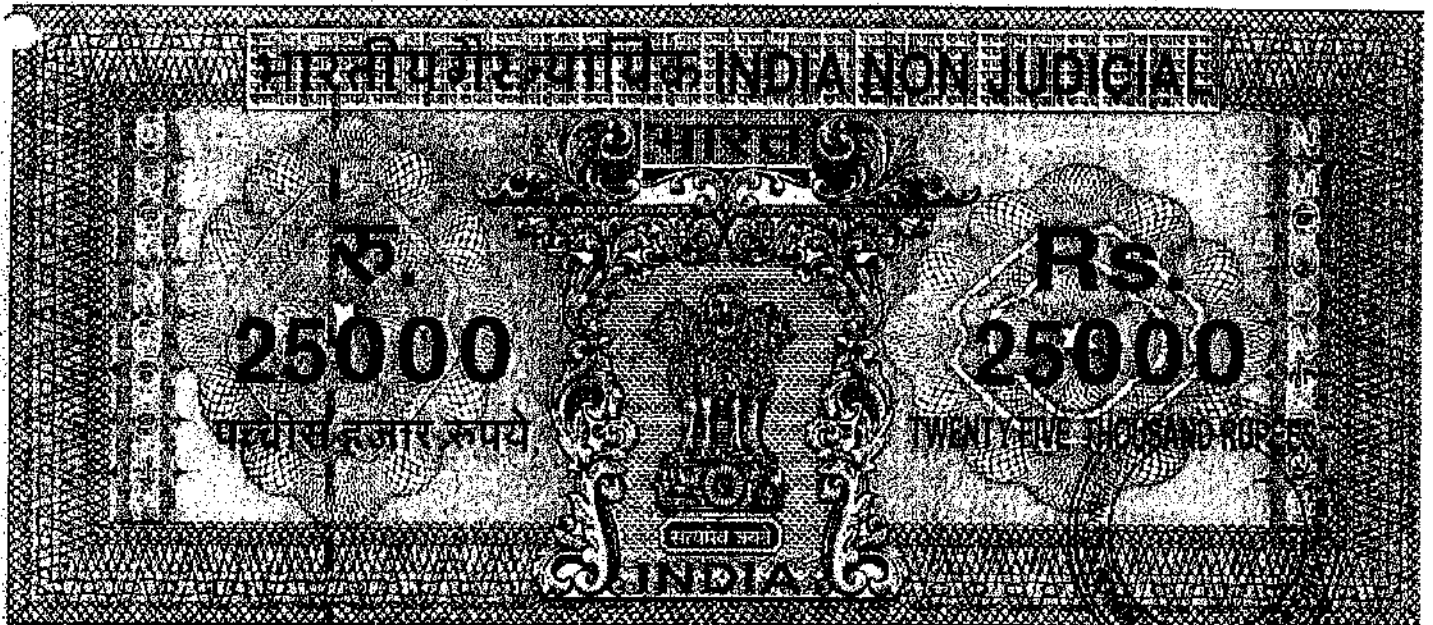
Registered holder

*K. Parasuram*

Lessee

*Ammin*  
12/1/2019  
District Collector  
Viluppuram.

Document No. 10.8 of 2019 of Book
Contains 62 Sheets of 2019
Registering Officer.



தமிழ்நாடு தமில்நாடு TAMILNADU

123  
09.01.19

K. Parasuram  
சான்றும் கிராமத்திலே  
சிறுவாரணம்.

க. நாடோதிரர்,  
மு.நா.வி.எண். 997/C1/14,  
49, வடக்கு அய்யனார் சாத்திரம்,  
விழுப்புரம் - 605 602.

1271



OTHER CONDITIONS IN THE ANNEXUER TO THE G.O.

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 Tamilnadu 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.

K. Parasa

R. Shakti

Registered holder

12/1/2019

District Collector

Viluppuram.

K. Parasa

Lessee

K. Parasa

Document No. 102	of 2019 of Book
Contains 63 Sheets 278	
Registering Officer	





தமிழ்நாடு தமிழ்நாடு TAMILNADU

124  
09.01.19

K. பாலசுப்பிரமணியம்  
சென்னை கிராமம்  
சிறுபாளையம்

க. தாமோதரன்,  
மு.தா.வி.எண். 897/G1/14  
49, வடக்கு அடியனார் குளத்தெரு  
விழுப்புரம் - 605 602.

302986



/28/

4. 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.
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.

K. Palani Sundar  
R. Sathya  
Registered holder

12/1/2019  
District Collector  
Viluppuram.

K. Palani Sundar  
Lessee

Document No. 2 of 2019 of Book  
Contains 63 Sheets 28 Shaps  
Registering Officer



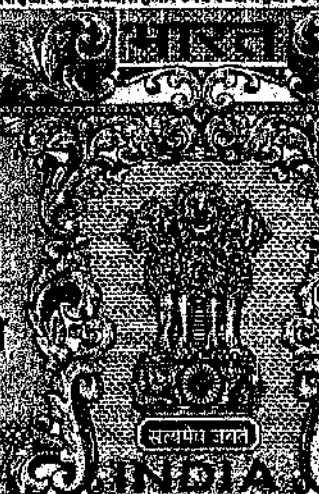
भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹. 25000

पच्चीस हजार रुपये

Rs. 25000

TWENTY FIVE THOUSAND RUPEES



தமிழ்நாடு தமிழ்நாடு TAMILNADU

125

09.01.19

K. பாரதமூர்த்தி

தலைவர் கிழவாண்டி  
கிழவாண்டி.

க. தாண்டோகர்,  
மு. தா. வி. எண். 997/C1/14,  
49, வடக்கு அய்யனார் குளத்திடை,  
விழுப்புரம் - 605 602.

25000/  
D 302987

1291

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.
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.

K. Parthasarathy  
R. Sathya  
Registered holder

12/1/2019  
District Collector  
Viluppuram.

K. Parthasarathy  
Lessee.

K. Parthasarathy

Document No. 108 of 2019 of Book
1 Contains 63 Sheets 29
Registering Office





தமிழ்நாடு தமில்நாடு TAMILNADU

126  
09.01.19  
K. Parandam  
சென்னை கிராமம்  
சென்னை.

*[Signature]*  
க. காசிமாதரன்,  
மு.தா.வி.எண். 997/C1/14,  
49, வடக்கு அடியாளர் குகை,  
விழுப்புரம் - 605 602.

1307

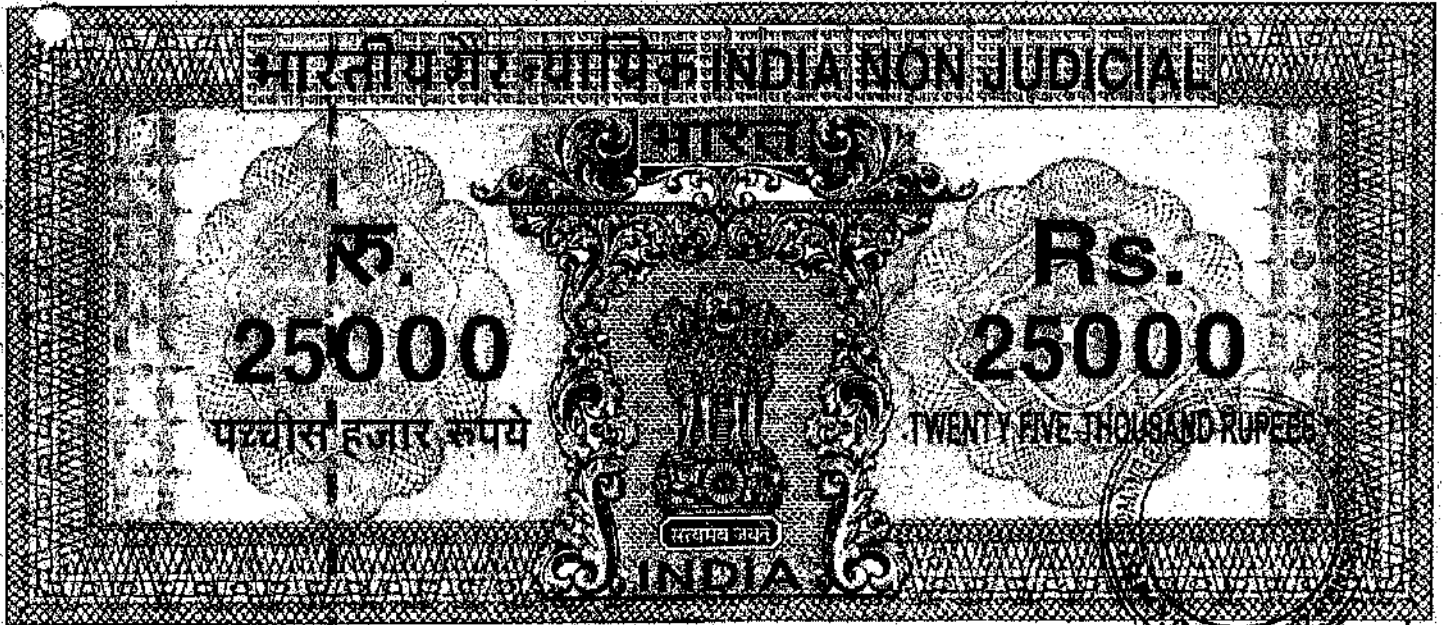
10. The terms and conditions are also subject to such further modifications, deletion and additions alteration as may be ordered by the Government to be included in the agreement to be executed for this purpose.
11. The applicant should maintain at his cost proper signboards indicating the survey numbers, 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.

*[Signature]*  
R. Sathya  
Registered holder

*[Signature]*  
18/1/2019  
District Collector  
Viluppuram.

*[Signature]*  
Lessee

*[Signature]*  
Document No. 102 of 2019 Book  
1 Contains 63 Sheets 803/1  
Registering Office



தமிழ்நாடு தமில்நாடு TAMILNADU

124  
09.01.19

க. பரமசிவம்  
என்.சி.சி. கிராமம்  
சிந்துபாளையம்.

*[Signature]*  
க. காஜமாநார்,  
மு.தா.வி.எண். 997/C1/14,  
49, வடக்கு அய்யனார் சாத்திரம்,  
விழுப்புரம் - 605 002.

/31/

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.

*[Signature]*  
R. Sheethu  
Registered holder

*[Signature]*  
18/1/2019  
District Collector  
Viluppuram.

*[Signature]*  
Lessee

Document No. 108 of 2019 of Book  
Contains 63 Sheets 31  
Registering Officer.





தமிழ்நாடு தமில்நாடு TAMILNADU

128  
09.01.19

K. Parasuram  
சுமீலம் கிராமத்தில்  
சிற்றுவாணம்.

*[Handwritten Signature]*

க. தாமோதரன்,  
மு.தா.வி.எண்.997/C1/14,  
49, வடக்கு அய்யனார் சுவாமிநாதர்,  
விழுப்புரம் - 605 602.

1321

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) 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.
18. That the mining plan is approved is without prejudice to any other order or direction from any court of competent jurisdiction.

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R. Shakti  
Registered holder

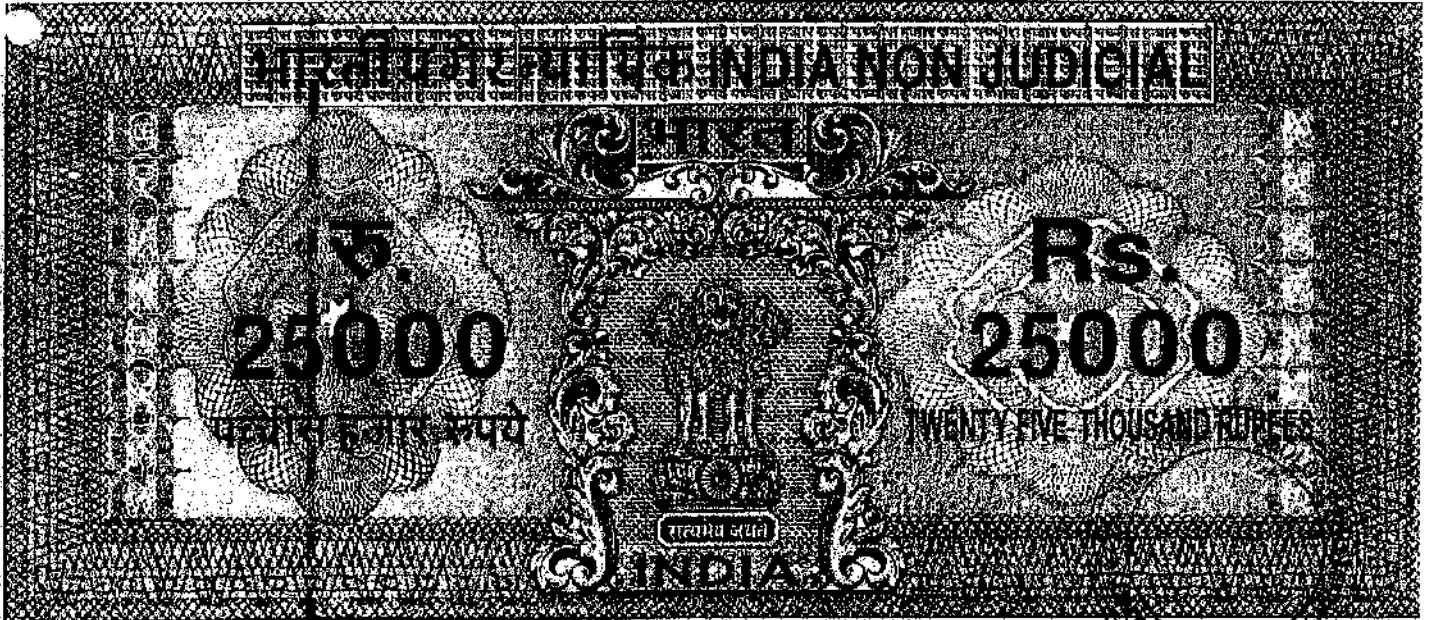
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District Collector  
Viluppuram.

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Lessee

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Registering Officer





தமிழ்நாடு தமிழ்நாடு TAMILNADU

129 | K. பாராசூரி  
 01.01.19 | சிவசெல்வம் கிராமம்  
 | சிற்றூர்.

க. தாமோதரன்,  
 மு.தா.வி.எண்.997/01/14,  
 49, வடக்கு அய்யனார் குளத்தேடு,  
 விழுப்புரம் - 605 602.

/ 39 /

**III. Environmental Clearance accorded by District Level Environmental Impact assessment Authority in Letter No.DELAA-TN/F.No.18015/Ec.No.02/2018 dated 04.12.2018.**

**Conditions to be Complied before commencing mining operations:-**

1. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
2. 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.
3. The proponent shall ensure that First Aid Box is available at site.

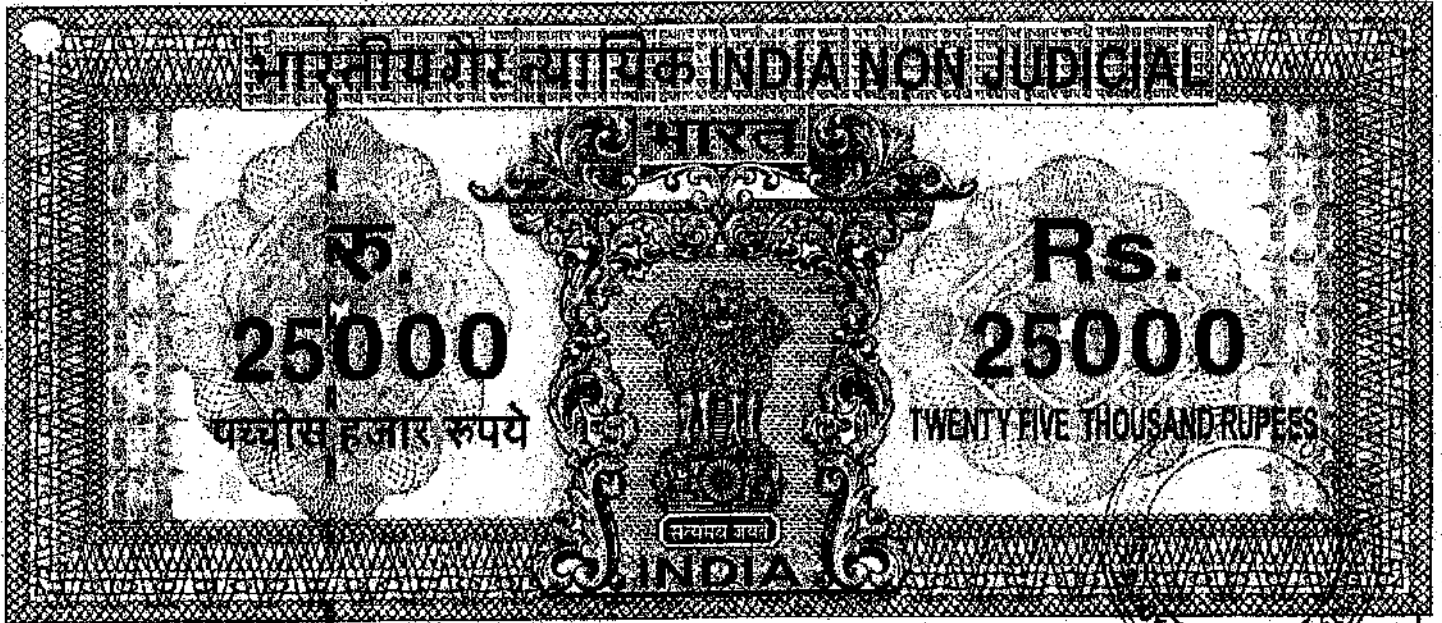
K Pararasuri  
 R. Shanthi  
 Registered holder

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 District Collector  
 Viluppuram.

K Pararasuri  
 Lessee

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 Registering Officer





தமிழ்நாடு தமிழ்நாடு TAMILNADU

130  
09.01.19

K. Pararasudhan  
சுமேலம் கிராமம்  
கிருஷ்ணாவலம்.

*e. Shan*  
க. தாமோதரன்,  
மு.தா. வி.எண். 987/C1/14,  
49, வடக்கு அய்யலார் குளத்துரு,  
விழுப்புரம் - 605 602.

1341

4. The excavation activity shall not alter the natural drainage pattern of the area.
5. The excavated pit shall be restored by the project proponent for useful purposes.
6. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
7. The quarrying operation shall be restricted between 7AM and 5 PM.
8. 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.

*K. Pararasudhan*

R. Shanmugam  
Registered holder

*K. Pararasudhan*

Lessee

*Shanmugam*  
18/1/2019  
District Collector  
Viluppuram.

*K. Pararasudhan*

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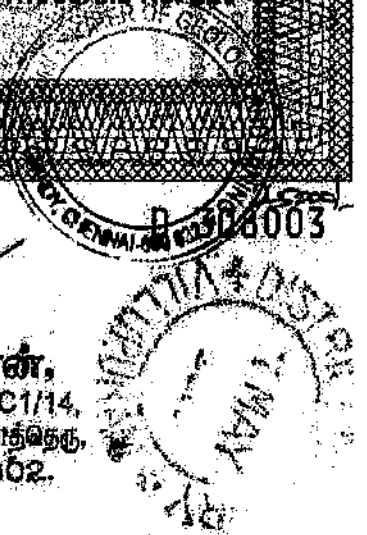
தமிழ்நாடு தமிழ்நாடு TAMILNADU

131  
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க.பாண்டிதான்  
பாண்டிதான் கிராமம்  
கிழவாலை.

க. காணோதான்,  
மு.தா.வி.எண்.997/C1/14,  
49, வடக்கு அய்யனார் சாத்திரம்,  
விழுப்புரம் - 605 602.

1351



9. A minimum distance of 15 mts. From any civil structure shall be kept from the periphery of any excavation area.
10. Depth of quarrying shall be 2 m 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.
11. 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.

*K. P. Senthil Kumar*  
R. Senthil Kumar  
Registered holder

*K. P. Senthil Kumar*  
Lessee

*M. M. M. M.*  
12/1/2019  
District Collector  
Viluppuram.

*K. P. Senthil Kumar*

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தமிழ்நாடு தமிழ்நாடு TAMILNADU

132  
09.01.19

K. பரமசிவன்  
சார்வரூப கிராமம்  
சிந்தாமலை.

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க. தாமோதரன்,  
மு. தா. வி. எண். 997/G/14,  
49, வடக்கு அய்யனார் குளத்தெரு,  
விழுப்புரம் - 605 802.



/36/

- 12. 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.
- 13. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
- 14. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
- 15. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.

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R. Stalin  
Registered holder

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12/1/2019  
District Collector  
Viluppuram.

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Lessee

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சிறுதாண்டி.

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க. தாமோதரன்,  
மு.தா.வி.எண். 997/C/1/14,  
49, வ.க.கு அய்யனார் தளத்தை,  
விழுப்புரம் - 605 602.



1371

- 16. 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.
- 17. 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.

*Signature*

R. Stalin  
Registered holder

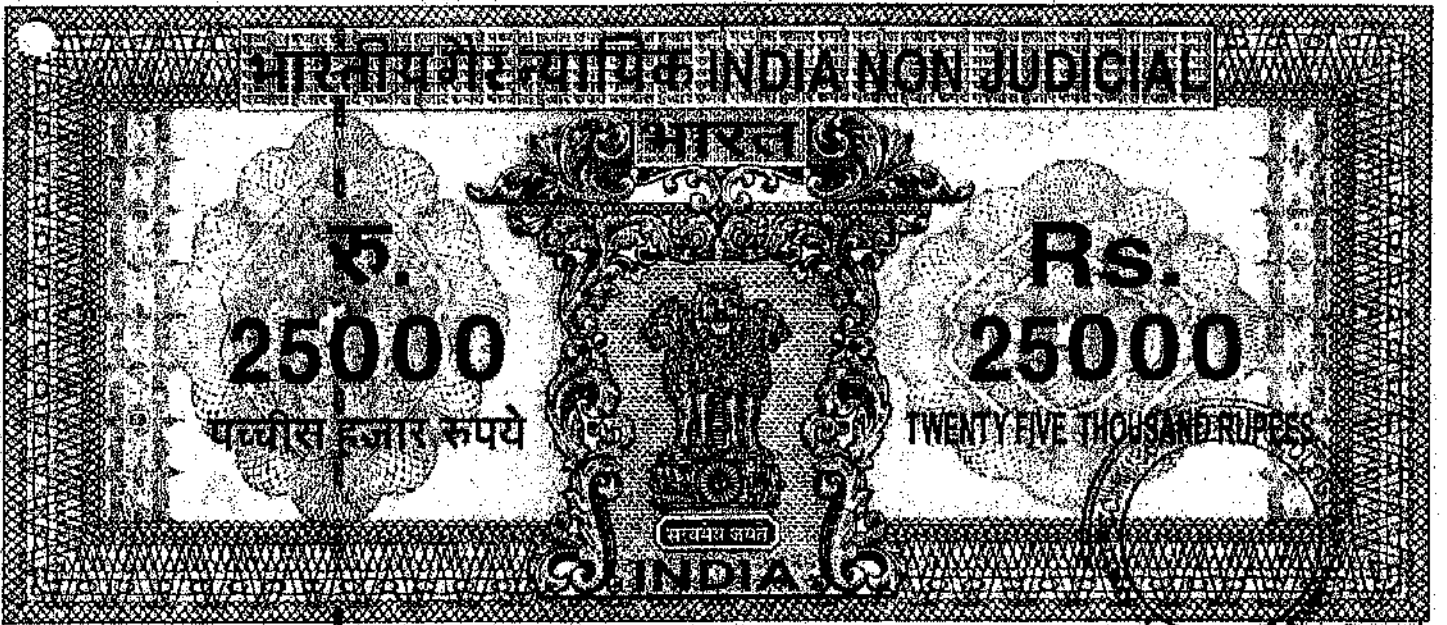
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13/1/2019  
District Collector  
Viluppuram.

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Registering Officer





தமிழ்நாடு தமிழ்நாடு TAMILNADU

134  
09/01/19

K. பழனிமூர்த்தி  
ராஜ்லக்ஷ் கிராமம்  
சிறப்பாலை.

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க. தாமோதரன்,  
மு.தா.வி. எண். 997/C1/14,  
49, வடக்கு அம்மனார் குளத்தெரு,  
வீழ்ப்புரம் - 605 002.



/38/

18. 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

19. 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.

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R. Shakti  
Registered holder

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10/1/2019  
District Collector  
Viluppuram.

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தமிழ்நாடு தமிழ்நாடு TAMILNADU

135  
09/01/19

K. பாராசூரி  
சாஸ்திரம் கிராமம்  
கிழக்கு மாவட்டம்.

க. தாமோதரன்,  
மு.தா.வி.எண். 997/C1/14,  
49, விலக்கு அபிவிருத்தி துறைமுகம்,  
விழுப்புரம் - 605 602.



1391

20. 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.
21. 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.
22. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
23. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.

K. Parasuri  
R. Sheth  
Registered holder

Mmm  
12/1/2019  
District Collector  
Viluppuram.

K. Parasuri  
Lessee

K. Parasuri

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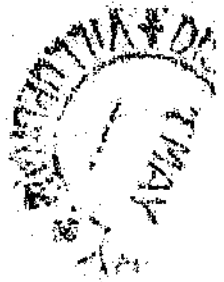
தமிழ்நாடு தமில்நாடு TAMILNADU

136  
09.01.19

K. பழனிமூர்த்தி  
சாலைக்கான கட்டிடக்கலை  
புத்தகம்.

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க. காசிமாதாள்,  
மு.நா.வி.எண். 997/01/14,  
49, வடக்கு அய்யனார் சாலை,  
விழுப்புரம் - 605 602.



1401

24. 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.

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R. Sathish  
Registered holder

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District Collector  
Viluppuram.

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09.01.19 ஜில்லா கிளர்ச்சி  
கிளர்ச்சி

க. தாமோதரன்,  
மு.தா.வி.எண். 997/G1/1A,  
49, வடக்கு அய்யனார் குளத்தி,  
விழுப்புரம் - 605 802.



1411

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

K. Parangim  
R. Sath  
Registered holder

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District Collector  
Viluppuram.

K. Parangim  
Lessee

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138  
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K. பரமசிவம்  
பாண்டிச்சேரி கிராமம்  
திருவாரூர்.

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மு.நா.வி.எண். 997/C/114.  
49, வடக்கு அய்யனார் குளத்தெரு,  
விழுப்புரம் - 605 602.



/ 42 /

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.

*K. Paramasivam*  
R. Shan  
Registered holder

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16/1/2019  
District Collector  
Viluppuram.

*K. Paramasivam*  
Lessee

*K. Paramasivam*

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Registering Officer	



தமிழ்நாடு தமிழ்நாடு TAMILNADU

139  
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க. பாரமசிவம்  
தாண்டி கிருமலை  
சிறுமலை.

க. தாமோதரன்,  
மு.நா.வி.எண். 997/C/1/14,  
48, வடக்கு அய்யனார் சாலை,  
விழுப்புரம் - 605 602.



/ 43 /

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. The mining officer shall ensure this.

34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.

*K. Paramasivam*

R. Shanmugam  
Registered Holder

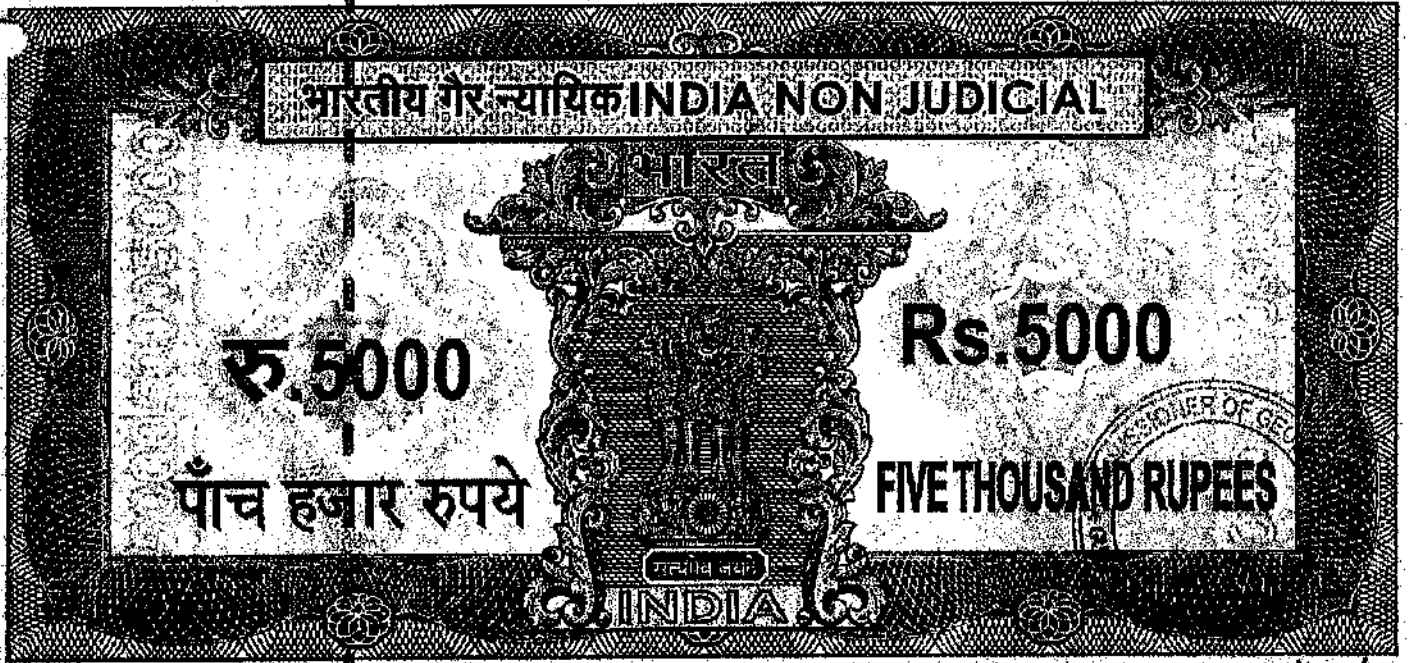
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18/1/2019  
District Collector  
Viluppuram.

*K. Paramasivam*  
Lessee

*K. Paramasivam*

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Registering Officer		





தமிழ்நாடு தமிழ்நாடு TAMILNADU

140  
09.01.19

க. பழனிசாமி  
சாலை கிராமம்  
சிறுதாண்டி

க. காபேலாசாமி,  
மு.தா. வி. எண். 997/C1/14  
49, வடக்கு அய்யனார் சாலை,  
விழுப்புரம் - 605 602.



/ 44 /

- 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. 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.

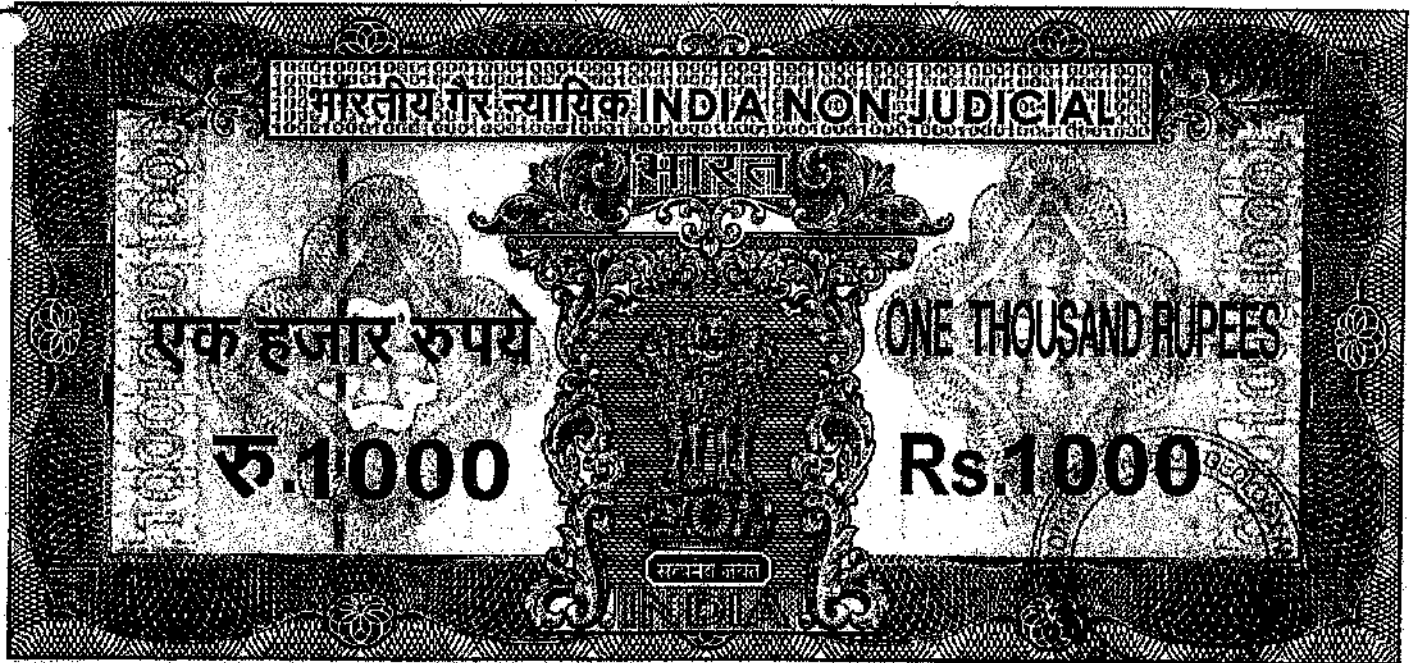
*K. Parthasarathy*  
R. Shankar  
Registered holder

*Shyamini*  
12/1/2019  
District Collector  
Viluppuram.

*K. Parthasarathy*  
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*K. Parthasarathy*

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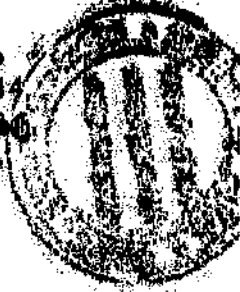


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K. Parasuram  
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க. பாரசுரமன்,  
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49, வட்டி அப்பள்ளி கட்டிடம்,  
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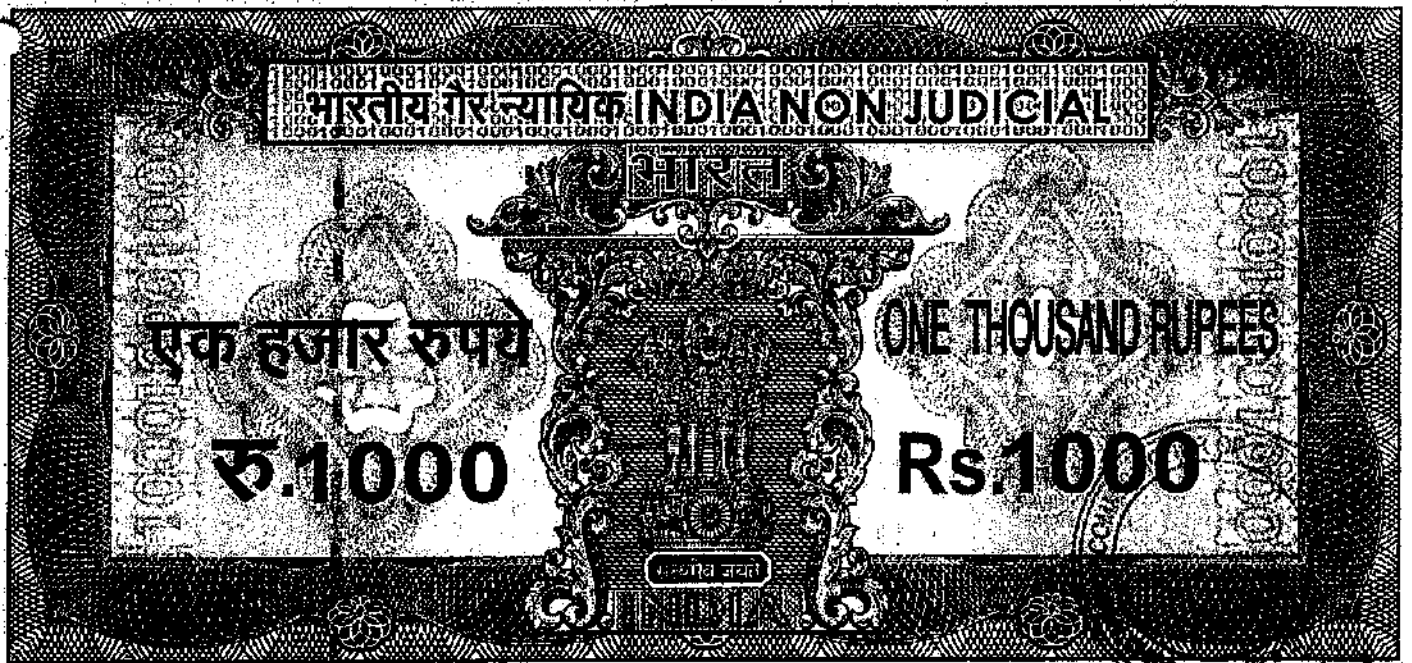
- 39. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
- 40. Bunds to be provided at the boundary of the project site.
- 41. The project proponent shall undertake plantation/afforestation work by planting 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.
- 42. At least 10 Neem trees should be planted around the boundary of the quarry site.
- 43. Floor of excavated pit to be leveled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.

K. Parasuram  
R. Shakti  
Registered holder

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District Collector  
Viluppuram.

K. Parasuram  
Lessee

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தமிழ்நாடு தமிழ்நாடு TAMILNADU

142  
09.01.19

K. Parag  
சான்றேல் சிபார்சு  
சம்பந்தம்.

க. தாமோதரன்  
பு. தா. வி. எண். 997/01/14,  
49, வடக்கு அம்பலமார் குளத்தெரு,  
விழுப்புரம் - 605 602.



1461

- 44. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
- 45. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
- 46. Rainwater shall be pumped out Via Settling Tank only
- 47. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
- 48. Safety equipments to be provided to all the employees.
- 49. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai

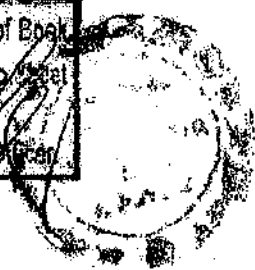
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R. Shakti  
Registered holder

21/1/2019  
District Collector  
Viluppuram.

K Parag  
Lessee

Document No. 108 of 2019 of Book  
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Registering Officer



50. 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.
51. 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.
52. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
53. 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.
54. 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.

**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 DELAA, Viluppuram.
3. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.

*K. Paragum*

*R. Shakti*

Registered holder

*K. Paragum*

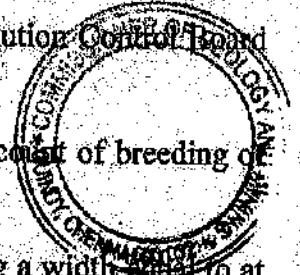
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*Ammini*  
12/1/2019  
District Collector  
Viluppuram.

*K. Paragum*

Document No. 128	of 2019	of Book
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Registering Officer		

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 health 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 system. Loading and unloading areas including all the transfer points should also have efficient 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 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.



K Paragjuw

R. Sheth

Registered holder

18/11/2019

District Collector

Viluppuram.

K Paragjuw

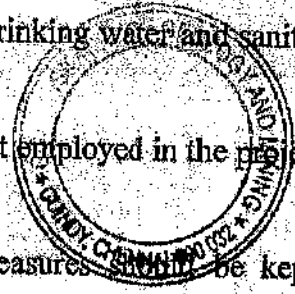
Lessee

K Paragjuw

Document No. 108	of 2019	of Book
1	Contains 63 Sheets	48
Registering Officer		



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.
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 shall 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 DEIAA, Viluppuram may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
16. The DEIAA, Viluppuram 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 DEIAA, VPM that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining 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.



*K. Parag Sundar*  
 R. Sathish  
 Registered holder

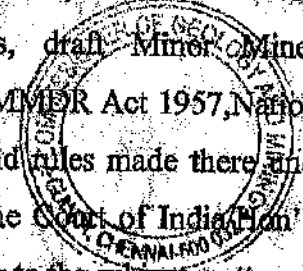
*Chinniy*  
 18/11/2019  
 District Collector  
 Viluppuram.

*K. Parag Sundar*  
 Lessee

*K. Parag Sundar*

Document No. 108	of 2019	of Book
Contains 62 Sheets		49
Registering Officer		

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 MMR 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.
19. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
20. The proponent has to provide / maintain proper bench formation during mining operation.



*K. Parasuram*

R. Shanthi

Registered holder

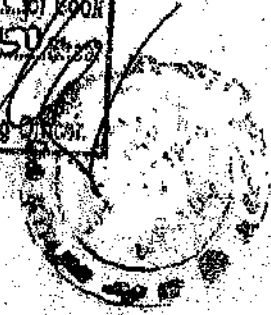
*Mmm*  
18/11/2019  
District Collector  
Viluppuram.

*K. Parasuram*

Lessee

*K. Parasuram*

Document No. 108	of 2019	of Book
Contains 63		50
Registering Officer		





1511

**SCHEDULE**

Taluk	Village	S.F.No.	Extent in Hect	Boundaries		
Vikravandi	Siruvalai	407/3 (part)	1.00.0	North	Remaining part of 407/3	Patta land
				South	437/1	Govt. land
					437/3	Patta land
					170/1	Govt. land
				East	170/1	Govt. land
407/1 & 2,	Patta land					
West	451/2 & 3	Patta land				

*K. Parasuram*

R. Shakti  
Registered holder

*Gimmis*  
12/1/2019  
District Collector  
Viluppuram.

*K. Parasuram*

Lessee.

*K. Parasuram*

Document No. 108 of 2019 of Book  
1 Contains 63 Sheets of 513

Registering Officer



IN WITNESS where of Thiru. K. Paramasivam, S.F.No.407/3, Siruvalai Village, Siruvalai Post, Vikravandi Taluk, Viluppuram District, Tamil Nadu and, Tmt.R.Santhi, W/o.Ramesh, No.9, Masthan Palli Street, Karaikkal, Puducherry State "the Registered Holder", Thiru.K.Paramasivam, S.F.No.407/3, Siruvalai Village, Vikravandi Taluk, Viluppuram District "the lessee" and Dr.L.Subramanian, I.A.S., Collector of Viluppuram District, acting for and on behalf of and by the order and direction of the Governor of TamilNadu have here unto set their hands.

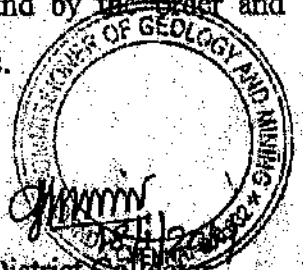
*K. Paramasivam*

R. Santhi  
Registered holder

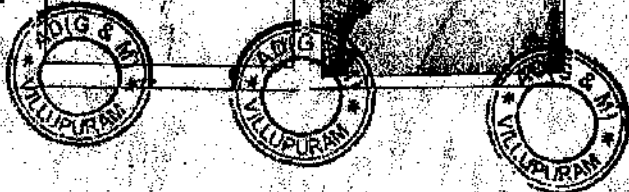


*K. Paramasivam*

Lessee



District Collector  
Viluppuram.



Signed by the above named in the presence of witnesses

*C. Sathish Kumar*  
C. SATHISH KUMAR  
S/O P. CHITRAVELU  
No. 254/ Keelaiyur Post  
Melur Taluk, Madurai

Signed by the above named in the presence of witnesses

*H. Raju*  
1. Assistant Director,  
Geology and Mining,  
Collectorate,  
Viluppuram.

2. *A. Alagesan*  
A. RAMAMOORTHY  
S/O ALAGESAN  
No. 6/42 NAGANUR Village,  
Senganur Post,  
PENNAGARAM Taluk,  
DHARMAPURI- 636810

*O. P. ...*  
2. Special Deputy Tahsildar  
(Minor), Viluppuram

*K. Paramasivam*

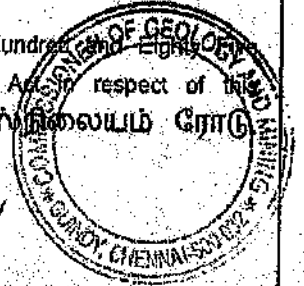
Document No. 108 of 2019 / Book  
Contains 63 sheets of 59 sq. ft.  
Registered Office

162A

CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1898

S.No 60 of 2019

I hereby certify that a sum of ₹ 1,94,285/- (Rupees One Lakh Ninety Four Thousand Two Hundred and Eighty Five only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. பரமசிவம் residing at தெ 135, முல்லை நகர், பழைய பஸ்நிலையம் ரோடு பெருந்திறை, ஈரோடு, Erode, Tamil Nadu, India, 638052.



Sub Registrar Annlyur  
Date: 24/01/2019



Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Annlyur and fee of ₹ 20,915/- paid at 12:29 PM on the 24/01/2019 by

Left Thumb



K Pararasud

Additions as per recitals of document

Execution admitted by  
Left Thumb



K Pararasud

Additions as per recitals of document

Execution admitted by  
Left Thumb



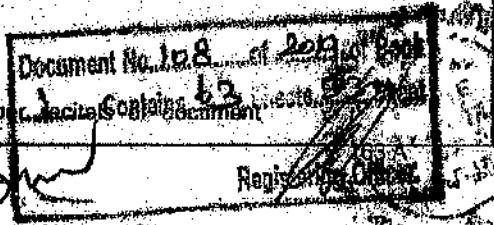
R. S. S. S.

1/2

Additions as per recitals of document

Document No. 108 of 2019 Book  
Contains 62 sheets

K. Pararasud

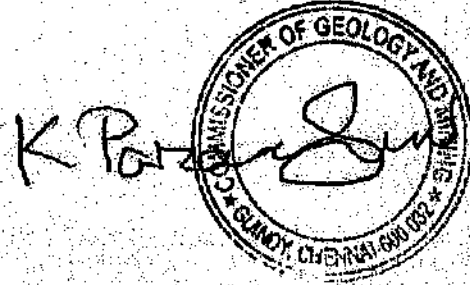


Registrar Annlyur

I have satisfied myself as to the execution of the Instrument by Mr. காரமணிபன், விழுப்புரம், Villuppuram, Tamil Nadu, India, 605602 (இரவீல அலகேசன், Villuppuram) who is exempted from personal appearance under section 38(1) of the registration act.

Sub Registrar, Anniyur

Claim admitted by  
Left Thumb



Additions as per recitals of document

Identified By

1. Adalabais

Mr. RAMAMOORTHY ALAGESAN Son of ALAGESAN No.2/33, NAGANUR, SENGANUR, DHARMAPURI, Dharmapuri, Tamil Nadu, India, 636810.

2. Sathish Kumar

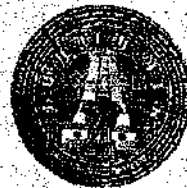
Mr. SATHISHKUMAR Son of CHITRAVEL No.4/354, NEAR PALLIVASAL, KEELAIYUR, MADURAI, MELUR., Madurai, Tamil Nadu, India, 625108.

24<sup>th</sup> day of January 2019

CHANDRAKUMAR G  
Sub Registrar  
Anniyur

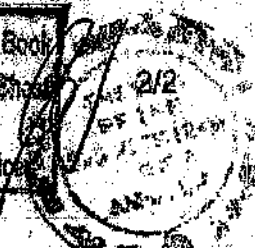
Registered as Number R/Anniyur/Book-1/108/2019.

Date: 24/01/2019  
Anniyur



CHANDRAKUMAR G  
Sub Registrar

Document No. 108 of 2019 of Book  
Contains 69 pages 54 sheets  
Registering Office



Handwritten signature and stamp.

From  
Dr.L.Subramanian I.A.S.,  
District Collector,  
Viluppuram District,  
Viluppuram.

To  
The Sub Registrar,  
Annyur.

**108/2019**  
Re.No.B/G&M/ 964/2017 dated 23.01.2019

Sir,

**Sub:** Mines and Quarries - Viluppuram District - Black Granite  
Vikravandi Taluk - Siruvalai Village - S.F.No.407/3 (Part)  
- over an extent of 1.00.0 Hectare of Patta land - lease  
granted by the Government to quarry Black Granite  
Lease agreement executed by Thiru.K.Paramasivam  
Registration of the lease agreement - regarding.

**Ref:** G.O. (3D) No.50, Industries (MMB.2) Department dated  
18.12.2018.

\*\*\*\*\*

Thiru.K.Paramasivam has been granted a quarry lease to quarry Black  
Granite in an extent of 1.00.0 Hect. of patta land in SF.No.407/3 (Part) of  
Siruvalai Village, Vikravandi Taluk for a period of 20 Years from the date of  
execution of the lease agreement in the G.O. cited.

The grantee Thiru.K.Paramasivam, S.F.No.407/3, Siruvalai Village,  
Vikravandi Taluk has executed the lease agreement with District Collector,  
Viluppuram on 18.01.2019 and therefore the lease is valid for a period of  
20 years from 18.01.2019 to 17.01.2039.

In this connection, I am to inform you that the stamp duty worked  
out on the basis of the average seigniorage fee calculated on the average  
production of 28016 CBM of Black granite during the entire lease period of  
twenty years and security deposit remitted by the lessee is as detailed below:

Seigniorage fee for 28016 CBM of black granite @ Rs.3859/- per CBM of black granite	:	Rs.10,81,13,744/-
Security Deposit	:	Rs.40,000/-
Area Assessment	:	Rs.6,000/-
Total	:	Rs.10,81,59,744/-
Stamp duty at the rate of 1%	:	Rs.10,81,597/- (or) 10,82,000/-
Total value of Stamp papers.	:	Rs.10,82,000/-

Document No. 108 of 2019 of Book  
Contains 53 Sheets 51  
Registering Officer

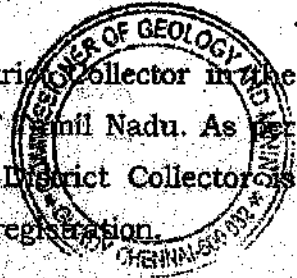
165A

K. Palaniappan

/2/

As per Rule 34 of Tamilnadu Minor Mineral Concession Rules 1959 the lease agreement has to be registered compulsorily at the expenses of the lessee.

The lease agreement was executed by the District Collector in the capacity as lessor on behalf of the Governor of Tamil Nadu. As per Section 88(1) of Indian Registration Act 1908, the District Collector is exempted from personal appearance for the purpose of registration.



In view of the above, I request that the lease agreement may be registered at the expenses of the lessee and if there is any deficiency in the stamp duty as per Rules in force, the same may be collected from the lessee at the time of registration.

Encl: Lease Deed.

*[Handwritten Signature]*  
For Collector,  
Viluppuram.

Copy to  
Thiru.K.Paramasivam,  
S.F.No.407/3,  
Siruvalai Village,  
Vikravandi Taluk.

*[Handwritten]*  
23/1/19

Document No. 108	of 209	of Book
Contains 63	Sheets	56.5000
Registering Officer		



*[Handwritten Signature]*



## WORKSHEET

1.	Anticipated production for a period of 20 years		7004 M <sup>3</sup> X 4 = 28016 M <sup>3</sup>
2.	Seigniorage fee for 28016 M <sup>3</sup> at the rate of Rs.3,859/- for 20 Years (per cube meter)	Rs.	10,81,13,744/-
3.	Security Deposit	Rs.	40,000/-
4.	Area Assessment(1.00.0 X 300 X 20)	Rs.	6,000/-
	<b>Total</b>	<b>Rs.</b>	<b>10,81,59,744/-</b>
	<b>GST 18%</b>	<b>Rs.</b>	<b>1,94,68,754/-</b>
	<b>Total Lease Amount</b>	<b>Rs.</b>	<b>12,76,28,498/-</b>

### Stamp Paper Calculation

Total Lease Amount (include GST Value) = Rs. 12,76,28,498/-

Stamp Paper need to Purchase  
(1% from Total Lease Amount) = Rs. 12,76,285/-

Stamp Paper Purchased = Rs. 10,82,000/-

Balance Stamp Duty Amount  
Paid Through Online = Rs. 1,94,285/-

*K. Prabakaran*

Document No. 108	of 208	of Book
Contains 60	Pages	57
Registering Officer		

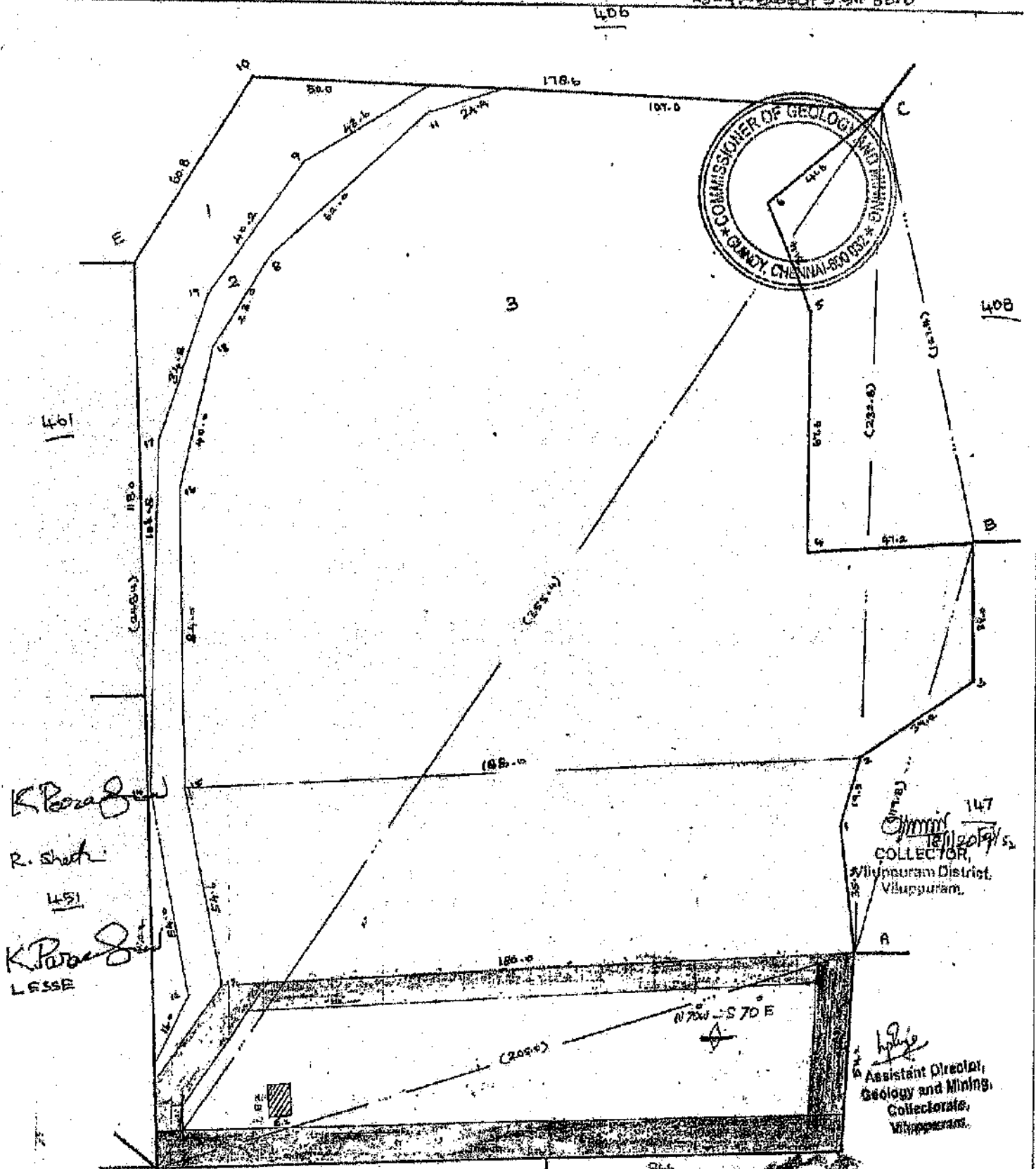


பராமேஸ்வரர் : அழகிய பட்டினம்  
 அட்டை : அங்கத்தினர் உரிமை

பெரியபாளையம் } அட்டை : 40  
 அட்டை : சிவசாலை

பராமேஸ்வரர் : 407

பராமேஸ்வரர் : 598 85.0



K. Parakkal  
 R. S. S. S.  
 451  
 K. Parakkal  
 LESSE


147  
 Collector,  
 Villupuram District,  
 Villupuram.

Assistant Director,  
 Geology and Mining,  
 Collectorate,  
 Villupuram.

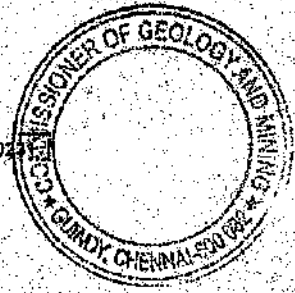
Document No. 108 of 2019 of Book  
 Contains 63  
 Registering Officer

173  
 437  
 வட்டம்  
 இவ்வாறு குறிக்கப்பட்டிருக்கிற நிலம்  
 பராமேஸ்வரர் அட்டை 7.5 டி கிராமம்

188 ATAKSILAKK,  
 ST. VIKRAVANDI.

  
**भारतीय निर्वाचन आयोग**  
**भारतीय निर्वाचन आयोग**  
**ELECTION COMMISSION OF INDIA**  
**IDENTITY CARD**  
**WOU0270231**

नाम : **परमेश्वर**  
 क्षेत्र : **परमेश्वर**  
 पिता का नाम : **विष्णुप्रसाद**  
 लिंग : **पुरुष** / Male  
 पता : **...**



**WOU0270231**  
 Address : 1-140A/135  
 Bus Stand Road  
 Perundurai,  
 Perundurai Erode - 638052  
 Date : 27/05/2010  
 Digitally signed by  
 103 - Perundurai  
 Assembly Constituency  
 Facsimile Signature of  
 Electoral Registration Officer  
 103 - Perundurai  
 Assembly Constituency

*Handwritten signature*  
*Handwritten signature*

*Handwritten signature: K. Palani*

Document No. 108 of 209 of Book  
 Contains 63 Sheets 50 of  
 Registering Officer



*Handwritten signature: K. Palani*



**இந்திய அடையாளம்**  
Unique Identification Authority of India

உடனடி அடையாளம்/Enrollment No.: 0000/00418/04216

To  
 கிருஷ்ணசாமி கவுண்டர் பரமசிவம்  
 Krishnasamy Gounder Paramasivam  
 S/O, Krishnasamy Gounder  
 135 Mullai Nagar  
 Old Bus Stand Road  
 Perundurai  
 Perundurai  
 Erode Perundurai  
 Tamil Nadu - 638052  
 9443714257

Download Date: 24/07/2017, Generated Date: 24/07/2017



உங்கள் ஆதார் எண் / Your Aadhaar No. :

**4018 9360 9432**

எனது ஆதார், எனது அடையாளம்



இந்திய அடையாளம்  
Unique Identification Authority of India

கிருஷ்ணசாமி கவுண்டர் பரமசிவம்  
 Krishnasamy Gounder Paramasivam  
 பிறந்த நாள் DOB: 08/05/1963  
 ஆண் / MALE

4018 9360 9432

எனது ஆதார், எனது அடையாளம்

தகவல்

- ஆதார் அடையாளத்திற்கான சான்ற அலை.
- அடையாள சான்ற ஆன்லைன் ஆதாரம், கோள் மூலமாக 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 அடையாளம் முழுநாட்டும் செல்லும்.
- வருவாய்தரவில் அல்லது மற்ற அரசு சேவைகளைப் பெறும்போது ஆதார் உதவியாக இருக்கும்.
- Aadhaar is valid throughout the country.
- Aadhaar will be helpful in availing Government and Non-Government services in future.



இந்திய அடையாளம்  
Unique Identification Authority of India

முகவரி:  
 கிருஷ்ணசாமி கவுண்டர், 135  
 மூலநகர், பழைய பஸ்  
 திட்டம் சாலை, பெருந்தலை,  
 பெருந்தலை, எரோடு,  
 தமிழ்நாடு - 638052

Address:  
 S/O, Krishnasamy Gounder, 135  
 Mullai Nagar, Old Bus Stand  
 Road, Perundurai, Perundurai,  
 Erode,  
 Tamil Nadu - 638052

4018 9360 9432



help@uidai.gov.in



www.uidai.gov.in

*R. Parasuram*

Document No. 10 B / 2019  
 Contains 63 Documents  
 Registered Officer

*R. Parasuram*





### தகவல்

- ஆதார் அடையாளத்திற்கான சான்று குடிபரிசைக்கு அல்ல.
- அடையாள சான்றை இணையதளம் மூலம் உறுதிப்படுத்திக் கொள்ளவும்.

### INFORMATION

- Aadhaar is proof of identity, not of citizenship.
- To establish identity, authenticate online.

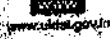
- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- வருங்காலத்தில் அரசு மற்றும் அரசு சாரா சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும்.
- Aadhaar is valid throughout the country.
- Aadhaar will be helpful in availing Government and Non-Government services in future.



Address: W/O Ramesh, 9, MASTHAN PALLI W/O RAMESH, 9, மஸ்தான் பள்ளி வீதி, STREET, Karaikal S.O, Karaikal, Pondicherry - 609602

முகவரி: W/O ரமேஷ், 9, மஸ்தான் பள்ளி வீதி, அரைக்கல் அஞ்சல், காரைக்கல், புதுச்சேரி - 609602

5140 7814 9761



R. Shesh

Document No. 108 of 2019 of 2019  
Contains 63 of 61 of 2019  
Registered Office

K. P. ...



இந்திய அடையாளம்  
Unique Identification Authority of India

பதிவு எண் / Enrolment No.: 0000/00439/65871

To  
சந்தி  
Shanthi  
W/O Ramesh  
9  
MASTHAN PALLI STREET  
Karaikal S.O  
Karaikal Pondicherry - 609602  
9443122001

Date: 11/08/2017



உங்கள் ஆதார் எண் / Your Aadhaar No. :

5140 7814 9761

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



சந்தி  
Shanthi  
பிறந்த நாள்/DOB: 12/02/1974  
பாலின / FEMALE

5140 7814 9761

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



சென்னை)  
 Sathishkumar  
 பிறந்த நாள் / DOB : 10/02/1983  
 ஆண்பால் / Male

4270 2814 2935

எனது ஆதார், எனது அடையாளம்



Commissioner of Patents Authority of India

முகவரி:  
 தலைநகர் தாய் பெயர்:  
 சி.சி. சி.சி.சி. 4354, பனாசிவாசலம்  
 சென்னை - 600 019, தமிழ் நாடு  
 605109

Address:  
 S/O: Chikravel, 4/354, Near  
 Panasiwallam, Kottaiyur,  
 Chennai-600 019, Tamil Nadu,  
 605109

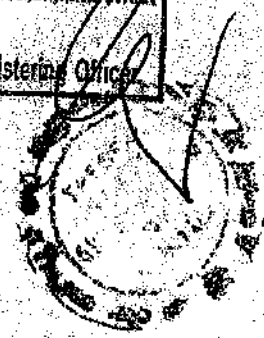


4270 2814 2935

1347 help@uipi.gov.in www.uipi.gov.in

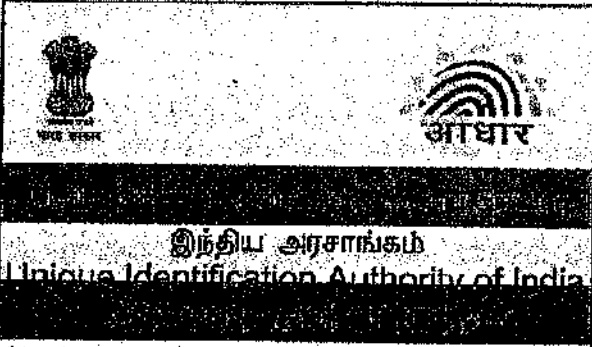
C. Sathish Kumar

Document No. 108 of 2019 of Book  
 Contains 63 Sheets. 627  
 Registering Office



K. Pankaj





**இந்திய அடையாளம்**  
**Unique Identification Authority of India**

பதிவு எண் / Enrolment No.: 0000/00454/33397

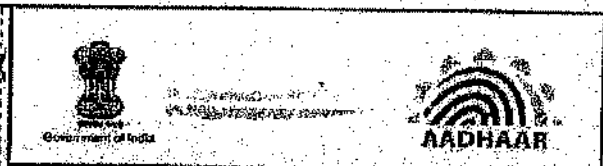
To  
 இராமமூர்த்தி அளகேசன்  
 Ramamoorthi Alagesan  
 S/O: Alagesan  
 2/33  
 NAGANUR  
 SENGANUR  
 Senganur  
 Senganur  
 Dharmapuri Tamil Nadu - 636810  
 9943313493

**உங்கள் ஆதார் எண் / Your Aadhaar No. :**  
**8455 0320 9767**  
**எனது ஆதார் எனது அடையாளம்**

இராமமூர்த்தி அளகேசன்  
 Ramamoorthi Alagesan  
 பிறந்த நாள்/DOB: 30/07/1979  
 ஆண் / MALE

**8455 0320 9767**

**எனது ஆதார் எனது அடையாளம்**



**தகவல்**

- ஆதார் அடையாளத்திற்கான சான்று, குடியரிமைக்கு அல்ல.
- அடையாள சான்றை ஆன்லைன் ஆதார கேஷன் மூலமாகப் பெறவும்.
- இது எலக்ட்ரானிக் செயல்முறை மூலம் உருவாக்கப்பட்ட ஆதாரம்.

**INFORMATION**

- Aadhaar is a proof of identity, not of citizenship.
- To establish identity, authenticate online.
- This is electronically generated letter.

■ ஆதார் நாடு முழுவதும் செல்லுபடியாகும்.

■ வருங்காலத்தில் அரசு மற்றும் 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.

*Ayalagan*

Address:  
 S/O: Alagesan, 2/33, NAGANUR,  
 SENGANUR, Senganur, Dharmapuri,  
 Tamil Nadu - 636810

முகவரி:  
 S/O: அளகேசன், 2/33, நகனூர்,  
 சேனகூர், சேனகூர், தர்மபுரி,  
 தமிழ் நாடு - 636810

**8455 0320 9767**

Document No. 108 of 2019  
 Contains 63 sheets  
 Registering Officer

*K. Palani*

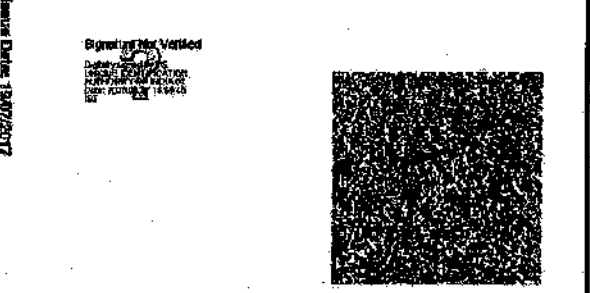


இந்திய அரசாங்கம்  
Government of India

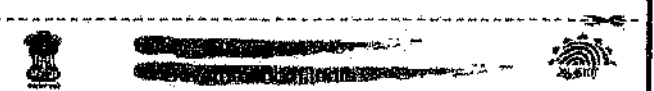
இந்திய தனிப்பட்ட அடையாள ஆணைய அமைதி  
Unique Identification Authority of India

பதிவேட்டு எண்/ Enrolment No.: 0000/00416/39289

To  
பரமசிவம் கிருஷ்ணசாமி கவுண்டர்  
Paramasiyam Krishnasamy Gounder  
S/O, Krishnasamy Gounder  
135 Mullai Nagar  
Old Bus Stand Road  
Perundurai  
Perundurai  
Perundurai  
Erode Tamil Nadu - 638052  
9443714257

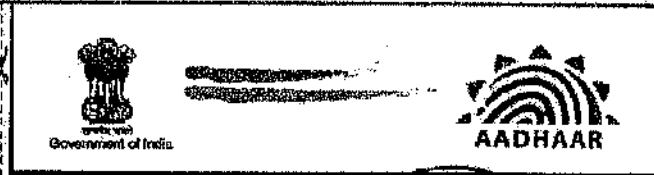


உங்கள் ஆதார் எண் / Your Aadhaar No. :  
**4018 9360 9432**  
VID : 9103 3894 5835 1332  
எனது ஆதார். எனது அடையாளம்



பரமசிவம் கிருஷ்ணசாமி கவுண்டர்  
Paramasiyam Krishnasamy Gounder  
பிறந்த நாள்/DOB: 06/05/1963  
ஆண்/ MALE

**4018 9360 9432**  
VID : 9103 3894 5835 1332  
எனது ஆதார். எனது அடையாளம்

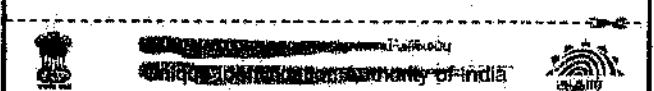


தகவல்  
■ ஆதார் அடையாளத்திற்கான சான்று தயாரிமைக்கு அல்ல  
■ பாதுகாப்பான QR குறியீடு ஆப்களை XML / ஆன்லைன்  
அங்கீகரிக்கத்தக்க பயன்படுத்தி அடையாளத்தை சரிபார்க்கவும்  
■ இது எலக்ட்ரானிக் செயல்முறைமூலம் தயாரிக்கப்பட்ட  
கடிதமாகும்.

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- பல்வேறு அரசு மற்றும் அரசு சாரா சேவைகளை எளிதில் பெற ஆதார் உதவுகிறது.
- உங்கள் மொபைல் எண் மற்றும் மின்னஞ்சல் ஐடிவை ஆதாரில் புதுப்பிக்கவும்
- mAadhaar செயலியைப் பயன்படுத்தி உங்கள் எம்மார்ட் போனில் ஆதாரை எடுத்துச் செல்லுங்கள்
- Aadhaar is valid throughout the country.
- Aadhaar helps you avail various Government and non-Government services easily.
- Keep your mobile number & email ID updated in Aadhaar.
- Carry Aadhaar in your smart phone – use mAadhaar App.



முகவரி:  
கிருஷ்ணசாமி கவுண்டர், 135 முல்லை நகர்,  
பழைய பஸ் நிலையம் சா.நெ. பெருந்துறை,  
பெருந்துறை, ச.செ.நெ.நெ.,  
தமிழ் நாடு - 638052  
Address:  
S/O, Krishnasamy Gounder, 135 Mullai  
Nagar, Old Bus Stand Road, Perundurai,  
Perundurai, Erode,  
Tamil Nadu - 638052

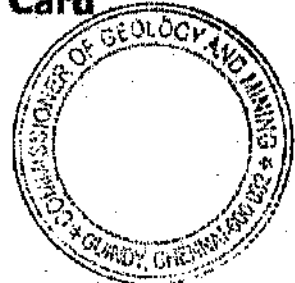
**4018 9360 9432**  
VID : 9103 3894 5835 1332  
எனது ஆதார். எனது அடையாளம்

K. Palani





ई- स्थायी लेखा संख्या कार्ड  
**e - Permanent Account Number (e-PAN) Card**  
**ADOPP9589L**

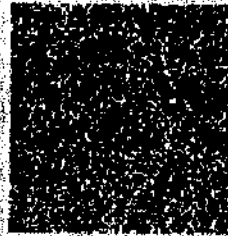


नाम / Name **K PARAMASIVAM**  
 पिता का नाम / Father's name **KRISHNASAMY GOUNDER**  
 जन्म की तारीख / Date of Birth **06/06/1963**  
 लिंग / Gender **Male**



*K Paramasivam*

हस्ताक्षर / Signature



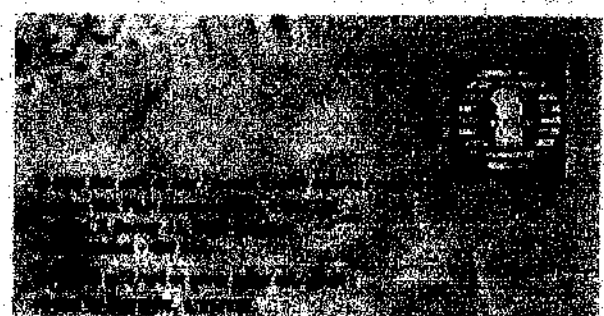
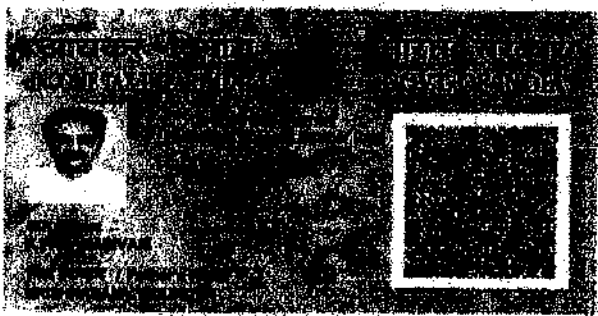
Signature Not Verified

Signed by: Income Tax PAN Services Unit, CHENNAI

Date : 08/02/20 021917  
Reason : Unauthenticated Signer  
Location : India

- ✓ Permanent Account Number (PAN) facilitate Income Tax Department linking of various documents, including payment of taxes, assessment, tax demand, tax arrears, matching of information and easy maintenance & retrieval of electronic information etc. relating to a taxpayer.  
स्थायी लेखा संख्या (PAN) एक प्रचलित से संबंधित विभिन्न दस्तावेजों को जोड़ने में आयकर विभाग को सहायक होता है, जिसमें करों के भुगतान, आकलन, कर मांग, टैक्स बकाया, सूचना के प्रसारण और इलेक्ट्रॉनिक जानकारी का अद्यतन रखरखाव व वापसी आदि भी शामिल है।
- ✓ Quoting of PAN is now mandatory for several transactions specified under Income Tax Act, 1961 (Refer Rule 114B of Income Tax Rules, 1962) आकलन अधिनियम, 1961 के अन्तर्गत निर्दिष्ट कई लेनदेन के लिए स्थायी लेखा संख्या (PAN) का उल्लेख अब अनिवार्य है। (आयकर विभाग, 1962 के नियम 114B, का संदर्भ लें)
- ✓ Possessing or using more than one PAN is against the law & may attract penalty of upto Rs. 10,000.  
एक से अधिक स्थायी लेखा संख्या (PAN) का रखना या उपयोग करना, कानून के विरुद्ध है और इसके लिए 10,000 रुपये तक का दंड लगाया जा सकता है।
- ✓ This e-PAN Card contains Enhanced QR Code which is readable by a specific Android Mobile App. Keyword to search this specific Mobile App on Google Play Store is "PAN QR Code Reader".  
इस ई-स्थायी लेखा संख्या (e-PAN) कार्ड में वर्धित क्वर कोड शामिल है जो एक विशिष्ट एंड्रॉइड मोबाइल ऐप द्वारा पठनीय है। Google Play Store पर इस विशिष्ट मोबाइल ऐप को खोजने के लिए कीवर्ड "PAN QR Code Reader" है।

Cut



*K Paramasivam*

भारत सरकार / GOVERNMENT OF INDIA  
खान मंत्रालय / MINISTRY OF MINES  
भारतीय खान ब्यूरो / INDIAN BUREAU OF MINES



अर्हताप्राप्त व्यक्ति के रूप में मान्यता प्रमाण पत्र  
(खनिज रियायत नियमावली, 1960 के नियम 22सी के तहत)  
**CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON**  
(Under Rule 22C of Mineral Concession Rules, 1960)

श्री एस. इलवरसन, पिता यू. सन्तानम, 7सी, मेट्टु स्ट्रीट, भीमा नगर, तिरुची - १, तमिलनाडु, जिनका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिनहोंने अपनी अर्हता और अनुभव का संतोषजनक साक्ष्य दिया है, को खनन योजना तैयार करने हेतु खनिज रियायत नियमावली 1960 के नियम 22सी के तहत अर्हताप्राप्त व्यक्ति के रूप में मान्यता प्रदान की जाती है।

Shri S. Ilavarasan, S/o. U. Santhanam, 7C, Mettu Street, Beema Nagar, Tridhy -1, Tamilnadu, whose Photograph and signature is affixed herein above, having given satisfactory evidence of his qualifications & experience hereby **RECOGNISED** under Rule 22C of the Mineral Concession Rule, 1960 as a Qualified Person to prepare Mining Plans.

उनकी पंजीयन संख्या है  
His registration number is

RQP/MAS/253/2013/A

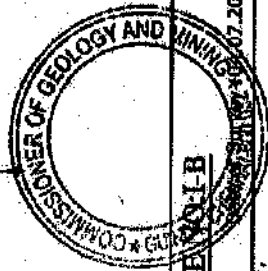
यह मान्यता 10 वर्षों की अवधि के लिए मान्यता है जो दिनांक 27.08.2023 को समाप्त होगी।  
This recognition is valid for a period of 10 years ending on 27.08.2023

उनके द्वारा प्रस्तुत खनन योजना में गलत जानकारी / दस्तावेज पाए जाने की स्थिति में यह प्रमाण पत्र वापस लिया जाएगा / निरस्त किया जाएगा।  
This certificate will liable to be withdrawn / cancelled in the event of furnishing the wrong information / documents in the Mining Plan submitted by him.

स्थान / Place : Chennai  
दिनांक / Date : 28.08.2013.

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines  
भारतीय खान ब्यूरो / Indian Bureau of Mines  
चेन्नई क्षेत्र / Chennai Region 176 A

K. Paburam



**PLATE NO. B**

**LESSEE:**

Thiru. K. PARAMASIVAM,  
S/o. KRISHNASAMY,  
No. 135, MULLAI NAGAR,  
OLD BUSSTAND ROAD, PERUNDURAI,  
ERODE, TAMILNADU-638 052

**LOCATION OF QUARRY:**

S.F. NO : 407/3(P),  
EXTENT : 1.00.0Ha,  
VILLAGE : SIRUVATAI,  
TALUK : VILLUPURAM,  
DISTRICT : VILLUPURAM.

**INDEX**

- Q.L. BOUNDARY
- APPROACH ROAD
- MAJOR ROAD
- VILLAGE ROAD

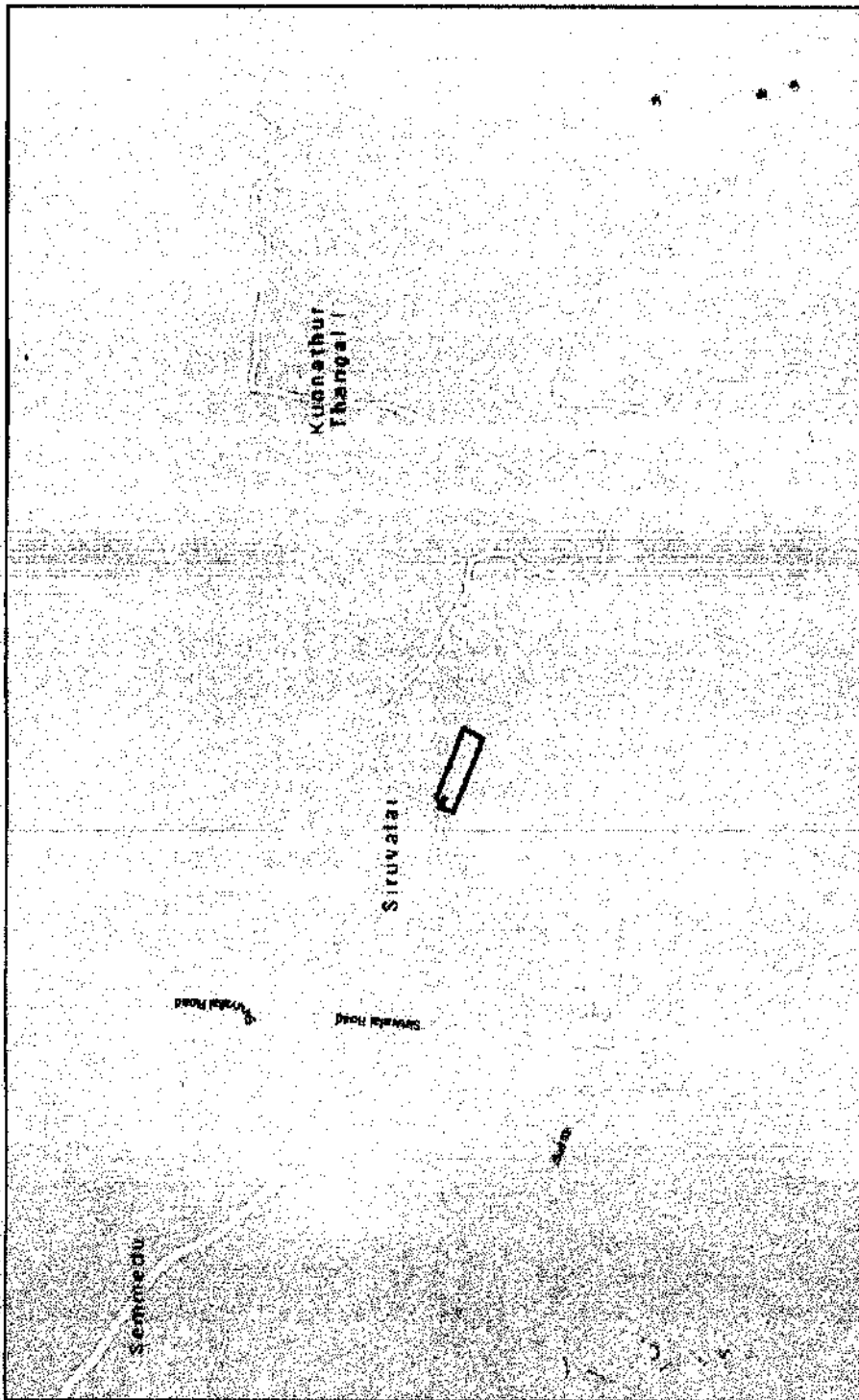
**ROUTE MAP**

NOT TO SCALE

**PREPARED BY:**

THIS IS TO CERTIFY THAT THE INFORMATION IN  
THIS PLATE IS TRUE AND CORRECT TO THE  
BEST OF MY KNOWLEDGE BASED UPON THE  
LEASEMAP AUTHENTICATED  
BY STATE GOVERNMENT

S. LAYARASAN, S.E.,  
RECOGNIZED QUALIFIED PERSON  
ROP/MAS/253/2918/A

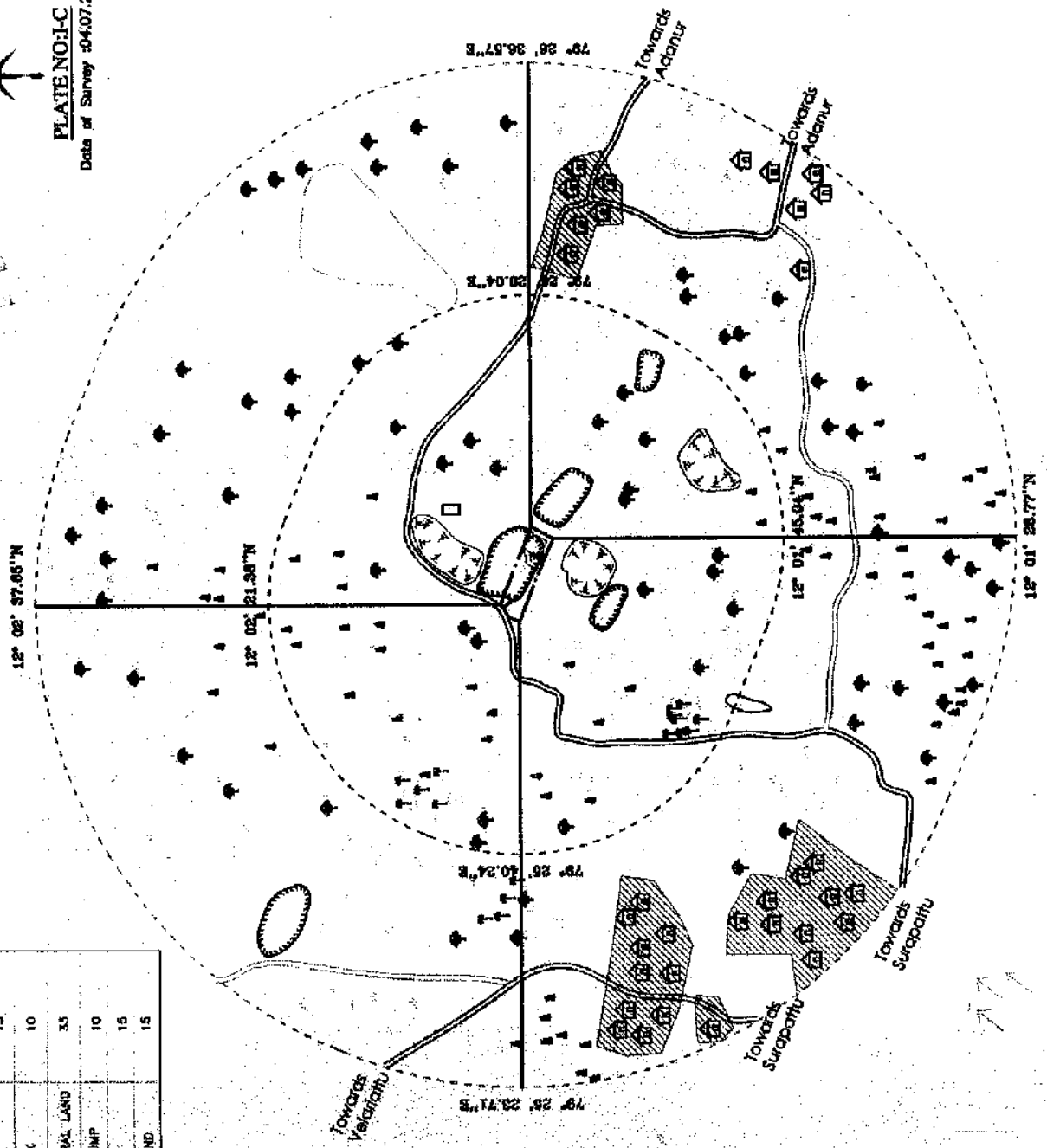





*K. Paramasivam*

OCTOBER TO DECEMBER

PLATE NO: I-C  
Date of Survey : 04.07.2023

LAND USE PATTERN	AREA IN PERCENTAGE (%)
TREES	15
ROAD/TANK	10
AGRICULTURAL LAND	35
QUARRY/DUMP	10
HABITATION	15
BARREN LAND	15














1Km Radius :   
 500m Radius :   
 Q.L.A.Area:   
 TOPO SHEET NO : 57 P/08  
 LATITUDE : 12° 02' 01.31"N to 12° 02' 05.11"N  
 LONGITUDE : 78° 26' 56.77"E to 78° 26' 03.51"E

APPLICANT:  
 THIRU.K.PARAMASIVAM,  
 S/O.KRISHNASAMY,  
 No.135, MULLAI NAGAR,  
 OLD BUS STAND ROAD, PERUNDURAI,  
 ERODE.TAMILNADU-636 052



LOCATION OF QUARRY:  
 S.F.NO : 407/3(P),  
 EXTENT : 1.00.042  
 VILLAGE : PERUNDURAI  
 TALLUK : PERUNDURAI  
 DISTRICT : SILLUPURAM

-  APPROACH ROAD
-  WIND DIRECTION
-  TREES
-  QUARRY PIT
-  SEASONAL AGRICULTURE LAND
-  VILLAGE ROAD
-  TANK
-  DUMP
-  HABITATION
-  BARREN LAND
-  CART TRACK

ENVIRONMENTAL &  
 LANDUSE PLAN(For 1km Radius)  
 SCALE- 1:10,000

PREPARED BY:  
 I.C. PABANDHI  
 I.C. PABANDHI  
 S. LAVANSHAN M.Sc.  
 RECOGNIZED QUALIFIED PERSON  
 NCP/NAS/253/2078/A

JULY TO SEPTEMBER

I.C. Pabandhi



**PLATE NO. II**

Date of Survey : 04.07.2023

LESSEE:  
THIRU. S. PARATHASAMY

S/O: S. SHIVASAMY,

No. 55, MULLAI NAGAR,

OLIVEBUS STAND ROAD, PERIUNDURAL,

ERODE, TAMILNADU - 625 052

LOCATION OF QUARRY:

S.F. NO. 55/2 (Part)

EXTENT : 11.00.0 Ha,

VILLAGE : SIRUVALAI,

TALUK : VIKRAVANDI,

DISTRICT : VILUPPURAM.

**INDEX**

QUARRY LEASE BOUNDARY

7.5m & 10m SAFETY DISTANCE

APPROACH ROAD

TEMPORARY BENCH MARK

VILLAGE ROAD

**QUARRY LEASE PLAN**

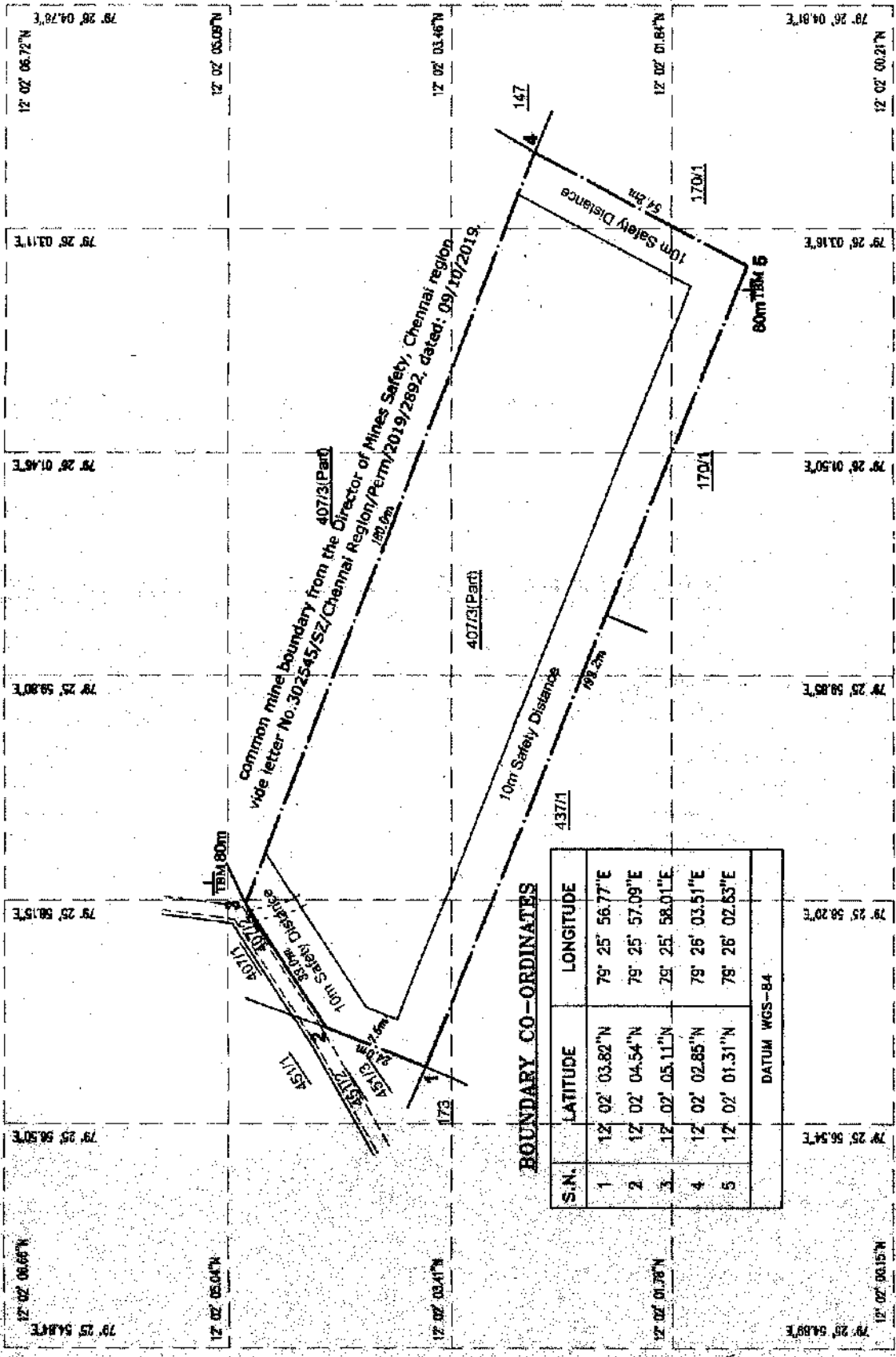
SCALE 1:1000

**PREPARED BY:**

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS  
PLATE IS TRUE AND CORRECT TO THE  
BEST OF MY KNOWLEDGE BASED UPON THE LEASER'S  
AFFIDAVIT

BY STATE GOVERNMENT

*S. Ilavarasan, S.C.*  
S. ILAVARASAN, S.C.  
RECOGNIZED QUALIFIED PERSON  
RQP/199/23/2013/A



Common mine boundary from the Director of Mines Safety, Chennai region  
vide letter No. 302545/S2/Chennai Region/Perm/2019/2692, dated: 09/10/2019

**BOUNDARY CO-ORDINATES**

S.N.	LATITUDE	LONGITUDE
1	12° 02' 03.82"N	79° 25' 56.77"E
2	12° 02' 04.54"N	79° 25' 57.09"E
3	12° 02' 05.11"N	79° 25' 58.01"E
4	12° 02' 02.85"N	79° 26' 03.51"E
5	12° 02' 01.31"N	79° 26' 02.53"E

DATUM WGS-84

*S. Palaniappan*

**PLATE NO. III**

Date of Survey :04.07.2023

**LESSEE:**

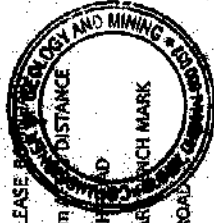
THIRU.K.PARAMASIVAM,  
S/O. KRISHNASAMY,  
No.135, MULLAI NAGAR,  
OLD BUS STAND ROAD, PERUNDURAI,  
ERODE, TAMILNADU-638 052

**LOCATION OF QUARRY:**

S.F.NOS. :407/3(PART)  
EXTENT :1.00.0 Ha,  
VILLAGE :SIRUVALAI,  
TALUK :MIKRAVANDI,  
DISTRICT :VILUPPURAM.

**INDEX**

- QUARRY LEASE BOUNDARY
- 7.5m & 10m DISTANCE
- APPROACH ROAD
- TEMPORARY BENCH MARK
- VILLAGE ROAD
- SHRUBS
- TOPSOIL
- CONTACT LINE
- OUTCROPS
- QUARRY PIT
- QUARRY ROAD
- BLACK GRANITE(Dolerite)
- STRIKE AND DIP
- DUMP
- TOPSOIL DUMP
- FENCING



**SURFACE PLAN**

SCALE 1:1000

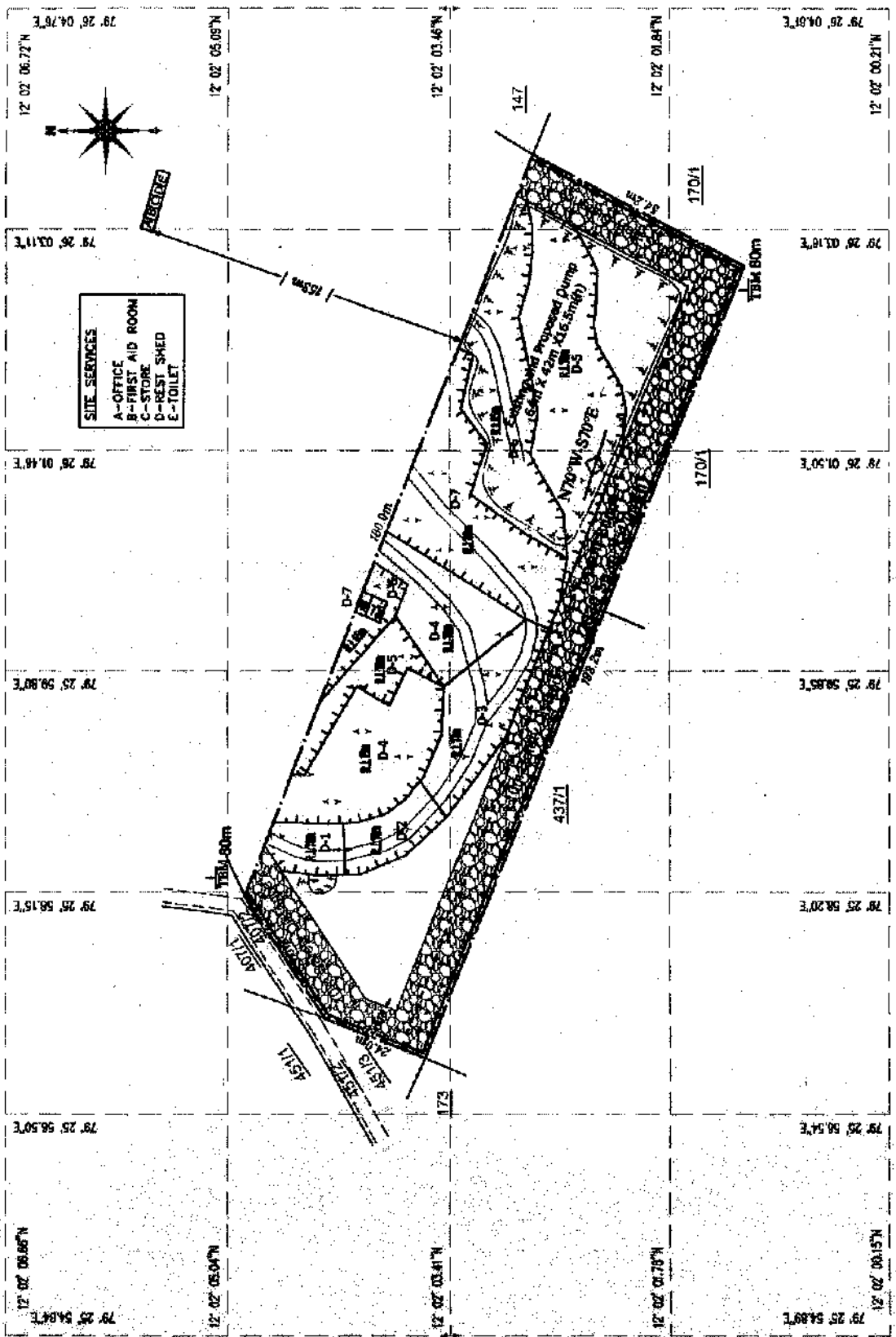
**PREPARED BY:**

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS  
PLATE IS TRUE AND CORRECT TO THE  
BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP  
AUTHENTICATED

BY STATE GOVERNMENT

*S. J. R.*

SILAVARASAM, S.C.,  
RECOGNIZED QUALIFIED PERSON  
ROP/MAS/253/2013/A  
180 A



**SITE SERVICES**  
A-OFFICE  
B-FIRST AID ROOM  
C-STORE  
D-REST SHED  
E-TOILET

**Existing Pit Details**

Pit-Id	Existing R.L	Pit R.L	Area In Sq.m	Total Depth in M	Depth in Meter				Volume in M <sup>3</sup>		Total Excavation in M <sup>3</sup>
					Topsoil	Weathered	Granite	Topsoil	Weathered	Granite	
D-1	80	79	188	1	0	0	0	0	0	0	0
D-2	80	78	245	2	2	0	0	490	0	0	490
D-3	80	77	551	3	2	1	0	1102	551	0	1653
D-4	80	75	1281	5	2	3	0	2562	3945	0	6507
D-5	80	70	1458	10	2	3	5	2916	4374	7290	14680
D-6	80	65	1098	15	2	3	10	2178	3267	10980	16425
D-7	80	60	1001	20	2	3	15	3002	3008	15015	20025
					<b>Total</b>	<b>12438</b>	<b>15038</b>	<b>33008</b>	<b>33008</b>	<b>33008</b>	<b>58671</b>

*K. Palanisami*



**PLATE NO. IV**  
Date of Survey 04.07.2023

**LESSEE:**  
THIRU. K. PARAMASIVAM,  
S/O. KRISHNASAMY,  
NO. 135, MULLAI NAGAR,  
OLD BUS STAND ROAD, PERUNDURAI,  
ERODE, TAMILNADU-638 052.

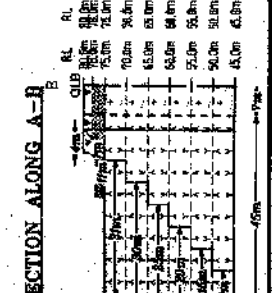
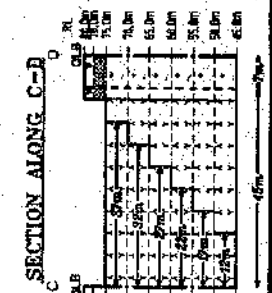
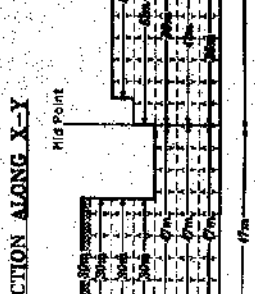
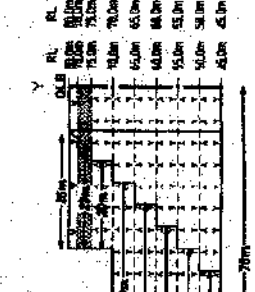
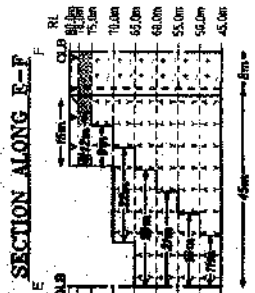
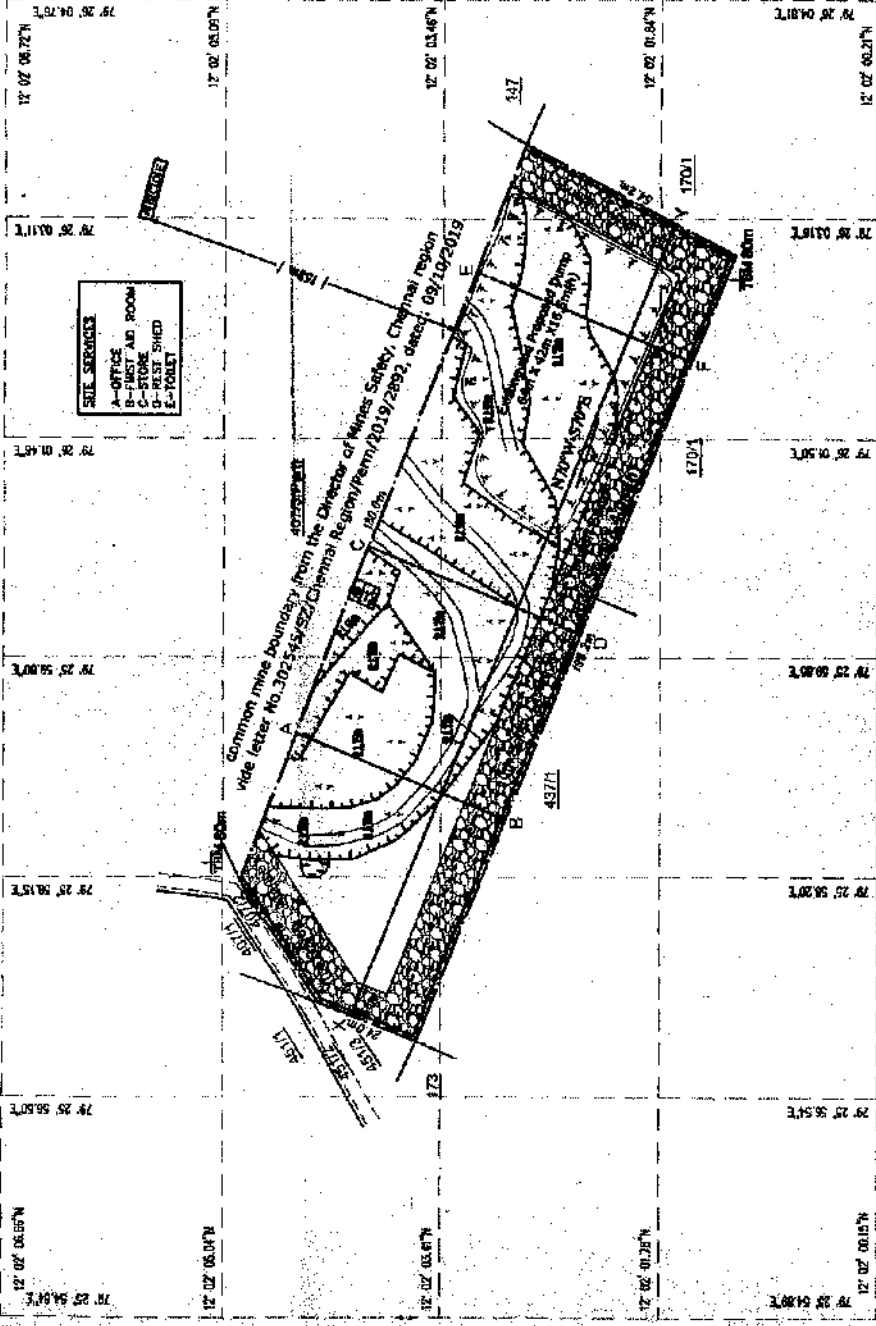
**LOCATION OF QUARRY:**  
S.F. NOS. 407/3(Part)  
EXTENT: 1.000.0 Ha.  
VILLAGE: SIRUVALAI,  
TALUK: VIKRAVANDI,  
DISTRICT: VILUPPURAM.

**INDEX**

- QUARRY LEASE BOUNDARY
- 7500 & 1000 FT. DISTANCE
- APPROACH ROAD
- TEMPORARY QUARRY AND MINING OPERATIONS ROAD
- VILLAGE
- SHRUBS
- TOPSOIL
- CONTACT LINE
- OUTCROPS
- QUARRY PIT
- QUARRY ROAD
- BLACK GRANITE (Debris)
- STRIKE AND DIP
- DUMP
- TOPSOIL DUMP
- FENCING

**GEOLOGICAL PLAN & 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 BASED UPON THE LANDMAP  
AUTHENTICATED  
BY STATE GOVERNMENT  
S. JAYASIMALS,  
REGISTERED QUARRY PERSON  
RQP/MS/283/2013/A



K. Palanisai





**PLATE NO. V**

Date of Survey: 04.07.2023

**LESSEE:**  
 THIRU. K. PARAMASIVAM,  
 S/o. KRISHNASAMY,  
 No. 135, MULLAI NAGAR,  
 OLD BUS STAND ROAD, PERUNDURAI,  
 ERODE, TAMILNADU-638 052

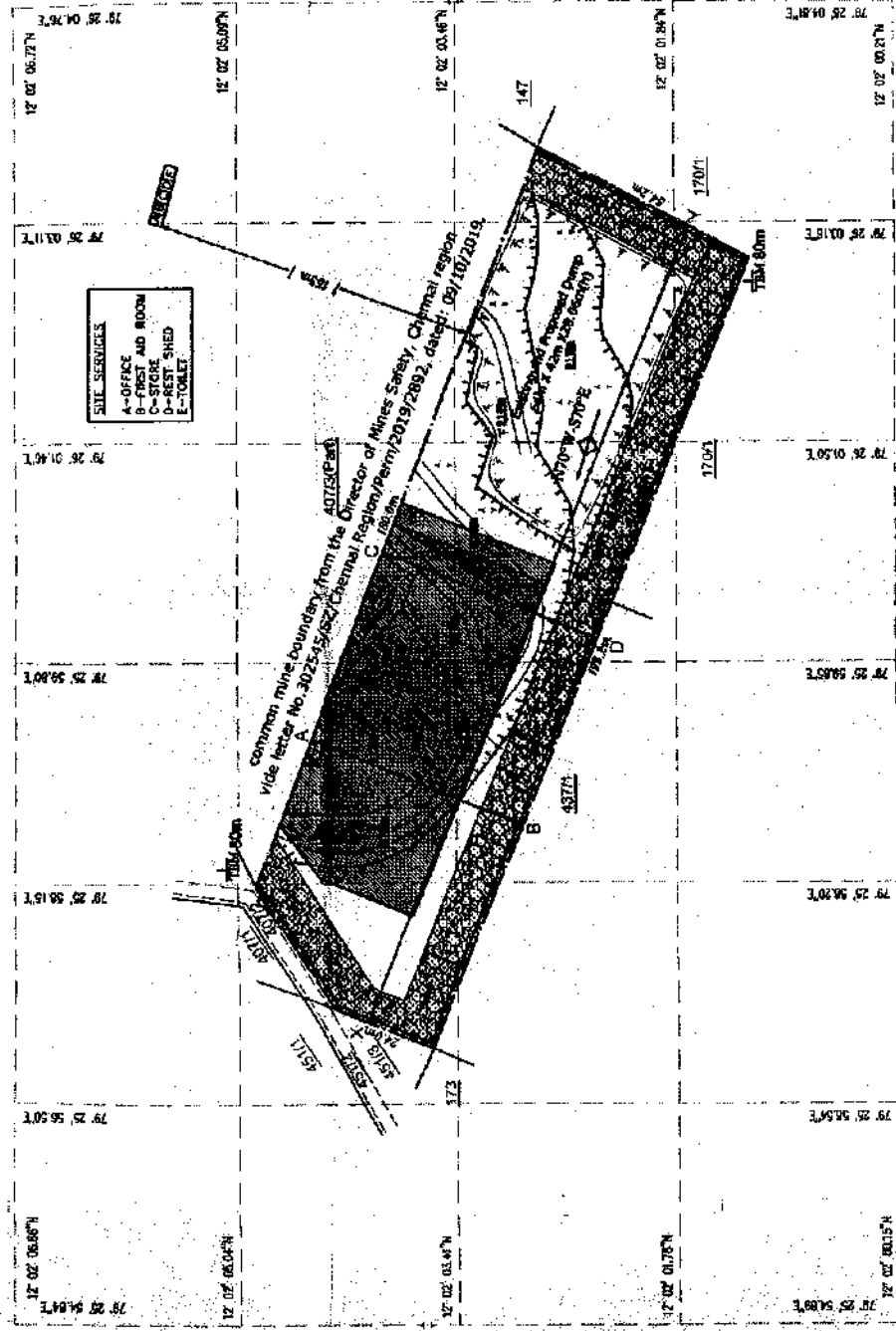
**LOCATION OF QUARRY:**  
 S.F. NOS. : 467/3(Part)  
 EXTENT : 1.00.0 Hb.  
 VILLAGE : SIRIVALAI,  
 TALUK : VIKRAVANDI,  
 DISTRICT : VILUPPURAM.

**INDEX**

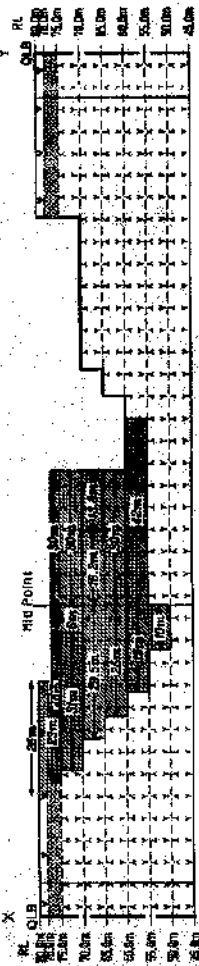
- QUARRY LEASE BOUNDARY
- 7.5m & 10m ARETY DISTANCE
- APPROACH ROAD
- TEMPORARY BENCH MARK
- VILLAGE ROAD
- SHRUBS
- TOPSOIL
- CONTACT
- OUTCROPS
- QUARRY PIT
- QUARRY ROAD
- BLACK GRANITE(Dolerite)
- STRIKE AND DIP
- DUMP
- TOPSOIL DUMP
- FENCING

**YEARWISE DEVELOPMENT AND PRODUCTION PLAN & SECTIONS** SCALE 1:1000

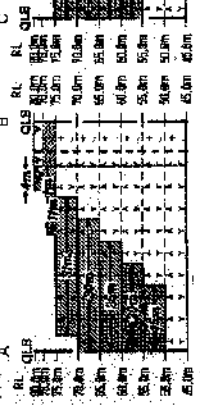
**PREPARED BY:**  
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLAN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASHP  
 BY STATE GOVERNMENT  
 S. LAKSHMANAN,  
 RECORDED: QUALIFIED PERSON  
 04/08/2023



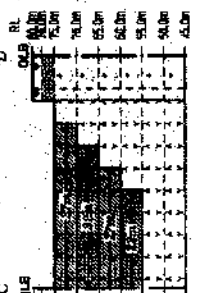
**SECTION ALONG X-Y**



**SECTION ALONG A-B**



**SECTION ALONG C-D**



18.01.2024-17.01.2025	PLANTATION
18.01.2025-17.01.2026	PLANTATION
18.01.2026-17.01.2027	PLANTATION
18.01.2027-17.01.2028	PLANTATION
18.01.2028-17.01.2029	EXCAVATION
18.01.2029-17.01.2030	EXCAVATION
18.01.2030-17.01.2031	EXCAVATION
18.01.2031-17.01.2032	EXCAVATION

*K. Palanichamy*

**PLATE NO.VI**

Date of Survey :04.07.2023

**LESSEE:**

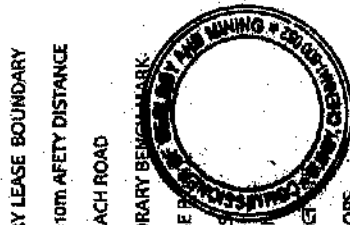
THIRU.K.PARAMASIVAM,  
S/o.KRISHNASAMY,  
No.135, MULLAI NAGAR,  
OLD BUS STAND ROAD, PERUNDURAI,  
ERODE, TAMILNADU-638 052

**LOCATION OF QUARRY:**

S.F.NOS.:407/3(Part)  
EXTENT :1.00.0 Ha,  
VILLAGE :SIRUVALAI,  
TALUK :VIKRAVANDI,  
DISTRICT :VILUPPURAM.

**INDEX**

- QUARRY LEASE BOUNDARY
- 7.5m & 10m AFETY DISTANCE
- APPROACH ROAD
- TEMPORARY BENCHMARK
- VILLAGE
- SHRUBS
- TOPSON
- CONTACT
- OUTCROPS
- QUARRY PIT
- QUARRY ROAD
- BLACK GRANITE(Dolerite)
- STRIKE AND DIP
- DUMP
- TOPSOIL DUMP
- FENCING



**QUARRY LAYOUT AND AFForestation PLAN**

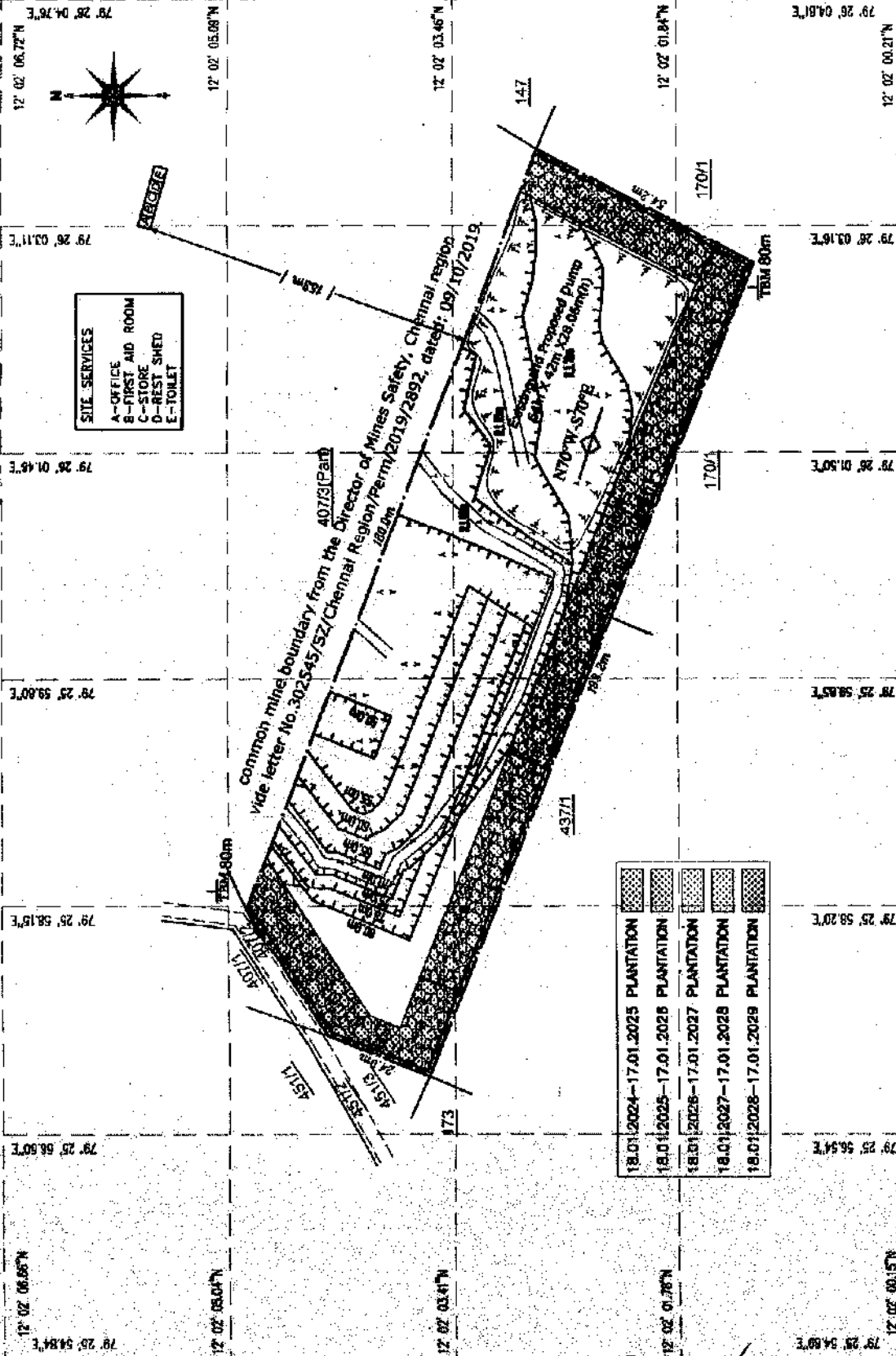
SCALE 1:1000

**PREPARED BY:**

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS  
PLATE IS TRUE AND CORRECT TO THE  
BEST OF MY KNOWLEDGE BASED UPON THE LEASMAP  
AUTHENTICATED

BY STATE GOVERNMENT

S. J. K. [Signature]  
S. JAYARAJAN, S.O.,  
RECOGNIZED QUALIFIED PERSON  
RSP/1483924/2013/A



**SITE SERVICES**  
A-OFFICE  
B-FIRST AID ROOM  
C-STORE  
D-REST SHED  
E-TOILET

18.01.2024-17.01.2025 PLANTATION  
18.01.2025-17.01.2026 PLANTATION  
18.01.2026-17.01.2027 PLANTATION  
18.01.2027-17.01.2028 PLANTATION  
18.01.2028-17.01.2029 PLANTATION

[Handwritten signature]

**PLATE NO. VIII**

Date of Survey : 04.07.2023

**APPLICANT:**

THIRU. K. PARAMASIVAM,  
S/o. KRISHNASAMY,  
No. 135, MULLAI NAGAR,  
OLD BUS STAND ROAD, PERUNDURAI,  
ERODE, TAMILNADU-638 052.

**LOCATION OF QUARRY:**

S.F. NO : 407/3(P),  
EXTENT : 1.00.0Ha,  
VILLAGE : SIRUVALAI,  
TALUK : VILLUPURAM,  
DISTRICT : VILLUPURAM.

**INDEX**

- Q.L. BOUNDARY
- SAFETY DISTANCE
- 500m RADIUS
- 60m RADIUS
- APPROACH ROAD
- WIND DIRECTION
- TREES
- QUARRY PIT
- SEASONAL AGRICULTURE LAND
- VILLAGE ROAD
- BARREN LAND
- DUMP



**ENVIRONMENTAL PLAN**

SCALE 1:5000

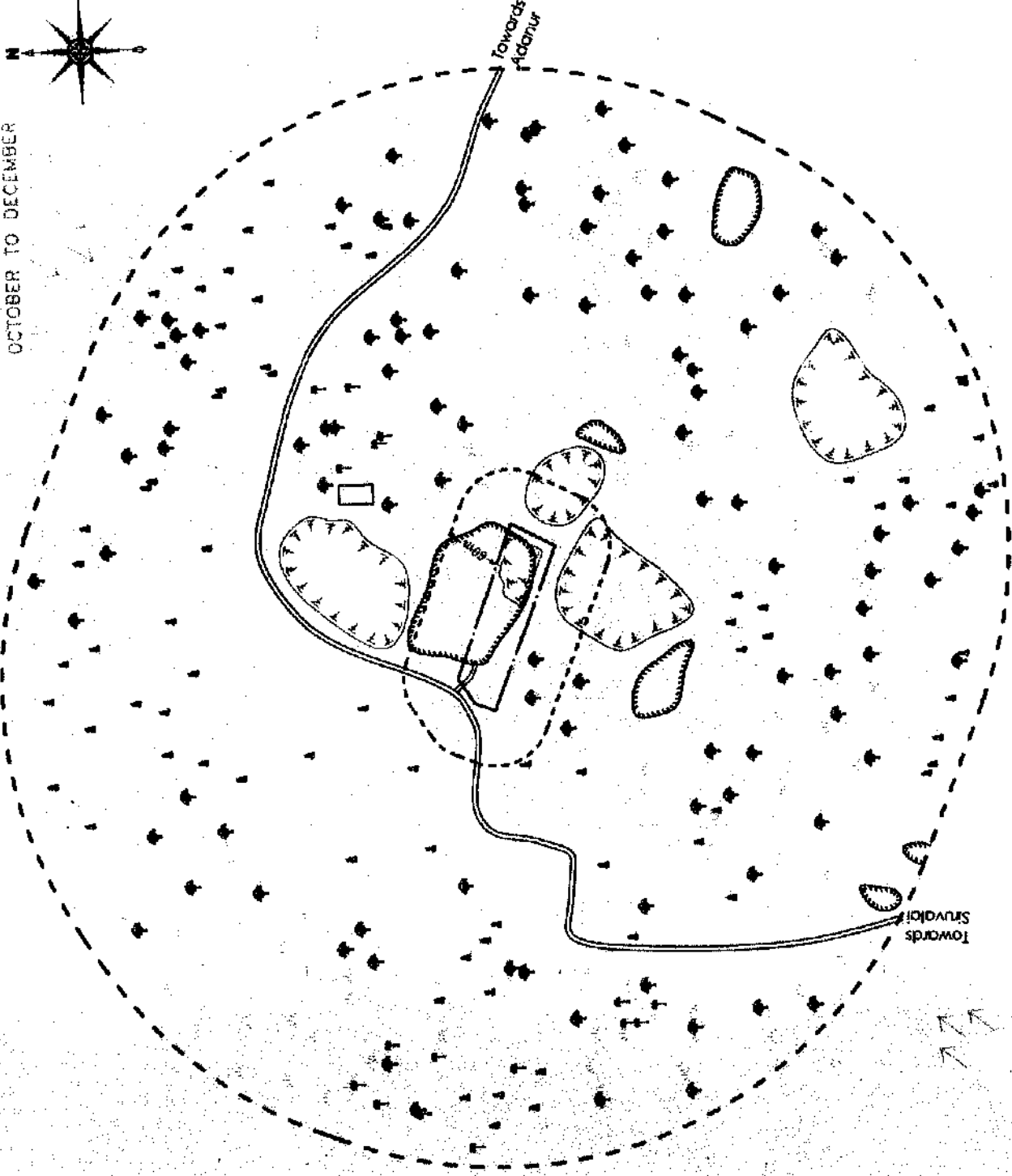
**PREPARED BY:**

THIS IS TO CERTIFY THAT THE INFORMATION IN  
THIS PLAN IS TRUE AND CORRECT TO THE  
BEST OF MY KNOWLEDGE BASED UPON THE  
LEASEMAP AUTHENTICATED  
BY STATE GOVERNMENT

*S. Jayaraman*

S. JAYARAMAN, S.,  
RECOGNIZED QUALIFIED PERSON  
ROP/NAS/253/2013/A

OCTOBER TO DECEMBER



JULY TO SEPTEMBER



**PLATE NO. IX**

Date of Survey : 04.07.2023

**LESSEE:**  
 THIRUK. PARAMASIVAM,  
 S/O. KRISHNASAMY,  
 No. 135, MULLAI MAGAR,  
 OLD BUS STAND ROAD, PERUNDURAI,  
 ERODE, TAMILNADU-638 052

**LOCATION OF QUARRY:**  
 S.F. NOS. : 407/3(P) & C  
 EXTENT : 1.00.0 Hb.  
 VILLAGE : STRIVAJAI,  
 TALUK : VIKRAVANDI,  
 DISTRICT : VILUPPURAM.

**INDEX**

- QUARRY LEASE BOUNDARY
- 7.5M & 10M SAFETY DISTANCE
- APPROACH ROAD
- TEMPORARY BENCH MARKS AND PILING H-PILES
- VILLAGE ROAD
- SHRUBS
- TOPSOIL
- CONTACT LINES
- OUTCROPS
- QUARRY PIT
- QUARRY ROAD
- BLACK GRANITE (Dolerite)
- STRIKE AND DIP
- PROPOSED BACK FILLING
- FENCING

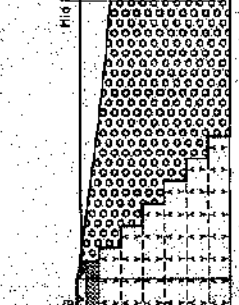
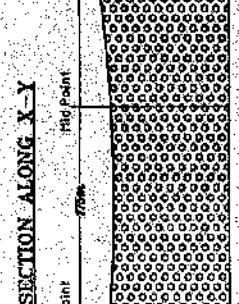
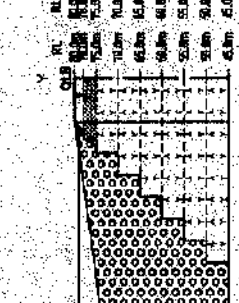
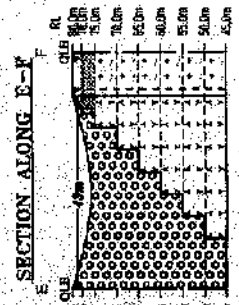
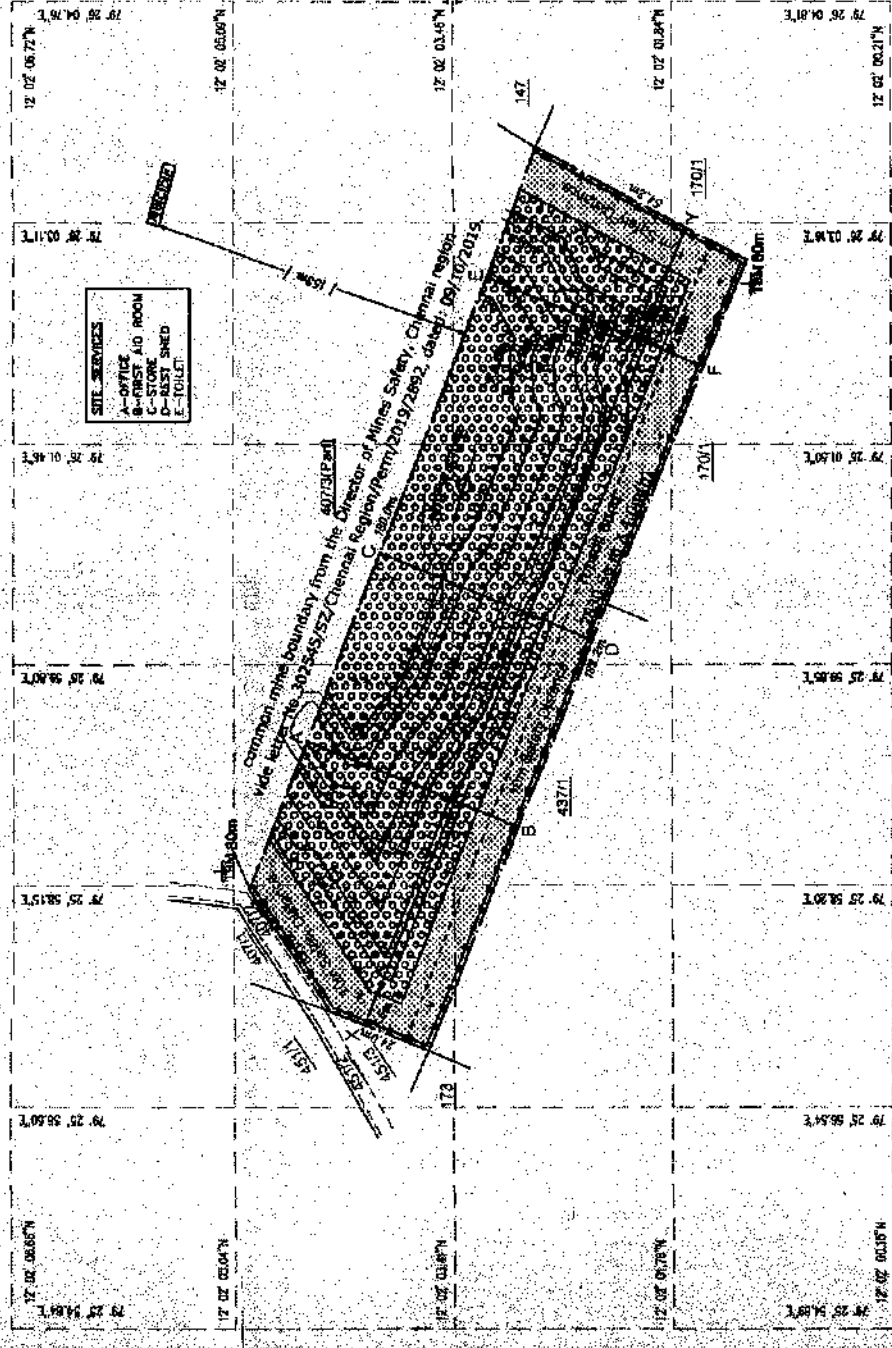


**CONCEPTUAL PLAN & SECTIONS**

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 BASED UPON THE LEASHP  
 AUTHENTICATED  
 BY STATE GOVERNMENT

*[Signature]*  
 S. K. PARAMASIVAM,  
 RECOMMENDED QUALIFIED PERSON  
 POP: 1835/2023/01.3/A



*[Handwritten signature]*  
 K. Palanivel



**PLATE NO. VI**

DATE: 04-07-2023

**LESSEE:**  
**THIRU.K. PARAMASIVAM,**  
**S/O. KRISHNASAMY,**  
**NO. 135, MULLAI NAGAR,**  
**OLD BUS STAND ROAD, PERUNDURAI,**  
**ERODE, TAMILNADU-638 052**

**LOCATION OF QUARRY:**  
**S.F. NOS. - 407/3(Part)**  
**EXTENT : 11,000.0 Hrs.**  
**VILLAGE : SRIVALLAI,**  
**TALUK : VIKRAVANDI,**  
**DISTRICT : VILUPPURAM.**

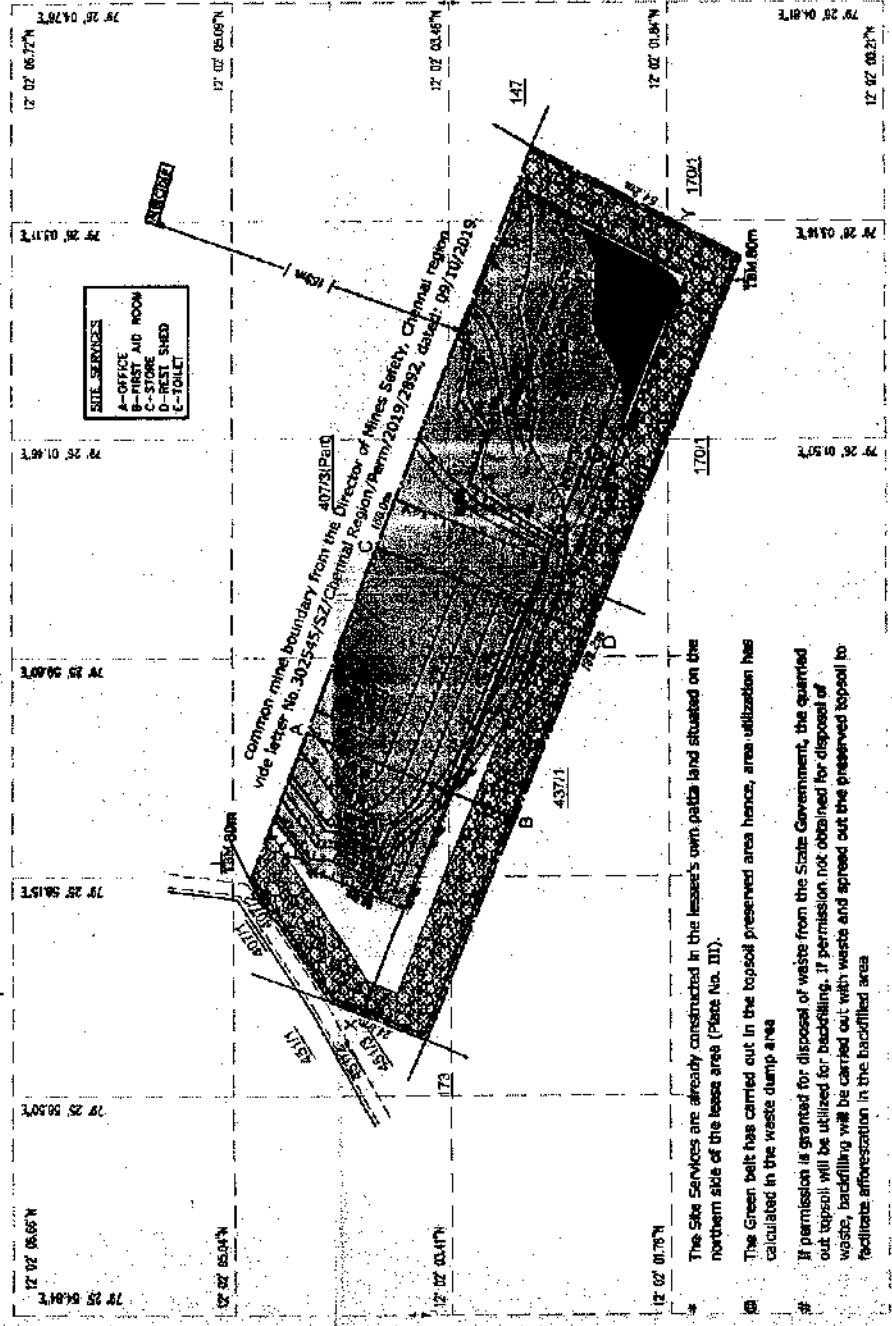
**INDEX**

- QUARRY LEASE BOUNDARY
- 7.5m & 10m SAFETY DISTANCE
- APPROACH ROAD
- TEMPORARY BENCH MARK
- VILLAGE ROAD
- SHRUBS
- TOPSOIL
- CONTACT LINE
- OUTCROPS
- QUARRY PIT
- QUARRY ROAD
- BLACK GRANITE(Dolerite)
- STRIKE AND DIP
- DUMP
- TOPSOIL DUMP
- FENCING
- PROPOSED GARLAND DRAIN



**PROGRESSIVE QUARRY CLOSURE PLAN AND SECTIONS**

SCALE: 1:1000  
 PREPARED BY: [Signature]  
 THIS PLAN IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASER'S AUTHENTICATED STATEMENT BY STATE GOVERNMENT.  
 SUPERVISOR,  
 ERODE, TAMILNADU-638 052  
 RECORDED & VALUED PERSON  
 REF: MNS/563/2013/A

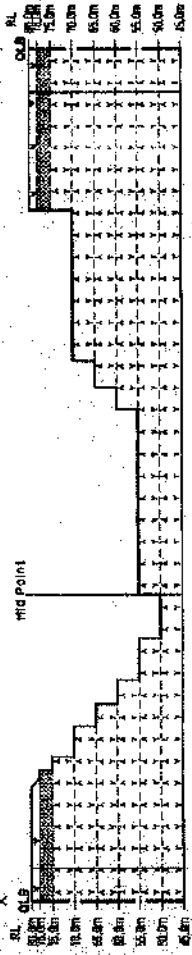


The Site Services are already constructed in the lessee's own patta land situated on the northern side of the lessee area (Plate No. III).

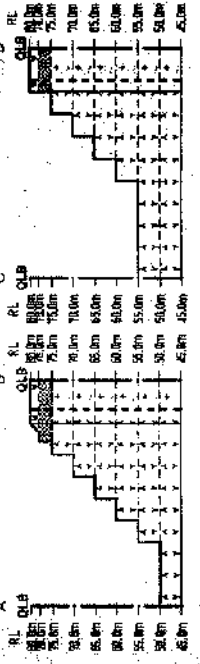
The Green belt has carried out in the topsoil preserved area hence, area utilization has calculated in the waste dump area

If permission is granted for disposal of waste from the State Government, the quantified out topsoil will be utilized for backfilling. If permission not obtained for disposal of waste, backfilling will be carried out with waste and spread out the preserved topsoil to facilitate afforestation in the backfilled area

**SECTION ALONG X-Y**



**SECTION ALONG A-B**



**LANDUSE PATTERN**

DESCRIPTION	PRESNT AREA (Ha)	AREA TO BE REQUIRED AT THE PRESENT SOURCE PERIOD (Ha)	END OF LIFE OF QUARRY PERIOD (%)	Color code
AREA UNDER QUARRY	0.58.13	0.02.90	0.69.70	[Pattern]
PUMPS	0.32.78	NIL	# Back FILLING	[Pattern]
INFRASTRUCTURE	NIL	NIL	NIL	[Pattern]
ROADS	0.02.00	NIL	0.02.00	[Pattern]
GREEN BELT	NIL (0.00.00)	NIL (0.00.00)	0.18.50	[Pattern]
STOCKING BLOCKS	0.05.09	0.02.49	NIL	[Pattern]
<b>TOTAL</b>	<b>1.00.00</b>	<b>0.05.09</b>	<b>1.00.00</b>	

*K. Pabundhan*

சான்றிதழ்

விடுதலைப் போரில் சிங்கள அரசின்

45. சிங்கள அரசின் தலைநகரில் 407/3 - 4

1.00.0 குடியிருப்பவர்கள் உள்ள இடம்: 933 பட்டினத்திக்கு 1104

சிங்கள அரசின் தலைநகரில் உள்ளது. இடத்தில் 407/3

1.00.0 குடியிருப்பவர்கள் உள்ள இடம் உள்ளது. இடத்தில்

இடத்தில், இடத்தில், 407/3 இடத்தில், இடத்தில்

இடத்தில் இடத்தில் இடத்தில்

இடம்: 45. சிங்கள அரசின்

தேதி: 17/08/2023

17/08/2023  
கனம் நிர்வாக அலுவலர்  
45. சிறுவாலை, 66. அருள்மலர் சிற்றாடல்  
விடுதலைப் போரில் வட.ப.ப.

K. Palani

**TOPOGRAPHICAL VIEW OF SIRUVALAI BLACK GRANITE  
QUARRY LEASE AREA**




Name of the lessee : **K. Paramasivam,**  
S/o. Krishnasamy Gounder,  
Address : No. 460, Main Road,  
Perundurai,  
Erode District,  
Tamil Nadu - 638 052.

**Location of the area:**

Extent : 1.00.0 Ha  
S.F.No. : 407/3 (Part)  
Village : Siruvalai  
Taluk : Vikkiravandi (Formerly Viluppuram)  
District : Viluppuram.

Signature of the Lessee

  
(K. Paramasivam)  
Proprietor

  
Attestat...  
(Village Administrative Officer)  
45, சிறுவாலை, 638 052, சேலம் மாவட்டம்.  
வி.ச.சி.ப.வாரணாஜி வ.அ.அ.அ.





**HYDROGEOLOGICA REPORT FOR**

**Black Granite Quarry Project**

**Extent: 1.00.0Ha of Patta land in S.F.Nos. 407/3(Part) of**

**Siruvalai Village, Vikravandi Taluk,**

**Viluppuram District, Tamil Nadu State.**

*K. Palaniappan*

**HYDROGEOLOGICAL REPORT FOR**  
**SIRUVALAI BLACK GRANITE (DOLERITE) DEPOSIT**

The applicant requires detailed information on ground water occurrences at proposed project site of Black Granite (Dolerite) deposit. The objective of the present study is to assess the availability of groundwater 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 done.

**1. INTRODUCTION**

**NAME OF THE APPLICANT WITH ADDRESS**

**Name of the Company** : **K. Paramasivam**  
**Address** : **S/o. Krishnasamy,**  
**No. 135, Mullai Nagar,**  
**Old Bus Stand Road, Perundurai,**  
**Erode District, Tamil Nadu – 638 052**  
**State** : **Tamil Nadu**  
**Mobile No** : **+91 9443714257, 9486082012**  
**Email ID.** :

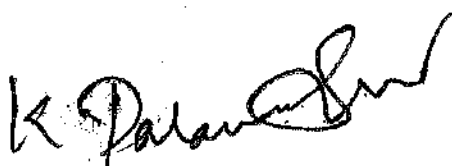
**DETAILS OF THE AREA**

**Land Classification** : **Patta land**  
**Survey No** : **407/3(Part)**  
**Extent** : **1.00.0Ha**  
**Village** : **Siruvalai**  
**Taluk** : **Vikravandi**  
**District** : **Viluppuram**

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 Client's requirements.

The data sources consulted were mainly:

- a) Central Ground Water Board (CGWB) Data
- b) State & District Geological and Hydrogeological Reports and Maps.
- c) Technical reports of the area by various organizations.



## 2. 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 proposed 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.

## 3. BACKGROUND INFORMATION

### Geographical information of the study area

Toposheet No	57P/08
Latitude	12°02'01.31"N to 12°02'05.11"N
Longitude	79°25'56.77"E to 79°26'03.51"E

## 4. Geology of the area

In the Villupuram district of Tamil Nadu is characterized by the occurrences of numerous Dolerite dykes. The dolerite dykes are general trending in NNE- SSW direction and rarely in NNW- SSE directions.

The quarry lease area contains pre-existing country rock of Charnockite and intruded by dolerite dyke. The dyke is covered by 2m thickness of soil and followed by fresh marketable black granite (Dolerite). The dolerite dyke is hard, compact and sheet in nature at the middle and boundary along the contacts due to geological disturbances.

## 5. GEOMORPHOLOGY

The residual hills and denudational hills are common in Tirukoilur, Kallakurichi and Gingetaluks. Structural hills are noticed in the western part of the district. The shallow pediments and buried pediments are common in the central part of the district. Coastal areas

*K. Parashuram*

are having older and younger flood plains and also beach landforms at places. The ground slope is gentle towards coast.

### **Soils**

The soils in the district are mostly forest soils and red soil. Alluvial soils are found in eastern side bordering coast. Black soils are confined to low ground in select pockets in Vanur taluk.

### **Drainage**

The Ponnaiyar, the Malattar and the Gadilam are the major rivers draining the district. The Ponnaiyar River flows from northwest to east in the district. The Manimuktanadi originates in Kalrayan hills and drains the southern part of the district. The Pambaiyar and the Varaganadhi originate in the uplands of the district and join Bay of Bengal.

### **Rainfall and Climate**

The district receives rainfall from southwest monsoon (June – September), northeast monsoon (October – December) and non-monsoon periods (January – May). The rainfall is generally heavy during low-pressure depressions and cyclones during the northeast monsoon period. The normal annual rainfall is 1119.8 mm (1901-1980) and the higher is towards coast.

The area falls under tropical climate with temperature in the summer months of March to May. The average temperature varies from 26 to 41°C. The humidity is also high in the order of 80%. The wind speed is high during the months of July and August. The wind speed ranges from 7.4 to 12.6 km/hr, which increases from 100 to 120 km/hr during cyclone period.

## **6. GEOLOGY-**

### **Regional Geology of the District-**

The hard rock terrain of Archaean to Late proterozoic comprises of predominantly Granite, Gneiss, Charnockite group of rocks and their magmatic derivatives, supracrustal sequences intruded by ultramafic complexes, basic dykes, granites.

The northern part of Tamilnadu, north of Noyil – Cauvery River is characterized by the occurrences of a number of Dolerite dykes in contrast to the areas south of Noyil – Cauvery River where the dykes are absent. The dolerite dykes in general trending is in WNW- ESE and NNE – SSE directions and rarely in N-S and NNW – SSE directions.

In central part of Tamil Nadu, ENE – WNW to NE- SW trending dolerite dykes (Black granite) are seen transecting the Charnockite in Kalrayan & Kolli Hills. Palaeo magnetic studies of some of these dykes indicate Mid-Proterozoic age.

*K. Parthasarathy*

Due to emplacement of Dolerite Dykes along narrower plains of weakness, the rock on solidification develops cracks and fractures mostly along the contacts with the country rocks. The dolerite dykes are mostly emplaced as 'swarms' in an area.

Granites were formed from molten rock referred to as "Magma" formed at great depths within the crust of the earth. During the cooling process, some of the minerals grow into larger crystals of colours peculiar to those minerals or get aligned along certain preferred directions giving rise to beautiful colors and patterns. Such rocks that were formed at great depths during the Archaean age are now exposed at the surface of the earth as a result of the combined actions of wind, air, sun and water and weathering and denudation over the past several million years.

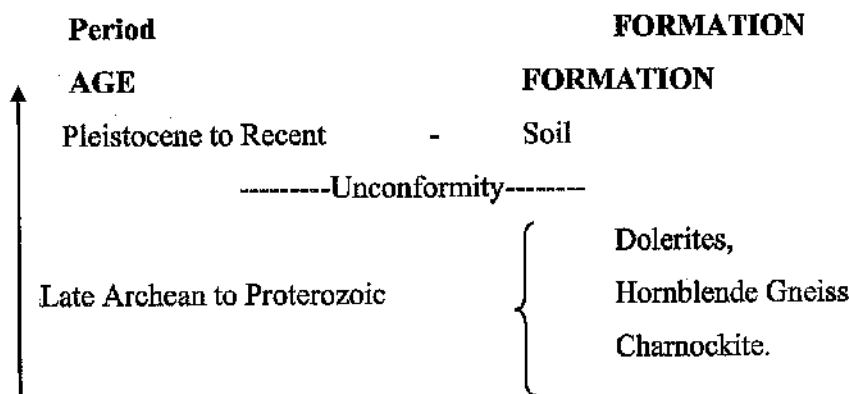
The granitic group ranges in composition from granite, through grandiorities to adamellite, augite-diorite, monzonite, etc, and contains inclusions of hornblendic rocks. To what extent they represent intrusive of different ages is yet to be determined, but their very complex nature is unquestionable since they include composite gneisses, migmatites, granitised older crystalline rocks and true granites with their aplitic and quartz vein systems.

The black granite is a basic igneous rock formed from ultramafic magmas by partial melting. The composition of the rock is plagioclase (Labradorite) and pyroxene (Augite). The texture is ophitic i.e., large oligoclase of Augite enclose the laths of plagioclase feldspar. The colour is termed as Leucocratic. Free silica is rare or absent. The rock is holocrystalline, black colour, hardness-5 to 6, prismatic cleavage.

The Physical attitude of the Black Granite deposit in this area is given below:-

Strike Direction = N70oW – S70oE  
 Dip direction and amount = Vertical dip.

Structural settings of the area:



*K. P. S. S.*

## 7. 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.

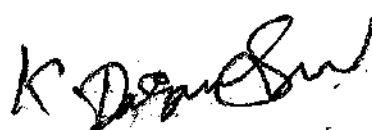
The apparent resistivity values determined are plotted as a log function versus the log of the spacing between the electrodes. These plotted curves identify thickness of layers. If there are multiple layers (more than 2), the acquired data is compared to a master curve to determine layer thickness.

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,

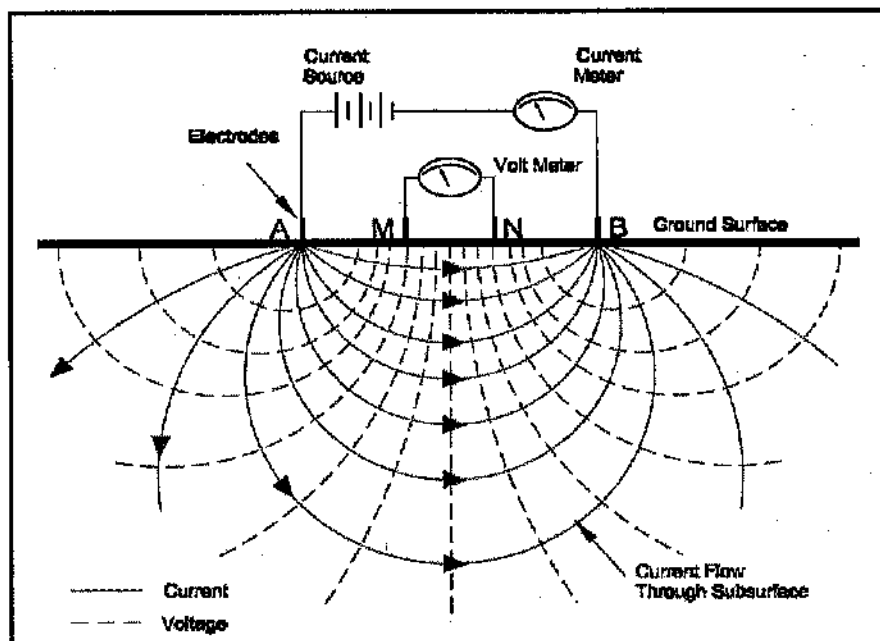
$$R = dV/I \text{ (Ohm)}$$

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:

$$R_s = (A/L) * (dV/I) \text{ (in Ohm m)}$$

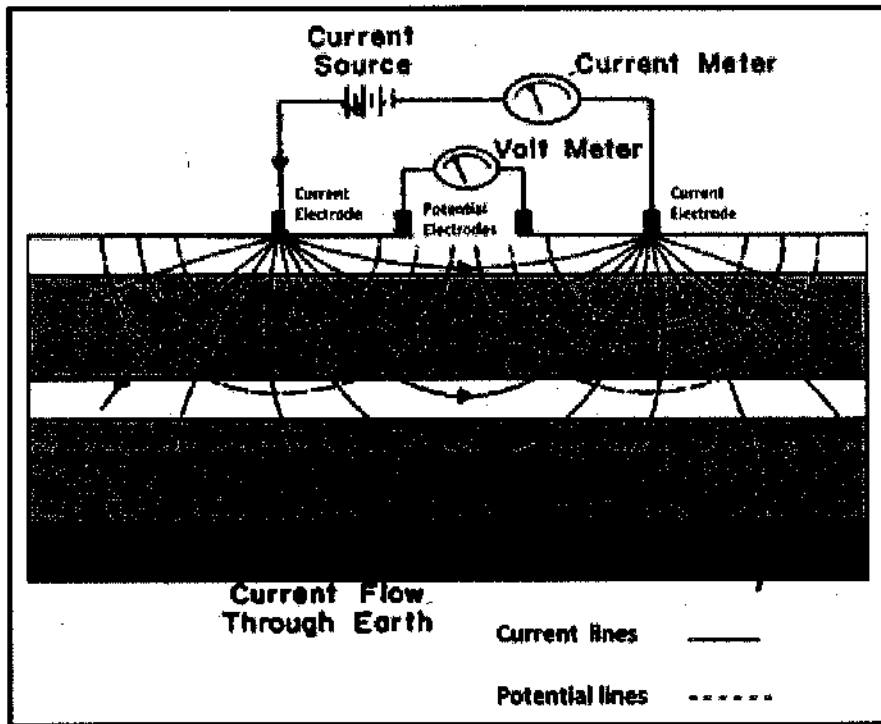
### Vertical Electrical Sounding (VES)

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.



*P. Parvinder*





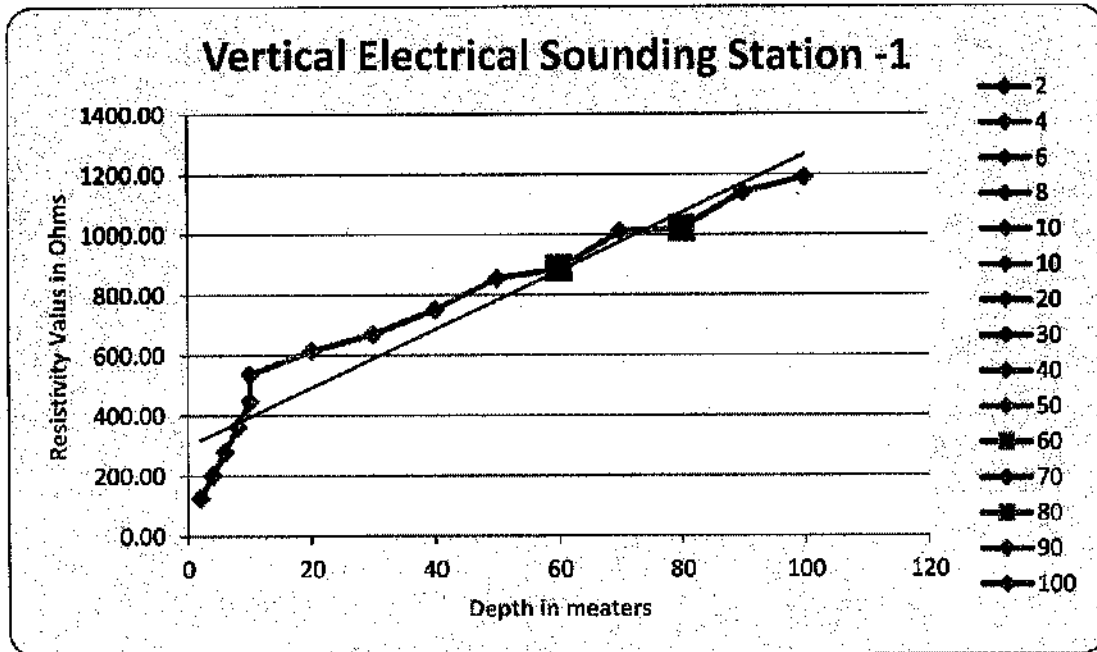
**Images of Siruvalai Black Granite Quarry lease area**



*K. Prasad*

## Vertical Electrical Sounding Data's and Graphs

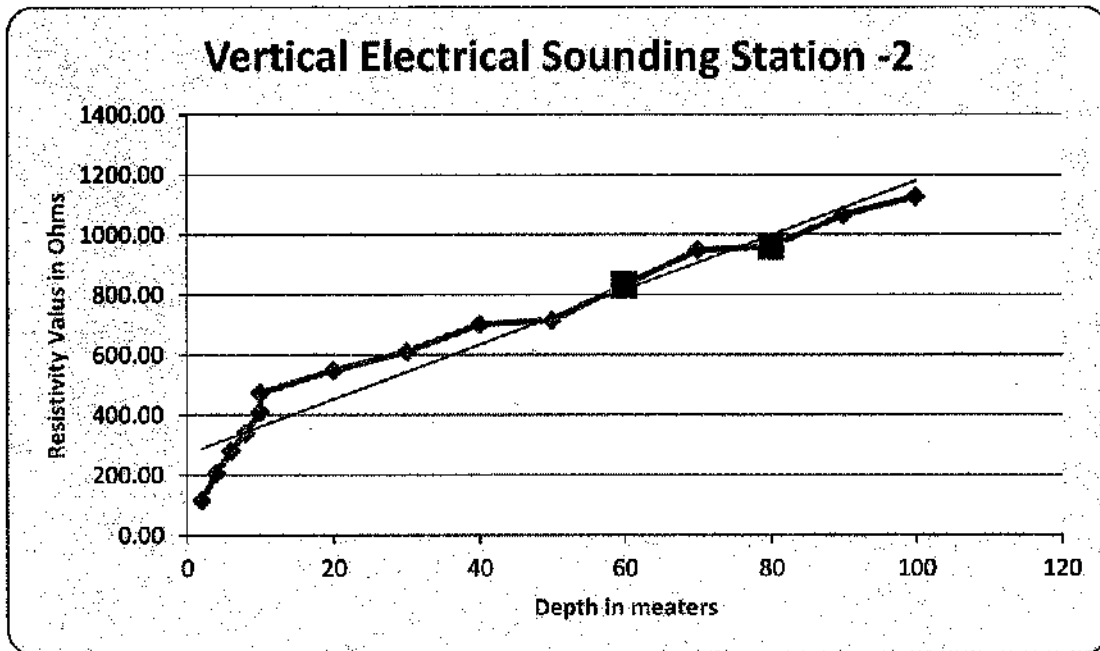
<b>Vertical Electrical Sounding Station - 1</b>					
<b>GPS Coordinates - 12°02'01.31"N 79°25'56.77"E</b>					
<b>S.No</b>	<b>Ab/2(m)</b>	<b>Mn/2(m)</b>	<b>Geometrical Factor (G)</b>	<b>Resistance Value in Ohms</b>	<b>Apparent Resistance in Ohms</b>
1	2	1	4.71	26.77	126.09
2	4	1	23.55	8.56	201.59
3	6	1	54.95	5.10	280.25
4	8	1	98.91	3.66	362.01
5	10	1	155.45	2.88	447.70
6	10	5	23.55	22.77	536.23
8	20	5	117.75	5.22	614.66
9	30	5	274.75	2.44	670.39
10	40	5	494.55	1.52	751.72
11	50	5	777.15	1.10	854.87
12	60	5	1122.55	0.79	886.81
13	70	5	1530.75	0.66	1010.30
14	80	5	2001.75	0.51	1020.89
15	90	5	2535.55	0.45	1141.00
16	100	5	3132.15	0.38	1190.22



Above the Vertical Electrical Sounding Station graphs purple Colour is fracture zone.

*K. Palani*

Vertical Electrical Sounding Station - 2					
GPS Coordinates - 12°02'05.11"N 79°26'03.51"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	24.66	116.15
2	4	1	23.55	8.76	206.30
3	6	1	54.95	5.10	280.25
4	8	1	98.91	3.44	340.25
5	10	1	155.45	2.64	410.39
6	10	5	23.55	20.14	474.30
8	20	5	117.75	4.66	548.72
9	30	5	274.75	2.22	609.95
10	40	5	494.55	1.42	702.26
11	50	5	777.15	0.92	714.98
12	60	5	1122.55	0.74	830.69
13	70	5	1530.75	0.62	949.07
14	80	5	2001.75	0.48	960.84
15	90	5	2535.55	0.42	1064.93
16	100	5	3132.15	0.36	1127.57

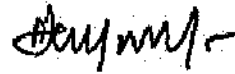


Above the Vertical Electrical Sounding Station graphs purple Colour is fracture zone

*IC. Palanisundar*

## 8. Conclusion

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 85m to 90m where minor fractures are observed and shallow aquifers are expected above 65m-70m BGL. The ultimate pit limit as per the approved mining plan depth is 20m (2m Topsoil + 3m Weathered +15m Black granite) which will have no impact on the Ground Water.



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

Govt. Approved Hydro Geologist

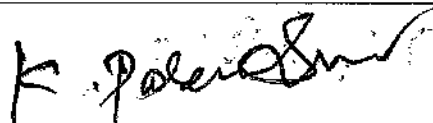
M/s. Geo Exploration and Mining Solutions,

Regd. Office: No. 17, Advaita Ashram Road,

Alagapuram, Salem – 636 004, Tamil Nadu

Mobile: +91 - 94433 56539

E-Mail: infogeoexploration@gmail.com



Dr. L. SUBRAMANIAN, I.A.S.,  
CHAIRMAN /  
DISTRICT COLLECTOR.



District Level Environment Impact  
Assessment Authority,  
Viluppuram District.

**ENVIRONMENTAL CLEARANCE**

**Lr.No.DEIAA-VPM-TN/F.No.18015/Ec.No.02/2018 Dated 4/12.2018**

To

Thiru. K. Paramasivam,  
S.F.No.407/3,  
Sirualai Village,  
Vikravandi Taluk,  
Viluppuram District.

Sir,

Sub: DEIAA - Proposed Black Granite Quarry - S.F.No.407/3(Part) -  
over an extent of 1.00.0 Hects. of Patta land - Sirualai Village-  
Vikravandi Taluk - Viluppuram District by Thiru.K.  
Paramasivam - Grant of Environmental Clearance - Reg.

Ref: 1. Your Application for Environment Clearance from  
DEIAA Dated 08.10.2018.  
2. Minutes of the 4<sup>th</sup> DEAC meeting held on 20.11.2018.  
3. Minutes of the 4<sup>th</sup> DEIAA meeting held on 27.11.2018.

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**Details of Minor mineral Activity:-**

1.	Name of Project Proponent and address	:	Thiru. K. Paramasivam, S.F.No.407/3, Sirualai Village, Vikravandi Taluk, Viluppuram District.
2.	Location of the Proposed Activity	:	
	Survey Number	:	407/3 (Part)
	Latitude and Longitude	:	Latitude : 12°02'01.31"N to 12°02'05.11"N Longitude: 79°25'56.77"E to 79°26' 03.51"E
	Village	:	Sirualai
	Taluk	:	Vikravandi
	District	:	Viluppuram
3.	Proposed Activity	:	
	i. Minor mineral	:	Black Granite
	ii. Mining Lease Area	:	1.00.0 hecta.
	iii. Approved quantity	:	7004 M <sup>3</sup> of Black Granite

*[Signature]*  
4/12/2018  
CHAIRMAN  
DEIAA

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	iv.	Depth of quarrying	:	20 m below the ground level
	v.	Type of quarrying	:	Open cast semi-mechanised
	vi.	Category (B1/B2)	:	"B2" category.
	vii.	Precise Area Communication	:	Government Letter No.8472/MMB-2/ 2018-1 dated 27.08.2018.
	viii.	Mining Plan approval	:	The CGM, Chennai Lr.No.3645/MM5/ 2018 dated: 01.10.2018.
	ix.	Quarry lease period	:	20 Years
4.		Man Power requirement per day	:	33 Nos.
5.		Utilities		
	i.	Source of Water	:	Water vendors / Existing borehole
	ii.	Quantity of Water Requirement in KLD: a. Domestic b. Industrial c. Green Belt & Dust Suppression	:	1.5 KLD 0.5 & 1.0 KLD
	iii.	Power requirement a. Domestic purpose b. Industrial purpose	:	The Limited scale of activities adopted in Black Granite Quarrying does not require high - tension electric power supply. The quarrying operation is only for day time. The electricity will be used only for mine office and lighting around the quarry during night time. The existing electric line near the quarry site will be used. Fuels are used for operating machinery and vehicles during quarrying process and fuel required for this project life is about 56032 liters of HSD.
6.		Cost		
	i.	Project Cost	:	Rs. 2,25,50,000/-
	ii.	EMP Cost	:	Rs. 7,28,000/-
7.		Date of Appraisal by DEAC:	:	20.11.2018 4 <sup>th</sup> Meeting
8.		<b>Date of review / discussion by DEIAA and the Remarks:-</b> The proposal was placed before the 4 <sup>th</sup> DEIAA meeting held on 27.11.2018 and the Authority after careful consideration, decided to grant Environmental Clearance to the said project for quarrying of "Black Granite" subject to the terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.		

*[Signature]*  
4/12/2018  
CHAIRMAN  
DEIAA

**9. Validity:**

This Environmental Clearance is granted for quarrying of "Black Granite" for the production quantity of 7004 cu.m. of Black Granite for a period of "5 Year" from the date of execution of Lease Deed.

**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 DEIAA.
  - 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 DEIAA.
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.

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4/12/2018  
CHAIRMAN  
DEIAA

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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.

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4/12/2018  
CHAIRMAN  
DEIAA

*Dr. P. S. S. S.*

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.

*Ammin*  
12/12/2018  
CHAIRMAN  
DEIAA

*K. Palani Selva*

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. The 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 TNPCE, Department of Geology and Mining and Regional Director, MoEF, GOI.

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 CHAIRMAN  
 DEIAA

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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 leveled 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 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 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.
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 equipments to be provided to all the employees.
53. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
54. 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.

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 CHAIRMAN  
 DEIAA

K. Parashar

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.
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, Viluppuram.

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 CHAIRMAN  
 DEIAA

*K. Pabudan*

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 health 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 system. Loading and unloading areas including all the transfer points should also have efficient 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 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.
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

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 CHAIRMAN  
 DEIAA

*J. C. Palang*

- workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
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 clearances from other statutory and administrative authorities.
  16. 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
  17. The DEIAA, Viluppuram may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
  18. The DEIAA, Viluppuram 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 DEIAA, VPM that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
  19. 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.
  20. 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

*M. M. M.*  
26/12/2018  
CHAIRMAN  
DEIAA

*K. P. S.*



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.

21. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
22. The proponent has to provide / maintain proper bench formation during mining operation.
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.

22/11/16

*M. M. M.*  
24/12/2018  
CHAIRMAN  
DEIAA

Copy to:-

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary, Environment and Forest Department, Government of Tamil Nadu, Tamil Nadu.
3. The Principal Secretary to Government, 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, Tamil Nadu 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 Chairman, SEIAA, Panagal Building, Chennai.
8. The Director of Geology and Mining, Guindy, Chennai-32
9. E1 Division, Ministry of Environment and Forests Paryavaran Bhawan, New Delhi.
10. Spare.

*K. Ramesh*

Report No	EHS360/TR/2024-25/001	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Sruvalal Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/001
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 1 – Core Zone-12° 2'3.14"N 79°25'58.92"E		

Date	Period. hrs	SPM ( $\mu\text{g}/\text{m}^3$ )	As ( $\text{ng}/\text{m}^3$ )	C6H6 ( $\mu\text{g}/\text{m}^3$ )	BaP ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )
07.03.2024	7:00-7:00	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.03.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.03.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:00-7:00	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.03.2024	7:15-7:15	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.03.2024	7:15-7:15	63.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.04.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.04.2024	7:15-7:15	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:00-7:00	65.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.04.2024	7:15-7:15	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:00-7:00	65.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.04.2024	7:15-7:15	65.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:00-7:00	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.05.2024	7:15-7:15	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:00-7:00	65.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.05.2024	7:15-7:15	66.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.05.2024	7:15-7:15	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.05.2024	7:15-7:15	63.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.05.2024	7:15-7:15	63.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<200	<100	<60	<80	<80

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

*[Signature]*

Authorised Signatory

Name: Santhosh Kumar A  
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

**EHS 360****LABS**

TC-9583

**PRIVATE LIMITED****TEST REPORT**

<b>Report No</b>	EHS360/TR/2024-25/002	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	IS 5182	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Air	<b>Sample Code</b>	EHS360/002
<b>Sample Description</b>	Ambient Air Quality Monitoring	<b>Sample Condition</b>	Good
<b>Sampling Location</b>	AAQ 2 –Near Project Area-12° 2'4.48"N 79°26'15.82"E		

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)
07.03.2024	7:00-7:00	41.2	21.5	7.6	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.03.2024	7:15-7:15	42.9	20.9	7.2	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:00-7:00	42.7	20.8	6.4	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.03.2024	7:15-7:15	42.6	19.3	6.6	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:00-7:00	41.1	18.5	7.7	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.03.2024	7:15-7:15	41.3	19.6	5.2	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:00-7:00	41.7	18.5	5.4	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.03.2024	7:15-7:15	42.5	18.9	7.5	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:00-7:00	42.3	21.3	5.9	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.04.2024	7:15-7:15	42.7	24.9	6.2	21.0	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:00-7:00	43.2	18.9	7.4	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.04.2024	7:15-7:15	42.0	19.6	5.7	22.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:00-7:00	43.4	19.8	7.2	23.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.04.2024	7:15-7:15	43.5	21.5	7.8	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:00-7:00	43.3	20.9	7.4	22.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.04.2024	7:15-7:15	43.2	19.6	7.3	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:00-7:00	42.4	18.5	6.7	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.05.2024	7:15-7:15	43.8	18.0	6.2	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:00-7:00	42.3	19.1	6.4	23.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.05.2024	7:15-7:15	42.0	19.7	6.2	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:00-7:00	44.7	19.3	6.7	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.05.2024	7:15-7:15	43.9	20.1	6.2	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:00-7:00	43.2	21.5	7.1	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.05.2024	7:15-7:15	42.7	20.9	7.6	22.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:00-7:00	43.9	21.5	7.2	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.05.2024	7:15-7:15	43.2	21.9	6.6	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
<b>NAAQ* Standard</b>		<100	<100	<60	<80	<80	<100	<400

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

Authorised Signatory

  
Name: Santhosh Kumar A  
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.  
3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.  
4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

E: info@ehs360labs.com

W: ehs360labs.com

10/2, Ground Floor, 50th Street, 7th Avenue

Ashok Nagar, Chennai - 600083.

## TEST REPORT

Report No	EHS360/TR/2024-25/002	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/002
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 2 -Near Project Area-12° 2'4.48"N 79°26'15.82"E		

Date	Period. hrs	SPM ( $\mu\text{g}/\text{m}^3$ )	As ( $\text{ng}/\text{m}^3$ )	C6H6 ( $\mu\text{g}/\text{m}^3$ )	BaP ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )
07.03.2024	7:00-7:00	67.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.03.2024	7:15-7:15	67.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:00-7:00	68.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.03.2024	7:15-7:15	68.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:00-7:00	68.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.03.2024	7:15-7:15	68.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:00-7:00	68.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.03.2024	7:15-7:15	68.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:00-7:00	69.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.04.2024	7:15-7:15	67.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:00-7:00	67.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.04.2024	7:15-7:15	67.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:00-7:00	67.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.04.2024	7:15-7:15	67.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:00-7:00	68.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.04.2024	7:15-7:15	68.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:00-7:00	68.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.05.2024	7:15-7:15	69.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:00-7:00	69.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.05.2024	7:15-7:15	69.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:00-7:00	68.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.05.2024	7:15-7:15	67.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:00-7:00	67.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.05.2024	7:15-7:15	68.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:00-7:00	68.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.05.2024	7:15-7:15	67.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<200	<100	<60	<80	<80

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

*[Signature]*



Authorised Signatory

*[Signature]*  
Name: Santhosh Kumar A  
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

**EHS 360****LABS****PRIVATE LIMITED**

TC-8883

**TEST REPORT**

<b>Report No</b>	EHS360/TR/2024-25/003	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	IS 5182	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Air	<b>Sample Code</b>	EHS360/003
<b>Sample Description</b>	Ambient Air Quality Monitoring	<b>Sample Condition</b>	Good
<b>Sampling Location</b>	AAQ3 - Siruvalai-12° 1'29.75"N 79°25'35.05"E		

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)
07.03.2024	7:00-7:00	44.2	19.9	7.1	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.03.2024	7:15-7:15	44.5	19.7	6.9	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:00-7:00	43.2	19.6	6.2	21.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.03.2024	7:15-7:15	43.8	19.4	6.4	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:00-7:00	43.5	19.3	6.5	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.03.2024	7:15-7:15	43.2	19.1	6.9	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:00-7:00	43.8	19.5	6.7	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.03.2024	7:15-7:15	43.5	19.2	6.0	21.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:00-7:00	43.2	18.9	7.2	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.04.2024	7:15-7:15	42.9	18.3	7.6	24.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:00-7:00	42.2	20.2	6.6	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.04.2024	7:15-7:15	43.2	19.5	7.5	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:00-7:00	42.8	18.9	6.5	23.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.04.2024	7:15-7:15	43.5	19.1	6.1	21.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:00-7:00	43.1	19.0	6.5	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.04.2024	7:15-7:15	44.8	19.7	6.3	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:00-7:00	43.2	20.9	6.5	26.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.05.2024	7:15-7:15	45.6	21.5	6.9	25.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:00-7:00	45.5	19.6	6.7	23.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.05.2024	7:15-7:15	45.1	19.3	6.4	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:00-7:00	44.5	20.2	6.1	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.05.2024	7:15-7:15	44.0	21.3	6.5	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:00-7:00	44.3	19.4	6.6	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.05.2024	7:15-7:15	43.6	19.6	6.2	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:00-7:00	43.1	20.5	6.6	23.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.05.2024	7:15-7:15	43.5	20.2	6.9	24.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
<b>NAAQ* Standard</b>		<100	<100	<60	<80	<80	<100	<400

**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



Authorised Signatory

 Name: **Santhosh Kumar A**  
 Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

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Ashok Nagar, Chennai - 600083.

### TEST REPORT

Report No	EHS360/TR/2024-25/003	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Sruvalai Village, Vikkravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/003
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ3 -Sruvalai-12° 1'29.75"N 79°25'35.05"E		

Date	Period. hrs	SPM ( $\mu\text{g}/\text{m}^3$ )	As ( $\text{ng}/\text{m}^3$ )	C6H6 ( $\mu\text{g}/\text{m}^3$ )	BaP ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )
07.03.2024	7:00-7:00	62.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.03.2024	7:15-7:15	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:00-7:00	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.03.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.03.2024	7:15-7:15	65.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:00-7:00	64.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.03.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.04.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.04.2024	7:15-7:15	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:00-7:00	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.04.2024	7:15-7:15	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:00-7:00	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.04.2024	7:15-7:15	62.0	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.05.2024	7:15-7:15	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:00-7:00	66.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.05.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.05.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:00-7:00	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.05.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:00-7:00	64.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.05.2024	7:15-7:15	64.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<200	<100	<60	<80	<80

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



*K. Paramasivam*

Authorised Signatory

Name: **Santhosh Kumar A**  
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.  
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**EHS 360****LABS****PRIVATE LIMITED**

TC-0688

**TEST REPORT**

<b>Report No</b>	EHS360/TR/2024-25/004	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Srivalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	IS 5182	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Air	<b>Sample Code</b>	EHS360/004
<b>Sample Description</b>	Ambient Air Quality Monitoring	<b>Sample Condition</b>	Good
<b>Sampling Location</b>	AAQ4 -Ulagampoondi- 12° 2'17.89"N 79°29'19.39"E		

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)
07.03.2024	7:00-7:00	48.9	21.5	6.6	24.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.03.2024	7:15-7:15	47.3	21.5	6.1	24.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:00-7:00	48.2	20.6	6.3	25.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.03.2024	7:15-7:15	48.6	20.7	6.7	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:00-7:00	45.5	21.6	6.1	23.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.03.2024	7:15-7:15	46.6	20.8	7.4	23.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:00-7:00	47.2	21.4	7.5	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.03.2024	7:15-7:15	47.3	20.3	7.8	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:00-7:00	48.1	21.7	6.4	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.04.2024	7:15-7:15	48.6	22.5	6.5	21.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:00-7:00	47.9	22.2	7.2	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.04.2024	7:15-7:15	48.2	21.6	7.1	23.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:00-7:00	40.6	21.6	7.3	23.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.04.2024	7:15-7:15	40.8	21.2	7.5	24.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:00-7:00	41.5	20.7	7.1	24.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.04.2024	7:15-7:15	49.9	21.4	6.8	25.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:00-7:00	40.1	22.2	6.7	25.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.05.2024	7:15-7:15	40.6	21.3	6.3	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:00-7:00	41.4	21.6	6.5	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.05.2024	7:15-7:15	41.9	21.4	6.6	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:00-7:00	40.5	21.5	6.5	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.05.2024	7:15-7:15	41.4	20.3	5.8	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:00-7:00	40.6	20.5	7.6	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.05.2024	7:15-7:15	41.7	21.7	7.8	23.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:00-7:00	40.4	22.3	7.4	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.05.2024	7:15-7:15	39.3	22.4	7.9	23.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
<b>NAAQ* Standard</b>		<100	<100	<60	<80	<80	<100	<400

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

*[Signature]*



*[Signature]*

Authorised Signatory

*[Signature]*

Name : Santhosh Kumar A  
Designation : Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.  
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4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

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Ashok Nagar, Chennai - 600083.



### TEST REPORT

Report No	EHS360/TR/2024-25/004	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/004
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ4 -Ulagampoondi- 12° 2'17.89"N 79°29'19.39"E		

Date	Period. hrs	SPM (µg/m³)	As (ng/m³)	C6H6 (µg/m³)	BaP (ng/m³)	Pb (µg/m³)	Ni (ng/m³)
07.03.2024	7:00-7:00	67.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.03.2024	7:15-7:15	67.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:00-7:00	67.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.03.2024	7:15-7:15	68.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:00-7:00	68.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.03.2024	7:15-7:15	69.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.03.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:00-7:00	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.04.2024	7:15-7:15	65.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:00-7:00	68.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.04.2024	7:15-7:15	69.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:00-7:00	69.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.04.2024	7:15-7:15	69.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:00-7:00	69.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.04.2024	7:15-7:15	69.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:00-7:00	67.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.05.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:00-7:00	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.05.2024	7:15-7:15	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:00-7:00	65.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.05.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:00-7:00	68.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.05.2024	7:15-7:15	69.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:00-7:00	67.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.05.2024	7:15-7:15	67.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<200	<100	<60	<80	<80

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

*[Signature]*



Authorised Signatory

Name: Santhosh Kumar A  
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after Invoicing or issued of test report.



LABS

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TEST REPORT

Report No	EHS360/TR/2024-25/005	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/005
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ5 – Ariyalur Tirukkai-12° 0'55.78"N 79°22'49.74"E		

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)
07.03.2024	7:00-7:00	39.5	19.5	5.2	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.03.2024	7:15-7:15	40.6	20.8	5.8	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:00-7:00	41.5	20.0	5.6	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.03.2024	7:15-7:15	40.8	20.9	5.4	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:00-7:00	40.5	20.5	5.7	24.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.03.2024	7:15-7:15	39.1	21.8	5.3	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:00-7:00	39.6	20.6	5.9	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.03.2024	7:15-7:15	39.5	20.3	5.3	21.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:00-7:00	40.5	19.5	5.4	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.04.2024	7:15-7:15	40.1	19.1	5.7	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:00-7:00	40.3	20.8	5.4	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.04.2024	7:15-7:15	40.6	20.2	5.9	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:00-7:00	40.6	20.5	5.2	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.04.2024	7:15-7:15	41.5	21.8	5.4	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:00-7:00	40.6	20.4	5.3	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.04.2024	7:15-7:15	40.9	20.9	7.6	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:00-7:00	41.8	20.4	7.5	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.05.2024	7:15-7:15	40.5	20.9	7.9	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:00-7:00	41.6	19.1	7.2	22.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.05.2024	7:15-7:15	42.8	19.3	7.8	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:00-7:00	41.3	20.4	7.6	24.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.05.2024	7:15-7:15	42.6	20.9	7.5	24.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:00-7:00	41.9	20.4	7.1	24.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.05.2024	7:15-7:15	42.8	20.1	7.2	25.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:00-7:00	42.9	20.4	7.5	25.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.05.2024	7:15-7:15	42.8	20.1	7.7	25.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<100	<60	<805	<80	<100	<400

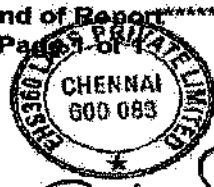
Note: BDL: Below Detection Limit ;DL: Detection Limit

Remarks: The values observed for the pollutants given above are within the CPCB standards.

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by

*[Signature]*



Authorised Signatory

*[Signature]*

Name: Santhosh Kumar A  
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.
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- 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after Invoicing or Issued of test report.

E: info@ehs360labs.com

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10/2, Ground Floor, 50th Street, 7th Avenue

Ashok Nagar, Chennai - 600083.

### TEST REPORT

Report No	EHS360/TR/2024-25/005	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/005
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ5 – Ariyalur Tirukkai-12° 0'55.78"N 79°22'49.74"E		

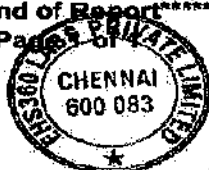
Date	Period. hrs	SPM ( $\mu\text{g}/\text{m}^3$ )	As ( $\text{ng}/\text{m}^3$ )	C6H6 ( $\mu\text{g}/\text{m}^3$ )	BaP ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )
07.03.2024	7:00-7:00	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.03.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:00-7:00	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.03.2024	7:15-7:15	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:00-7:00	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.03.2024	7:15-7:15	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:00-7:00	63.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.03.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:00-7:00	61.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.04.2024	7:15-7:15	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.04.2024	7:15-7:15	62.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:00-7:00	65.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.04.2024	7:15-7:15	64.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:00-7:00	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.04.2024	7:15-7:15	62.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:00-7:00	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.05.2024	7:15-7:15	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.05.2024	7:15-7:15	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.05.2024	7:15-7:15	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:00-7:00	64.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.05.2024	7:15-7:15	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:00-7:00	64.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.05.2024	7:15-7:15	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<200	<100	<60	<80	<80

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



Authorised Signatory

Name: Santhosh Kumar A  
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.  
3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.  
4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



LABS



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TEST REPORT

Report No	EHS360/TR/2024-25/006	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/006
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 6 – Anniyur- 12° 3'53.13"N 79°23'51.67"E		

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)
07.03.2024	7:00-7:00	38.5	19.1	6.3	20.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.03.2024	7:15-7:15	37.9	19.9	6.5	20.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:00-7:00	38.1	18.2	6.6	20.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.03.2024	7:15-7:15	38.5	19.8	6.5	20.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:00-7:00	39.1	19.5	6.1	20.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.03.2024	7:15-7:15	41.6	19.2	5.8	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:00-7:00	42.1	18.6	6.1	21.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.03.2024	7:15-7:15	43.9	19.1	6.2	22.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:00-7:00	41.5	18.2	6.6	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.04.2024	7:15-7:15	44.6	18.9	7.3	23.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:00-7:00	42.5	18.5	5.5	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.04.2024	7:15-7:15	41.9	19.1	5.1	21.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:00-7:00	42.7	19.3	5.2	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.04.2024	7:15-7:15	38.6	19.5	5.3	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:00-7:00	39.2	19.2	5.1	22.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.04.2024	7:15-7:15	38.1	18.3	6.4	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:00-7:00	41.2	19.2	6.6	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.05.2024	7:15-7:15	41.3	19.9	6.1	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:00-7:00	40.9	20.3	6.6	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.05.2024	7:15-7:15	40.6	20.4	7.6	22.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:00-7:00	43.5	21.6	7.2	24.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.05.2024	7:15-7:15	42.3	20.9	7.9	24.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:00-7:00	40.5	21.3	8.4	24.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.05.2024	7:15-7:15	41.6	21.1	8.2	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:00-7:00	44.5	20.5	6.3	25.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.05.2024	7:15-7:15	42.3	20.9	6.7	25.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
NAAQ* Standard		<100	<100	<60	<80	<80	<100	<400

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

*[Signature]*



Authorised Signatory

*[Signature]*

Name : Santhosh Kumar A  
Designation : Quality Manager

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4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

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10/2, Ground Floor, 50th Street, 7th Avenue

Ashok Nagar, Chennai - 600083.



PRIVATE LIMITED

TEST REPORT

Report No	EHS360/TR/2024-25/006	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/006
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ 6 – Anniyur- 12° 3'53.13"N 79°23'51.67"E		

Date	Period. hrs	SPM ( $\mu\text{g}/\text{m}^3$ )	As ( $\text{ng}/\text{m}^3$ )	C6H6 ( $\mu\text{g}/\text{m}^3$ )	BaP ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )
07.03.2024	7:00-7:00	69.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.03.2024	7:15-7:15	67.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:00-7:00	68.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.03.2024	7:15-7:15	68.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:00-7:00	66.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.03.2024	7:15-7:15	66.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:00-7:00	66.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.03.2024	7:15-7:15	66.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:00-7:00	67.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.04.2024	7:15-7:15	67.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:00-7:00	67.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.04.2024	7:15-7:15	67.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:00-7:00	67.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.04.2024	7:15-7:15	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:00-7:00	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.04.2024	7:15-7:15	62.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:00-7:00	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.05.2024	7:15-7:15	64.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:00-7:00	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.05.2024	7:15-7:15	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:00-7:00	65.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.05.2024	7:15-7:15	65.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:00-7:00	65.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.05.2024	7:15-7:15	65.1	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:00-7:00	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.05.2024	7:15-7:15	63.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<200	<100	<60	<80	<80

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

*[Signature]*



*[Signature]*

Authorised Signatory

Name: Santhosh Kumar A  
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report.  
3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.  
4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.

Report No	EHS360/TR/2024-25/007	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/007
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ7 -Vengadanur-11°59'34.77"N 79°26'0.60"E		

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)
07.03.2024	7:00-7:00	41.6	20.5	6.3	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
08.03.2024	7:15-7:15	41.2	21.9	6.4	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
14.03.2024	7:00-7:00	42.5	21.8	6.2	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
15.03.2024	7:15-7:15	42.9	18.3	6.9	24.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
21.03.2024	7:00-7:00	43.6	19.5	6.2	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
22.03.2024	7:15-7:15	44.9	18.6	6.1	24.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
28.03.2024	7:00-7:00	44.3	19.5	6.8	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
29.03.2024	7:15-7:15	43.6	19.9	6.5	24.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
04.04.2024	7:00-7:00	41.3	19.3	6.2	23.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
05.04.2024	7:15-7:15	44.0	18.6	6.8	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
11.04.2024	7:00-7:00	44.6	19.9	6.1	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
12.04.2024	7:15-7:15	43.1	19.6	6.4	24.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
18.04.2024	7:00-7:00	43.6	18.8	6.8	23.5	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
19.04.2024	7:15-7:15	44.1	20.5	6.3	23.4	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
25.04.2024	7:00-7:00	43.8	20.9	6.9	24.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
26.04.2024	7:15-7:15	42.9	19.6	6.4	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
02.05.2024	7:00-7:00	43.6	19.5	7.2	24.9	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
03.05.2024	7:15-7:15	43.8	19.0	6.9	24.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
09.05.2024	7:00-7:00	44.3	19.1	6.5	24.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
10.05.2024	7:15-7:15	42.8	19.7	7.1	25.2	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
16.05.2024	7:00-7:00	43.9	19.3	7.8	25.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
17.05.2024	7:15-7:15	44.2	21.1	7.2	25.3	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
23.05.2024	7:00-7:00	44.3	21.5	7.5	25.7	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
24.05.2024	7:15-7:15	43.9	21.9	8.0	25.6	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
30.05.2024	7:00-7:00	42.7	20.3	7.5	25.1	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
31.05.2024	7:15-7:15	42.1	20.9	6.7	24.8	BDL(DL:5.0)	BDL(DL:1.0)	BDL(DL:1.14)
-NAAQ* Standard		<100	<100	<60	<80	<80	<400	<4

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

*[Signature]*



Authorised Signatory

*[Signature]*

Name : Santhosh Kumar A  
Designation : Quality Manager

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### TEST REPORT

Report No	EHS360/TR/2024-25/007	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 5182	Sample Drawn by	Laboratory
Sample Name	Air	Sample Code	EHS360/007
Sample Description	Ambient Air Quality Monitoring	Sample Condition	Good
Sampling Location	AAQ7 -Vengadanur-11°59'34.77"N 79°26'0.60"E		

Date	Period. hrs	SPM ( $\mu\text{g}/\text{m}^3$ )	As ( $\text{ng}/\text{m}^3$ )	C6H6 ( $\mu\text{g}/\text{m}^3$ )	BaP ( $\text{ng}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )	Ni ( $\text{ng}/\text{m}^3$ )
07.03.2024	7:00-7:00	62.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
08.03.2024	7:15-7:15	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
14.03.2024	7:00-7:00	64.3	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
15.03.2024	7:15-7:15	62.9	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
21.03.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
22.03.2024	7:15-7:15	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
28.03.2024	7:00-7:00	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
29.03.2024	7:15-7:15	63.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
04.04.2024	7:00-7:00	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
05.04.2024	7:15-7:15	63.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
11.04.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
12.04.2024	7:15-7:15	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
18.04.2024	7:00-7:00	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
19.04.2024	7:15-7:15	61.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
25.04.2024	7:00-7:00	64.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
26.04.2024	7:15-7:15	62.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
02.05.2024	7:00-7:00	63.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
03.05.2024	7:15-7:15	63.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
09.05.2024	7:00-7:00	62.2	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
10.05.2024	7:15-7:15	62.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
16.05.2024	7:00-7:00	62.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
17.05.2024	7:15-7:15	61.6	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
23.05.2024	7:00-7:00	61.4	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
24.05.2024	7:15-7:15	61.8	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
30.05.2024	7:00-7:00	61.7	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
31.05.2024	7:15-7:15	62.5	BDL (DL:0.1)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:0.1)	BDL (DL:0.1)
NAAQ* Standard		<200	<200	<100	<60	<80	<80

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



Authorized Signatory

Name: Santhosh Kumar A  
Designation: Quality Manager

- Note: 1. The test results are only to the sample submitted for test. 2. Any correction of the test report in full or part shall invalidate the report. 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client. 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.



**EHS 360****LABS****PRIVATE LIMITED**

TC-8883

**TEST REPORT**

<b>Report No</b>	EHS360/TR/2024-25/ 008	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	<b>M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY</b> 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	IS 9989	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Noise Level Monitoring	<b>Sample Code</b>	EHS360/ 008
<b>Sample Description</b>	Ambient Noise	<b>Sample Collected Date</b>	01-06-2024

Location	N1 – Core Zone- 12° 2'4.36"N 79°25'58.23"E			N2 – Near Project Area- 12° 2'4.54"N 79°26'15.72"E		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	34.5	38.5	36.9	34.4	37.8	36.4
07:00-08:00	34.9	38.1	36.8	35.9	38.5	37.4
08:00-09:00	37.7	39.7	38.8	36.9	39.5	38.4
09:00-10:00	35.5	40.8	38.9	35.4	38.9	37.5
10:00-11:00	37.6	41.3	39.8	36.7	41.3	39.6
11:00-12:00	36.8	41.8	40.0	35.8	42.5	40.3
12:00-13:00	35.5	41.8	39.7	35.1	44.5	42.0
13:00-14:00	34.6	47.6	44.8	35.1	45.5	42.9
14:00-15:00	36.6	46.6	44.0	30.8	41.5	38.8
15:00-16:00	37.1	41.1	39.5	34.5	45.6	42.9
16:00-17:00	37.2	47.2	44.6	33.9	44.3	41.7
17:00-18:00	38.1	45.9	43.6	31.2	45.7	42.8
18:00-19:00	39.4	46.3	44.1	32.6	46.7	43.9
19:00-20:00	32.6	41.2	38.8	38.4	46.6	44.2
20:00-21:00	37.3	42.5	40.6	35.6	45.5	42.9
21:00-22:00	37.5	45.5	43.1	32.6	41.6	39.1
22:00-23:00	35.4	46.2	43.5	35.8	46.3	43.7
23:00-00:00	36.8	39.5	38.4	31.9	38.5	36.3
00:00-01:00	35.9	39.8	38.3	34.2	39.4	37.5
01:00-02:00	35.2	40.3	38.5	32.8	39.8	37.6
02:00-03:00	36.1	41.5	39.6	33.7	38.9	37.0
03:00-04:00	35.7	40.1	38.4	32.8	36.8	35.2
04:00-05:00	34.9	38.6	37.1	33.5	37.1	35.7
05:00-06:00	35.9	37.8	37.0	34.1	36.5	35.5
Result	Day Means		41.0	Day Means		40.8
	Night Means		38.2	Night Means		36.4

**Note:** CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)  
The Noise level in the above location exists within the permissible limits of CPCB.

Verified by



Authorised Signatory

**Name : Santhosh Kumar A**  
Designation : Quality Manager

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Ashok Nagar, Chennai - 600083.



Report No	EHS360/TR/2024-25/ 009	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 9989	Sample Drawn by	Laboratory
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 009
Sample Description	Ambient Noise	Sample Collected Date	01-06-2024

Location	N3 -Siruvalai-12° 1'29.76"N 79°25'34.39"E			N4 -Ulagampoondi-12° 2'18.39"N 79°29'19.58"E		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	37.9	43.2	41.3	35.2	38.1	36.9
07:00-08:00	38.2	41.5	40.2	35.4	39.4	37.8
08:00-09:00	37.2	45.5	43.1	36.2	38.1	37.3
09:00-10:00	39.9	42.5	41.4	34.9	38.8	37.3
10:00-11:00	40.2	43.6	42.2	32.9	39.6	37.4
11:00-12:00	41.5	42.5	42.0	32.6	37.7	35.9
12:00-13:00	31.9	36.5	34.8	35.4	47.8	45.0
13:00-14:00	33.7	35.1	34.5	35.9	45.9	43.3
14:00-15:00	42.8	45.5	44.4	36.1	44.3	41.9
15:00-16:00	45.6	46.2	45.9	36.1	40.2	38.6
16:00-17:00	42.5	44.2	43.4	33.4	41.7	39.3
17:00-18:00	31.6	36.7	34.9	32.9	39.1	37.0
18:00-19:00	34.2	38.1	36.6	34.9	41.5	39.3
19:00-20:00	33.9	37.8	36.3	32.9	40.9	38.5
20:00-21:00	34.5	35.5	35.0	32.6	40.5	38.1
21:00-22:00	35.2	36.4	35.8	31.8	38.7	36.5
22:00-23:00	33.8	38.6	36.8	34.2	35.5	34.9
23:00-00:00	32.4	37.9	36.0	33.6	41.6	39.2
00:00-01:00	34.6	37.2	36.1	31.5	38.2	36.0
01:00-02:00	35.5	38.4	37.2	32.4	38.8	36.7
02:00-03:00	34.8	35.6	35.2	32.5	38.9	36.8
03:00-04:00	33.8	38.1	36.5	32.4	35.5	34.2
04:00-05:00	35.9	38.9	37.7	32.6	36.8	35.2
05:00-06:00	36.4	38.8	37.8	33.7	35.9	34.9
Result	Day Means		39.3	Day Means		38.5
	Night Means		36.6	Night Means		36.2

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)  
The Noise level in the above location exists within the permissible limits of CPCB.

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by

*[Signature]*



Authorised Signatory

*A-57*  
Name: Santhosh Kumar A  
Designation: Quality Manager

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Report No	EHS360/TR/2024-25/ 010	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 9989	Sample Drawn by	Laboratory
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 010
Sample Description	Ambient Noise	Sample Collected Date	01-06-2024

Location	N5 – Ariyalur Tirukkai- 12° 0'55.94"N 79°22'49.62"E			N6 –Anniyur-12° 3'54.07"N 79°23'50.06"E		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	35.1	41.3	39.2	34.8	38.5	37.0
07:00-08:00	36.2	40.9	39.2	34.6	35.6	35.1
08:00-09:00	34.5	38.2	36.7	35.2	36.7	36.0
09:00-10:00	35.6	36.6	36.1	31.8	35.6	34.1
10:00-11:00	37.2	37.8	37.5	35.5	40.2	38.5
11:00-12:00	40.6	42.5	41.7	34.4	37.5	36.2
12:00-13:00	42.8	44.2	43.6	34.1	38.8	37.1
13:00-14:00	41.5	41.7	41.6	36.5	39.9	38.5
14:00-15:00	31.9	38.6	36.4	37.5	40.1	39.0
15:00-16:00	36.5	40.3	38.8	34.6	42.5	40.1
16:00-17:00	35.5	38.7	37.4	35.6	41.5	39.5
17:00-18:00	36.4	41.5	39.7	34.1	43.4	40.9
18:00-19:00	34.6	42.6	40.2	33.6	41.6	39.2
19:00-20:00	37.2	38.8	38.1	34.7	40.8	38.7
20:00-21:00	35.6	39.6	38.0	34.1	43.4	40.9
21:00-22:00	33.6	41.5	39.1	36.9	40.1	38.8
22:00-23:00	32.8	40.2	37.9	32.7	34.0	33.4
23:00-00:00	31.6	38.4	36.2	34.2	36.8	35.7
00:00-01:00	33.4	41.2	38.9	33.9	34.7	34.3
01:00-02:00	32.5	35.7	34.4	32.4	35.6	34.3
02:00-03:00	32.6	39.4	37.2	34.8	35.1	35.0
03:00-04:00	33.7	34.4	34.1	35.5	36.1	35.8
04:00-05:00	32.9	35.6	34.5	35.6	35.7	35.7
05:00-06:00	34.5	35.8	35.2	36.7	37.6	37.2
Result	Day Means		38.9	Day Means		37.8
	Night Means		35.8	Night Means		35.4

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)  
The Noise level in the above location exists within the permissible limits of CPCB.

\*\*\*\*\*End of Report\*\*\*\*\*



Verified by

*[Signature]*

Authorized Signatory

Name: Santhosh Kumar A  
Designation: Quality Manager

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## TEST REPORT

Report No	EHS360/TR/2024-25/ 011	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	IS 9989	Sample Drawn by	Laboratory
Sample Name	Noise Level Monitoring	Sample Code	EHS360/ 011
Sample Description	Ambient Noise	Sample Collected Date	01-06-2024

Location	N7 - Vengadanur- 11°59'34.63"N 79°26'0.27"E		
Parameter	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)
06:00-07:00	35.6	40.3	38.6
07:00-08:00	35.7	41.5	39.5
08:00-09:00	36.9	45.2	42.8
09:00-10:00	35.8	43.2	40.9
10:00-11:00	36.8	40.7	39.2
11:00-12:00	35.8	38.8	37.6
12:00-13:00	38.8	39.7	39.3
13:00-14:00	39.7	40.9	40.3
14:00-15:00	40.2	41.8	41.1
15:00-16:00	42.5	43.3	42.9
16:00-17:00	45.5	48.1	47.0
17:00-18:00	43.2	46.6	45.2
18:00-19:00	45.5	47.3	46.5
19:00-20:00	45.5	46.8	46.2
20:00-21:00	41.2	45.5	43.9
21:00-22:00	42.1	42.9	42.5
22:00-23:00	37.5	38.5	38.0
23:00-00:00	37.9	38.1	38.0
00:00-01:00	36.1	38.8	37.7
01:00-02:00	36.4	37.2	36.8
02:00-03:00	36.2	36.9	36.6
03:00-04:00	35.5	37.7	36.7
04:00-05:00	35.4	36.8	36.2
05:00-06:00	35.1	36.5	35.9
Result	Day Means		41.8
	Night Means		36.8

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by

*[Signature]*



*[Signature]*

Authorized Signatory

Name : Santhosh Kumar A  
Designation : Quality Manager

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**TEST REPORT**

Report No	EHS360/TR/2024-25/ 012	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 012
Sample Description	Soil 1	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	06-06-2024
Sampling Location	Core Zone		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	47.3 %
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	1.09 g/cm <sup>3</sup>
03	Water Holding Capacity	By Gravimetric Method	45.8 %
04	Bulk Density	By Cylindrical Method	37.7 mg/kg
05	Porosity	By Gravimetric Method	22.5 mg/kg
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	35 mg/kg
07	Magnesium as Mg		0.0011 %
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 Cl B	3.25 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	470.1 mg/kg
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	1.53 %
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	0.89 %
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	47.3 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.09 g/cm <sup>3</sup>

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by



Authorised Signatory

 Name : Santhosh Kumar A.  
 Designation : Quality Manager

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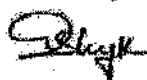
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Report No	EHS360/TR/2024-25/ 012	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Sruvalal Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 012
Sample Description	Soil 1	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	06-06-2024
Sampling Location	Core Zone		

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	32.9 %
	Sand		29.4 %
	Silt		37.7 %
15	Manganese as Mn	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	9.52 mg/kg
16	Zinc as Zn		2.15 mg/kg
17	Boron as B		2.02 mg/kg
18	Potassium as K		25 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		1.02
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		0.66 mg/kg
23	Iron as Fe		3.58 mg/kg
24	Cation Exchange Capacity	USEPA 9080 – 1986	41.4 meq/100g of soil

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by




Authorised Signatory

 Name: Santhosh Kumar A  
 Designation : Quality Manager

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TEST REPORT

Report No	EHS360/TR/2024-25/ 013	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 013
Sample Description	Soil 2	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	06-06-2024
Sampling Location	Soil - 2 - Siruvalai		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.62
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	450 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	46.3 %
04	Bulk Density	By Cylindrical Method	1.11 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	45.7 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	65.5 mg/kg
07	Magnesium as Mg		51 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 Cl B	16.4 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0011 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	4.56 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	410.5 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.05 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.19 %

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by



Authorised Signatory

Name: Santosh Kumar A  
Designation : Quality Manager

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**EHS 360****LABS****PRIVATE LIMITED****TEST REPORT**

Report No	EHS360/TR/2024-25/ 013	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 013
Sample Description	Soil 2	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	06-06-2024
Sampling Location	Soil - 2 - Siruvalai		

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	31.8 %
	Sand		32.2 %
	Silt		36.0 %
15	Manganese as Mn	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	18.5 mg/kg
16	Zinc as Zn		6.5 mg/kg
17	Boron as B		1.15 mg/kg
18	Potassium as K		32 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		1.71 mg/kg
23	Iron as Fe		1.06 mg/kg
24	Cation Exchange Capacity		USEPA 9080 - 1986

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by



Authorised Signatory

*A.S.J.*  
Name : Santhosh Kumar A.  
Designation : Quality Manager

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TC-9593

**TEST REPORT**

<b>Report No</b>	EHS360/TR/2024-25/ 014	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	SOP Method	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Soil	<b>Sample Code</b>	EHS360/ 014
<b>Sample Description</b>	Soil 3	<b>Sample Collected Date</b>	01-06-2024
<b>Qty. of Sample Received</b>	2 KG	<b>Sample Received On</b>	01-06-2024
<b>Sample Condition</b>	Good	<b>Test Commenced On</b>	06-06-2024
<b>Sampling Location</b>	Soil - 3 - Ulagampoondi		

S. No.	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.02
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	358 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	42.2 %
04	Bulk Density	By Cylindrical Method	0.99 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	45.9 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	22 mg/kg
07	Magnesium as Mg		28.5 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 Cl B	18 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0016 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.04 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	415 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.98 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.15 %

\*\*\*\*\*End of Report\*\*\*\*\*



Verified by

Authorised Signatory

  
Name : Santhosh Kumar A  
Designation : Quality Manager

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**EHS 360****LABS****PRIVATE LIMITED****TESTREPORT**

Report No	EHS360/TR/2024-25/ 014	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 014
Sample Description	Soil 3	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	06-06-2024
Sampling Location	Soil - 3 - Ulagampondi		

S.No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	35.5 %
	Sand		32.3 %
	Silt		32.2 %
15	Manganese as Mn	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	19 mg/kg
16	Zinc as Zn		3.5 mg/kg
17	Boron as B		3.12 mg/kg
18	Potassium as K		8.15 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		1.03
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		1.53 mg/kg
23	Iron as Fe		5.41 mg/kg
24	Cation Exchange Capacity		USEPA 9080 - 1986

\*\*\*\*\*End of Report\*\*\*\*\*



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Authorised Signatory

  
Name : Santhosh Kumar A.  
Designation : Quality Manager

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**EHS 360****LABS****PRIVATE LIMITED**

TC-9583

**TEST REPORT**

Report No	EHS360/TR/2024-25/ 015	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalal Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 015
Sample Description	Soil 4	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	06-06-2024
Sampling Location	Soil – 4 – Ariyalur Tirukkai		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.51
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	550 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	48.3. %
04	Bulk Density	By Cylindrical Method	1.02 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	45.8 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	78.2 mg/kg
07	Magnesium as Mg		61.7 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 Cl B	31 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0022 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.5 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	421 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.12 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.23 %

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by



Authorised Signatory

  
Name : Santhosh Kumar A  
Designation : Quality Manager

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**EHS 360****LABS****PRIVATE LIMITED**

TC-8683

**TEST REPORT**

<b>Report No</b>	EHS360/TR/2024-25/ 015	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	SOP Method	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Soil	<b>Sample Code</b>	EHS360/ 015
<b>Sample Description</b>	Soil 4	<b>Sample Collected Date</b>	01-06-2024
<b>Qty. of Sample Received</b>	2 KG	<b>Sample Received On</b>	01-06-2024
<b>Sample Condition</b>	Good	<b>Test Commenced On</b>	06-06-2024
<b>Sampling Location</b>	Soil - 4 - Ariyalur Tirukkai		

S. No	Test Parameters	Protocols	Results
14	<b>Texture :</b>		
	Clay	Gravimetric Method	32.5 %
	Sand		31.0 %
	Silt		36.5 %
15	Manganese as Mn	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	20.2 mg/kg
16	Zinc as Zn		5.5 mg/kg
17	Boron as B		1.08 mg/kg
18	Potassium as K		25 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		3.11
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		1.12 mg/kg
23	Iron as Fe		2.06 mg/kg
24	Cation Exchange Capacity	USEPA 9080 - 1986	35 meq/100g of soil

\*\*\*\*\*End of Report\*\*\*\*\*



Verified by

Authorised Signatory

**Name : Santhosh Kumar A**  
 Designation : Quality Manager

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**EHS 360****LABS****PRIVATE LIMITED****TEST REPORT**

<b>Report No</b>	EHS360/TR/2024-25/ 016	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	<b>M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY</b> 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	SOP Method	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Soil	<b>Sample Code</b>	EHS360/ 016
<b>Sample Description</b>	Soil 5	<b>Sample Collected Date</b>	01-06-2024
<b>Qty. of Sample Received</b>	2 KG	<b>Sample Received On</b>	01-06-2024
<b>Sample Condition</b>	Good	<b>Test Commenced On</b>	06-06-2024
<b>Sampling Location</b>	Soil - 5 - Anniyur		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.78
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	286 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	47.5 %
04	Bulk Density	By Cylindrical Method	1.08 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	44.5 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	38.4 mg/kg
07	Magnesium as Mg		23 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 Cl B	18.41 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0021 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.05 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	410 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.65 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.54 %

\*\*\*\*\*End of Report\*\*\*\*\*



Verified by

Authorised Signatory

  
Name: **Santhosh Kumar A**  
Designation: Quality Manager

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Report No	EHS360/TR/2024-25/ 016	Report Date	06-06-2024
Site Location	<b>M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY</b> 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 016
Sample Description	Soil 2	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	06-06-2024
Sampling Location	Soil - 5 - Anniyur		

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	30.2 %
	Sand		32.9 %
	Silt		36.9 %
15	Manganese as Mn	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	9.15 mg/kg
16	Zinc as Zn		1.05 mg/kg
17	Boron as B		2.37 mg/kg
18	Potassium as K		0.91 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		2.55
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		2.03 mg/kg
23	Iron as Fe		7.53 mg/kg
24	Cation Exchange Capacity		USEPA 9080 - 1986

\*\*\*\*\*End of Report\*\*\*\*\*



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Authorised Signatory

**Name: Santhosh Kumar A**  
 Designation: Quality Manager

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**EHS 360****LABS**

TC-9883

**PRIVATE LIMITED****TEST REPORT**

Report No	EHS360/TR/2024-25/ 017	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 017
Sample Description	Soil 6	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	06-06-2024
Sampling Location	Soil - 6 - Vengadanur		

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.23
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	416 µmhos/cm
03	Water Holding Capacity	By Gravimetric Method	46.7 %
04	Bulk Density	By Cylindrical Method	1.6 g/cm <sup>3</sup>
05	Porosity	By Gravimetric Method	42.5 %
06	Calcium as Ca	Food and Agriculture organization of the united Nation Rome 2007 : 2018	42 mg/kg
07	Magnesium as Mg		25.7 mg/kg
08	Chloride as Cl	APHA 23 <sup>rd</sup> Edn 2019 4500 Cl B	30 mg/kg
09	Soluble Sulphate as SO <sub>4</sub>	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0013 %
10	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	3.81 mg/kg
11	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	456.23 mg/kg
12	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.77 %
13	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.03 %

\*\*\*\*\*End of Report\*\*\*\*\*

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 A-57  
 Name: Santhosh Kumar A  
 Designation: Quality Manager

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**EHS 360****LABS****PRIVATE LIMITED****TEST REPORT**

Report No	EHS360/TR/2024-25/ 017	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalei Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Soil	Sample Code	EHS360/ 017
Sample Description	Soil 6	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 KG	Sample Received On	01-06-2024
Sample Condition	Good	Test Commenced On	06-06-2024
Sampling Location	Soil - 6 - Vengadanur		

S. No	Test Parameters	Protocols	Results
14	Texture :		
	Clay	Gravimetric Method	31.2 %
	Sand		30.6 %
	Silt		38.2 %
15	Manganese as Mn	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	20.8 mg/kg
16	Zinc as Zn		3.01 mg/kg
17	Boron as B		0.88 mg/kg
18	Potassium as K		18.3 mg/kg
19	Cadmium as Cd		BDL (DL : 1.0 mg/kg)
20	Total Chromium as Cr		6.67
21	Copper as Cu		BDL (DL : 1.0 mg/kg)
22	Lead as Pb		2.05 mg/kg
23	Iron as Fe		3.15 mg/kg
24	Cation Exchange Capacity	USEPA 9080 - 1986	49 meq/100g of soil

\*\*\*\*\*End of Report\*\*\*\*\*



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Authorised Signatory

 Name : Santhosh Kumar A  
 Designation : Quality Manager

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TEST REPORT

Table with 4 columns: Report No, Site Location, Sampling Method, Sample Name, Sample Description, Qty. of Sample Received, Sample Condition, Sampling Location, Report Date, Sample Drawn by, Sample Code, Sample Collected Date, Sample Received On, Test Commenced On.

Main test results table with 4 columns: S.No., Parameters, Test Method, RESULTS. Includes 16 rows of data for various water quality parameters like Colour, Odour, pH, Conductivity, etc.

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by

[Signature]



Authorised Signatory

[Signature]

Name: Santhosh Kumar A, Designation: Quality Manager

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## TEST REPORT

Report No	EHS360/TR/2024-25/018	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/018
Sample Description	Surface Water (SW-1)	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	06-06-2024
Sampling Location	Veeramur Lake		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 - 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	7.5 mg/l
32	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	40 mg/l
33	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.3 mg/l
34	Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL:0.05 mg/l)
35	Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	1.12 mg/l
36	Sulphide as H <sub>2</sub> S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:0.01 mg/l)
37	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
38	Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
39	Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	17.5 mg/l
Discipline: Biological		Group: Water	
40	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	450 MPN/100ml
41	<i>Escherichia coli</i>	APHA 23 <sup>rd</sup> Edn. 2017:9221F	130 MPN/100ml

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by

*[Signature]*



Authorised Signatory

Name: Santhosh Kumar A  
Designation: Quality Manager

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**TEST REPORT**

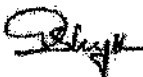
Report No	EHS360/TR/2024-25/ 019	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/019
Sample Description	Surface Water (SW-2)	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	06-06-2024
Sampling Location	Anniyur Lake		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical		
1	Colour	IS 3025 Part 4:1983	5 Hazen
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983	7.88
4	Conductivity @ 25°C	IS 3025 Part 14:2013	857 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984	4.8 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984	506 mg/l
7	Total Hardness as CaCO <sub>3</sub>	IS 3025 Part 21:2009	189.64 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991	30.2 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994	27.8 mg/l
10	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23:1986	173 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988	80.2 mg/l
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	45 mg/l
13	Iron as Fe	IS 3025 Part 53:2003	0.22 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.19 mg/l
16	Nitrate as NO <sub>3</sub>	IS 3025 Part 34:1988	9.52 mg/l

\*\*\*\*\*End of Report\*\*\*\*\*



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Authorized Signatory

Name: Santhosh Kumar A.  
Designation: Quality Manager

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**TEST REPORT**

<b>Report No</b>	EHS360/TR/2024-25/019	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	<b>M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY</b> 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	SOP Method	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Water	<b>Sample Code</b>	EHS360/019
<b>Sample Description</b>	Surface Water (SW-2)	<b>Sample Collected Date</b>	01-06-2024
<b>Qty. of Sample Received</b>	2 Litres	<b>Sample Received On</b>	01-06-2024
<b>Sample Condition</b>	Fit for Analysis	<b>Test Commenced On</b>	06-06-2024
<b>Sampling Location</b>	Anniyur Lake		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	6.55 mg/l
32	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	50 mg/l
33	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.1 mg/l
34	Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL:0.05 mg/l)
35	Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	1.21 mg/l
36	Sulphide as H <sub>2</sub> S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:0.01 mg/l)
37	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
38	Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
39	Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	12 mg/l
	<b>Discipline: Biological</b>	<b>Group: Water</b>	
40	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	600 MPN/100ml
41	<i>Escherichia coli</i>	APHA 23 <sup>rd</sup> Edn. 2017:9221F	100 MPN/100ml

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by




Authorised Signatory

 Name : Santhosh Kumar A  
 Designation : Quality Manager

- Note: 1. The test results are only to the sample submitted for test. Any correction of the test report in full or part shall invalidate the report.  
 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.  
 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after involving or issued of test report.

**TEST REPORT**

Report No	EHS360/TR/2024-25/ 020	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/020
Sample Description	Ground Water (WW-1)	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	06-06-2024
Sampling Location	Near Project Area		

S.No.	Parameters	Test Method	RESULTS
	Discipline: Chemical		
1	Colour	IS 3025 Part 4:1983	5 Hz
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983	6.97
4	Conductivity @ 25°C	IS 3025 Part 14:2013	1049 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984	1.0 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984	619 mg/l
7	Total Hardness as CaCO <sub>3</sub>	IS 3025 Part 21:2009	195.47 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991	35.5 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994	26 mg/l
10	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23:1986	206 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988	125 mg/l
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	79.2 mg/l
13	Iron as Fe	IS 3025 Part 53:2003	0.26 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.21 mg/l
16	Nitrate as NO <sub>3</sub>	IS 3025 Part 34:1988	4.12 mg/l

\*\*\*\*\*End of Report\*\*\*\*\*



Verified by

Authorised Signatory

Name: Santhosh Kumar A  
Designation: Quality Manager

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Report No	EHS360/TR/2024-25/ 020	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/020
Sample Description	Ground Water (WW-1)	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	06-06-2024
Sampling Location	Near Project Area		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 - 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Sulphide as H <sub>2</sub> S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
37	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
38	Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
39	Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	BDL (DL:0.0005 mg/l)
	Discipline: Biological	Group: Water	
40	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	155 MPN/100ml
41	<i>Escherichia coli</i>	APHA 23 <sup>rd</sup> Edn. 2017:9221F	< 1.8 MPN/100ml

\*\*\*\*\*End of Report\*\*\*\*\*



Verified by

*[Signature]*

Authorized Signatory

*[Signature]*

Name: Santhosh Kumar A  
Designation: Quality Manager

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**EHS 360****LABS****PRIVATE LIMITED****TEST REPORT**

<b>Report No</b>	EHS360/TR/2024-25/ 021	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	SOP Method	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Water	<b>Sample Code</b>	EHS360/021
<b>Sample Description</b>	Ground Water (WW-2)	<b>Sample Collected Date</b>	01-06-2024
<b>Qty. of Sample Received</b>	2 Litres	<b>Sample Received On</b>	01-06-2024
<b>Sample Condition</b>	Fit for Analysis	<b>Test Commenced On</b>	06-06-2024
<b>Sampling Location</b>	Ulagampoondi		

S.No.	Parameters	Test Method	RESULTS
<b>Discipline: Chemical</b>			
1	Colour	IS 3025 Part 4:1983	5 Hz
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983	7.97
4	Conductivity @ 25°C	IS 3025 Part 14:2013	1006 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984	1.0 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984	594 mg/l
7	Total Hardness as CaCO <sub>3</sub>	IS 3025 Part 21:2009	185.38 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991	30.3 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994	26.7 mg/l
10	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23:1986	177 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988	122 mg/l
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	65.2 mg/l
13	Iron as Fe	IS 3025 Part 53:2003	0.35 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.22 mg/l
16	Nitrate as NO <sub>3</sub>	IS 3025 Part 34:1988	6.51 mg/l

\*\*\*\*\*End of Report\*\*\*\*\*



Verified by

Authorised Signatory

  
Name: Santhosh Kumar A.  
Designation: Quality Manager

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## TEST REPORT

<b>Report No</b>	EHS360/TR/2024-25/ 021	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvaial Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	SOP Method	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Water	<b>Sample Code</b>	EHS360/021
<b>Sample Description</b>	Ground Water (WW-2)	<b>Sample Collected Date</b>	01-06-2024
<b>Qty. of Sample Received</b>	2 Litres	<b>Sample Received On</b>	01-06-2024
<b>Sample Condition</b>	Fit for Analysis	<b>Test Commenced On</b>	06-06-2024
<b>Sampling Location</b>	Ulagampoondi		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H <sub>2</sub> S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	<b>Discipline: Biological</b>	<b>Group: Water</b>	
37	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	95 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 <sup>rd</sup> Edn. 2017:9221F	< 1.8 MPN/100ml

\*\*\*\*\*End of Report\*\*\*\*\*



Verified by

*[Signature]*

Authorised Signatory

*[Signature]*  
Name: Santhosh Kumar A  
Designation: Quality Manager

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**EHS 360****LABS****PRIVATE LIMITED****TEST REPORT**

Report No	EHS360/TR/2024-25/ 022	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/022
Sample Description	Ground Water (BW-1)	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	06-06-2024
Sampling Location	Near Project Area		

S.No	Parameters	Test Method	RESULTS
	<b>Discipline: Chemical</b>		
1	Colour	IS 3025 Part 4:1983	5 Hz
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983	7.75
4	Conductivity @ 25°C	IS 3025 Part 14:2013	854 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984	1.0 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984	504 mg/l
7	Total Hardness as CaCO <sub>3</sub>	IS 3025 Part 21:2009	169.26 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991	30.6 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994	22.6 mg/l
10	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23:1986	191 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988	66.4 mg/l
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	55 mg/l
13	Iron as Fe	IS 3025 Part 53:2003	0.25 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.31 mg/l
16	Nitrate as NO <sub>3</sub>	IS 3025 Part 34:1988	4.65. mg/l

\*\*\*\*\*End of Report\*\*\*\*\*

Verified by



Authorized Signatory

Name: Santhosh Kumar A  
Designation: Quality Manager

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## TEST REPORT

Report No	EHS360/TR/2024-25/ 022	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/022
Sample Description	Ground Water (BW-1)	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	06-06-2024
Sampling Location	Near Project Area		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H <sub>2</sub> S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
<b>Discipline: Biological</b>		<b>Group: Water</b>	
37	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	100.5 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 <sup>rd</sup> Edn. 2017:9221F	< 1.8 MPN/100ml

\*\*\*\*\*End of Report\*\*\*\*\*



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*[Signature]*

Authorised Signatory

Name: **Santhosh Kumar A**  
Designation: Quality Manager

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**TEST REPORT**

Report No	EHS360/TR/2024-25/ 023	Report Date	06-06-2024
Site Location	M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY 407/3 (Part), Extent: 1.00.0 Ha, Sruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
Sampling Method	SOP Method	Sample Drawn by	Laboratory
Sample Name	Water	Sample Code	EHS360/023
Sample Description	Ground Water (BW-2)	Sample Collected Date	01-06-2024
Qty. of Sample Received	2 Litres	Sample Received On	01-06-2024
Sample Condition	Fit for Analysis	Test Commenced On	06-06-2024
Sampling Location	Ariyalur Tirukkai		

S.No.	Parameters	Test Method	RESULTS
<b>Discipline: Chemical</b>			
1	Colour	IS 3025 Part 4:1983	5 Hz
2	Odour	IS 3025 Part 5:2018	Agreeable
3	pH at 25°C	IS 3025 Part 11:1983	7.59
4	Conductivity @ 25°C	IS 3025 Part 14:2013	893 µmhos/cm
5	Turbidity	IS 3025 Part 10:1984	1.0 NTU
6	Total Dissolved Solids	IS 3025 Part 16:1984	527 mg/l
7	Total Hardness as CaCO <sub>3</sub>	IS 3025 Part 21:2009	167.17 mg/l
8	Calcium as Ca	IS 3025 Part 40:1991	29.1 mg/l
9	Magnesium as Mg	IS 3025 Part 46:1994	23 mg/l
10	Total Alkalinity as CaCO <sub>3</sub>	IS 3025 Part 23:1986	163 mg/l
11	Chloride as Cl	IS 3025 Part 32:1988	112 mg/l
12	Sulphate as SO <sub>4</sub>	IS 3025 Part 24:1986	61.7 mg/l
13	Iron as Fe	IS 3025 Part 53:2003	0.19 mg/l
14	Residual Free Chlorine	IS 3025 Part 26:1986	BDL (DL:0.1 mg/l)
15	Fluoride as F	APHA 23 <sup>rd</sup> Edn. 2017:4500 F,D	0.22 mg/l
16	Nitrate as NO <sub>3</sub>	IS 3025 Part 34:1988	5.1 mg/l

\*\*\*\*\*End of Report\*\*\*\*\*



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*[Signature]*

Authorised Signatory

Name: Santhosh Kumar A  
Designation: Quality Manager

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**TEST REPORT**

<b>Report No</b>	EHS360/TR/2024-25/ 023	<b>Report Date</b>	06-06-2024
<b>Site Location</b>	<b>M/S. THIRU. K. PARAMASIVAM BLACK GRANITE QUARRY</b> 407/3 (Part), Extent: 1.00.0 Ha, Siruvalai Village, Vikkiravandi Taluk, Viluppuram District, Tamil Nadu State.		
<b>Sampling Method</b>	SOP Method	<b>Sample Drawn by</b>	Laboratory
<b>Sample Name</b>	Water	<b>Sample Code</b>	EHS360/023
<b>Sample Description</b>	Ground Water (BW-2)	<b>Sample Collected Date</b>	01-06-2024
<b>Qty. of Sample Received</b>	2 Litres	<b>Sample Received On</b>	01-06-2024
<b>Sample Condition</b>	Fit for Analysis	<b>Test Commenced On</b>	06-06-2024
<b>Sampling Location</b>	Ariyalur Tirukkai		

S.No.	Parameters	Test Method	RESULTS
17	Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
21	Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
23	Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
25	Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
26	Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
28	Phenolic compounds as C <sub>6</sub> H <sub>5</sub> OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
29	Anionic Detergents (as MBAS)	IS 13428 - 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
30	Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
31	Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
32	Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
33	Sulphide as H <sub>2</sub> S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
34	Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
35	Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
36	Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
	<b>Discipline: Biological</b>	<b>Group: Water</b>	
37	Total Coliform	APHA 23 <sup>rd</sup> Edn. 2017:9221B	130 MPN/100ml
38	<i>Escherichia coli</i>	APHA 23 <sup>rd</sup> Edn. 2017:9221F	< 1.8 MPN/100ml

\*\*\*\*\*End of Report\*\*\*\*\*



Verified by

Authorised Signatory

  
Name: Santhosh Kumar A  
Designation: Quality Manager

Note: 1. The test results are only to the sample submitted for test. Any correction of the test report in full or part shall invalidate the report.  
 3. Sample will be retained for 15 days from the date of reporting except in case of regulatory samples or specifically instructed by client.  
 4. Perishable samples will be discarded immediately after reporting. 5. Under no circumstance's lab accepts any liability or loss/damage caused by use or misuse of test report after invoicing or issued of test report.





## 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.*



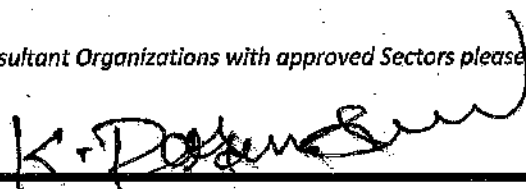
Sr. Director, NABET  
Dated: Feb 20, 2023



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.*




ஊராட்சி ஒன்றிய தொடக்கப்பள்ளி  
சிறுவாலை

அனுப்புனர்

தலைமை ஆசிரியர்  
ஊராட்சி ஒன்றிய தொடக்கப்பள்ளி  
சிறுவாலை கிராமம்  
விக்கிரவாண்டி வட்டம்  
விழுப்புரம் மாவட்டம்

பெறுநர்

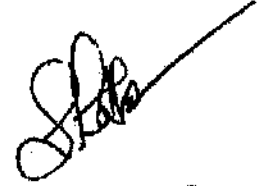
மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம்  
சென்னை (பனகல் மாளிகை)

பொருள்:- பள்ளியின் வகுப்பறைக்கு வண்ண பூசுதல் கழிவறைக்கு  
வண்ணம் பூசுதல் மற்றும் மரம் நடுவது குறித்து

ஐயா

விழுப்புரம் மாவட்டம் விக்கிரவாண்டி வட்டம் சிறுவாலை  
ஊராட்சியில் புல எண் 407/3 ல் K.பரமசிவம் என்பவர் கருப்பு கிராண்ட்  
கல் குவாரி நடத்தி வருகிறார், இது சமயம் எங்கள் பள்ளியின்  
வகுப்பறைகளுக்கு வண்ணம் பூசுதல் கழிவறைக்கு வண்ணம் பூசுதல்  
மரம் நடுதல் ஆகியவற்றை செய்து தருவதற்கு பள்ளியின் தலைமை  
ஆசிரியர் ஆகிய நான் கேட்டுக்கொண்டதன் பெயரில் மேற்படி பணிகளை  
செய்து தர சம்மதம் தெரிவித்துள்ளார் என்பதை தெரிவித்துக்  
கொள்கிறேன்.

தேதி : 11.09.2023



தலைமை ஆசிரியர்  
ஊராட்சி ஒன்றிய தொடக்கப்பள்ளி  
சிறுவாலை

