

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT  
REPORT OF  
MULTI COLOUR GRANITE QUARRY**

(As per EIA Notification, 2006 dated 14.09.2006 and amendments)

**BROWNFIELD PROJECT**

**AREA DETAILS**

**Category-B1  
(Cluster)**

**Extent – 1.62.0 Ha  
S.F No – 480/1 (P)  
Village – Nadanthai  
Taluk – Paramathi Velur  
District – Namakkal  
State – Tamil Nadu**

**PROPONENT**

**M/s. Sivasakthi Rock Exports  
No.G3, Vairam Vasandam, Vairam Gardens  
Sambakulam, K.Pudur  
Madurai -625 007  
Mob: + 918778569017,  
Email: sivasakthirockexports@gmail.com**

**EIA CONSULTANT**

**AADHI BOOMI MINING & ENVIRO TECH (P) LTD  
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**Mob: 98427 29655.**

**2023**



**M/s. Sivasakthi Rock Exports**

No.G3, Vairam Vasandam,  
Vairam Gardens,  
Sembakulam, K.Pudur,  
Madurai District -625 007

Date: 21.9.2023

**To**

**District Environmental Engineer,**

Tamil Nadu Pollution Control Board,  
Collectorate Campus,  
Near Tamil Nadu Civil Supply Corporation,  
Namakkal - 637003.

**Sub:** Submission of **Draft Environmental Impact Assessment (EIA) Report** as per EIA Notification, 2006 dated 14.09.2006 and amendments for the proposed Multi Colour Granite Quarry over an extent of 1.62.0 Hectare in S.F.No: 480/1(P), Nadanthai village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu –reg.

**Ref:**

- 1) MoEF&CCOM:F.No.L-11011/175/2018-IA-II(M) , dated 12.12.2018
- 2) Precise area letter vide No: 15473/MMB.2/2017-1, Dated 07.12.2017
- 3) Approval of Mining Plan Vide Rc. No. 7781/MM5/2017 dated 05.01.2018
- 4) EC letter from DEIAA: Letter No. DEIAA-NMK-TN/F.No.259/Mines/03/EC.No.03/2018, Dated 23.02.2018
- 5) SOM Approval letter: Rc.No.8442/MM4/2022 dated 10.01.2023
- 6) Our application submitted Terms of Reference dated: 19.06.2023
- 7) ToR Lr.No.SEIAA-TN/F.No.10140/TOR-1529/2023 dated 07.08.2023

**Dear Sir,**

With reference to the above mentioned subject, we herewith submit the hard copy of **Draft Environmental Impact Assessment Report** as per the Terms of Reference vide Lr.No.SEIAA-TN/F.No.10140/TOR-1529/2023 dated 07.08.2023 with a Demand Draft of Rs. ( ) in favour of DEE, TNPCB, Namakkal for your kind perusal. Hence, we kindly request you to process our application for Public Hearing as per EIA Notification, 2006 for obtaining Environment Clearance from SEIAA/SEAC, Tamil Nadu as early as possible.

Thanking You,

Yours faithfully,

**M/s. Sivasakthi Rock Exports**  
(Project Proponent)

Enclosure: 1. Draft EIA Report along with the soft copy

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

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**M/s. Sivasakthi Rock Exports**

No.G3, Vairam Vasandam,  
Vairam Gardens,  
Sembakulam, K.Pudur,  
Madurai District -625 007

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**UNDERTAKING**

**M/s. Sivasakthi Rock Exports, as Project Proponent,** hereby give this undertaking to the effect that the conditions laid down in Terms of Reference vide Lr.No.SEIAA-TN/F.No.10140/TOR-1529/2023 dated 07.08.2023 for our Multi Colour and Granite Quarry, in SF.No. 480/1(P), over an extent of 1.62.0 Ha of Nadanthai village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu, have been compiled with, and the data submitted and the information presented in this report are true to the best of my knowledge.

Signature and seal of the Project Proponent

Place : Salem

Date : 21.9.2023

**AADHI BOOMI MINING AND ENVIRO TECH (P) Ltd.**

(NABET/QCI Accredited Organisation – 'A' Category)

ISO: 9001:2015 Certified Company

Call: 0427-2444297, +91 9842729655, +91 9443290855

Email: [suriyakumar@abmenvirotec.com](mailto:suriyakumar@abmenvirotec.com), [admin@abmenvirotec.com](mailto:admin@abmenvirotec.com).Website: [www.abmenvirotec.com](http://www.abmenvirotec.com)**Declaration by the Head of the accredited consultant organization/authorized person**

I, S.Suriyakumar, Managing Director of Aadhi Boomi Mining & Enviro Tech (P) Ltd, hereby confirm that the Draft EIA Report has been prepared as per the conditions laid down in Terms of Reference vide Lr.No.SEIAA-TN/F.No.10140/TOR-1529/2023 dated 07.08.2023 for conducting Public Hearing and obtaining Environment Clearance from SEIAA/SEAC, Tamil Nadu for Multi Colour and Granite Quarry of **M/s. Sivasakthi Rock Exports**, located in S.F.No. 480/1(P), over an extent of 1.62.0 Ha of Nadanthai village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu.

I also confirm that I shall be fully accountable for any mis-leading information mentioned in this statement.

Name : **Mr.S.Suriyakumar**

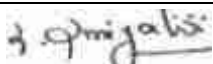
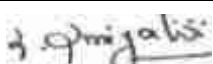
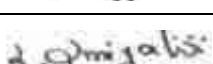
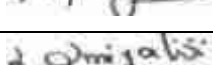
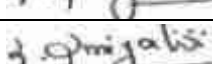
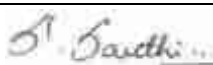


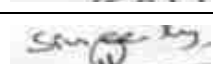

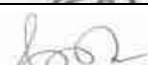
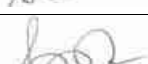
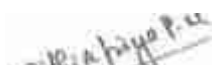

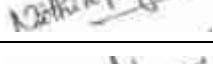
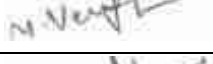
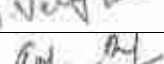

Signature :

Designation : **Managing Director**

Name of the EIA Consultant Organization: Aadhi Boomi Mining & Enviro Tech Private Limited.

QCI/NABET Accredited Consultant, Certificate No: NABET/EIA/2124/RA 0228.


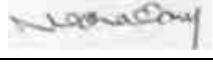
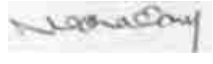



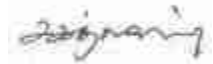
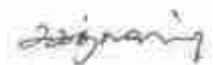




**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**Proponent: **M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District****DECLARATION OF EXPERTS - NABET ANNEXURE - VII**

S.No	Name of the Expert	Category	Functional Areas	Signature
<b>In-House Experts</b>				
1.	Mr.S.Suriyakumar	A	EIA Co-ordinator	
		A	Solid and Hazardous Waste SHW*- HW* only	
		A	Risk Assessment and Hazard Management (RH)	
		A	Land Use (LU)	
		A	Soil Conservation (SC)	
2.	Mrs. S. Santhi	B	Land Use (LU)	
		B	Socio Economics (SE)	
3.	Mr.K.Thirumeni	B	EIA Co-ordinator - Building and Construction	
		B	EIA Co-ordinator - Highways	
		B	Land use (LU)	
4.	R.R Prakash Babu	B	Air Pollution, Monitoring, Prevention and Control (AP)	
		B	Noise and Vibration (NV)	
5.	Dr. Nithia Priya P.M	B	Air Pollution, Monitoring, Prevention and Control (AP)	
		B	Water Pollution Monitoring, Prevention and Control (WP)	
6.	Mr. M. Venkatesh Prabhu	B	Meteorology, Air Quality Modelling & Prediction (AQ)	
		B	Noise and Vibration (NV)	
7.	Mr. K. Manuraj	B	Geology (GEO)	
			Hydrogeology (HG)	

**Consultant:** Aadhi Boomi Mining & Enviro Tech (P) Ltd, Salem, Tamil Nadu

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

8.	V. Sudha	B	Ecology and Biodiversity	
<b>Empanelled Experts</b>				
9.	Dr. Nallathambi Varadarajan	A	Geology (Geo)	
		A	Hydrology, ground water and water conservation (HG)	
10.	Bidisha Roy	B	Meteorology, Air Quality Modelling & Prediction (AQ)	
<b>Team Member Involved in Report Preparation</b>				
11.	Mrs. S. Sri Vidhya	Team Member	Water Pollution Monitoring, Prevention and Control (WP) under FAE - Dr. Nithia Priya P.M	
			Meteorology, Air Quality Modelling & Prediction (AQ) under FAE - Mr. M. Venkatesh Prabhu	
12.	Mr. S. Sagath Srikrishnan	Team Member	Solid hazardous Waste (SHW) under FAE Mr. Suriyakumar. S	
			Water Pollution Monitoring, Prevention and Control (WP) under FAE - Dr. Nithia Priya P.M	
13.	Mrs. A. Nagadevi	Team Member	Water Pollution Monitoring, Prevention and Control (WP) under FAE - Dr. Nithia Priya P.M	
			Ecology and Biodiversity (EB) under FAE - V. Sudha	
14.	Mr. A. Jagadeesh Kumar	Team Member	Noise and vibration under FAE - Mr. M. Venkatesh Prabhu	
			Meteorology, Air Quality Modelling & Prediction (AQ) under FAE - Mr. M. Venkatesh Prabhu	

**Consultant: Aadhi Boomi Mining & Enviro Tech (P) Ltd, Salem, Tamil Nadu**

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Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

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**Consultant (ACO):** Aadhi Boomi Mining & Enviro Tech (P) Ltd, Salem, Tamil Nadu



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**Consultant (ACO):** Aadhi Boomi Mining & Enviro Tech (P) Ltd, Salem, Tamil Nadu

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**Consultant (ACO):** Aadhi Boomi Mining & Enviro Tech (P) Ltd, Salem, Tamil Nadu

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**Consultant (ACO):** Aadhi Boomi Mining & Enviro Tech (P) Ltd, Salem, Tamil Nadu

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**Consultant (ACO):** Aadhi Boomi Mining & Enviro Tech (P) Ltd, Salem, Tamil Nadu

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**Consultant (ACO):** Aadhi Boomi Mining & Enviro Tech (P) Ltd, Salem, Tamil Nadu

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### LIST OF ABBREVIATIONS AND ACRONYMS

AQI	Air Quality Index
AAQ	Ambient Air Quality
CPCB	Central Pollution Control Board
CAPEXIL	Chemical and Allied Export Promotion Council of India
CSR	Corporate Social Responsibility
DB	Decibel
DGM	Department of Geology & Mining
DGPS	Differential Global Positioning System
EC	Environment Clearance
EMP	Environment Management Plan
EIA	Environmental Impact Assessment
EMC	Environmental Management Cell
LEQ	Equivalent Noise Level
GOVT	Government of Tamilnadu
GLC	Ground Level Concentration
HSE	Health, Safety And Environment
HA	Hectare
KLD	Kilo Litres Per -Day
KM	Kilo Meter
MOEF & CC	Ministry of Environment Forest and Climate Change
NH	National Highway
NOC	No Objection Certificate
PH	Public Hearing
R & R	Rehabilitation & Resettlement
SEIS	Seismograph
SEIAA	State Environmental Impact Assessment Authority
SEAC	State Expert Appraisal Committee
SH	State Highway
SPM	Suspended Particulate Matter
TNPCB	Tamil Nadu Pollution Control Board
TOR	Terms of Reference
WQI	Water Quality Index

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### Compliance of Standard ToR

S. No	ToR	Compliance
1.	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification, 1994 came into force w.r.t. the highest production achieved prior to 1994.	<p>The lease was granted for M/s. Sivasakthi Rock Exports (1.62.0 Ha) vide G.O. (3D).No: 11 Industries (MMB-2) Dept. dated 12.03.2018 for the period of 20years. Refer Annexure II in Page No 255.</p> <p>The lease deed was executed on 12.04.2018 and will expire on 11.04.2038. Refer Annexure III in Page No 261. The details of production since inception of mining activity are mentioned in Chapter 1. Refer Table No 1.2 in Page No. 2</p>
2.	A copy of the document in support of the fact that the proponent is the rightful lease of the mine should be given.	<p>The lease was granted by the Government of Tamil Nadu in favor of for M/s. Sivasakthi Rock Exports (1.62.0 Ha) vide G.O. (3D).No: 11 Industries (MMB-2) Dept. dated 12.03.2018 for the period of 20years.</p> <p>The lease deed was executed on 12.04.2018 and will expire on 11.04.2038. Refer Annexure III in Page No 261.</p>
3.	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	<p>Contents in all documents are synchronizing with one another in terms of mine lease area, production levels, waste generation, its management and quarrying technology.</p> <p>The Mining plan for Multi colour granite quarry of M/s. Sivasakthi Rock Exports was approved by the Commissioner of Geology and Mining, Chennai vide letter No. 7781/MM5/2017dated 05.01.2018.</p> <p>The 1st scheme of mining has been prepared for the lease area 1.62.0 Ha for the period from 2023-2024 to 2027-2028 and it has been approved by Commissioner, Department of Geology and Mining, Guindy, Chennai vide letter Rc.No.8442/MM4/2022 dated 10.01.2023</p>
4.	All corner coordinates of the mine lease area, superimposed on a	The area is bounded by northern latitude of 11°11'06.7372" N to 11°11'12.6115"N and

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	<p>High Resolution Imagery/ Toposheet; topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p>	<p>eastern longitude from 77°58'09.5551"E to 77°58'14.6753"E.</p> <p>Toposheet No. 58E/16. Details are given in Page No. 5 and 6 of Chapter 1.</p> <p>Geomorphology &amp; Geology of the area is given in Fig No 2.11. Refer Pg.No.27 of Chapter 2. Land Use details given in Table 3.25 pg. no.126 and also refer Fig No.3.29 pg.no.125. Land use within the lease area is mentioned in Table No 2.8 in Chapter 2. Refer Page No 33.</p>
5.	<p>Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.</p>	<p>Survey of India Toposheet No. 58E/16 in 1:50,000 scale indicating physical features of geological map of the area, geomorphology of land forms of the area, existing minerals and quarrying history of the area, important water bodies, streams and rivers and soil characteristics is given in Fig 1.1, 1.2, 2.11, 3.29, 3.32, 3.35 and Refer Page 5, 6, 27, 125, 131, 137 respectively.</p>
6.	<p>Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.</p>	<p>The details of land proposed for mining activities are given in Table No 2.8 of Chapter 2. Refer Page No: 33.</p>
7.	<p>Whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system</p>	<p>The proponent M/s. Sivasakthi Rock exports is very much conscious of complying with the Environmental Regulations with systematic mining. The proponent will comply with the EC conditions and Consent to Operate issued by the TNPCB with stipulated time.</p>

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	<p>or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.</p>	
8.	<p>Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.</p>	<p>Quarry Safety pertaining to the failure of pit slope in open cast quarrying is described in Table 7.1, Page No.186.</p> <p>Safety for blasting is given under Table 10.1: in Page 198.</p> <p>General safeguard measures are given in Chapter 4, Page no 138 – 181.</p>
9.	<p>The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine/ lease period.</p>	<p>The Study area of the existing mining project comprises of 10km zone around the mining Lease boundary has been prepared. Refer Fig No. 1.2 &amp; Pg. No. 6</p> <p>Data like reserves, waste generation up to life of mine have been incorporated in Chapter 2 (Pg. No. 34-44) of the EIA report.</p>
10.	<p>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</p>	<p>Land use of the study area, parks, migratory routes of fauna, water bodies, human settlements, other existing mines/ industrial activity and other ecological features are shown in delineating forest area, agricultural land, grazing land, wildlife sanctuary and national parks. Refer Clause 3.11 in Page no. 124 in Chapter 3.</p> <p>Land use plan of the mine lease area is given in Page No. 33, Table No.2.8.</p>

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	post operational phases and submitted. Impact, if any, of change of land use should be given.	
11.	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.	Details of the dump design area given in Pg. No. 43, 44 The mining operation will not disturb/relocate any villages and hence R & R plan not required. (Refer Chapter 7, Clause 7.3, and Page No. 189).
12.	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	Not applicable. The mining area does not involve any forest land (Refer Table 2.2 Pg No.18)
13.	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	Not applicable. The mining area does not involve any forest land (Refer Table 2.2 Pg No.18)
14.	Implementation status of	Not Applicable

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	recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	
15.	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	The details of reserve forest located within study area of 10km radius are given in chapter 2. Refer Table No 2.2 in Page No 18.  The details of flora within the study area are given detail in Chapter 3. Refer Clause 3.9.7 in Page No 94.
16.	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	Eco biodiversity (EB) study has been done for the project which details the impact on surrounding wildlife and mitigation measures are discussed and given in Chapter-4, Clause 4.10, Pg. No. 168-173.
17.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.	There is no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors and Tiger/Elephant Reserves within the 10 km radius of the mining lease area. Refer Page No. (Refer Table 2.2 in Page No 17-18).

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18.	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease) shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled- I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	Details of Flora and Fauna found in the study area are given in Chapter 3 (Pg. No 94-105) in the EIA Report. No scheduled list of fauna is found in this study area.
19.	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	The project site is neither falling under 'Aravalli range' nor it is located in proximity to area declared as Critically Polluted Area.
20.	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies	Not Applicable. Bay of Bengal is located 176.80km away from the lease area towards the SE side (Refer Page No. 18, Table 2.2).



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	demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Hence the project does not attract the C.R.Z. Notification.
21.	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.	The existing Multi colour Granite Quarry project does not involve any kind of displacement of the population since the mining will be concentrated only in the quarry area. Hence, Rehabilitation of settlement is not anticipated under this project as it is not required (Refer Chapter 7, Clause 7.3, and Page No. 189). The Socio-Economic study detailed in included in Clause 3.9 of Chapter 3, Page No 105-123.
22.	One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline	Summer season monitoring data for a period of three months (March 1 <sup>st</sup> 2023– May 31 <sup>st</sup> 2023) on Air quality, Water quality, Noise level, Soil, Flora and Fauna in the core and buffer zones is collected and complied data wise in

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	<p>data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p>	<p>the EIA report (Chapter 3, Page No. 53-105).</p>
23.	<p>Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.</p>	<p>Air quality modeling carried out for prediction of impact of the project on the air quality of the area, which is included in Chapter 4, Clause 4.1, Pg. No 138 -151.</p> <p>Wind Rose Pattern is shown in Fig. 3.1, Pg. No: 56 of Chapter 3.</p>
24.	<p>The water requirement for the</p>	<p>The water requirement for the Project is 3.5</p>

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	<p>Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.</p>	<p>KLD; the details are given in Chapter – 2, Pg No.48.</p> <p>A detailed water balance is shown in Fig 4.4 of Chapter 4 (Page no.160)</p>
25.	<p>Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.</p>	<p>The Multi colour granite quarry project requires water for drinking, dust suppression and plantation. Drinking water is obtained from Mineral water industries. For Dust suppression, Green belt and other uses water will be obtained from ordinary water vendors through water tank. There is no extraction of ground water within lease area for the quarry activity. So no clearance from the Competent Authority is required.</p>
26.	<p>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>At the end of the project the quarried out pit will be used as Water storage pond. It will increase the agricultural activity in the surrounding villages. The rainwater harvesting and rate of evaporation is given in Chapter 7. (Refer Clause 7.4 of Chapter 7, page no.189).</p>
27.	<p>Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.</p>	<p>The impacts of the project on the water quality are assessed and necessary safe guard measures will be provided. (Refer Clause 4.6 Chapter 4, Page No. 160-166).</p>
28.	<p>Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these</p>	<p>The mining operation will not intersect the ground water table. Schematic representation is shown in Page No: 163, Refer Fig.4.6. The depth of mining is 33m whereas the depth of water table is 45m bgl (for the scheme period). So No NOC is required from CGWA for the proposed project.</p> <p>However detailed Hydro geological study has been carried out and incorporated in Chapter 3 of Clause 3.7, Pg. No: 77 and Chapter 4, of Clause 4.6.5, Pg. No: 165.</p>

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	aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	
29.	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	There is no stream crossing inside the mining lease area and hence there is no need of modification/diversion (Refer Fig No.4.5 in Page No.162).
30.	Information on site elevation, working depth, groundwater table etc. should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	Elevation of the quarry area is 196m above MSL. The mining operation will be at a maximum depth of 33m (Ultimate). The ground water table is at 45m from the surface in the adjacent tube well, and mine workings are above groundwater table (Refer Fig No 4.6 in Page No.163).
31.	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should	Phase-wise plan of plantation and Compensatory Afforestation and the plant species selected for green belt. The proposed afforestation plan is given in Table 4.29 of Chapter 4. Refer Page No.174.

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	be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	
32.	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.	The transportation of minerals will be carried out through the existing roadways during day work hours only with no increase in the existing traffic pattern (Refer Chapter 2, Fig No: 2.6, Page No.20).
33.	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Details of the onsite shelter and facilities to be provided to the mine workers are discussed in Chapter 2 Clause 2.13. Refer Pg.No.48.
34.	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Conceptual mining plan is given in Chapter 2. Refer Fig 2.19 in Page No.46.
35.	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated	Occupational Health impacts of the Project are detailed in EIA report (Refer Clause 4.13 of Chapter 4, Page no. 176).

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	in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	
36.	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	All control measure for public health implications, air emission, noise control, and waste management will be duly considered as per norms and the remedial measures are detailed along with budgetary allocation in Chapter 10, Pg. No: 197-204.
37.	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Details of community welfare activities to be done for the local community along with proposed budget have been incorporated in EIA Report (Refer Chapter 8, Pg. No: 192-195)
38.	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Environmental Management Plan (EMP) for the proposed quarry project has been prepared and incorporated in Chapter 10. (Pg. No. 197-204).
39.	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	This draft EIA report has been prepared for conducting public hearing.
40.	Details of litigation pending	No litigation pending against the project.

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	against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	
41.	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost – 85.5 Lakh EMP cost- 7.30 Lakhs Refer Chapter 2, Clause 2.14, Page No. 49)
42.	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	A detailed Risk and Disaster Management Plan has been prepared and detailed in Chapter 7. (Pg. No: 185-191).
43.	Benefits of the Project if implemented shall clearly indicate environmental, social, economic, employment potential, etc.	Project Benefits have been detailed in Chapter 8. (Refer Chapter 8, Pg. No: 192-195).

### General Points to be followed as per ToR

<b>S.No 44</b>	<b>ToR</b>	<b>Compliance</b>
a)	Executive Summary of the EIA/EMP Report	Executive Summary is furnished separately and given in Chapter 11.
b)	All documents to be properly referenced with index and continuous page numbering.	Yes, all documents are properly referenced with index and continuous page numbering.
c)	Where data are presented in the report especially in Tables, the period in which the data were collected and the sources should be indicated.	Yes. The data Collection period and sources are mentioned in table in EIA report.
d)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the project.	The Baseline Monitoring Report with all analytical reports done by a MoEF&CC/NABL accredited laboratory is enclosed with the EIA Report.
e)	Where the documents provided are in a language other than English, an English translation should be provided.	The documents are provided in English

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f)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Yes, environmental appraisal of mining projects also submitted along with the EIA report.
g)	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry, should also be followed.	Yes, we followed the instructions for the proponents and consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009 while preparing EIA report.
h)	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.	No changes have been made in Draft EIA report. The details given in TOR application and in this report are same
i)	As per the circular no. J-11011/618/2010-IA.II (I) dated 30.5.2012, certified Report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project by the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.	The Certified EC compliance for the earlier EC issued by DEIAA, Namakkal has been obtained. It will be submitted to SEIAA/SEAC before EC appraisal meeting.



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### Compliance of Additional TOR given by SEAC

S.No.	CONDITIONS	COMPLIANCE
1	The PP shall furnish the details such as number of days the quarry worked, the details of production of the granite blocks, stocks, pit mouth value of the granite blocks, export details, ec., in the half yearly return in Form –F for every half year ending 30 <sup>th</sup> September and 31 <sup>st</sup> March before the 15 <sup>th</sup> of the following month for the proceeding half year period and the annual return in Form-G before 1 <sup>st</sup> July of each year for the preceding year to the District Collector under the provision under Rule 41 of the Granite Conservation and Development Rules, 1999.	The proponent has submitted affidavit to SEIAA/SEAC stating that mining operations will remain suspended until the EC issued by SEIAA as per MoEF & CC OM F.No. I A3- 22/11/2023-IA.III (E-208230), dated. 28.04.2023.
2.	As per Rule 31 (1) of Granite Conservation and Development Rules, 1999, the over burden, waste stock and non-saleable granites generated during mining operation for granite shall be stored separately in properly formed dumps on the ground earmarked in the lease hold area. As per clause 1 of Appendix-IV of the Tamil Nadu Minor Mineral Concession Rules, 1959, the mining waste shall be dumped in the lease hold area as specified in each mining plan. Hence, the PP shall submit the revised 'Plan and Sections' duly approved by the competent authority indicating the existence of the dump is within the mine lease area.	Agreed, PP will submit revised Plan and Section duly approved by the competent authority mentioning that the existence of dump is within the mining lease area.
3.	The proponent shall carry out a survey and enumerate water body located within 1km radius and shall submit a comprehensive hydrogeological report covering the impacts on the water body and the mitigation measures that will be adopted.	There is no water bodies such as lake, pond and river located within 1km radius of project site. However, the impacts of mining on water environment are given in Chapter 4. Refer Page No160of Chapter 4.
2	The Project Proponent shall submit a Certified Compliance Report obtained from the office of the concerned DEE/TNPCB (or) IRO, MoEF & CC, Chennai and appropriate	The Certified EC compliance for the earlier EC issued by DEIAA, Namakkal has been obtained from Regional Office, MOEF&CC, Chennai. It will be submitted

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	mitigation measures for the non-compliance items, if any.	to SEIAA/SEAC before EC appraisal meeting.
<b>ANNEXURE - I</b>		
1.	<p>In case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following.</p> <ul style="list-style-type: none"> <li>(i) Original pit dimension</li> <li>(ii) Quantity achieved Vs EC approved Quantity</li> <li>(iii) Balance Quantity as per Mineable Reserve calculated</li> <li>(iv) Mined out Depth as on date Vs EC permitted depth</li> <li>(v) Details of Illegal/Illicit mining</li> <li>(vi) Violation in the quarry during the past working</li> <li>(vii) Quantity of material mined out outside the mine lease area</li> <li>(viii) Condition of safety zone/benches</li> <li>(ix) Revised/Modified Mining plan showing the benches of not exceeding 6m height and ultimate depth of not exceeding 50m</li> </ul>	<p>It is under process. Once the PP obtained letter from AD/DD Geology &amp; Mining Department, Namakkal District it will be submitted to SEA/SEIAA.</p>
2.	<p>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>The latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site has been attached in Draft EIA report. Refer Annexure XIII and XIV in Page No 315 and 316.</p>
3.	<p>The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50m, (ii) 100m, (iii) 200m and (iv) 300m (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</p>	<p>The details of nearest habitation are given in Table No 2.2 in Chapter 2. Refer Page no 17. The impacts on nearest habitation due to blasting activity on nearest habitation are given in Chapter 4. Refer Clause 4.5 in Page No 158.</p>

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	indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.																					
4.	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the water bodies like lake; water tanks, etc are located within 1 km of the proposed quarry.	The hydro geology study has been conducted within the study area of project site. Refer Page No 77- 85 in Chapter 3. The details of water bodies in the study area are given chapter 2. Refer Table no 2.2 in Page no 18.																				
5.	The Proponent shall carry out Bio-diversity study through reputed Institution and the same shall be included in EIA report.	The baseline study on Ecology and Biodiversity are given detail in Chapter 3. Refer Clause 3.9.5 in Page No 91. The impact on Ecology and Biodiversity are given in Chapter 4. Refer Clause 4.10 in Page No 168.																				
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.	It is under process. It will be submitted during appraisal of EC application.																				
7.	In the case of proposed lease in an existing (or old) quarry where the benches are nonexistent (or) partially formed critical of the bench geometry approved in the Mining plan, the Project Proponent (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	<p>It is existing Multi colour granite with four existing pits.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Pit</th> <th style="text-align: center;">L(m)</th> <th style="text-align: center;">W(m)</th> <th style="text-align: center;">D(m) RL</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">I</td> <td style="text-align: center;">56m</td> <td style="text-align: center;">42m</td> <td style="text-align: center;">173-159m (14m)</td> </tr> <tr> <td style="text-align: center;">II</td> <td style="text-align: center;">26m</td> <td style="text-align: center;">14m</td> <td style="text-align: center;">159-151m (8m)</td> </tr> <tr> <td style="text-align: center;">III</td> <td style="text-align: center;">62m</td> <td style="text-align: center;">39m</td> <td style="text-align: center;">173- 157m (16m)</td> </tr> <tr> <td style="text-align: center;">IV</td> <td style="text-align: center;">37m</td> <td style="text-align: center;">22m</td> <td style="text-align: center;">157-149m(8m)</td> </tr> </tbody> </table> <p>There is one bench with the depth of 16m present in this quarry. The action plan for realignment of bench signed by Asst. Director of Geology and Mining will be attached in Final EIA report.</p>	Pit	L(m)	W(m)	D(m) RL	I	56m	42m	173-159m (14m)	II	26m	14m	159-151m (8m)	III	62m	39m	173- 157m (16m)	IV	37m	22m	157-149m(8m)
Pit	L(m)	W(m)	D(m) RL																			
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IV	37m	22m	157-149m(8m)																			

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	quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC prepare and submit an 'Action plan' for carrying out the realignment of the 'high wall' benches of 16 m to ensure slope stability in the proposed quarry lease which shall be vetted by the concerned Asst. Director of Geology and Mining, during the time of appraisal for obtaining the EC.	
8.	The Proponent shall submit a conceptual 'Slope Stability plan' for the proposed quarry indicating the proposed stabilizing measures during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.	The ultimate depth of the proposed projects is 33m bgl. So the 'Slope Stability plan' for the proposed project is under preparation. It will be attached in Final EIA report.
9.	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	Agreed. The affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 will be attached in Final EIA report
10.	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30m from the blast site.	As it is granite quarry, only mild blasting will be carried out to remove blocks from the parent rock by forming crack. So there will be no fly rocks in this project.
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.	The drone survey will be conducted for this project. The video and photographs will be attached in Final EIA report.
12.	If the proponent has already carried out the	No. The lease deed for this existing

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	mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines.	granite quarry has been executed on 12.04.2018. Refer Annexure III in Page No 261.
13.	What were the period or the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	The mining activity was stopped before 28.04.2023. The period of earlier mining is 2018-2023.
14.	<p>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><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>	<p>Highest production – 2181.622m<sup>3</sup>(2022-23) as on 14.09.2022</p> <p>Approved depth – 33m bgl</p> <p>Actual depth – 24m bgl</p> <p>M/s.Sivasakthi Rock Exports (No proponent name changed)</p> <p>Earlier EC copy is attached as Annexure XII in Page No 307</p> <p>Yes Mining activity has been carried out as per approved mining plan and EC</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>The Toposheet showing location of the lease area is attached in Chapter 1. Refer 1.2 in Page No.6</p> <p>The geology and geomorphology of the 10km radius of proposed area is given in Chapter 2. Refer Fig No 2.11 in Page No 27.</p> <p>The land use/land cover image is given Chapter 3. Refer Page No 125.</p>
16.	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.	The drone survey will be conducted for this project. The video and photographs are will be attached in Final EIA report
17.	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including re plantation of existing	The fencing and green belt development along the periphery is under process. The photographs will be attached in Final EIA

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

	trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Report.
18.	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, and proposed working methodology with justifications, the anticipated impacts of the mining on the surrounding environment and the remedial measures for the same.	The details of reserves, production capacity and methodology are given in Chapter – 2. Refer Page No 34-44 & the impacts on surrounding environment due to mining activity are given in Chapter 4. Refer Page No 138-179.
19.	The Project Proponent shall provide the organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	The employment potential of proposed project is given in Chapter 2. Refer Page No 48.
20.	The project proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD/TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may be clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.	<p>The hydro geology study has been conducted within the study area of project site. Refer Page No 77-85 in Chapter 3. The details of water bodies in the study area are given chapter 2. Refer page no 18.</p> <p>The depth of water table identified by Geo resistivity survey is 45m bgl whereas the proposed depth of mining is 33m bgl. Therefore the mining activity will not intersect ground water table. The schematic diagram is given in chapter 4. Refer Page No 163.</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	The baseline data for the environmental and ecological parameters were collected. Refer Chapter 3.

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	& flora/fauna including traffic/vehicular movement study.	
22.	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly' the Environment management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	The anticipated cumulative impact on various environments such as air, water, soil and noise etc due to proposed mining activity are given in Chapter 4 with appropriate mitigation measures. The environmental management plan is given in Chapter 10.
23.	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) is submitted.	The studies on rain water harvesting are given in Chapter 7. Refer Page No 189.
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.	The land use/land covers of 10km radius of proposed mining lease area are given in Chapter 3. Refer Fig No 3.29 in Page No 125.
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. All waste and rejects shall be dumped within the lease area of 1.62.0 Ha of M/s. Sivasakthi Rock exports.
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	No. There is no boundary of critically polluted area found within 10km radius proposed mining lease area.

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	prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	
27.	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the project, if any, should be provided.	At the end of mining, the quarried out pit will be used for storing rain water which will enhance agricultural activity around the lease area. The rain harvesting plan is given detail in Chapter 7. Refer Page No 189.
28.	Impact on local transport infrastructure due to the project should be indicated.	No. The existing roads are available to withstand the traffic generated due to proposed project. Refer Fig No.2.6 in Page No 20 of Chapter 2.
29.	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	Only trees such as Neem trees, coconut trees, palm trees, Prosopis juliflora are found within 500m radius.
30.	A detailed mine closure plan for the proposed project which should be site specific.	The mine closure plan for the proposed project is included in the EIA report. Refer Fig No 2.18 in Chapter 2. (Page No 45)
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.	Agreed. The EIA coordinator will educate the local students on the importance of preserving local flora and fauna during public hearing meeting.
32.	The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the <b>appendix-I</b> in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of	Agreed. In consultation with the DFO, State Agriculture University, the green belt will be made around the boundary of lease area to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated



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	native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	
33.	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/ Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner	Agreed. Taller/one year old Saplings will be planted as per the advice of local forest authorities/botanist/ Horticulturist with regard to site specific choices.
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..	The Disaster management Plan has been prepared and included in the EIA report. Refer Clause 7.2 in Page No 185 of Chapter 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.	Risk Assessment and management Plan has been prepared and included in the EIA report. Refer Clause 7.2 in Page No 185 of Chapter 7.
36.	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	An occupational Health impact of the Project has been anticipated and the appropriate mitigation measures are given in Chapter 4 of EIA report. Refer Clause 4.13 in Page No.176.
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	Yes it is given in EIA report. Refer Clause 4.13.3 in Page No.177 of EIA report

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	budgetary allocations.	
38.	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	The study on Socio-economic for the proposed project is mentioned in Clause 3.10 of Chapter 3. Refer Page No 105 of EIA report.
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.	Nil
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.	The benefits of the proposed project are given detail in Chapter 8. Refer Page No 192-195.
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.	The Certified EC compliance for the earlier EC issued by DEIAA, Namakkal has been obtained. It will be submitted to SEIAA/SEAC before EC appraisal meeting.
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 for the proposed project is mentioned in Chapter 10 along with EMP cost. The affidavit stating to abide the EMP for the entire life of mine will be attached in final EIA report.
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.	Agreed.

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT****Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District****Compliance of conditions mentioned in TOR letter by SEIAA****Compliance of Annexure 'B'**

<b>S.No.</b>	<b>CONDITIONS</b>	<b>COMPLIANCE</b>
<b>Cluster Management Committee</b>		
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as member including the existing as well as proposed quarry.	Agreed. The Cluster Management Committee will be formed as per SEAC guidance.
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.,	Agreed. After forming CMC, the all the members will implement environment management plan effectively. Effective plan has been given in Chapter – 4
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.	Agreed. The List of members of the committee formed will be submitted to AD/Mines before the commencing the quarry activity.
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.	Certified Blaster will be engaged for blasting having adequate knowledge in Environmental safety aspects. Plan will be included in Final EIA report. The usage of haul roads by the individual quarry is attached in EIA report. Refer Fig No 2.19 in page No 46 of 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.	Risk Management is elaborated in Chapter 7 of the Draft EIA report
6	The Cluster Management Committee shall form Environmental Policy to	Agreed. The CMC will form Environmental Policy to practice

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	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.	sustainable mining in a scientific and systematic manner. The same shall be displayed within the cluster area.
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.	The conceptual plan for the quarry area 1.62.0 Ha is attached in draft EIA report. Refer Fig No 2.19 in page No 46 of Chapter 2.  After forming CMC, the restoration strategy of individual quarry will be submitted to AD Mines, Namakkal.
8	The committee shall furnish the Emergency Management plan within the cluster.	Agreed. After forming CMC, the committee will furnish the Emergency Management plan to AD Mines, Namakkal.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Occupational safety and Health care of the workers are included in Chapter – 4 in draft EIA report
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	Agreed. After forming CMC, the committee will furnish the action plan to achieve sustainable development goals with reference to water, sanitation & safety to AD Mines, Namakkal.
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Agreed. After forming CMC, the committee will furnish fire safety and evacuation plan to AD Mines, Namakkal.
<b>Impact study of mining</b>		
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from	Impact on Soil Health, biodiversity,

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

	<p>reputed research institutions on the following</p> <ol style="list-style-type: none"><li>Soil health &amp; bio-diversity.</li><li>Climate change leading to Droughts, Floods etc.</li><li>Pollution leading to release of Greenhouse gases (CHG), rise in Temperature, &amp; Livelihood of the local people.</li><li>Possibilities of water contamination and impact on aquatic ecosystem health.</li><li>Agriculture, Forestry &amp; Traditional practices.</li><li>Hydrothermal/Geothermal effect due to destruction in the Environment.</li><li>Bio-geochemical processes and its foot prints including environmental stress.</li><li>Sediment geochemistry in the surface streams.</li></ol>	<p>carbon emission and impact on water environment including aquatic ecosystem and on agricultural environment are discussed in detail in Chapter 4.</p>
<b>Agriculture &amp; Agri - Biodiversity</b>		
13	<p>Impact on surrounding agricultural fields around the proposed mining area.</p>	<p>The impact on surrounding agricultural fields is given in chapter 4. Refer Clause 4.14 in page No.178.</p>
14	<p>Impact on soil flora &amp; vegetation around the project site.</p>	<p>The impact on ecology and biodiversity including soil flora &amp; vegetation around the project site is mentioned in Chapter 4. Refer Page No.168.</p>
15	<p>Details of type of vegetations including no of trees &amp; shrubs within the proposed mining area and if so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed</p>	<p>As it is existing granite quarry there is no trees or plants in quarry area. However PP planted Neem trees along the boundary of mining lease area. There are only few numbers of Neem trees, coconut trees, palm trees, Prosopis juliflora are found</p>

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	mentioned in the EMP.	within 500m radius buffer zone. It will not be disturbed during quarrying activity.
16	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural ecosystem.	The impact on ecology and biodiversity including the soil micro flora, fauna and soil seed banks around the project site is mentioned in Chapter 4. Refer Page No.168.
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	At the end of mining, the quarried out pit will be used as water storage pond which improves the agricultural activity in the buffer zone. Refer Page No 44 in Chapter 2. The afforestation plan for five years is given in Chapter 4. Refer Table No 4.29 in Page No.174.
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, horticulture, Agriculture and livestock.	Anticipated impact on Agriculture, Horticulture and livestock is given Chapter 4. Refer Clause 4.14.2 in Page No 178.
<b>Forests</b>		
19	The project proponent shall detailed study on impact of mining on reserve forests free ranging wildlife.	There are No reserve forests located within 10km radius of the project site. There are no wildlife sanctuaries within 10km radius. Refer Table 2.3 in Page No 18 of Chapter 2. The impact on reserve forest and wild life sanctuary is given in Chapter 4. Refer Clause 4.10 in page No 168.
20	The Environmental Impact Assessment should study on impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	There is no endangered species found within 10km radius study area.
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be	As it is existing Multi colour granite quarry, no trees and shrubs are present in the quarry area.

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	numbered and action suggested for protection.	
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	<p>There are no protected areas, National Parks, Corridors and Wildlife pathways within 10km radius of the project site. There is no reserve forest located within 10km radius.</p> <p>The impact on reserve forest is given in Chapter 4. Refer Clause 4.10 in page No 168.</p>
<b>Water Environment</b>		
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. Within 1km (radius) so as to assess the impacts on the nearby water bodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	<p>The hydro geology study has been conducted within the study area of project site. Refer Page No 77 in Chapter 3. The details of water bodies in the study area are given chapter 2. Refer page no 18.</p> <p>The depth of water table identified by Geo resistivity survey is 45m bgl whereas the proposed depth of mining is 33m bgl. Therefore the mining activity will not intersect ground water table. The schematic diagram is given in chapter 4. Refer Page No 163.</p>
24	Erosion Control measures.	<p>To control the erosion, the tree sapling will be planted along the mining lease boundary.</p> <p>Garland drainage will be developed around the dump to control the washout of dump due to hydrostatic pressure.</p>
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the	The impact of mining on the nearby villages and water bodies are given detail in chapter 4.

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

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	nearby villages, water-bodies/Rivers, & any ecological fragile areas.	
26	The Project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	The detailed study of impact on fish habitation and food WEB/ food chain in the water body and reservoir is given in Chapter 4. Refer Table 4.28, Page No 171.
27	The Project Proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	The detailed impact studies are given in Chapter 4.
28	The Project Proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological site possible land form changes visual and aesthetic impacts.	The study and the impact on aquatic plants and animals in water bodies are mentioned in Chapter 4. Refer Clause 4.10 in Page No 168.  There are no caves, heritage site, and archaeological site found within 10km radius of project site.
29	The terms of reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The impact study on soil health and erosion is given in Clause 4.7 in Chapter 4. Refer Page no 167. The soil physical, chemical components and microbial components are given in Chapter 3. Refer Page No.85.
30	The Environmental Impact Assessment should study on wet lands, water bodies, rivers, streams, lakes and farmer sites.	The impact study on surface water bodies and agricultural land is given in Chapter 4. Refer Page No 161 and 178 respectively.
<b>Energy</b>		
31	The measures taken to control Noise, Air, Dust control and steps adopted to efficiently utilise the energy shall be furnished.	The mitigation measure for air pollution and noise pollution is given in chapter 4. Refer Page No 138- 160.
<b>Climate change</b>		
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the	The carbon emission due to proposed mining activity and its mitigation measures are given in Chapter 4.



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	measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Refer Clause 4.2 in Page No 151.
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	The carbon emission due to proposed mining activity and its mitigation measures are given in Chapter4. Refer Clause 4.2 in Page No 151.
<b>Mine closure plan</b>		
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued is given in Chapter 2, pg. No. 43-46.
<b>EMP</b>		
35	Detailed Environmental Management Plan along with adaption, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	Detailed environmental management plan is given in Chapter 10, pg. No. 197.
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	The environmental management plan is given chapter 10. The cost for green belt development is mentioned in Table 10.2 in Chapter 10. Refer Page No 204.  Budget for mine closure plan is given in Table 10.3 in Page No 204 of Chapter 10.  The disaster management plan is given in Chapter 7. Refer page no 185
<b>Risk Assessment</b>		
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of mining.	Disaster management plan is given in Chapter 7, pg. No. 185

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<b>Disaster Management Plan</b>		
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	Details are furnished in Table 7.1 in chapter 7, pg. No. 186
<b>Others</b>		
39	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake, pond, tank etc.	The letter regarding approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake, pond, tank within 300m radius has been obtained from VAO. Refer Annexure XIII in Page No 315.
40	As per the MoEF&CC office memorandum F.No22-65/2017-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.	Draft EIA is been prepared for conducting public hearing. The points raised in PH and funds allocated will be included in Final EIA report.
41	The project proponent shall study and furnish the possible pollution due to plastic and micro plastic on the environment. The ecological risks and impacts of plastic & micro plastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	The study on pollution due to plastic and micro plastic and its ecological risk is mentioned in Chapter 7. Refer Clause 7.5 in Page no 191.

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT****Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District****ANNEXURE 1****Additional Information for Considering EC for Mining Projects**

<b>S. No.</b>	<b>Details to be provided</b>	<b>Page No.</b>
1]	Name of the project lease & owner	1
2]	Lease Extent	1
3]	Lease Validity	1
4]	Approved Mining Plan/Scheme – Review a] Specify whether DSR is provided [applicable in case of minor minerals only]	DSR is given in TOR application
5]	Specify – Nature and type of violation I. Without EC or in excess of quantity approved in EC II. Without CTO or in excess of quantity approved in CTO III. Without mining plan/Scheme of mining or in excess of quantity approved in Mining Plan/Scheme of mining IV. Without Forest Clearance V. Any other violation	NA
6]	Violation period I. Number of months II. Number of Years	NA
7]	Exploitation/Excavation quantity – Reserves proved through exploration by drilling	Pg No.34-44
8]	Give details of production from the date of execution of the lease deed / since 1994	Pg No.2
9]	Quantity mined out during the violation period & if, yes indicate the violated quantity, in term of % of consented quantity.	NA
10]	State illegal mining / encroachments outside the lease boundary? Percentage of quantity mined out outside the lease boundary.	Not applicable
11]	Method of working I. Category type ; [a] Mechanised [b] Semi-Mechanised [c] Manual II. Construction and design of haul roads	[a ]
	[a] Dimension as per the statutory requirements which were followed or otherwise [b] Number of vehicles plying on the main haul roads inside the mine and the approach road to the pit located outside the mine, if any.	29

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	[c] Are any measures taken to minimize fugitive dust generated from mine haul roads /Does it comply with the CPCB/PCB Guidelines/	138									
	[d] Is there a possibility that air pollutants emitted from the project area that do not comply with air quality standards as per CPCB/PCB/	No									
12]	Mechanized /Semi- Mechanized Method of Mining	29									
	[i] Number of loading/excavating equipments as per approved mining plan and capacity.										
	[ii] Number of loading/excavating equipments actually being deployed and capacity.										
	[iii] Type and number of transporting equipments.										
	[iv] Type of transporting system used –[a] trucks [b] Any other mode										
	[v] Capacity and No. Trucks used as per approved mining plan										
	[vi] Capacity and No. Trucks used actually in the mine										
	[vii] Number and Capacity of loading equipments and trucks used not in line with approved mining plan										
	<table border="1"> <thead> <tr> <th></th> <th>Capacity [m<sup>3</sup>]</th> <th>Numbers</th> </tr> </thead> <tbody> <tr> <td>Excavator</td> <td>-</td> <td>-</td> </tr> <tr> <td>Tipper</td> <td>-</td> <td>-</td> </tr> </tbody> </table>			Capacity [m <sup>3</sup> ]	Numbers	Excavator	-	-	Tipper	-	-
	Capacity [m <sup>3</sup> ]		Numbers								
Excavator	-		-								
Tipper	-		-								
	[viii] Impact of excess deployment of loading equipments [excavators] and transporting equipments on environment. [a] Air pollutants [b] Water Quality [c] Land Quality [d] Noise level	No excess equipment									
	[ix] Does the deployment of loading equipments[excavators] and trucks fulfill the statutory requirements as per MMR 1961, with respect to the site conditions/	Yes									
13]	Method of Rock Breaking / Material preparation for the excavation;	28-31									
	[i] Methodology adopted-										
	[a] Drilling and blasting										
	[b] Rock breakers										
	[c] Rippers										
	[d] Surface miners										
	[e] Direct mucking by excavators										
	[f] Manual means										
	[g] Any other methods or combination of above										

## **DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

	[ii] Incase of drilling and blasting method	138-179
	[a] Type of blasting ; short hole or deep hole	
	[b] Whether controlled blasting technique adopted / If yes, specify the technique with details of the study , year of study	
	[c] Impacts due to blasting defined as per the studies, if any carried out previously as indicated	
	[d] Dust pollution	
	[e] Noise level[dB[A]]	
	[f] Ground vibration studies and Fly rock projection	
	[iii] Impact of preparation of Ore and waste on environment-	
	[a] Air Pollution	
	[b] Noise Pollution	
	[c] Water Pollution	
	[d] Safety standards	
	[e] Traffic density	
	[f] Road Conditions[vulnerability]	
14]	Construction and Design of Dumps.	43-46
	[a] Place / Location.	
	[b] Approach to Dump form the mine distance and safety standards.	
	[c] Area of extent occupied.	
	[d]Dimension of Dump and No. of terrace with heights [benches].	
	[e] Vegetation covered; If yes, specify the details of plants.	
15]	Construction and Design of Waste Dumps.	43-46
	[i] Numbers and Location of Dumps as per approved Mining Plan.	
	[ii] Specify whether reject dumps are located within or outside mining lease.	
	[iii] Area occupied in excess of the approval mining plan.	
	[iv] Dimension of Terracing, Light, shapes, etc., Dump as per approved Mining Plan.	
	[v] Fresh/Existing Dimension Height, shape, width. etc., of Dumps in the mine.	
	[vi] Volume/Quantity added to Waste / Dump during the violated period.	
	[vii] Approach to the Dump-Dimension, distance.	
	[viii] Number of and type of equipments deployed in Dump.	
	[ix] Provision of Garland drains around the Dumps.	
	[x] Any vegetation made on the slopes.	
	[xi] Provision of safety standards.	138-179

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

	[xii] Impact of Waste/Dumps on environment.	
	[a] Air Pollution	
	[b] Water Pollution	
	[c] Dust Pollution	
	[d] Noise Pollution	
	[xiii] Terracing	
16]	Construction and Design of Ore and sub grade ore / mineral Stacks;-	NA
	[i] Number and Location of Ore stacks.	
	[ii] Dimension of Ore / sub grade Stacks as per the Approved Mining Plan	
	[iii] Volume / Quantity added during the violation period.	
	[iv] Any Screening plant or any other loading equipment engaged during the violated period.	
	[v] Approach to Ore / sub grade stack – Distance, hazards.	
	[vi] Safety standards adopted while operation.	
	[vii] Impact of ore / sub grade on environment.	
	[a] Air Pollution.	
	[b] Water Pollution.	NA
	[c] Dust Pollution.	
	[d] Noise Pollution.	
17]	Mine Pit Water	
	[i] Intersection of Ground water table, specify the measures taken.	
	[ii] Ground water table as per hydro geological Studies [Pumping test].	160-166
	[iii] Provision of Garland drains around pit and dumps.	
	[iv] Water pollution.	
	[v] Management of mine water.	
	[vi] Ultimate pit limit, w.r.t. Ground water intersection and management of drainage of ground water.	
18]	Diversion of General Drainage / River / Nallah course for mining.	No
19]	Clearing of vegetation before the commencement of mining operation – Number of trees [species wise].	No
20]	Man Power.	
	[a] Statutory management.	48
	[b] Regular [Non-statutory] Manpower.	
21]	Occupational Health and Safety.	
	[a] Periodical monitoring of health standards of persons employed as per Mine Act, 1952.	176-177

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

	[b] Failure to inform statutory bodies periodically, if any.	
22]	Population [Nearby Habitation].	
	[i] Population/Significant Population / Dense Population within the buffer zone of 10 km.	105
	[ii] People displacement due to mining activities.	189
	[iii] Location / Existence of habitation near the river or any other historical / sensitive / forest distance.	
	[iv] Impact of mining on Surrounding and habitation- Air, Water, Noise, Pollution.	138-179
	[v] Socio Economic aspects of mining.	105-123
23]	CSR	
	[a] Field ground Activities or studies. Actual amount spent towards CSR and the future proposal.	193
24]	NOC from DMG for quantity clarification in respect of settlement of all the amount payable against identified violation.	NA
25]	For the Clearance of EC, Public Hearing is mandated as per MoEF & CC Notification. Give reason for exemption of Public Hearing.	The PH will be conducted
26]	Conceptual post mining land use / restoration.	43-46
27]	Litigation / court cases, if any pending.	NA
28]	Disaster management plan for the mine.	185-191

# DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

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## CHAPTER 1: INTRODUCTION

### 1.1. PURPOSE OF THE REPORT

The applicant, **M/s. Sivasakthi Rock Exports** having registered office at No: G3, Vairam Vasandam, Vairam Gardens, Sambakulam, K.Pudur, Madurai District and Tamilnadu are a partnership firm managed by Thiru.S.M.Govindaraj. They have been granted mining lease from the State Government over an extent of 1.62.0 Hectares in 480/1(part), Nadanthai Village, Paramathi Velur Taluk, Namakkal District for quarrying Multi colour granite blocks under G.O. (3D).No: 11 Industries (MMB-2) Dept. dated 12.03.2018 for the period of 20years.

The mining plan was prepared based on the precise area communication letter vide No. 15473/MMB.2/ 2017-1, Dated 07.12.2017 and the same was approved by the Commissioner of Geology and Mining, Chennai vide letter No. 7781/MM5/2017 dated 05.01.2018.

An environment clearance for M/s. Sivasakthi Rock Exports was obtained from District Environmental Impact Assessment Authority vide letter no. DEIAA-NMK-TN/F.No.259/Mines/03/EC.No.03/2018, Dated 23.02.2018 for operating multi color granite quarry for the period of five years. The lease deed was executed on 12.04.2018 and will expire on 11.04.2038.

Scheme of mining has to be prepared under Rule 18 (3) of GCDR, 1999 and Rule 41 of TNMMCR, 1959 for the existing mining lease once in five years for systematic and scientific development of quarry. Accordingly, the 1st scheme of mining has been prepared for the period from 2023-2024 to 2027-2028 for this existing quarry and it has been approved by Commissioner, Department of Geology and Mining, Guindy, Chennai, vide letter Rc.No.8442/MM4/2022 dated 10.01.2023.

Recently MoEF&CC has issued OM vide F.No.IA3-22/11/2023-IA.III (E-208230) dated 28.04.2023. In this notification, it is stated that the EC issued by DEIAA between 15.01.2016 and 13.09.2018 shall be reappraised through SEAC/SEIAA and EC shall be issued by SEIAA within the period of 1 year.

As per the cluster letter issued by Assistant Director, Department of Geology and Mining, Namakkal vide Rc.No.1250/Mines/2022 dated 30.05.2023, three existing quarries namely M.M.Exports with an extent of 2.75.5 Ha, Tmt.V.Punitha with an extent of 2.86.5 Ha and M/s. Sivasakthi Rock Exports with an extent of 1.62.0 Ha and one lease expired quarry namely J.A.Richard with an extent 1.76.0 Ha located within 500m radius of proposed project site. The total area of cluster is 9.00.0 Ha. The extents of lease area



## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

of all lessees as per cluster letter of M/s. Sivasakthi Rock Exports (1.62.0 Ha), are given below.

### Existing Quarries

1. J.A. Richard	–	1.76.0 Ha
2. M.M.Exports	–	2.75.5 Ha
3. Tmt.V.Punitha	–	2.86.5 Ha
4. M/s. Sivasakthi Exports	–	1.62.0 Ha

Based on MoEF&CC OM vide F.No.IA3-22/11/2023-IA.III (E-208230) dated 28.04.2023 and cluster letter issued by Assistant Director, Department of Geology and Mining, Namakkal, the lessee made TOR application through PARIVESH website to carry out EIA Studies for obtaining Environmental clearance. The details are given in below Table 1.1.

**Table 1.1 Details on Terms of Reference**

S. No	Name of Applicant	ToR Application No	SEAC and SEIAA Meeting No	TOR Letter No
1	M/s. Sivasakthi Rock Exports	SIA/TN/MIN/432724/2023 dated 09.06.2023	394 <sup>th</sup> SEAC Meeting, dated 21.07.2023 and 644 <sup>th</sup> SEIAA Meeting dated 07.08.2023	Lr.No.SEIAA-TN/F.No.10140/ToR-1529/2023 dated 07.08.2023

The Draft EIA report has been prepared based on the Terms of Reference issued by SEIAA. The points raised in the public hearing and the commitments of the project proponent will be given detail in the Final EIA Report which will be submitted to SEAC/SEIAA, TN for obtaining environmental clearance. The production achieved by the Lessee since inception of mining activity as against approved Mining plan/Scheme is given below.

**Table 1.2 Production Details from 2018 to 2023**

S.No	Year	Proposed Production in m <sup>3</sup>	Actual production achieved in m <sup>3</sup>
1	2018-19	3024	205.521
2	2019-20	3015	744.230
3.	2020-21	3015	300.293
4.	2021-22	3150	1505.724
5.	2022-23 (As on 14.9.2022)	3267	2181.622
<b>Total</b>		<b>15471</b>	<b>4937.390</b>

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

From the above table, it is shown that the applicant excavate the granite within the quantity as mentioned in approved mining plan. The production quantity mentioned in approved mining plan and in environmental clearance issued by DEIAA is same. Therefore there is no violation in this proposed project.

### 1.2. IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

#### 1.2.1. IDENTIFICATION OF PROJECT

**Table 1.3 Details on Project and Project Proponent**

<b>M/s. Sivasakthi Rock Exports</b>	
<b>Particulars</b>	<b>Details</b>
Address of the Project Proponent	<b>M/s. Sivasakthi Rock Exports</b> No.G3, Vairam Vasandam, Vairam Gardens, Sembakulam, K.Pudur, Madurai District, Tamil Nadu Pincode-625 007 Mob- +918778569017, Email: sivasakthirockexports@gmail.com
Lease Area	1.62.0 Hectares (Patta Land)
Site Location	S.F.No: 480/1(P), Nadanthai village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu.
Geographical Co-ordinates	Latitude: 11°11'06.7372"N to 11°11'12.6115"N. Longitude: 77°58'09.5551"E to 77°58'14.6753"E.
Toposheet No.	58E/16
Government Order	G.O. (3D) No.11 Industries (MMB.2) Dept. dated 12.03.2018
Precise Area Communication	15473/MMB.2/2017-1, Dated 07.12.2017
Mining Plan Approval Details	7781/MM5/2017 dated 05.01.2018
EC letter from DEIAA	Letter No. DEIAA-NMK- TN/F.No.259/Mines/03/EC.No.03/2018, Dated 23.02.2018
Period of Lease	20 years (12.04.2018 to 11.04.2038)
Approval of Scheme of mining	Rc.No.8442/MM4/2022 dated 10.01.2023
AD Cluster letter	Rc.No.1250/Mines/2022 dated 30.05.2023

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

**Table 1.4 Land Particulars**

State & District	Taluk	Village	S.F.No.	Area in Position (Ha)	Applied Area for quarrying (Ha)	Ownership Occupancy
Tamil Nadu & Namakkal	Paramathi Velur	Nadanthai	480/1(P)	1.81.5	1.62.0	Own Patta land
			<b>TOTAL</b>	<b>1.81.5</b>	<b>1.62.0</b>	

### 1.3 BRIEF DESCRIPTION OF THE PROJECT

#### 1.3.1. Nature and Size of the Project

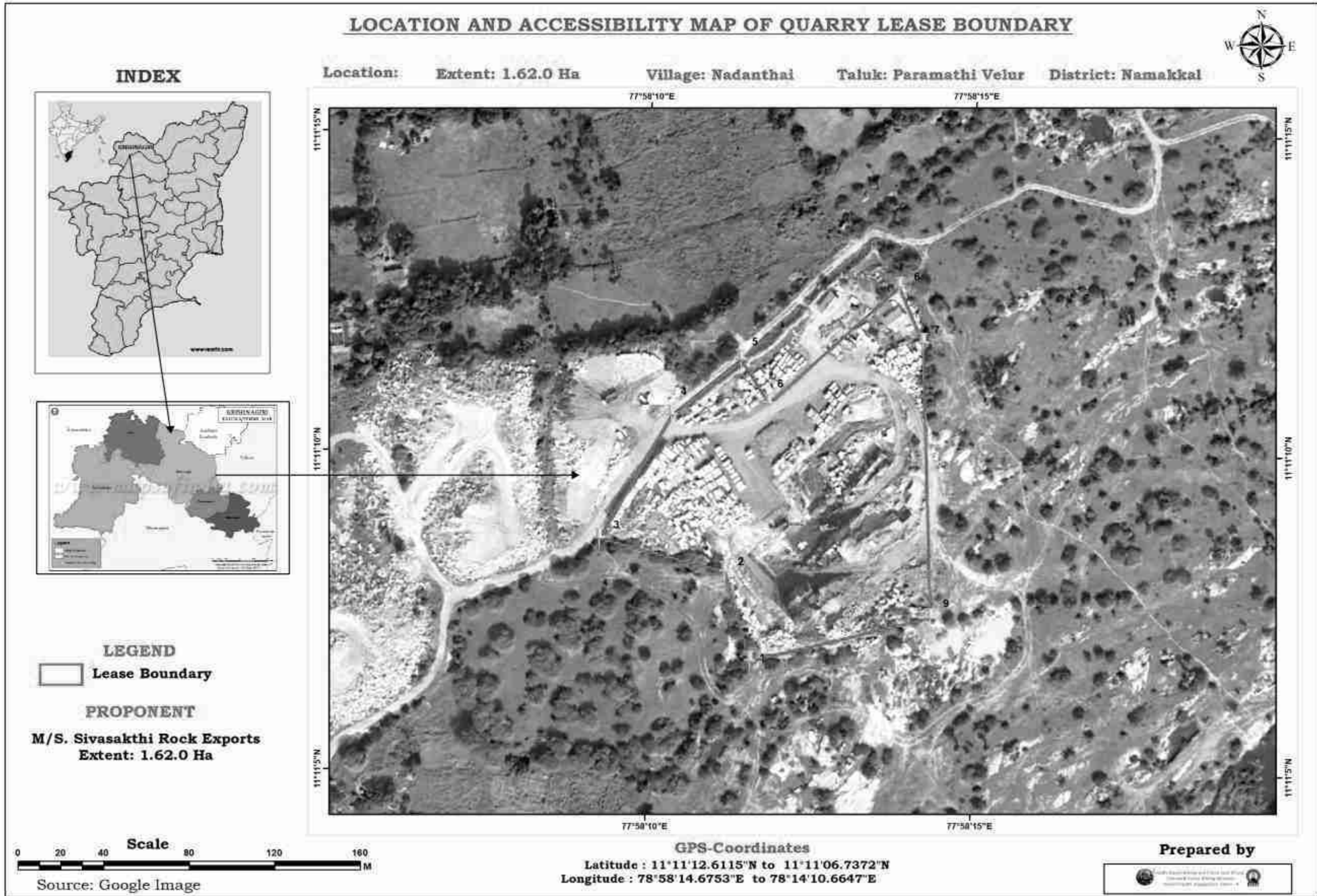
Open cast Mechanized mining shall be adopted to raise the production in this area and transportation of granite and waste. Hydraulic excavators and tippers have been used for loading and transporting the rejects and wastes. Cranes are used for loading the granite blocks in the tipper. The wire saw cutting is adopted below second bench to recover more granite blocks to increase the rate of recovery. Granite is being used for decorative purposes in building, monument, Institutional, commercial and residential buildings in the form of slabs, tiles, cut to size, markers etc.

The geological resource is estimated as 3,73,294m<sup>3</sup> whereas a mineable reserve is estimated as 92,356m<sup>3</sup> up to a depth of 33m from the ground surface. The production shall be 15,054m<sup>3</sup> at the rate of 30% recovery for five years. The above said reserves and productions are as per approved 1<sup>st</sup> scheme of mining (2023-24 to 2027-28).

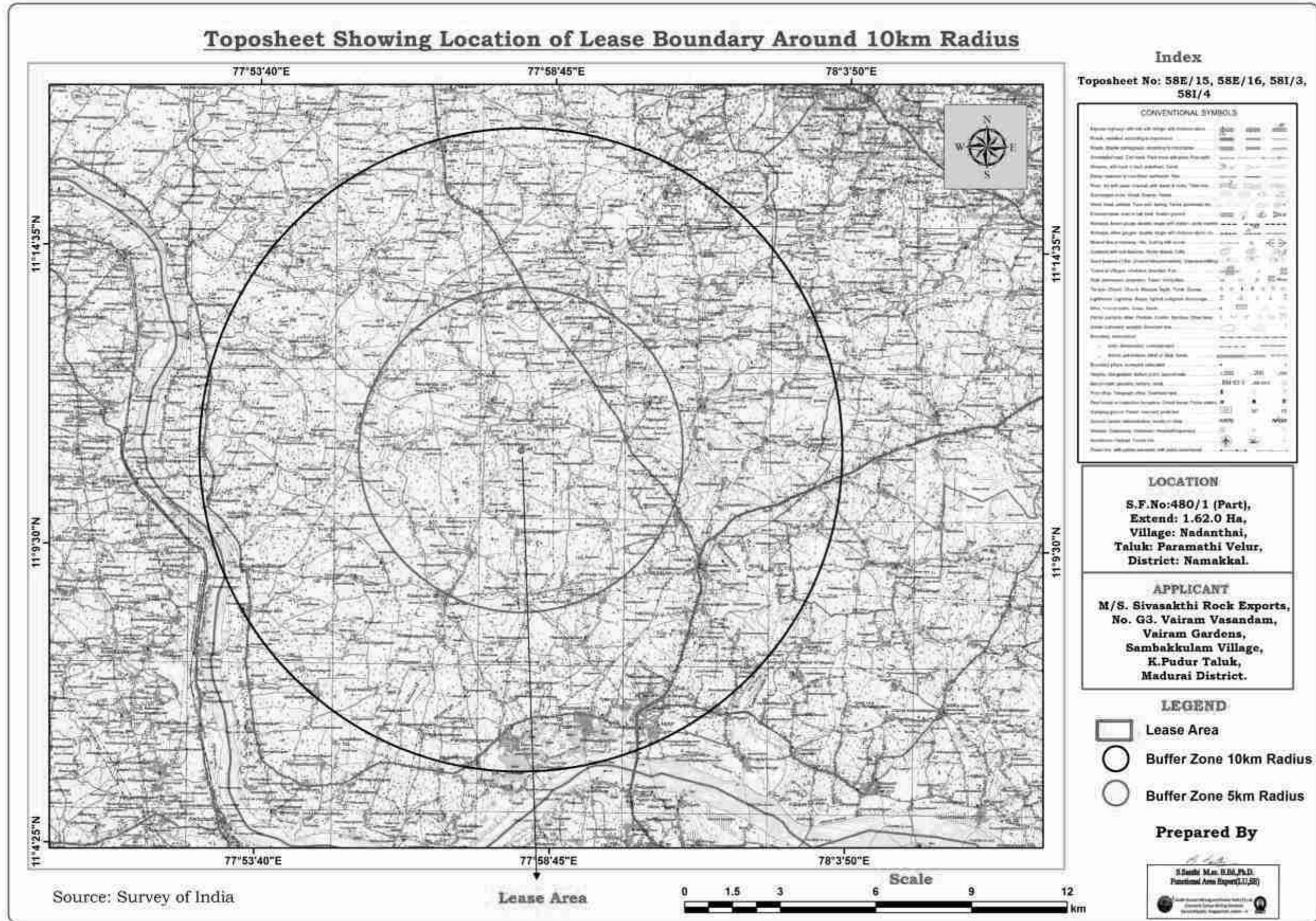
#### 1.3.2. Location of the Project

The project site is easily accessible from Namakkal. By travelling from Namakkal via NH 44, Paramathi is arrived at the distance of 16.5km. From Paramathi, by travelling via MDR 998 for 7.7km Kabilarmalai village is reached. From the Kabilarmalai village, Surampalayam village is reached at the distance of 5.0km. From Surampalayam village, by travelling via Surampalayam village road, the project site is arrived at the distance of 1.3km.

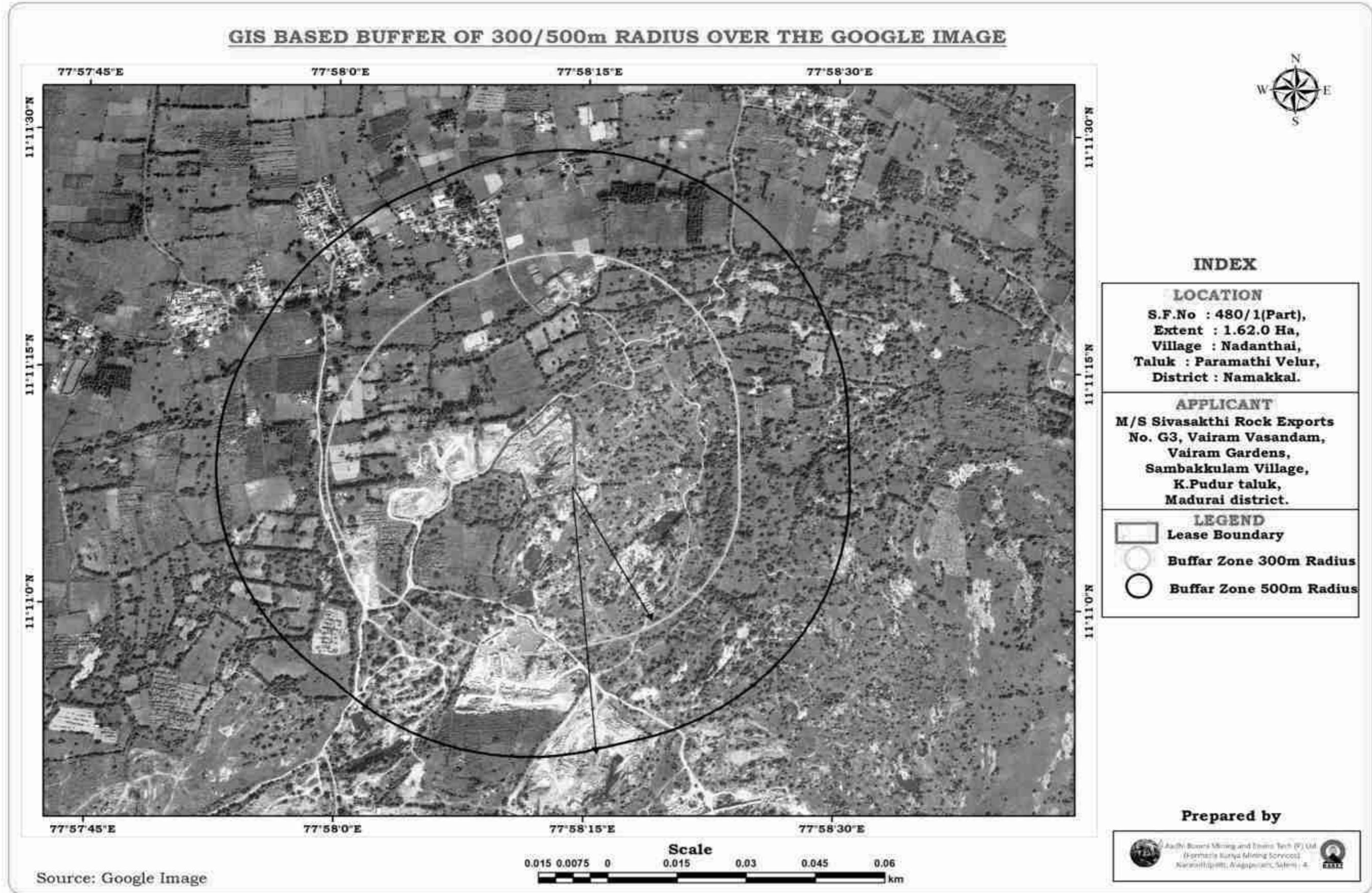
The area is represented by Survey of India Topo sheet No. 58 E/16, the location map is given in Fig. No 1.1. The area lies in the northern latitude of 11°11'06.7372" N to 11°11'12.6115"N and eastern longitude of 77°58'09.5551"E to 77°58'14.6753"E.



**Fig No 1.1 Google earth image showing location and route for existing multi color granite quarry**



**Fig No 1.2 Toposheet showing location of existing multi color granite quarry with 10km radius study area**



**Fig No 1.3. Google earth image showing 300m and 500m radius around mining lease area**

#### **1.4. SCOPE OF THE PROJECT**

The proposal for Environmental Clearance of existing Multi color Granite Quarry of M/s. Sivasakthi Rock Exports requires Environmental Impact Assessment (EIA) to be carried as per with Standard and additional TOR specified by the SEAC. Based on the documents furnished for TOR, the Committee observed that the project falls under the category B1 and schedule 1(a) of the EIA Notification, 2006. This is primarily to ascertain the potential impacts of the mining activity for environmental components, prediction and evaluation of environmental impacts to describe the Environmental Management Plan.

The EIA/EMP report also includes an independent chapter prepared by an Accredited Consultant. The collection and analysis of air, water and soil sample required for preparation of EIA report data will be done by an Environmental Laboratory duly notified under the Environment (Protection) Act, 1986, accredited by NABET/NABL.

The scope of the study includes a detailed characterization of the environment in an area of 10km radius of the mine lease area. The EIA will cover one season (Three months) baseline environmental data, as per the ToR and guidelines of SEIAA, Tamil Nadu.

In order to assess the likely impacts arising out of this project on the surrounding environment and evaluating the quantum of likely negative impacts, if any, from this mine, the proponent has selected Aadhi Boomi Mining and Enviro Tech Pvt. Ltd., Salem as their environmental EIA consultant for this project. ABM prepared an Environmental Impact Assessment (EIA) report and made an effective Environment management Plan (EMP) for various environmental components likely to be affected.

The scope covers all the conditions outlined in the TOR prescribed by SEIAA, Tamil Nadu for this mining project vide Letter No. SEIAA-TN/F.No.10140/TOR-1529/2023 dated 07.08.2023 and their compliance thereof is attached in EIA report.

#### **1.5. METHODOLOGY OF EIA STUDY**

The EIA study includes detailed baseline data generation and characterization of existing status of environment in an area of 10 km radius with the project as its center for various environmental components viz. Air, Noise, Water, Land, Biological and Socio-Economic components and other parameters of interest. The envisaged scope of EIA is as follows

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Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

- ❖ To assess the present status of air, noise, water, land, biological and socio-economic components of environment.
- ❖ To identify and quantify the significant positive and negative impacts due to various mining operation in various components of the environment through identification and prediction of impacts.
- ❖ To prepare a detailed Environment Management Plan (EMP) for implementation of mitigation measures.
- ❖ To suggest a monitoring program to evaluate the effectiveness of mitigation measures.
- ❖ Post-project environmental quality monitoring program to be followed.
- ❖ To prepare a capital and running cost estimates for Environmental Management Plan (EMP).

The baseline monitoring study has been carried out during the summer season (March 1<sup>st</sup> 2023 to May 31<sup>th</sup> 2023) for various environmental components to assess the anticipated impact on the environment and suggest suitable mitigation measures for likely adverse impacts due to the project. Environmental attributes, source and frequency of monitoring are outlined in Table No.1.5.

**Table 1.5 Environment Attributes**

<b>Attributes</b>	<b>Parameters</b>	<b>Source and Frequency</b>
Meteorology	Temperature, Wind Speed, Wind Direction, Rain fall, Relative Humidity.	Secondary sources of IMD station, Namakkal, Hourly recorded data for the period of 3 months.
Ambient Air Quality	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub>	24 hourly samples twice a week for three months at 5 locations.
Water Quality	Physical, Chemical and Biological parameters	Grab sampling at 5 locations once during study period.
Noise levels	Noise levels in dB(A)	At 5 locations data monitored once in a Month for three months for 24 hours during EIA study.
Soil Characteristics	Physical and Chemical parameters	Once at 5 locations during study period
Hydrogeology	Drainage area and pattern, nature of streams, aquifer characteristics, recharge and discharge areas	Based on data collected through field investigation devices once in a month.
Land use	Existing land use for different	Based on Survey of India Toposheet



## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

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	categories	and Google Earth imagery
Ecology and Biodiversity	Existing terrestrial flora and fauna within 10 km radius circle	Field observation and utilization of Secondary data.
Socio-Economic aspects	Socio-economic and demographic characteristics, worker characteristics	Based on collection of primary data through questionnaire analyses and utilization of Secondary data from census records (2001 -2011), statistical hand books, Toposheets, health records and relevant official records.
Risk assessment and Disaster Management Plan	Identify areas where disaster can occur by fires and explosions and release of toxic substances if any	Based on the findings of Risk Modeling done for the risk associated with explosives, and land-slips.

The impacts of the project activities on environmental components can be quantified through EIA Studies within the impact zone of the project activities. The results of EIA Studies form the basis for the preparation of a viable EMP for mitigation of the adverse impacts.

# DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

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## CHAPTER – 2: PROJECT DESCRIPTION

### 2.1. NEED FOR THE PROJECT

The Proponent, M/s. Sivasakthi rock exports obtained lease from the State Government over an extent of 1.62.0 hectares in S.F.No.480/1 (P), Nadanthai Village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu for quarrying multi colour granite blocks under G.O. (3D) No.11 Industries (MMB.2) Dept. dated 12.03.2018. The lease was granted for a period of 20 Years from 12.04.2018 to 11.04.2038.

An environment clearance for M/s. Sivasakthi Rock Exports was obtained from District Environmental Impact Assessment Authority vide letter no. DEIAA-NMK-TN/F.No.259/Mines/03/EC.No.03/2018, Dated 23.02.2018 for operating multi color granite quarry for the period of five years.

Based on MOEF&CC OM dated 28.04.2023 and AD's 500m radius cluster letter, the lessee made an ToR application to SEIAA/SEAC, Chennai to carry out EIA studies and to conduct public hearing for obtaining environmental clearance from SEIAA/SEAC.

Granite is one of the important materials for building construction. Granite is used in many outdoor and indoor projects. Outdoor projects like bridges, monuments, buildings, paving etc. Indoor projects like countertops, floor etc. Using granite for kitchen tops, shelves, tabletops etc makes it look elegant. Apart from elegance, it has great strength and is durable. It looks stylish and is easy to clean. Granite sinks like the under-mount sink, angular basin, modern or pedestals sink are some different granite basins available. These are water-resistant and maintenance is also easy. So it is needy to excavate the granite for economic and infrastructure development of our Nation.

### 2.2 DEMAND – SUPPLY GAP

Construction of building, temples takes place in all villages, towns, cities and metropolitan cities. There is great demand in availability of granite. So it is necessary to fulfill the demand by starting the existing multi color granite quarry.

### 2.3 LOCATION

The area is represented by Survey of India Topo sheet No. 58 E/16. The area lies in the northern latitude of 11°11'06.7372"N to 11°11'12.6115"N and eastern longitude of 77°58'09.5551"E to 77°58'14.6753"E. Latitude and Longitude of all boundary Pillars of are given in below Table 2.1.

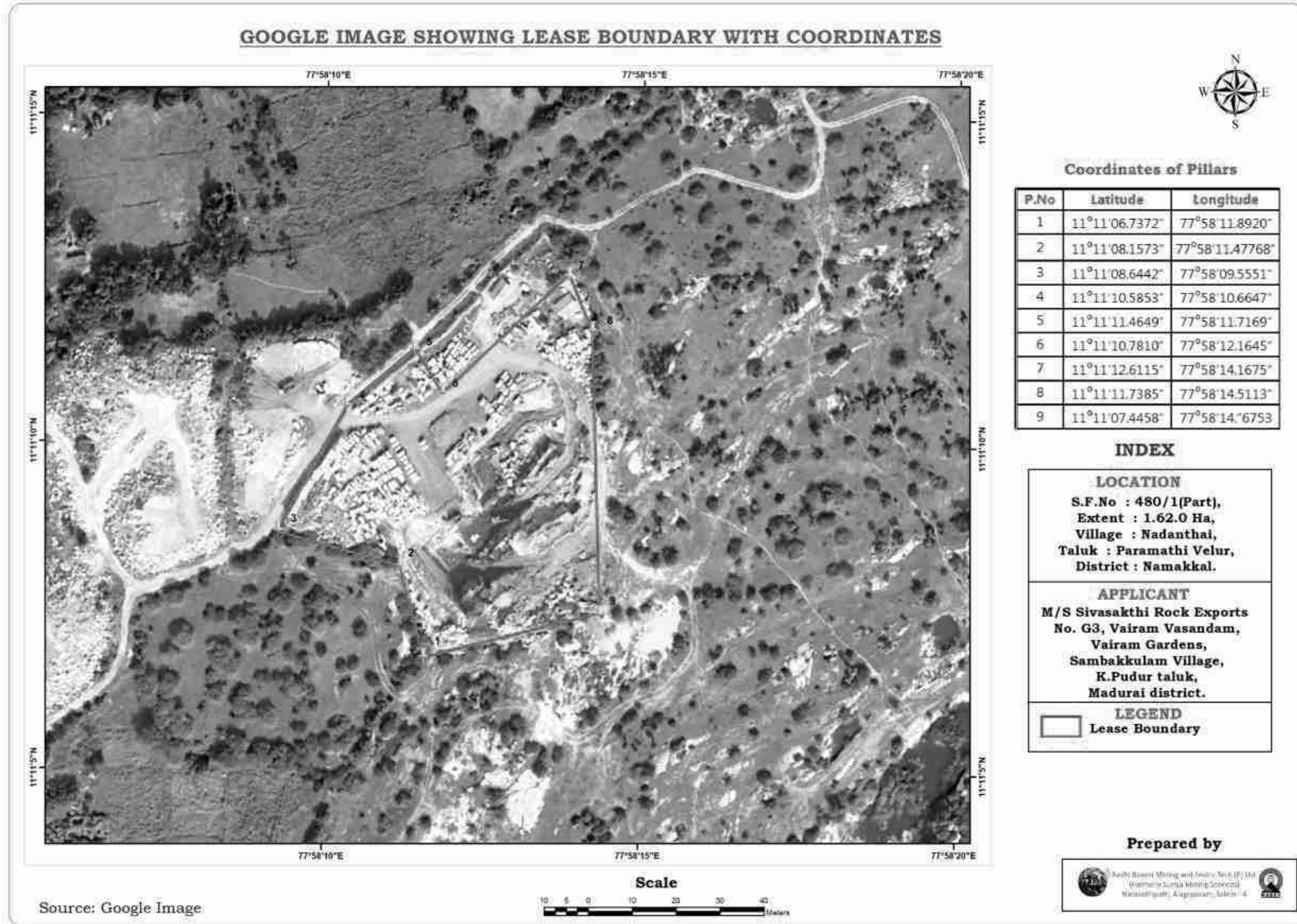
**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

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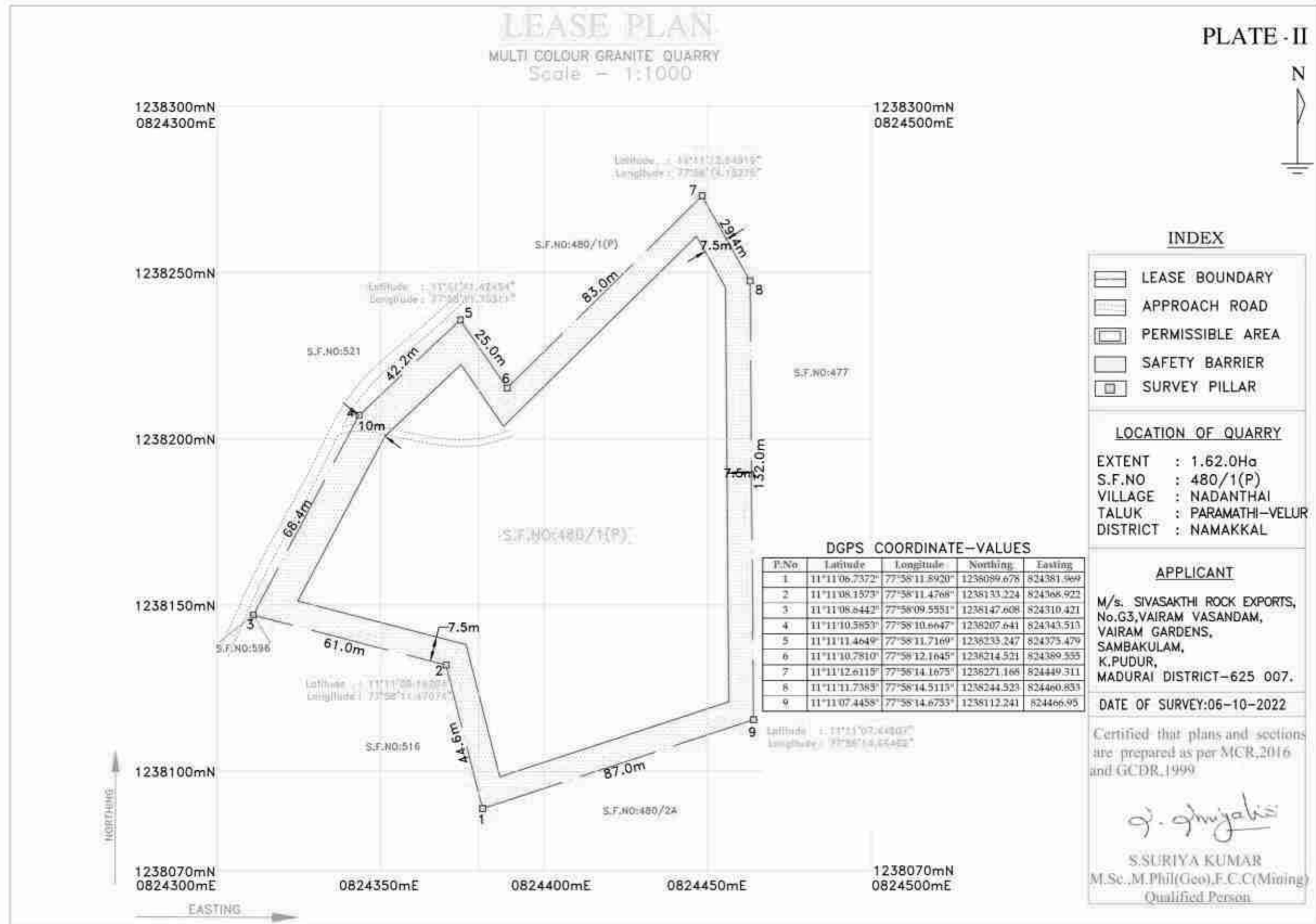
**Table 2.1 Coordinates of Quarry lease Boundary Pillars as taken by DGPS for  
Geo Referencing of Lease Plan is given as under**

<b>P.No</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Northing</b>	<b>Easting</b>
1	11°11'06.7372"	77°58'11.8920"	1238089.678	824381.969
2	11°11'08.1573"	77°58'11.4768"	1238133.224	824368.922
3	11°11'08.6442"	77°58'09.5551"	1238147.608	824310.421
4	11°11'10.5853"	77°58'10.6647"	1238207.641	824343.513
5	11°11'11.4649"	77°58'11.7169"	1238235.247	824375.479
6	11°11'10.7810"	77°58'12.1645"	1238214.521	824389.555
7	11°11'12.6115"	77°58'14.1675"	1238271.168	824449.311
8	11°11'11.7385"	77°58'14.5113"	1238244.523	824460.853
9	11°11'07.4458"	77°58'14.6753"	1238112.241	824466.95



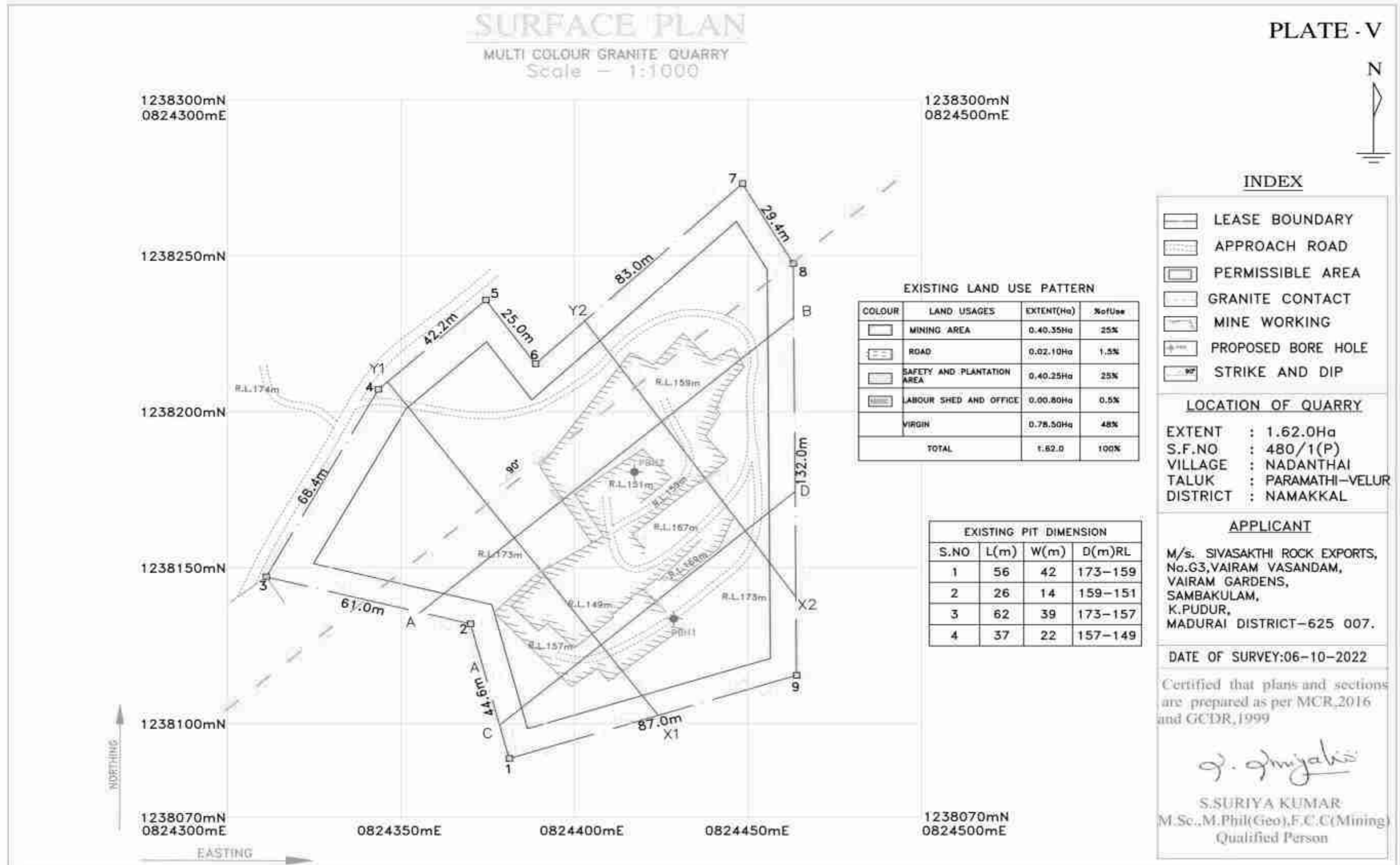
**Fig No. 2.1 Google image showing lease boundary with its Coordinates**

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**  
**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**



**Fig No.2.2 Lease Plan**

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**Fig No.2.3 Surface Plan**

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

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**Fig No. 2.4 Photograph shows general view of the existing lease area and texture of the Multi colour granite.**

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

**Table 2.2 Environmental Settings**

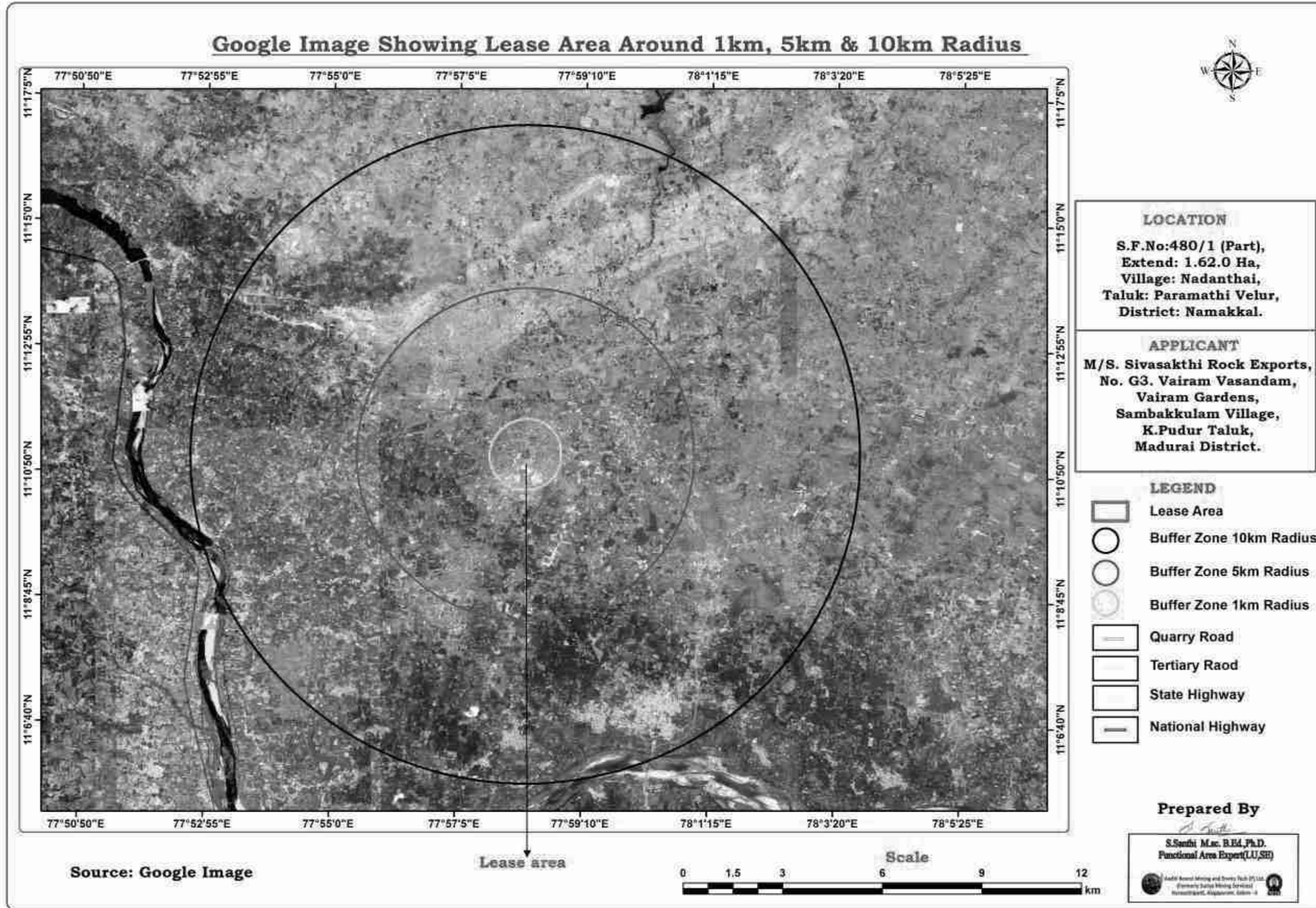
<b>Project Details</b>				
Proponent	M/s. Sivasakthi Rock Exports			
Total Mine Lease Area	1.62.0 Ha – Multi color granite quarry			
Survey No.	S.F.No.480/1(P) (Patta Land)			
Site Location	Nadanthai Village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu			
Geographical Co-ordinates	Latitude: 11°11'06.7372" N to 11°11'12.6115"N Longitude: 77°58'09.5551"E to 77°58'14.6753"E.			
Toposheet No.	58E/16			
Elevation	Elevation of the area is 196m above MSL			
<b>Accessibility</b>				
Nearest Habitation	150m – NW			
Nearest village	Surampalayam – 0.35km – NW			
PMHC	Paramathi Government Primary Hospital – 6.39 km - SE			
Nearest Settlement	<b>Name of Village</b>	<b>Direction</b>	<b>Distance from Mines (km approx.)</b>	<b>Population</b>
	Sirapalli	NW	1.39	1342
	Rangampalayam	S	1.95	2583
	Kabilakuruchi	SW	3.45	3775
	Manickanatham	SE	3.40	1823
Nearest Town	Paramathi– 6.0km - SE			
Nearest Roadway	NH - 44 (Kashmir – Kanyakumari) – 6.6km - SE SH-86 (Thiruchengode – Paramathyvelur)– 2.9km – NE MDR-885 (Pasur – Vellodu) –1.08km –W Surampalayam Village Road – 450m - NW			
Nearest Railway station	Unjalur Railway station – 11.84km - SW			
Nearest Airport	1. Salem Domestic Airport – 66.60 km – NE 2. Trichy International Airport – 93.13km - SE			
<b>Environmental Sensitiveness</b>				
Interstate Boundary	Karnataka-Tamil Nadu interstate boundary is located at a distance			



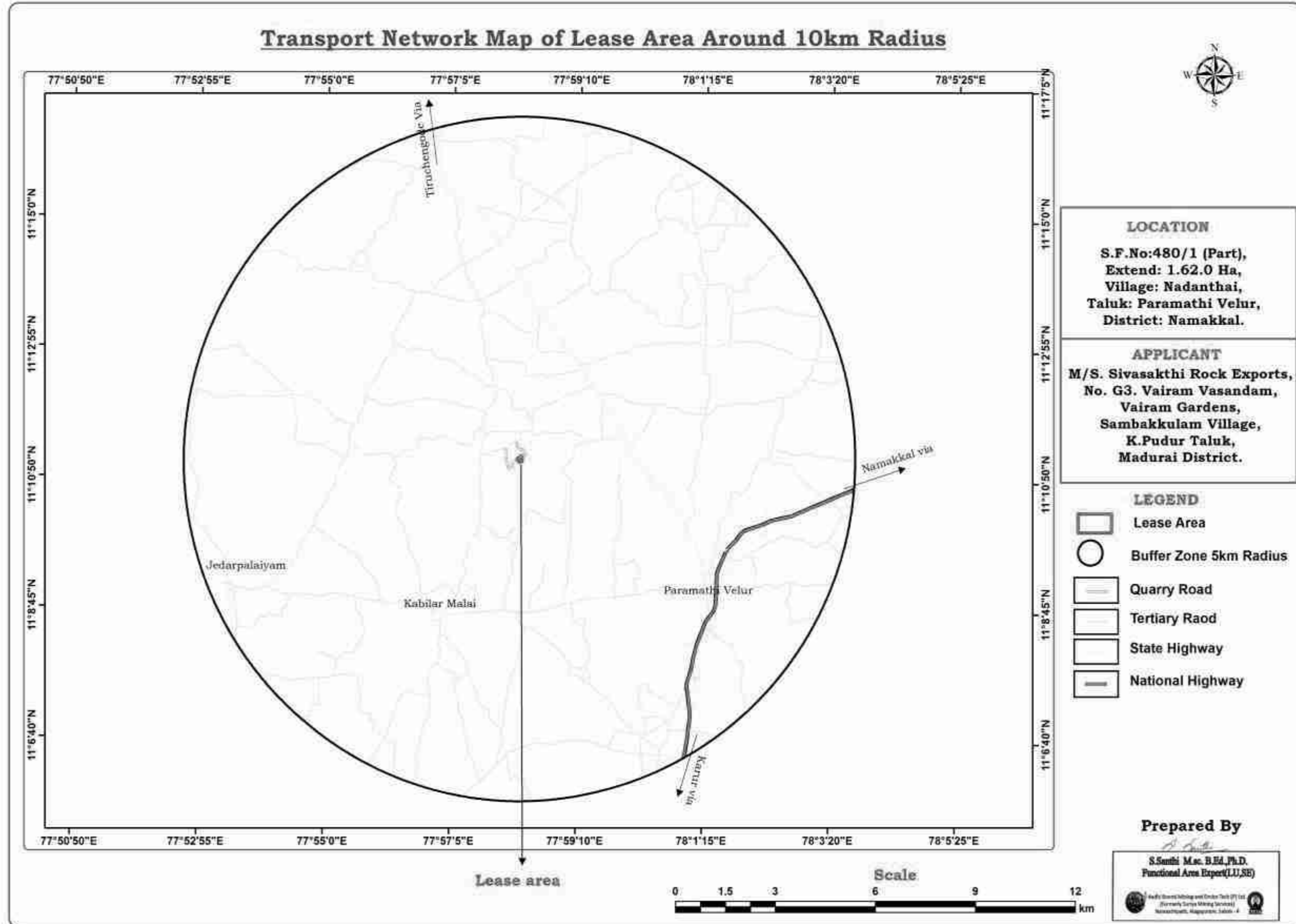
## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

	of 86.84 km in NW direction.
Coastal Zone	Bay of Bengal – 176.80 km - SE.
Reserve Forest	No forest is located within 10km radius of the project site. The nearest R.F is Selur Extension R.F – 34km – E. The proposed project site is not a forest land. Hence it does not attract Forest Conservation Act, 1980
National Park/Wildlife Sanctuary	Vellode Birds Sanctuary – 34.78km – NW. It is notified birds sanctuary. There is no wild life sanctuary found within 10 Km radius from the proposed area and this project doesn't fall under the Wildlife (Protection) Act, 1972.
Water bodies	Important water bodies within 10 km radius 1. A lake – 2.3km – SE 2. Thirumanimutharu river – 5.0km – NE 3. Mavureddy lake – 5.1km – SE 4. Pallapalayam lake – 7.2km – SW 5. Idumbankulam lake – 7.4km – SE 6. Cauvery river – 9.6km – SW. 7. Mariyamman padugai dam across Cauvery River – 9.7km - SW
Defense Installations	Nil within 10km radius
Critically Polluted area	Nil within 10km radius
Quarries around 500m radius	Three existing quarries namely M.M.Exports with an extent of 2.75.5 Ha, Tmt.V.Punitha with an extent of 2.86.5 Ha and M/s. Sivasakthi Rock Exports with an extent of 1.62.0 Ha and Lease expired quarry namely J.A.Richard with an extent 1.76.0 Ha located within 500m radius of project site as per AD cluster letter Roc.No.1250/Mines/2022 dated: 30.05.2023.
Seismic zone	Zone-II, Low damage risk zone as per BMTPC, Vulnerability atlas Seismic zone of India IS: 1893-2002



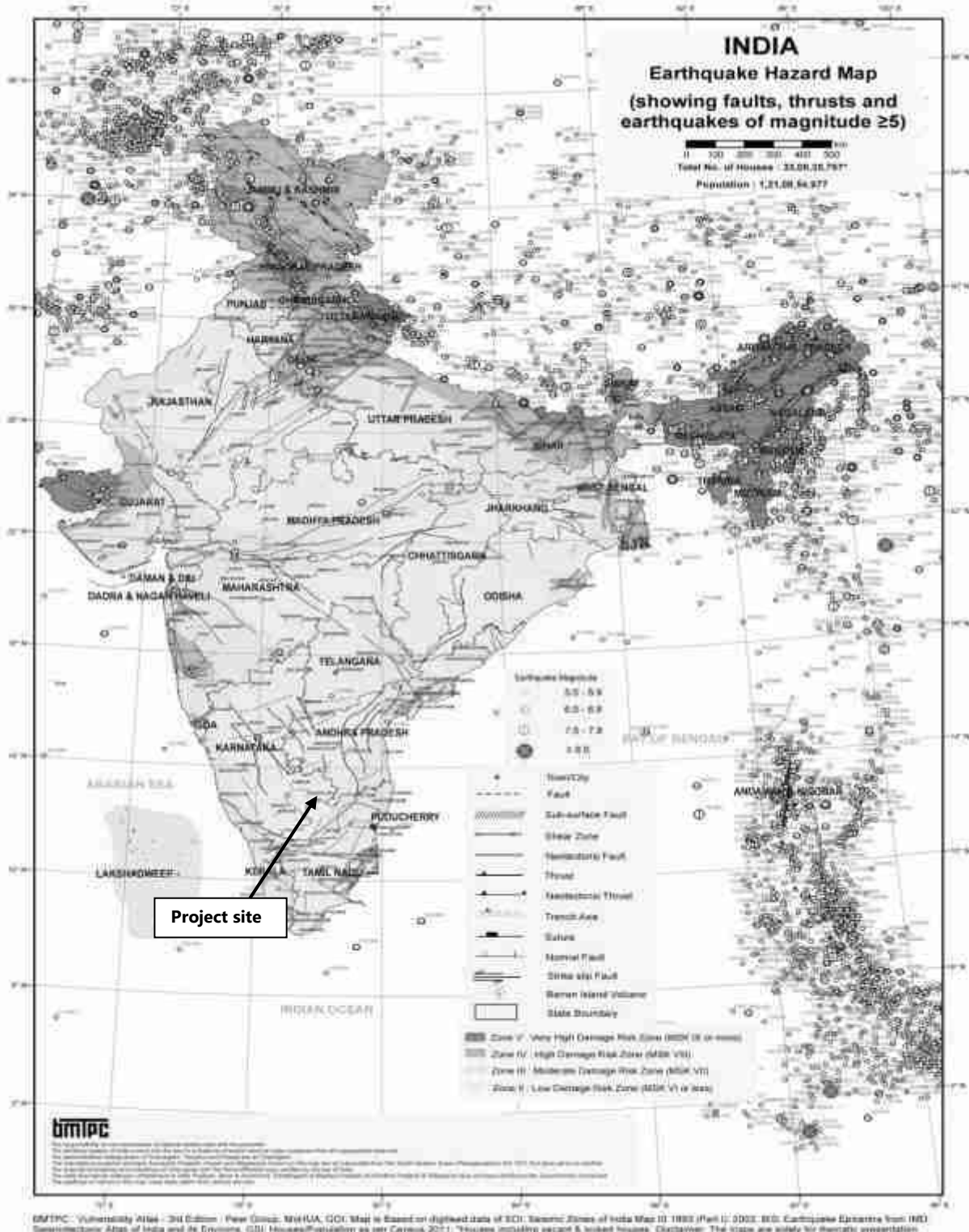
**Fig No. 2.5 Google Earth Image showing 1km, 5km and 10 km radius around exiting multi color granite quarry**



**Fig No 2.6 Transport Network of 10 km radius around exiting multi color granite quarry**

# DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

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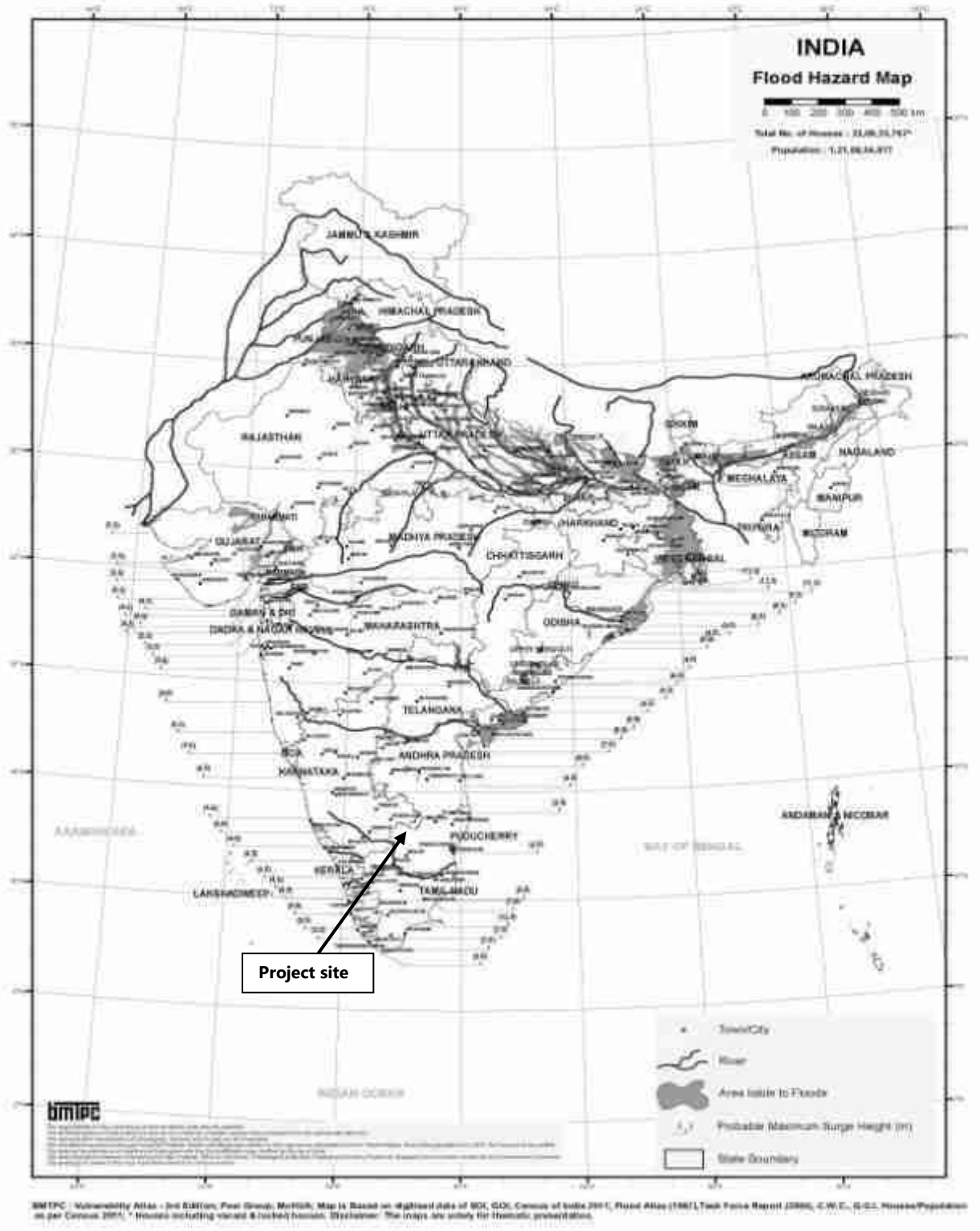


**Fig No 2.7 Earthquake Hazard Map**

The area falls under Zone-II, low damage risk zone as per BMTPC, Vulnerability atlas Seismic zone of India IS: 1893-2002.

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**Fig No 2.8 Flood Hazard Map**

The area falls under Probable Maximum Surge Height of 5m.

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**Fig No 2.9 Winds and Cyclone Hazard Map**

The area falls Moderate Damage Risk Zone-B ( $V_b = 44\text{m/s}$ ).

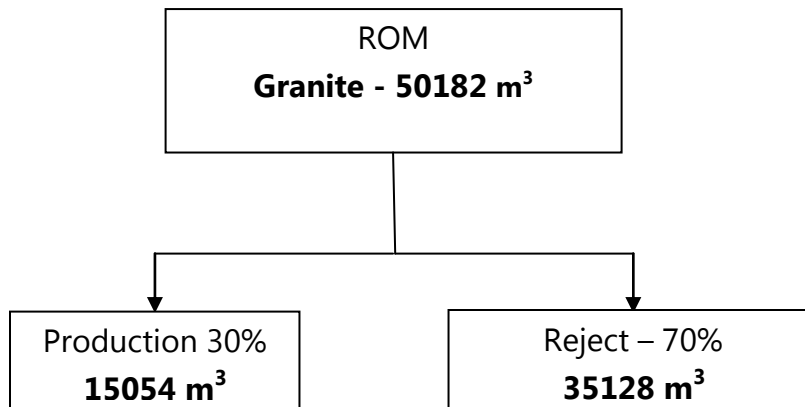
**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

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**2.4 Size or Magnitude of Operation**

**Table 2.3 Mining Details**

<b>Particulars</b>	<b>Details</b>																				
Method of Mining	Open cast – mechanized mining																				
Geological resources	3,73,294m <sup>3</sup>																				
Mineable reserves	92,356m <sup>3</sup>																				
Production	15,054m <sup>3</sup> @30% of granite for five years and 3,011m <sup>3</sup> per annum.																				
Reject	3,5128 m <sup>3</sup> @ 70% for five years (2023-24 to 2027-28)																				
Top soil	Top soil– 6,624m <sup>3</sup> for plan period																				
Weathered rock	5,896m <sup>3</sup>																				
Ore: Waste ratio	1: 3.16																				
Depth of Mining	33m																				
Water Table	45m bgl																				
Road design	1: 10 inside the pit and ramp 1:16 for transport																				
Overall Pit Slope	45°																				
Period of Lease	20 Years (12.04.2018-11.04.2038)																				
Existing pit dimension	<table border="1"> <thead> <tr> <th><b>Pit</b></th> <th><b>L(m)</b></th> <th><b>W(m)</b></th> <th><b>D(m) RL</b></th> </tr> </thead> <tbody> <tr> <td align="center">I</td> <td align="center">56m</td> <td align="center">42m</td> <td align="center">173-159m</td> </tr> <tr> <td align="center">II</td> <td align="center">26m</td> <td align="center">14m</td> <td align="center">159-151m</td> </tr> <tr> <td align="center">III</td> <td align="center">62m</td> <td align="center">39m</td> <td align="center">173- 157m</td> </tr> <tr> <td align="center">IV</td> <td align="center">37m</td> <td align="center">22m</td> <td align="center">157-149m</td> </tr> </tbody> </table>	<b>Pit</b>	<b>L(m)</b>	<b>W(m)</b>	<b>D(m) RL</b>	I	56m	42m	173-159m	II	26m	14m	159-151m	III	62m	39m	173- 157m	IV	37m	22m	157-149m
	<b>Pit</b>	<b>L(m)</b>	<b>W(m)</b>	<b>D(m) RL</b>																	
	I	56m	42m	173-159m																	
	II	26m	14m	159-151m																	
	III	62m	39m	173- 157m																	
IV	37m	22m	157-149m																		



**Fig No 2.10 Material Balance**

## **DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

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### **2.5 Proposed schedule for approval and implementation**

The proposed activity will be commenced only after obtaining Environment Clearance from SEAC/SEIAA, Tamil Nadu and CTE/CTO from TNPCB and other necessary clearance from concerned departments.

### **2.6 Technology and process description**

#### **2.6.1 Regional Geology**

Namakkal District is mostly underlain by the Archaean crystalline and metamorphic complex. The geology of the district is complicated due to recurring tectonic and magmatic activities occurred during Pre-Cambrian period. The famous Sittampundi Anorthosite Complex which is known for its complex geology and occurrences of Platinum Group of Elements is situated in this district. Hornblende Biotite Gneisses are the oldest rocks in four Taluks of the district. It is very fissile and present widely in plains. The gneisses are highly weathered upto 30 m at some places. The Charnockites are coarse grained, massive and foliated at places and their colour is bluish dark to grey. They are the second largest rock type present in the district. They are massive and less weathered than the gneisses. They exhibit 2 to 3 distinct set of joints and most of them are vertical with steep dips. Iron ore deposits associated with quartz feldspathic gneiss and garnetiferous quartz gneisses are present in some areas.

These rocks are highly folded and jointed and less weathered. Quartzite and crystalline lime stones are exposed in patches in north and central parts of the district. The thickness of these bands varies from a few metres to ten metres and the length extends to few kilometres. Numerous lenses of dunite with magnesite veins of various dimension are exposed within gneiss. There are number of basic dykes present in the study area. Granites are found in some parts of the district. They are massive and jointed poorly. Thin veneer of alluvium is found along the course of the Cauvery and Thirumanimuthar. However, alluvium of few metres thickness is found near the junction of river Thirumanimuthar and river Cauvery. Several faults and shears are occurring mostly with north east-southwest trend. They are expected to influence the course of groundwater movement, its storage and developmental potentials in the district.



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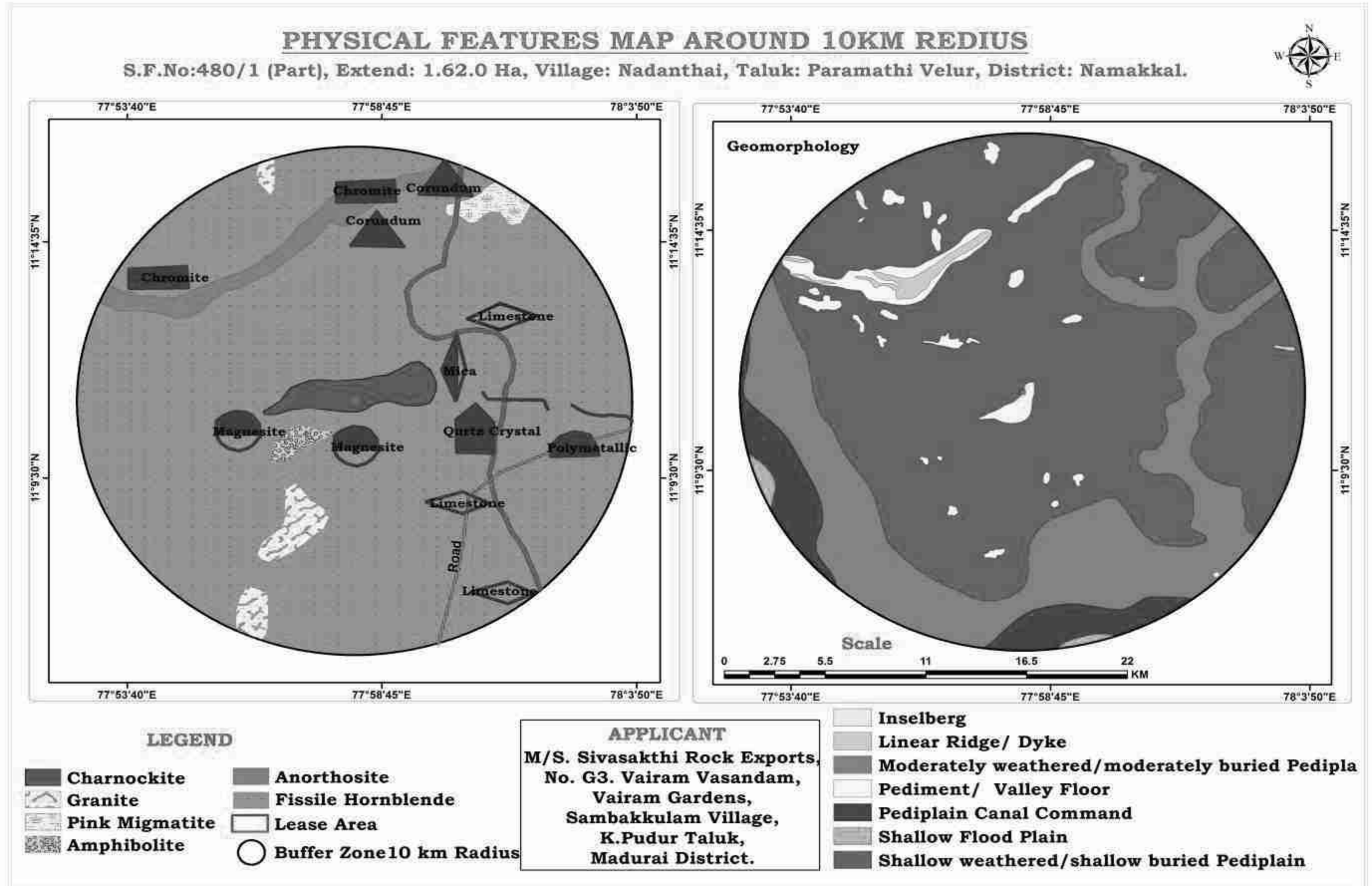
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### **2.6.1.1 Exploration**

The Systematic geological mapping and demarcation of the commercially viable granite deposit has been prepared with relevant structural features such as Contact of the country rock with commercial Multi colour granite deposit. Different joint pattern and their pattern of repetition etc. have been marked. Based on the features, estimation of geological and minable reserves has been arrived having considered the market potentiality. In the earlier approved mining plan, two core drilling proposal for exploration was given, No core drilling were done due to expected recovery has been achieved however, however the lessee has proposed to drill two bore holes to ascertain the proved depth persistence of the deposit, colour and texture of formation and possibility of recovery of bigger size blocks in this Scheme period.

The mineralized zone of the deposit is well established but drilling was made randomly and therefore two more bore holes as per plate-III is proposed to be carried out during the next Scheme period.

The proposed two core drilling shall be vertical to a depth of up to RL450m (48m bgl) (both) with Nx and Bx standard size at the earmarked areas in the geological plan to probe the depth and quality of the deposit at deeper levels during the next five years period of mining.



**Fig No 2.11 Regional Geology & Geomorphology Map**

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### 2.6.2 Method of Mining

#### a) Open cast working:

The quarry operation will be carried out by open cast mechanized method of mining. Jack hammer drilling and blasting will be adopted to make perfect pre-determined crack to release the block from the parent rock. Hydraulic excavators will be engaged for loading the rejects, top soil and weathered rock and wire saw will be adopted for cutting the rocks. Wire saw cutting is adopted below second bench to recover more granite blocks to increase the rate of recovery. The top soil is found up to 2m depth from surface, below which found hard rock formation. The recovery factor is taken as 30% and it may increase further at deeper levels.

Manpower will be engaged for drilling shot-holes, line drilling, smooth blasting, Jet burner operation, dressing of granite blocks, cutting and removal of small amount waste or rejects and support service labours for operation of machineries. The materials required for manual workings are listed as under,

1. Drill rods - 450mm, 800mm, 1650mm, 3900mm and up to 7200mm.
2. Steel alloy chains of sufficient lengths with dia. of 12 - 18mm with "D' shackles.
3. Rubber hose and clamps.
4. Feather and wedges of 15 cm and 30 cm sizes utilized for splitting of blocks.
5. Crow bars of 1500 - 1800mm lengths.
6. Spades, Sludge hammers, Iron Pans and chisels.

### 2.6.3 Extent of Mechanization

The following machinery is proposed to be exclusively for the development and production work at this quarry.

#### i) Drilling equipment:

Drilling of shot-holes will be carried out using compressor and Jack hammer combination. Depth of holes shall be 2.5m for 3m bench height. The spacing shall be 30 - 40cms and burden from the preface depends upon the size of block. However, it is preferred to have 1 - 2m burden from the preface for effective pulling of blocks.

In case of burden in excess of 1.5m the spacing should be adjusted smaller, less than 30cms. To achieve a correct blasting geometry certain amount of trial blast is pre-requisite to affect a perfect pre-determined crack to release the block from the parent rock. Details of drilling equipments are tabulated below,

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**Table 2.4: Details of drilling equipment**

Type	No	Dia.of hole	Bucket/ Capacity (MT)	Make	Motive Power	H.P
Jack Hammer	2	32mm	Hand held	Atlas copco	Diesel	60
DTH Wagon Drill	1	---	---	---	---	---
Compressor	2	7.5 Kgs/ Kg	XAT 266	Atlas Copco P 600 (IR)	Diesel	120
Gen set	2	---	---	Powerica	--	CP125 D5P

### ii) Loading Equipment:

Loading of waste and granite rejects shall be done by hydraulic excavator into tippers for clearing of waste and rejects from the working place periodically. One hydraulic excavator with 1.7m<sup>3</sup> bucket capacity are engaged for clearing of wastes in the lease area of M/s.Sivasakthi Rock Exports.

**Table 2.5: Details of loading equipment**

Type	No	Size/ Capacity	Make	Motive Power	H.P
Hydraulic Excavator	1	1.7 m <sup>3</sup>	Kobelco	Diesel	180
Hydraulic Crane	1	70MT	TATA P & H 955 A	Diesel	-



**a) Excavator for loading waste and rejects b) Crane for loading granite**

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Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

### iii) Haulage and Transport Equipment:

Transport of Rejects and waste will be done by Tippers of 10 Tonnes capacity

**Table No-2.6: Details of transportation vehicles**

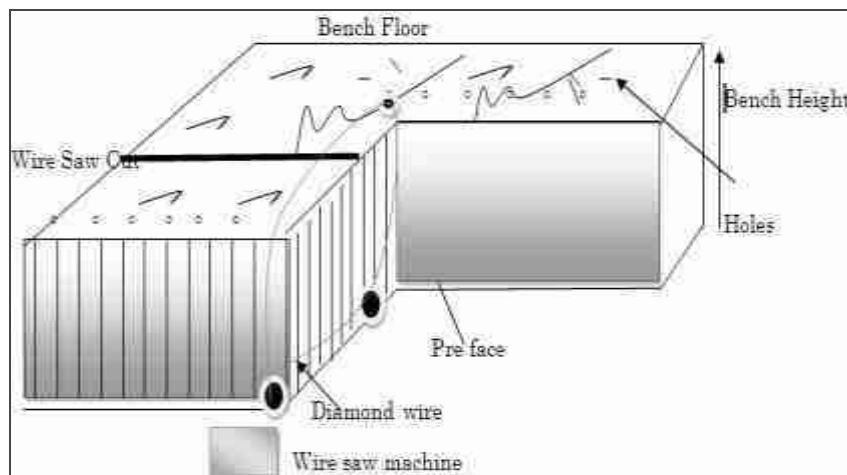
Type	No	Size/ Capacity	Make	Motive Power	H.P
Tipper	1	10M.T	MAN	Diesel	110



**Tipping Truck**

### iv) Diamond wire saw cutting:

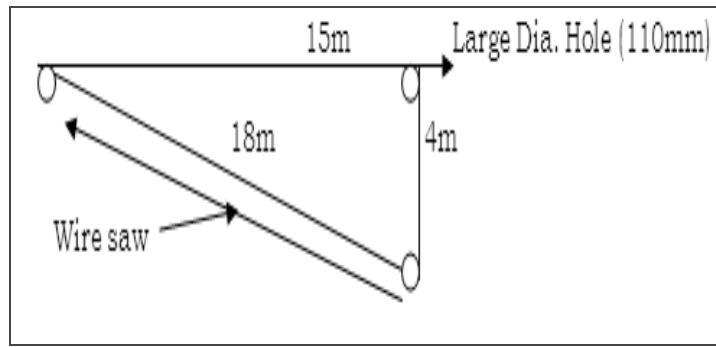
Diamond Wire saw cutting is an eco-friendly method of quarrying with high rate of recovery, thereby the conservation aspects of GCDR, 1999 is perfectly fulfilled.



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### PLAN VIEW FOR INITIAL WIRE –CUT:



Details of wire saw cutting machine is given as under

**Table No 2.7 Details of wire saw cutting machine**

Type	Nos.	Capacity (m <sup>3</sup> )	Make	Motive Power	H.P.
Wire saw Machine	2	Industrial Diamond wire	Stone Tech	Electric Power	-

### v) Blasting pattern

**Blasting:** A controlled Blasting technique is adopted to open a pre-determined crack of the block from the parent body. Shot-hole with 32-40mm dia. which are drilled by line drilling and Jack hammers at a close spaced interval of 30cms will be initiated suitably with any one or more of the following methods

- Pre-splitting
- Cushing blasting with low strength and very low dia. Cartridges axial priming or standard dia. cartridge with intermittent stemming materials.
- Water impulsion with Detonating cords of sufficient power, preferably 10gms per meter to develop cracks along the line of drilling,

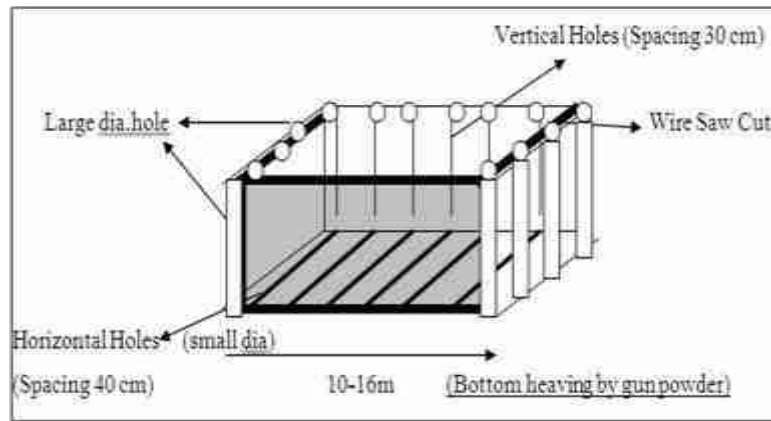
### a) Broad Blasting Parameter:

Dia. of the hole	=	32 - 36 mm
Spacing	=	30cms
Charge per Hole	=	D.cord with water or 70gms of gun powder or slurry
Depth	=	2.5 m

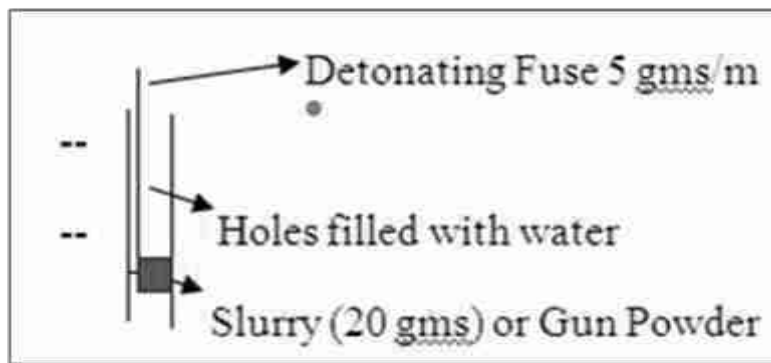
## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

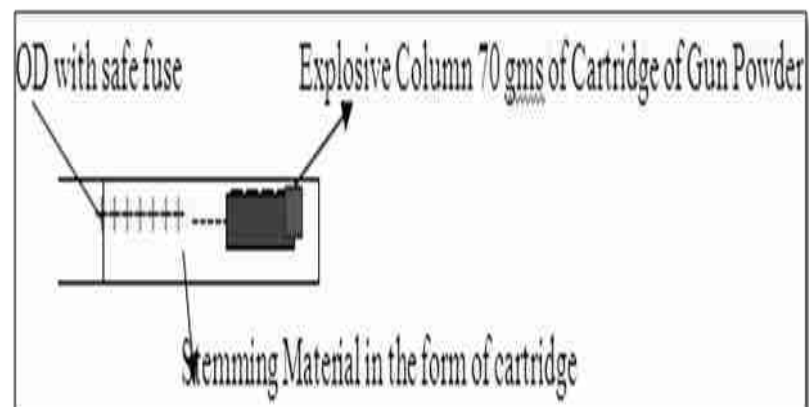
### Wire Saw Cut and Drilling Pattern



### Charging of Vertical Holes



### Charging of Horizontal Holes



In watery holes, the detonating fuse is directly used and water act as a cushion to move the blocks and form a line of crack. In other cases, small vibration created by low explosives open the artificial shear plane \tensional crack formed by a line of drilling. Sometimes wedges are used to cut the major blocks into smaller sizes after drilling of holes to a depth of 30-40cms. Then the blocks are dressed to desire sizes.

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### b) Type of Explosives:

Common explosives used to develop a line of crack along the line of drilling are,

- i) Detonating Fuse or Cord with 5-10gms of Expl. Permeter,
- ii) Low explosives like Gun powder or 70gms of slurry cartridges,
- iii) Ordinary Detonator, class- 6
- iv) Safety fuse, class -6.

**c) Powder factor:** The Powder factor for waste rock development shall be 2m<sup>3</sup> or 7 tonnes per Kg. of explosives

### d) Storage of explosives

The applicant is advised to store the explosives as per the Indian Explosives Act, 1958. The explosives to be used in mines being a small quantity the District collector may be approached to keep the stocks not exceeding 5 Kgs at time or any other quantity permitted by the concerned authorities in a portable magazine of S & B types.

## 2.7 Land Use Pattern of the Core Zone

Depth of mining is estimated as 33m based on the working pits of the lease quarry. The Present and proposed land use pattern is given as under, at the time of closure of mine the pit will be backfilled.

**Table 2.8 Computation of existing and proposed land use pattern**

S.No	Head	Area put on use at start of plan (Ha) (Present)	% of Use	Total Area used at the end of plan (Ha)	% of Use
i)	Area under mining	0.40.35	25%	0.69.25	43%
iii)	Waste Dump	0.00	-	0.18.00	11%
iv)	Road	0.02.10	1.5%	0.03.24	2%
v)	Green belt & Safety area	0.40.25	25%	0.52.00	32%
vi)	Labour shed and office	0.00.80	0.5%	0.00.80	0.5%
vii)	Virgin area	0.78.50	58%	0.18.71	11.5%
<b>Total</b>		<b>1.62.0</b>	<b>100</b>	<b>1.62.0</b>	<b>100</b>



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### 2.8 Mineral Reserves and Resources

#### 2.8.1 Geological Resources and Reserves

The geological resources estimated by cross sectional method is as **373294m<sup>3</sup>** of granite up to a depth of 33m from the surface, having considered the depth of mining, recovery, safety barriers etc. A detail of estimation of geological resources and reserves is given in the Table 2.9

**Table 2.9 Computation of Geological Reserves**

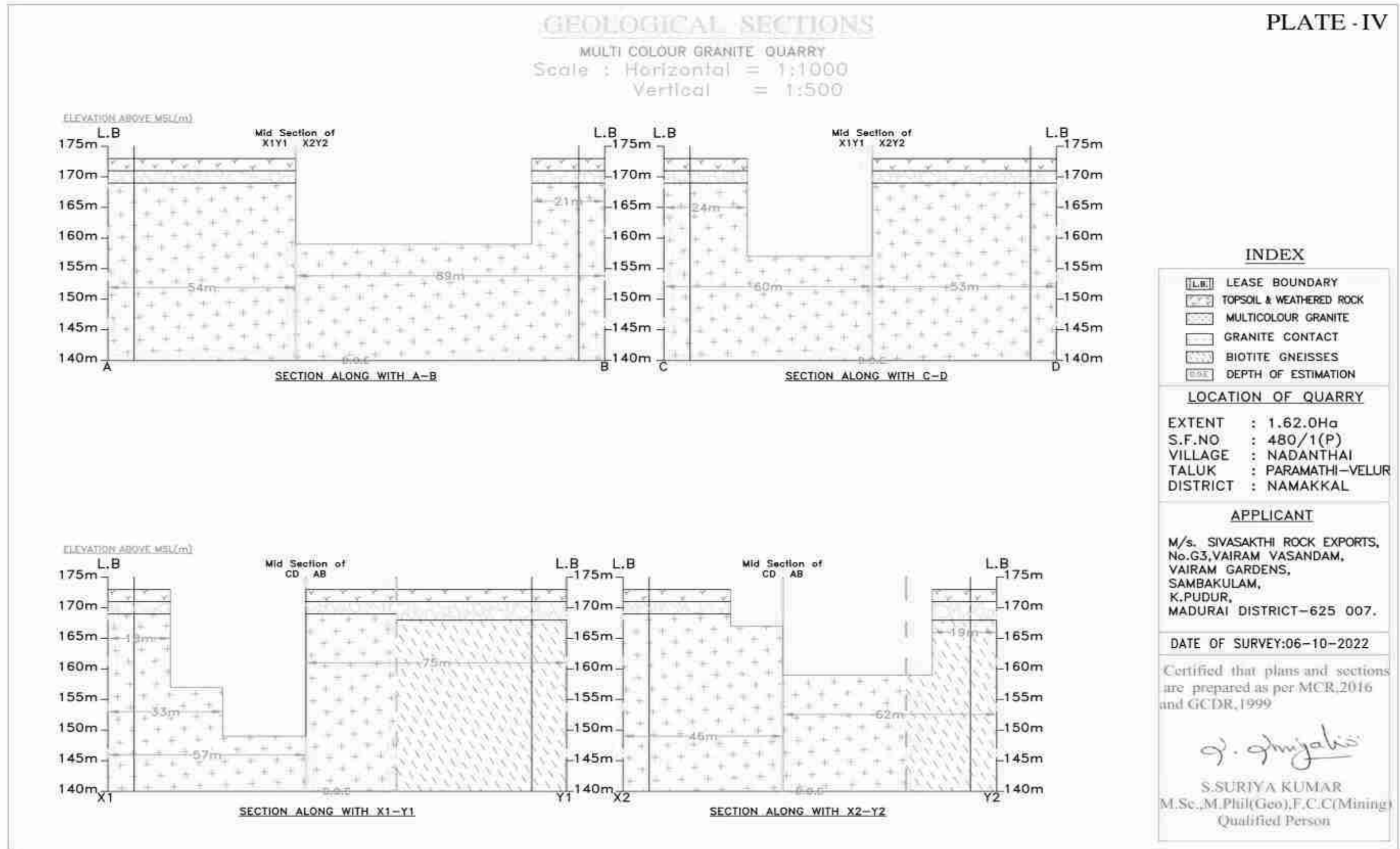
SECTION	L(m)	W(m)	D(m)	Volume (m <sup>3</sup> )	Recovery @30% (m <sup>3</sup> )	Reject @70% (m <sup>3</sup> )
<b>AB-X1Y1</b>	54	75	33	133650	40095	93555
<b>AB-X2Y2</b>	21	19	14	5586	1676	3910
	89	62	19	104842	31453	73389
<b>CD-X1Y1</b>	24	18	16	6912	2074	4838
	33	60	8	15840	4752	11088
	60	57	9	30780	9234	21546
<b>CD-X2Y2</b>	53	31	6	9858	2957	6901
	53	46	27	65826	19748	46078
<b>TOTAL</b>				<b>373294</b>	<b>111989</b>	<b>261305</b>

**Note:**

Total Volume of Geological resources up to a depth of 33m = 373294m<sup>3</sup>  
Recoverable Geological reserves @ 30% = 111989m<sup>3</sup>  
Total Granite Reject @ 70% = 261305m<sup>3</sup>



**Fig No 2.12 Geological plan**



**Fig No 2.13 Geological Cross Section**

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### 2.8.2 Mineable /Recoverable Reserves:

The mineable\ recoverable reserves is estimated by cross-sectional method excluding the mineral under benches, safety barriers etc., The mineable reserves is estimated as **92356m<sup>3</sup>** of granite to a depth of mining 33m from the surface. Details of estimation of mineable reserve are given in Table 2.10.

**Table 2.10 Computation of Mineable/Recoverable Reserves**

Section	Bench	L (m)	W (m)	D (m)	Volume (m <sup>3</sup> )	Reserve (m <sup>3</sup> ) 30%	Reject @ 70%	Weathered rock (m <sup>3</sup> )	Topsoil (m <sup>3</sup> )
AB-X1Y1	I	47	43	2					4042
	II	45	41	2				3690	
	III	43	38	4	6536	1961	4575		
	IV	37	32	6	7104	2131	4973		
	V	31	26	6	4836	1451	3385		
	VI	25	20	6	3000	900	2100		
	VII	19	14	6	1596	479	1117		
AB-X2Y2	I	14	11	2					308
	II	12	9	2				216	
	III	10	6	5	300	90	210		
	IV	4	43	5	860	258	602		
	V	66	37	6	14652	4396	10256		
	VI	60	31	6	11160	3348	7812		
	VII	54	25	6	8100	2430	5670		
CD-X1Y1	I	17	11	2					374
	II	15	41	2				1230	
	III	13	7	5	456	137	319		
	IV	7	39	6	1638	491	1147		
	V	37	10	6	2220	666	1554		
	VI	31	28	6	5208	1562	3646		
	VII	25	22	6	3300	990	2310		
CD-X2Y2	I	46	24	2					2208
	II	44	22	2				1936	
	III	42	35	5	7350	2205	5145		
	IV	36	29	6	6264	1879	4385		
	V	30	23	6	4140	1242	2898		
	VI	24	17	6	2448	734	1714		
	VII	18	11	6	1188	356	832		
<b>TOTAL</b>					<b>92356</b>	<b>27706</b>	<b>64650</b>	<b>7072</b>	<b>6932</b>

Total volume of ROM up to a depth of 33m	=	92356m <sup>3</sup>
Total Mineable reserves @30%	=	27706m <sup>3</sup>
Reject of granite @70%	=	64650m <sup>3</sup>

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Total Weathered	=	7072m <sup>3</sup>
Total Topsoil	=	6932 m <sup>3</sup>
Total Waste Ratio (6932m <sup>3</sup> +7072m <sup>3</sup> +64650m <sup>3</sup> )	=	78654/27706=1:2.8

### 2.9 Year Wise Production and Development

The five years period of production and the generation of waste are described in the year-wise development/production schedule as tabulated below. The year-wise development/production plan is shown in Plate no-VI – VIB (Scheme of mining) and year-wise sections are given in Plate VII (Scheme of mining).

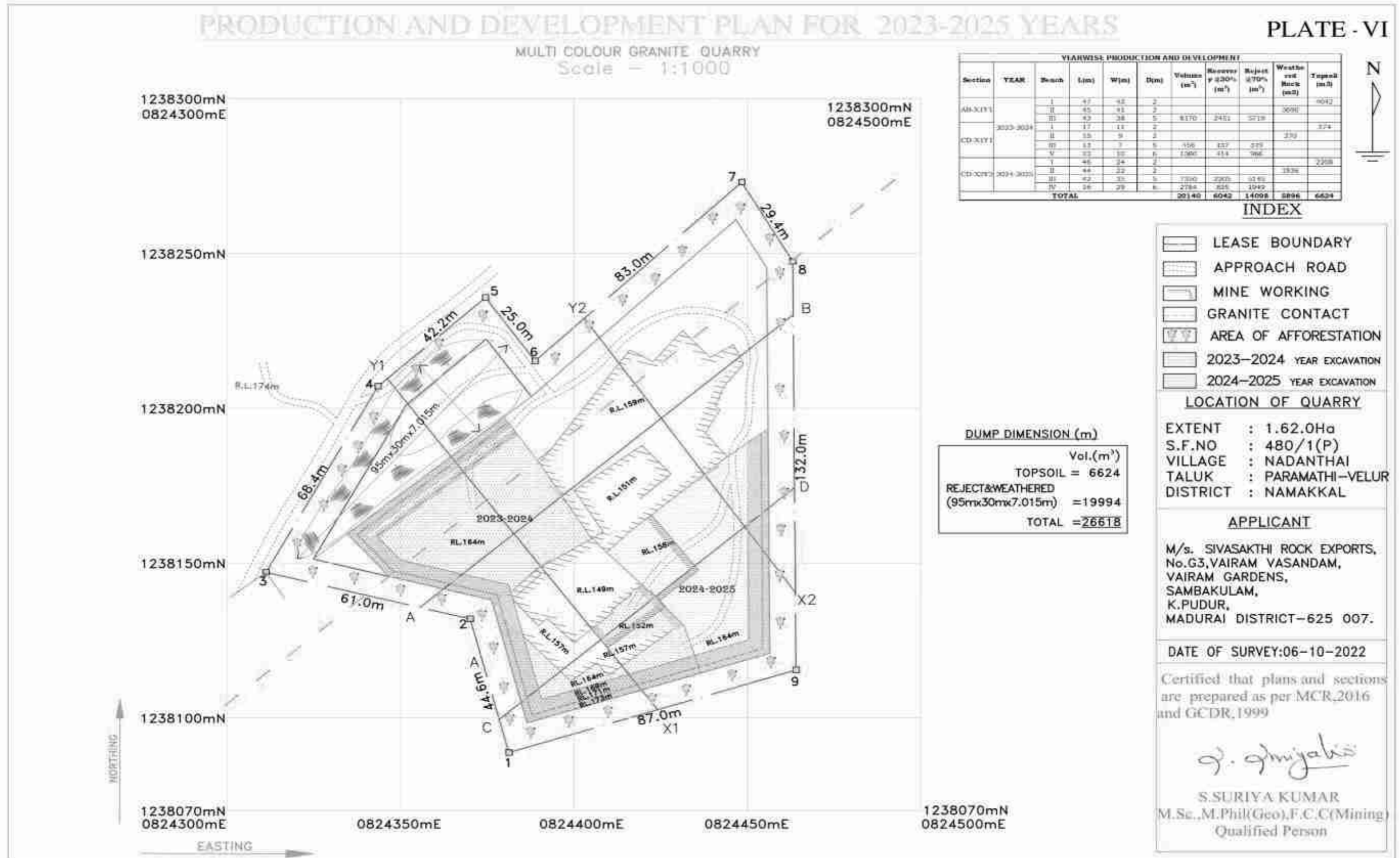
**Table 2.11 Computation of Year wise development Plan**

Year	Top Soil	Weathered rock	Rom (m <sup>3</sup> )	Production @30% (m <sup>3</sup> )	Rejects @70% (m <sup>3</sup> )	Ore to over burden ratio
2023-24	4416	3960	10005	3002	7004	1 : 5.12
2024-25	2208	1936	10134	3040	7094	1 : 3.69
2025-26	---	---	10068	3020	7048	1 : 2.33
2026-27	---	---	9990	2997	6993	1 : 2.33
2027-28	---	---	9984	2995	6989	1 : 2.33
<b>TOTAL</b>	<b>6624</b>	<b>5896</b>	<b>50181</b>	<b>15054</b>	<b>35128</b>	<b>1 : 3.16</b>

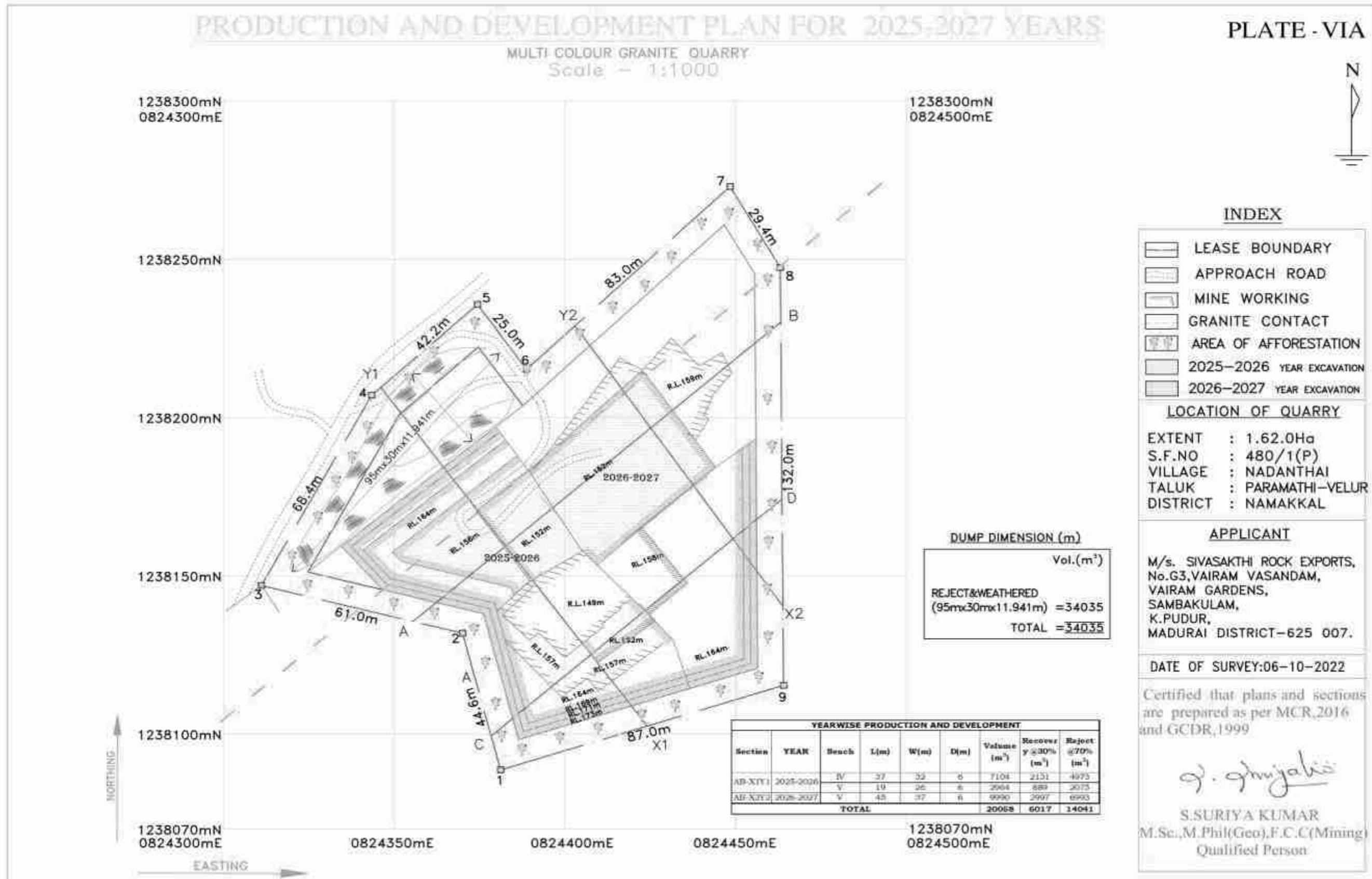
Granite Recovery @30% for 5 years	=	15054m <sup>3</sup>
Average granite Recovery @30%/Annum	=	3011m <sup>3</sup>
Granite Rejects@70%	=	35128m <sup>3</sup>
Total Weathered	=	5896m <sup>3</sup>
Total Topsoil	=	6624 m <sup>3</sup>
Granite to Waste ratio (Top soil+ weathered+ Reject) = (6624 m <sup>3</sup> + 5896 m <sup>3</sup> + 35128 m <sup>3</sup> )	=	47648/15054
	=	1:3:16

The development involves only removal of waste, rejects and topsoil. About 70% of total excavated rock is estimated to be the rejects and remaining will be the saleable granite blocks.

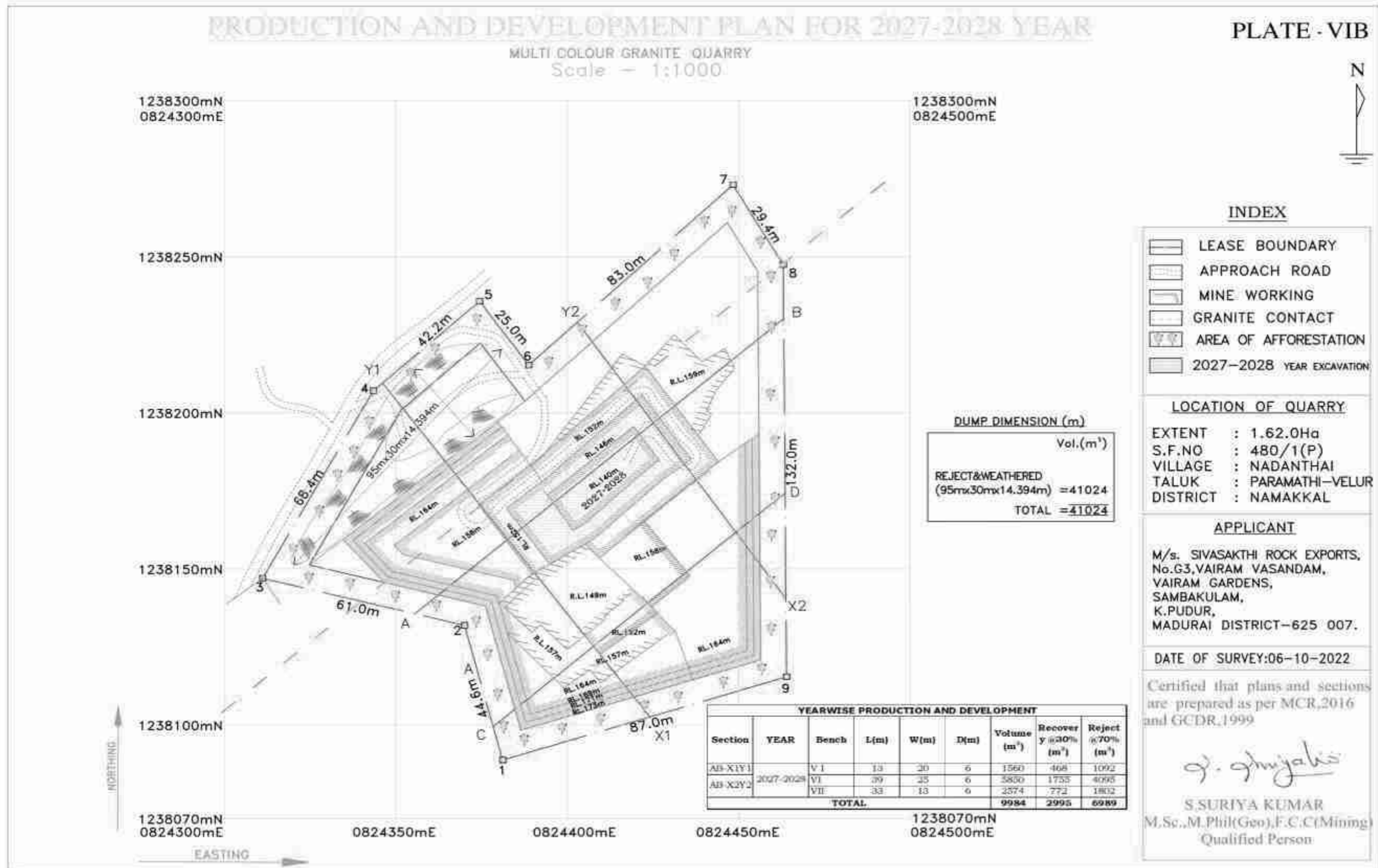
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**Fig No 2.14 Year Wise Development and Production Plan for 2023-2025**



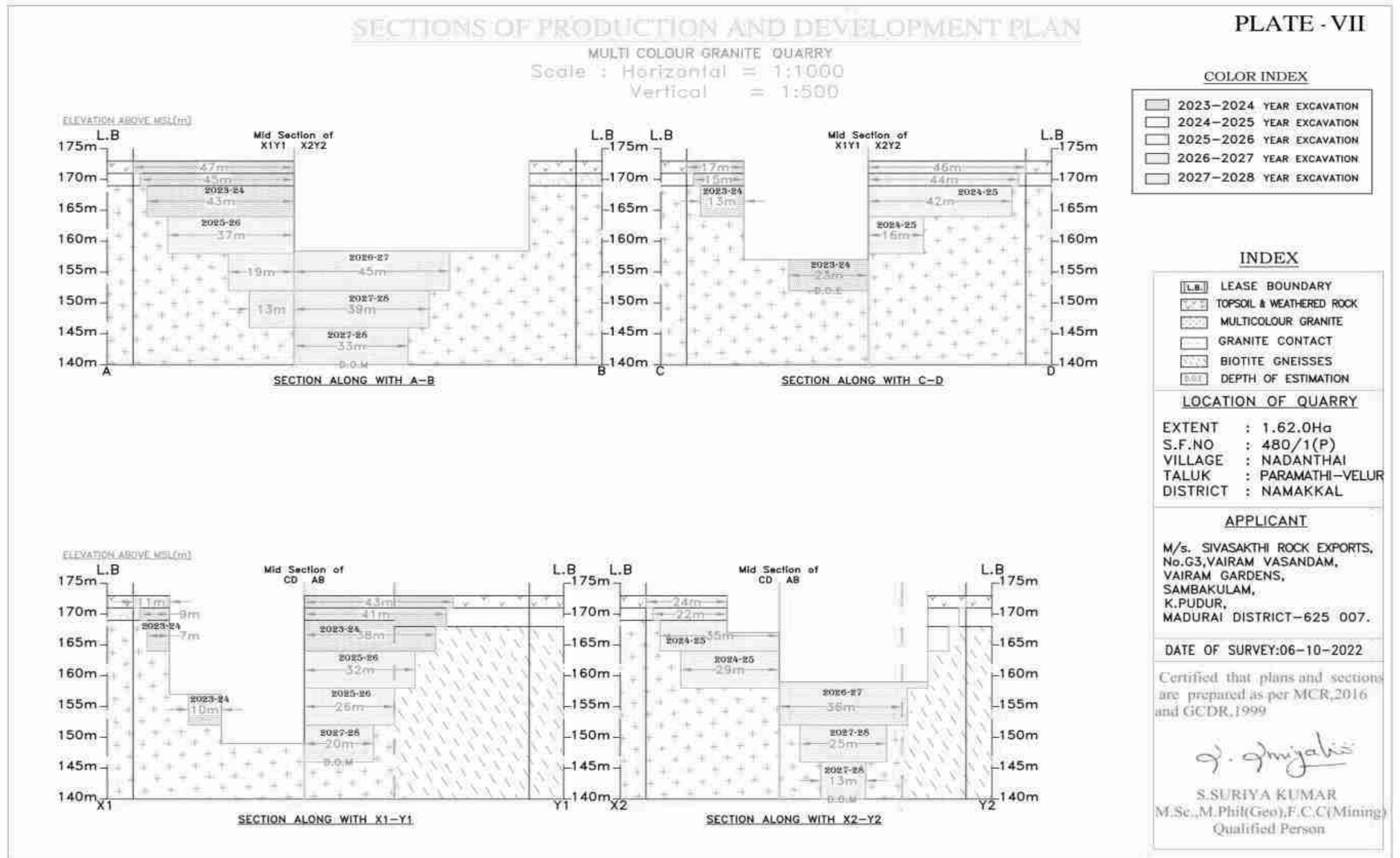
**Fig No 2.15 Year Wise Development and Production Plan for 2025-2027**



**Fig No 2.16 Year Wise Development and Production Plan for 2027-2028**



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**Fig No 2.17 Section of Development and Production Plan for 2023-28**

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### 2.10 Stacking of Mineral Rejects and Disposal of Waste for the plan period.

The waste rocks to be generated from the mine will be fragmented rocks, rejects of Granite with patches, cracks and small size blocks and boulders. The site selected for dumping waste and Granite rejects is stable, therefore no chance for instability of dumps and washouts. Total generation of Granite rejects for the next five years will be **35,128m<sup>3</sup>**, weathered rock will be **5,896m<sup>3</sup>** and Topsoil will be **6,624m<sup>3</sup>**.

**Table 2.12 Computation of waste and rejects materials**

Year	Topsoil (m <sup>3</sup> )	Weathered rock/ Boulders (m <sup>3</sup> )	Granite Rejects @ 70% (m <sup>3</sup> )	Total
2023-24	4416	3960	7004	15380
2024-25	2208	1936	7094	11238
2025-26	---	---	7048	7048
2026-27	---	---	6993	6993
2027-28	---	---	6989	6989
<b>Total</b>	<b>6624</b>	<b>5896</b>	<b>35128</b>	<b>47648</b>

For the next five years, all the rejects and weathered rock will be dumped in the northwestern side of mining lease area as per approved scheme of mining. Top soil will be used for afforestation purposes.

**Table 2.13 Reject and waste dump quantity for the plan period (2023-2028)**

Description	End of 5 <sup>th</sup> Year
Topsoil	6624 m <sup>3</sup>
Reject & Weathered	41024m <sup>3</sup> (95m x 30m x 14.394m)
<b>Total</b>	<b>47,648m<sup>3</sup></b>

### 2.11 Conceptual Mining Plan

Conceptual Mining Plan is prepared with an object of long-term systematic development of bench lay - outs, selection of permanent dump so as to avoid re-handling, setting roads, to determine ultimate pit limit, depth of mining and ultimate pit slope, selection of sites for construction of infrastructures, lying of roads etc. Kindly refer Table 2.12 & Plate No-VIII.

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### 2.11.1 Ultimate Pit Dimensions

The ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible area etc., The Ultimate pit of the mine is given as under

**Table 2.14 Ultimate Pit Dimensions (m)**

PIT	Bench	Topsoil/Mineral	L(m)	W(m)	D(m)
I	I	Topsoil	128m	93m	2m
	II	Weathered rock	124m	89m	2m
	III	Granite	120m	84m	5m
	IV	Granite	108m	71m	6m
	V	Granite	97m	60m	6m
	VI	Granite	85m	48m	6m
	VII	Granite	73m	36m	6m
<b>TOTAL =</b>					<b>33m</b>

Details of ultimate pit and dump dimensions are given in plate No-IX. Ultimate or over all pit slope shall be 45° and each bench height shall be 6m height and vertical.

For the whole life of mine, the total generation of Granite rejects will be **64,650m<sup>3</sup>**, and weathered will be **7,072m<sup>3</sup>** and Topsoil will be **6,932m<sup>3</sup>**.

**Table 2.15 Ultimate Dump Dimensions (M)**

Description		Volume (m <sup>3</sup> )
Top Soil	=	6932m <sup>3</sup>
Reject & Weathered (95mX30mX25.165m)	=	71722m <sup>3</sup>
<b>Total</b>		<b>78654m<sup>3</sup></b>

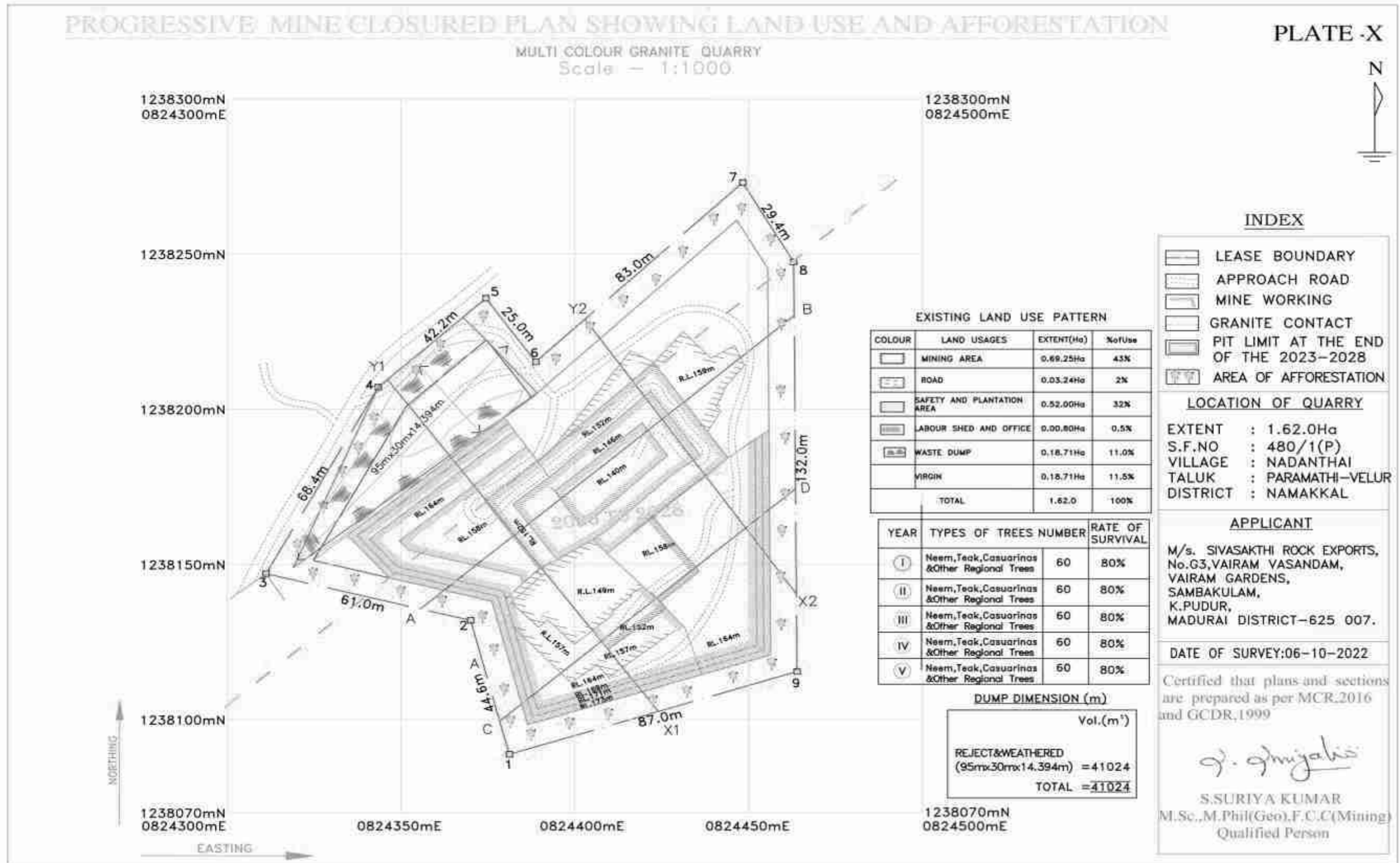
At the end of mining, all rejects and weathered rock will be dumped in same place in North west side as per approved scheme of mining and plantation will be done on slopes of dump. Top soil will be used for afforestation purposes.

### 2.11.2 Restoration, Reclamation of already mined out area

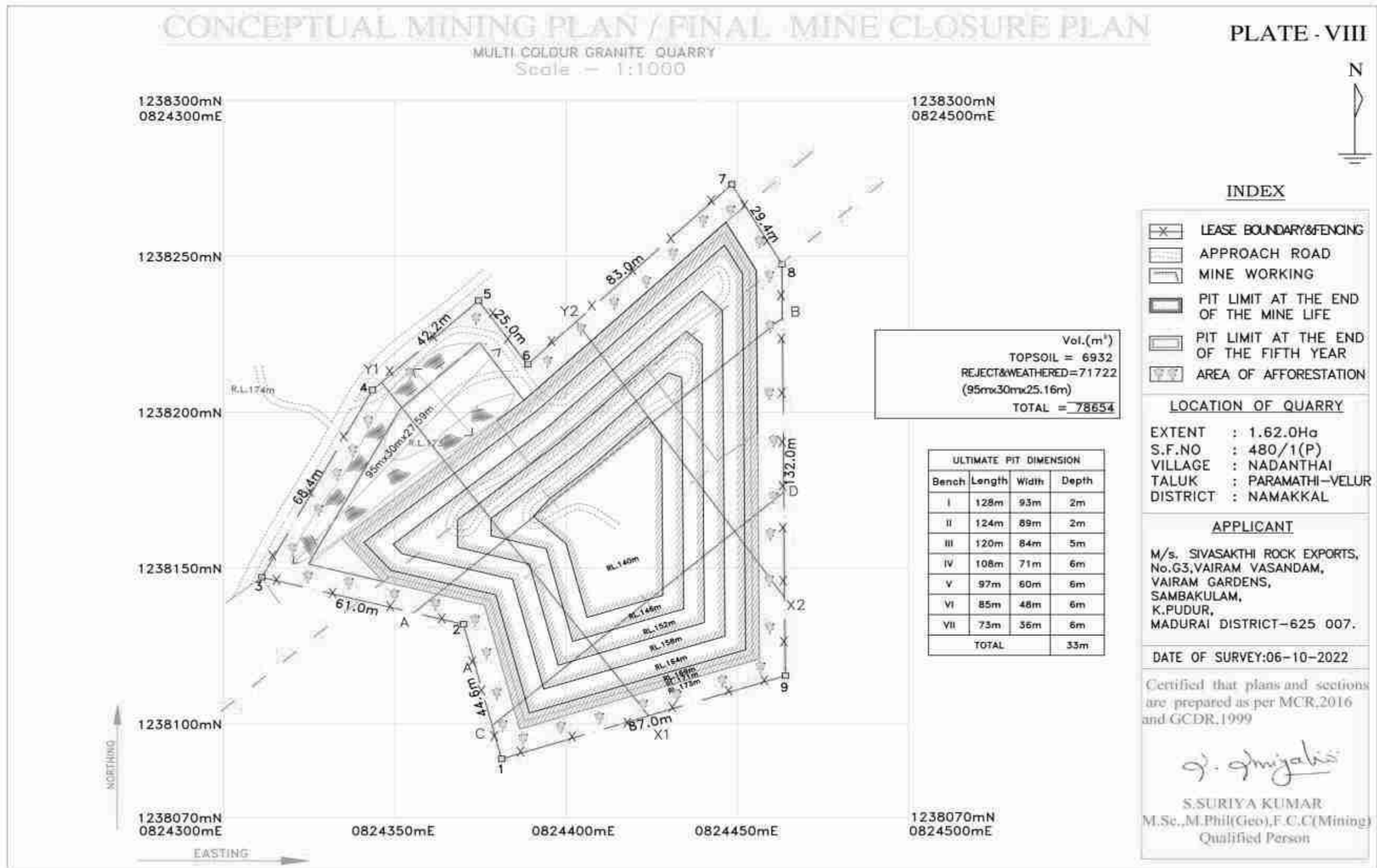
The quarried out pit will be used as water storage pond which improves the agricultural activity in the buffer zone.

The quarried pit will be fenced by using Barbed wire fencing to prevent inherent entry of public and cattle.

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**Fig No 2.18 Progressive Mine Closure Plan**



**Fig No 2.19 Conceptual mining plan**



**Fig No 2.20 Ultimate Pit Limit**

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### 2.12 Employment Potential (Management & Supervisory personal)

**Table 2.16 Employment Potential of M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry**

<b>Management and supervisory staffs</b>	Mines manager	1 no
	Mate	1 no
	Blaster cum mate	1 no
	Supervisor	1 no
	Clerk cum record keeper	1 no
<b>Skilled</b>	Operator	2 no
	Wire saw operator	2 no
<b>Semi-skilled</b>	Driver	2 no
	Driller	6 no
<b>Unskilled</b>	Dressing Labours	3 no
	Cleaners	2 no
	Watchman	1 no
<b>Total</b>		23 nos

**Table No 2.17 Water Requirements (3.5 KLD)**

Drinking & Domestic purposes	1.0 KLD
Water sprinkling on haul roads	1.5 KLD
Green Belt	1.0 KLD
Total	3.5 KLD
<b>Source</b>	Water Vendors

### 2.13 Amenities

This is an existing quarry project. Good approach road is already available. All site services such as first-aid room, office, rest room, canteen and toilets will be established outside the lease area. The workers are supplied with helmets, safety boots, ear plugs, masks, gloves, etc., as personal protective devices.

#### 2.13.1 Sanitary facilities

Semi-permanent latrines & urinals shall be maintained at convenient places for use of labours as per the provisions of Rule (33) of the main rules, 1955 separately for males and females. Washing facilities shall also be arranged as per rule (36) of the mines Rules, 1955.

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### 2.13.2 First Aid facility

10 Numbers First aid kit will be made available at site. Better higher facilities are available in and around Namakkal district.

### 2.13.3 Labour Health

Periodic medical examination has to be made for occupational health once in a year in addition to attending medical treatment of occupational injuries under Rule 45 (A).

### 2.13.4 Precautionary safety measures to the Labourers

Safety provisions like helmet, goggles, safety belt, safety shoes etc have to be provided as per the circulars and amendments made for Mine labours under guidance of DGMS.

Necessary training will be conducted once in a year to all the employees with the help of qualified and experienced officers to train about the safe and systematic quarrying operation

### 2.13.5 The Child labour Employment

As per the Mines Act, 1952, no child labours below 18 years of old were engaged for any work in the quarry.

### 2.13.6 Power Requirement

Only diesel operated mining machinery will be used for quarrying. No power will be required for the proposed project.

### 2.14 Project Cost

i) Land Cost	=	Rs 16,00,000
ii) Machinery to be used	=	Rs 62,00,000
iii) Refilling / Fencing	=	Rs 1,00,000
iv) Labourers Shed	=	Rs 1,50,000
v) Sanitary facility	=	Rs 2,00,000
vi) Other items	=	Rs 3,00,000

**Total = Rs 85.5 Lakhs**



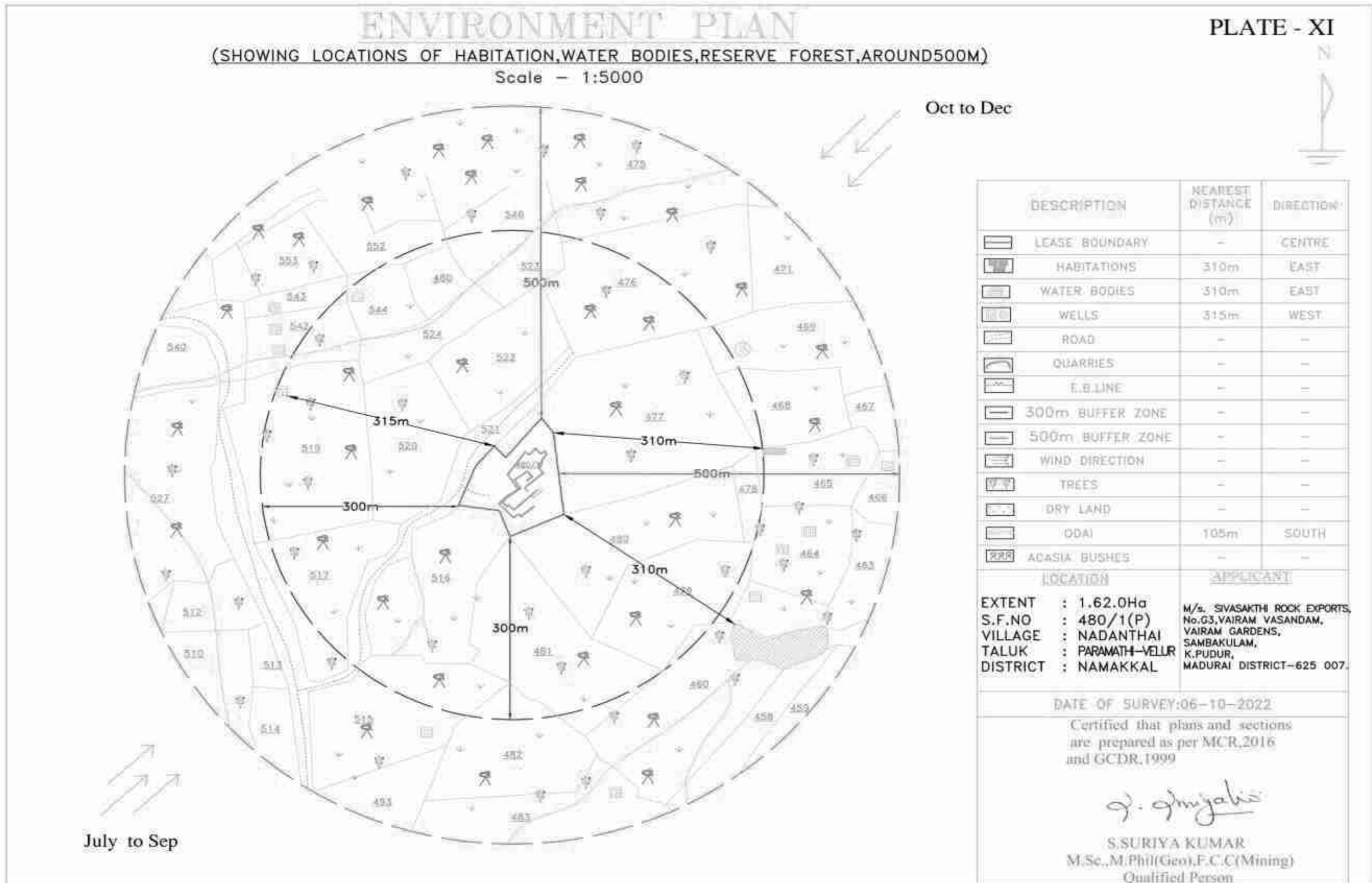
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### EMP Cost

i)	Personal protective equipment	=	Rs 1,00,000
ii)	Environmental Monitoring	=	Rs 2,30,000
iii)	Occupation Health	=	Rs 1,00,000
iv)	Green Belt & Dust suppression	=	Rs 3,00,000
	<b>Total</b>	=	<b>Rs 7.30 lakhs</b>



**Fig No 2.21 Environmental Plan**

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### **2.15 End Use**

The applicant does not have the facilities to cut and polish the rough blocks of granite. He proposes to sell the rough blocks directly to the potential buyers of the domestic and world market.

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### **CHAPTER – 3: DESCRIPTION OF THE ENVIRONMENT**

#### **3.0 BASELINE ENVIRONMENTAL STATUS**

##### **3.1 INTRODUCTION**

The chapter describes the existing environmental settings in the study area and is based upon the secondary information collected from the published sources, reconnaissance survey, primary socio-economic and environmental monitoring of air, noise, soil, ground and surface water in the study area.

For the purpose of EIA studies, mine lease area was considered as the core zone and area outside the mine lease boundary up to 10km radius from the lease boundary was considered as buffer zone. Collection of base line data is an integral part of the preparation of environmental impact assessment reports. The baseline monitoring study has been carried out during March 1<sup>st</sup>, 2023 – May 31<sup>th</sup>, 2023 to assess the existing environmental scenario in this area.

The Various environmental components studied as a part of the baseline study are discussed in the following project activities are:

- Air Environment
- Noise Environment
- Soil Environment
- Water Environment
- Flora and Fauna
- Socio-economic
- Land Environment

##### **3.2 METHODOLOGY**

The guiding factors of the present baseline study are the requirements laid down by the Central Pollution Control Board (CPCB) and guidelines as per the Environmental Impact Assessment Notification.

- In order to assess the Ambient Air Quality (AAQ), samples of ambient air were collected by installation of Respirable Dust Sampler and Fine Particulate Matter Sample at different locations within the study area and analyzed to find out the existing status of air quality.

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- Ground water samples were collected from the existing tube wells, while samples for surface water were collected from river & small ponds. The samples were analyzed for parameters necessary to determine water quality (based on IS: 10500 criteria) and those, which are relevant from environmental impact point of view of the proposed river bed mining project.
- Soil samples were collected and analyzed for relevant physical and chemical characteristics in order to assess the impact of the proposed mining on soil.
- Inventory of flora and fauna species present in the area was made through field visits and survey by ecologists.
- Socio-economic data was collected from primary sources through village – level surveys and household visits.

The land use patterns of the study area were assessed through latest satellite imaging and topographical sheets of Survey of India.

Appropriate methodologies have been followed in preparing the EIA-EMP report. The methodology adopted for the study is outlined below. The sampling locations were selected on the basis of the following:

- Predominant wind directions recorded by the India Meteorology Department (AWS- Automatic Weather Station) station, Namakkal Observatory, Namakkal district.
- Existing topography;
- Drainage pattern and location of existing surface water bodies like lakes/ponds, rivers and streams;
- Location of villages/towns/sensitive areas, and;
- Areas, which represent baseline conditions;

### **3.3 METEOROLOGICAL DATA RECORDED AT IMD (AWS- Automatic Weather Station) STATION, NAMAKKAL OBSERVATORY, NAMAKKAL DISTRICT**

The meteorology of the project area plays very important role in dispersion of pollutants and build-up of pollution within the air atmosphere. In the present study, in the month of March 1<sup>st</sup> – May 31<sup>th</sup>, 2023 meteorological data for site specific has been taken to find the dispersion of pollutant concentration. The mixing height, which is an important parameter to express the dispersive potential of atmosphere, has been taken from the atlas of hourly mixing height and assimilative capacity of atmosphere in India.

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**Table 3.1 Summary of the Meteorological data for the study period**

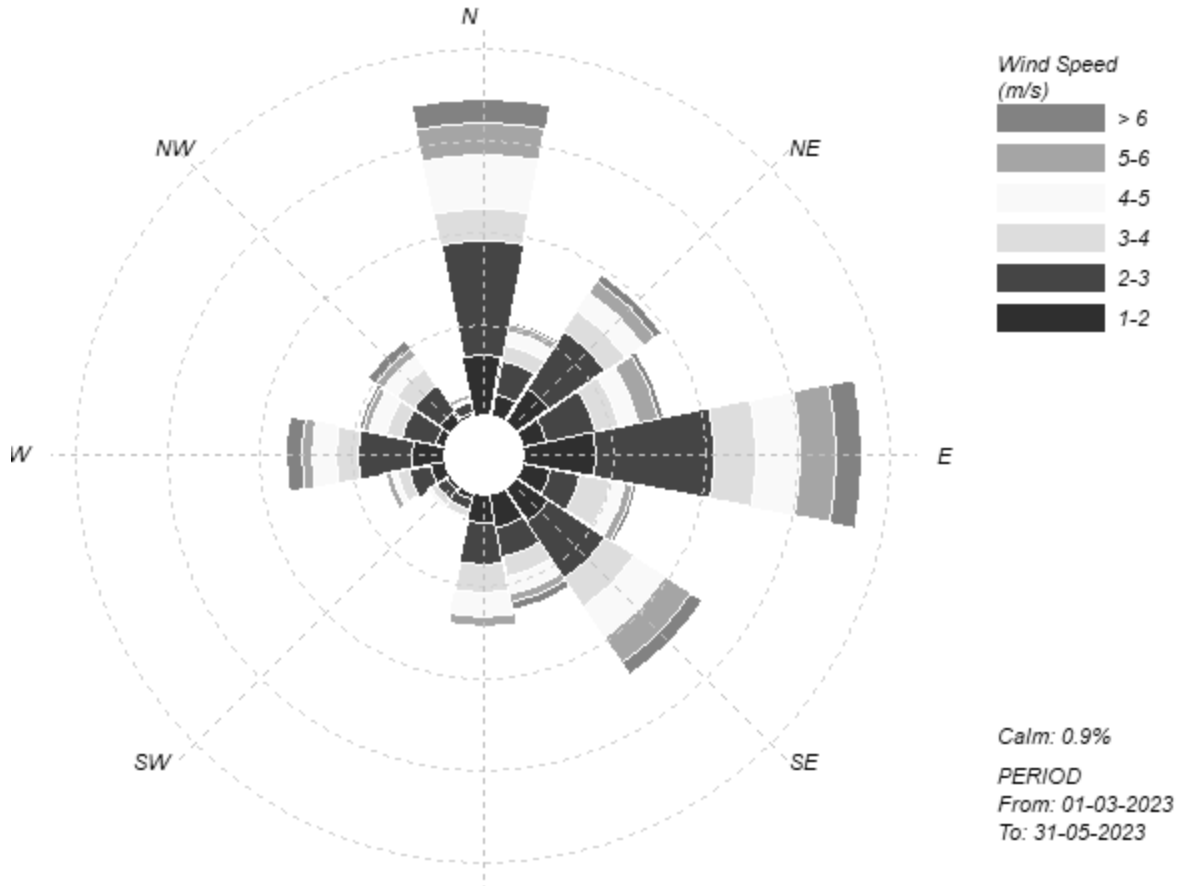
S.No	Parameters	Months	March 2023	April 2023	May 2023
1	Temperature (°C)	Max	37	38	36
		Min	22	25	26
		Average	29	31	30
2	Rainfall (mm)	Total Average Rainfall	19	60	117
		No. of rainy days	2	6	13
3	Humidity (%)	Average	54	51	63
4	Wind speed (mps)	Average	2.19	2.25	2.25
5	Cloud (%)	Average	24	28	43

### 3.3.1 Wind Rose

Wind speed and wind direction data is useful in identifying the influence of meteorology on the air quality of the area. The observed wind pattern during the study period is described below. In the present study, in the month of March 1<sup>st</sup> to May 31<sup>st</sup> 2023 meteorological data has been taken to find the dispersion of pollutant concentration. Wind-rose diagram for the study period is shown given below in Fig No. 3.1.

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**Fig No 3.1 Wind Rose Pattern for the Study period**

## 3.4 AIR ENVIRONMENT

Prevailing air environment i.e. baseline conditions in an area is primarily governed by many factors activities going on in that area. The pollutant level in atmosphere is also governed by the meteorology, topography, natural settings in terms of plantation, forest cover, vegetation etc as these factors in combination with each other are responsible for dispersion, diffusion, transportation and assimilation of pollutants in the local air shed.

### 3.4.1 Ambient Air Monitoring

The prime objective of baseline air quality study (10km radius) is to assess the existing air quality of the area to form base line information. The study area represents mostly rural environment. Ambient air monitoring was carried out at 5 locations. The locations were identified keeping in view of predominant wind

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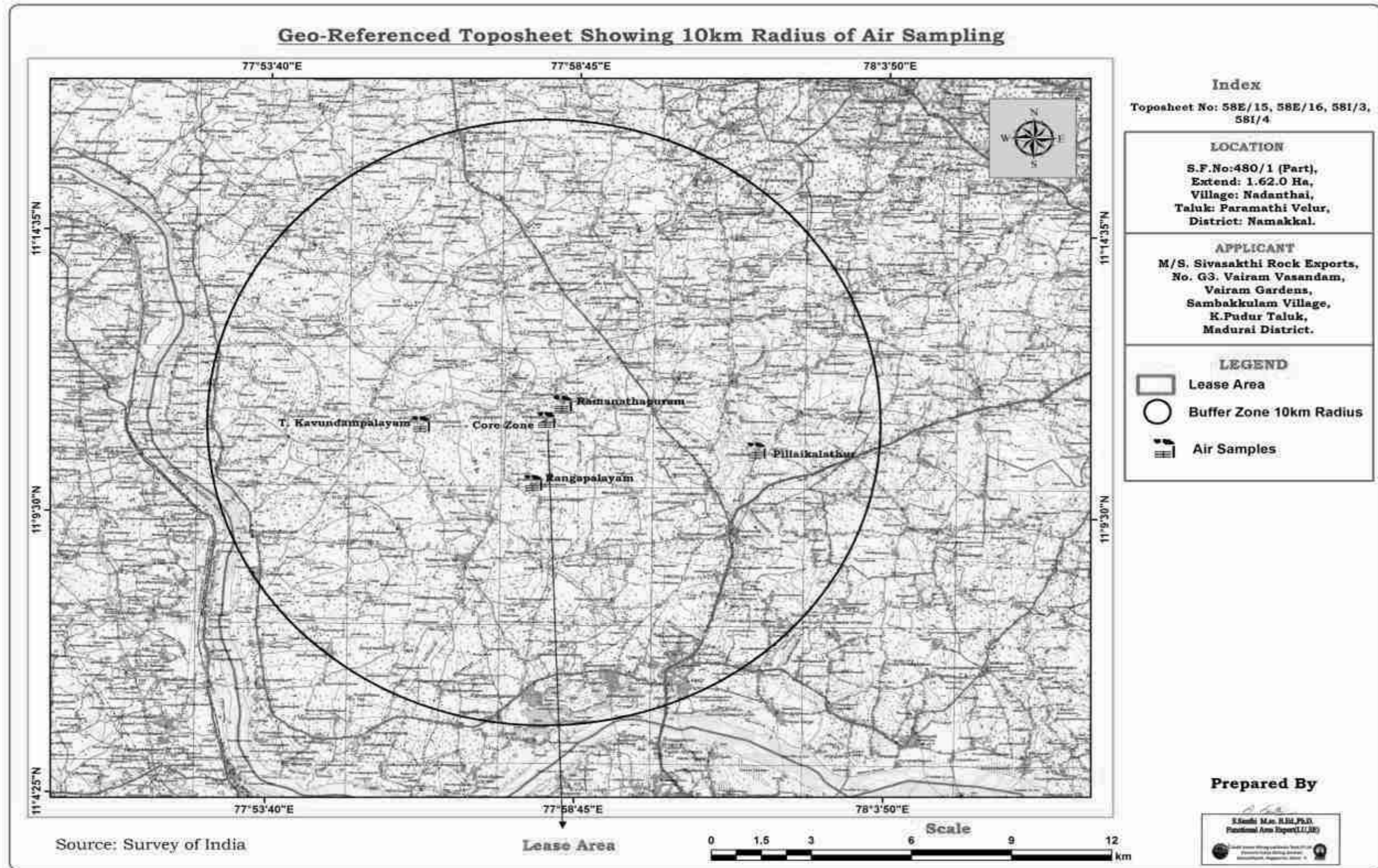
directions prevailing during study period, sensitive receptors, human settlements and mining activities around. The details about sampling locations are mentioned below in Fig No. 3.2, 3.3 and presented in Table 3.1(a).

The existing Ambient Air Quality status (AAQ) has been monitored for parameters PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>. Ambient air quality monitoring was carried out at a frequency of two days per week at each location for three months at 8 hour continuously. Respirable dust samplers have been used for monitoring the existing PM<sub>10</sub> status and fine dust samplers are used for monitoring PM<sub>2.5</sub> status in the study area. Methodologies adopted for sampling and analysis were carried out, as per the approved methods of Central Pollution Control Board (CPCB).

**Table 3.1 (a) Ambient Air Quality Monitoring Locations**

S. No	Sample Location	Station Code	Direction/ Distance (w.r.t. mine)	Core Zone/ Buffer Zone	Latitude	Longitude
1	Core Zone	AAQ-1	--	Core	11°11'12.34"N	77°58'14.15"E
2	Ramanathapuram	AAQ-2	0.74km - N	Buffer	11°11'30.27"N	77°58'30.43"E
3	T.Kavundampalayam	AAQ-3	3.61km – W	Buffer	11°11'6.69"N	77°56'10.73"E
4	Pillaikalathur	AAQ-4	6.35km- E	Buffer	11°10'41.59"N	78° 1'42.09"E
5	Rangampalayam	AAQ-5	1.95km S	Buffer	11°10'4.18"N	77°58'1.94"E





**Fig No 3.2 Geo Referenced Toposheet showing Air Sampling station around 10km radius**

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**Fig No 3.3 Air Monitoring locations at Core and Buffer Zone**

### 3.4.2 Monitoring Result

Monitoring station-wise minimum and statistical analysis (minimum, maximum, arithmetic mean) for measured levels of  $PM_{10}$ ,  $PM_{2.5}$ ,  $SO_2$ ,  $NO_x$  in study area for the monitoring period are shown parameter wise in Table 3.2 and graphical representation of concentration pollutants are showing in Fig No 3.4.

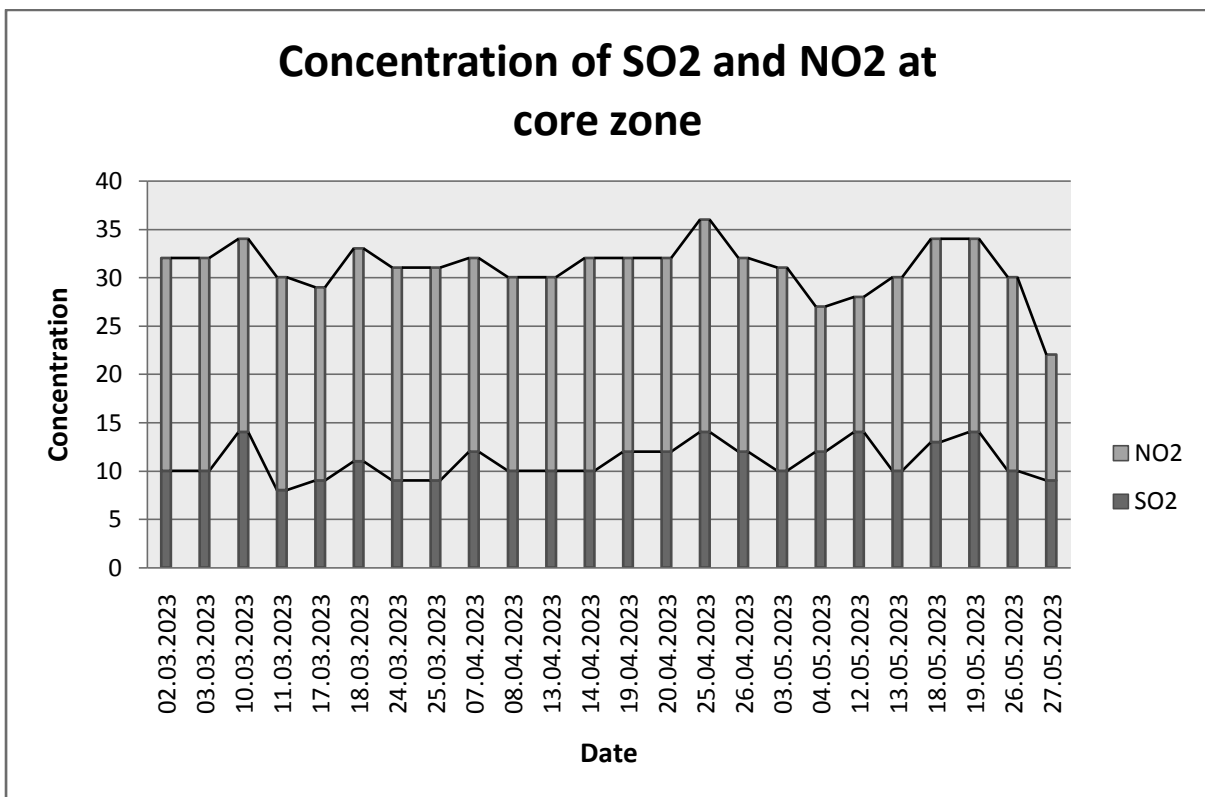
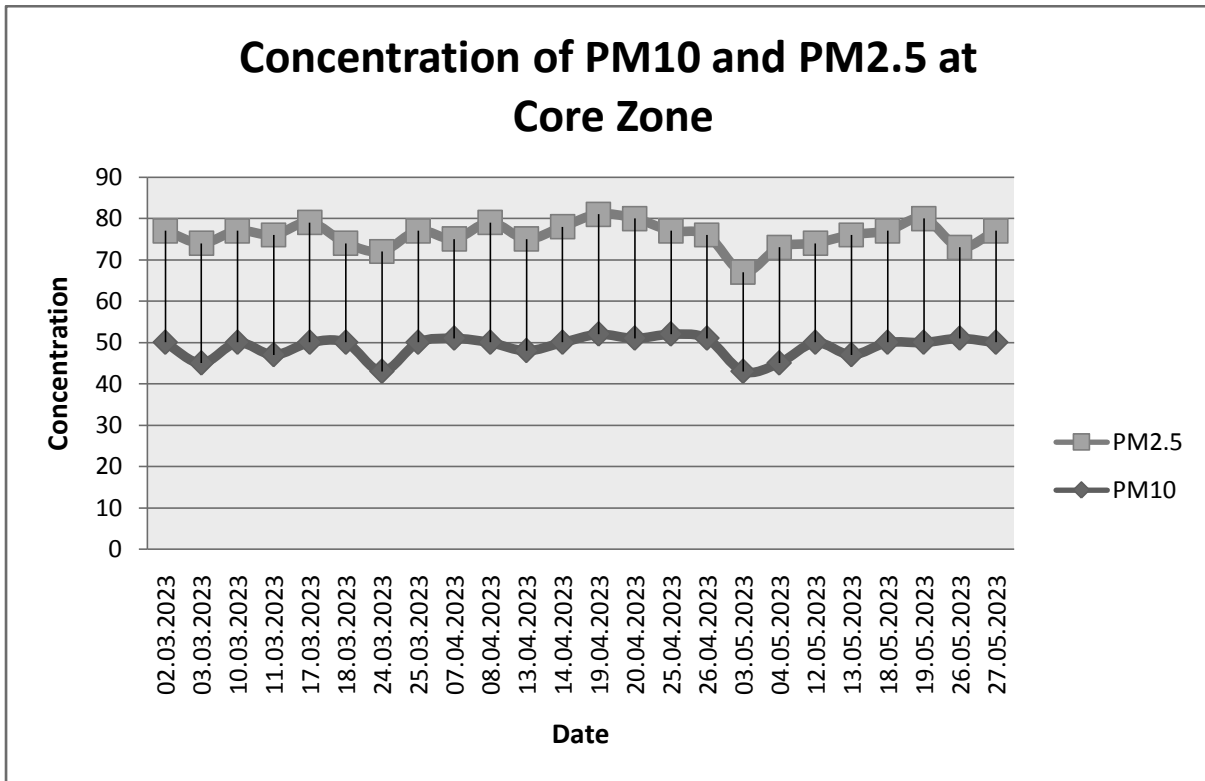
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**Table 3.2 Summaries of Ambient Air Quality Results**

Location	Code	PM <sub>10</sub> (µg/m <sup>3</sup> )				PM <sub>2.5</sub> (µg/m <sup>3</sup> )				SO <sub>2</sub> (µg/m <sup>3</sup> )				NO <sub>x</sub> (µg/m <sup>3</sup> )				
		Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	
<b>Core Zone</b>	A <sub>1</sub>	52	43	49	52	30	21	27	29.5	14	8	11	14	22	13	20	22	
<b>Buffer zone</b>	Ramanathapuram	A <sub>2</sub>	55	44	51	55	32	22	29	32	13	6	9	12.5	25	11	18	20
	T.Kavundampalayam	A <sub>3</sub>	50	38	48	50	30	20	28	30	12	5	10	12	20	10	20	22
	Pillaikalathur	A <sub>4</sub>	51	41	47	50	28	21	26	28	13	7	12	15	20	14	22	25
	Rangampalayam	A <sub>5</sub>	54	40	48	54	31	20	29	31	15	7	7	12	21	11	17	14
<b>NAAQS</b>		<b>100</b>				<b>60</b>				<b>80</b>				<b>80</b>				

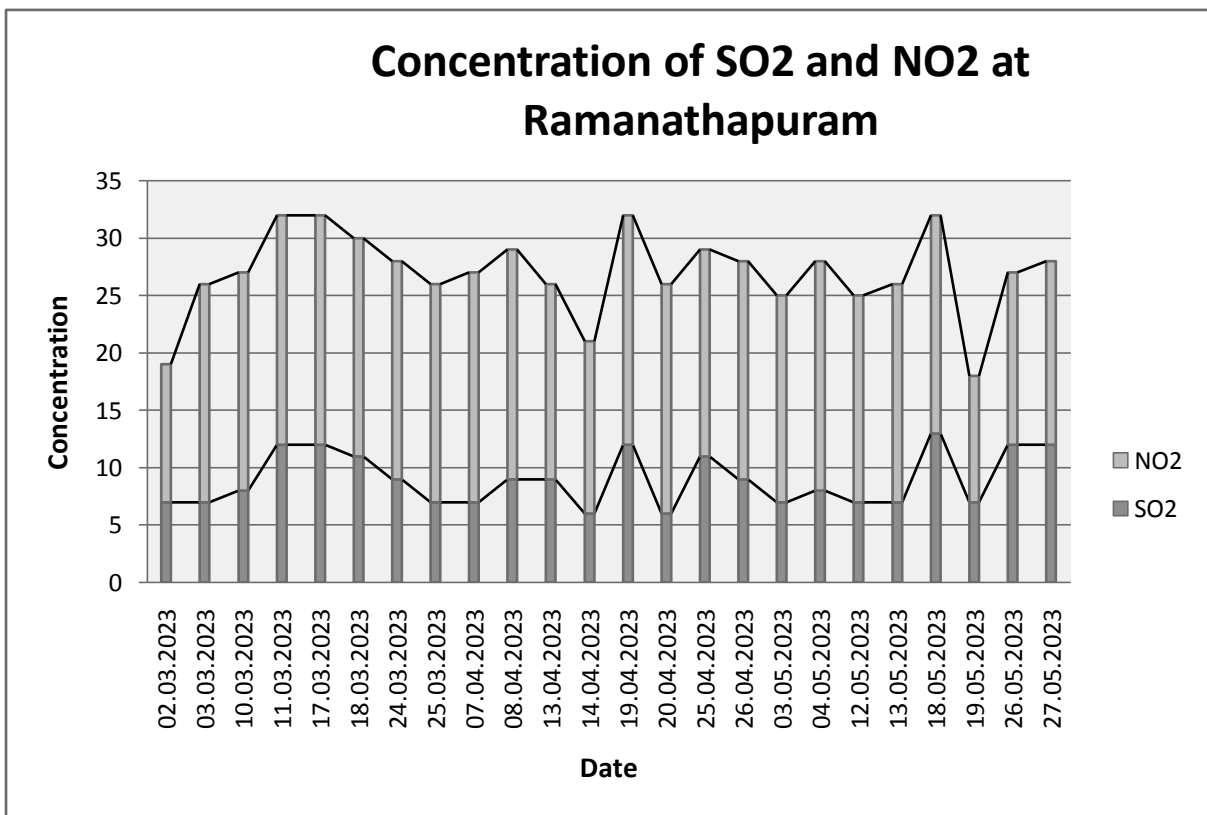
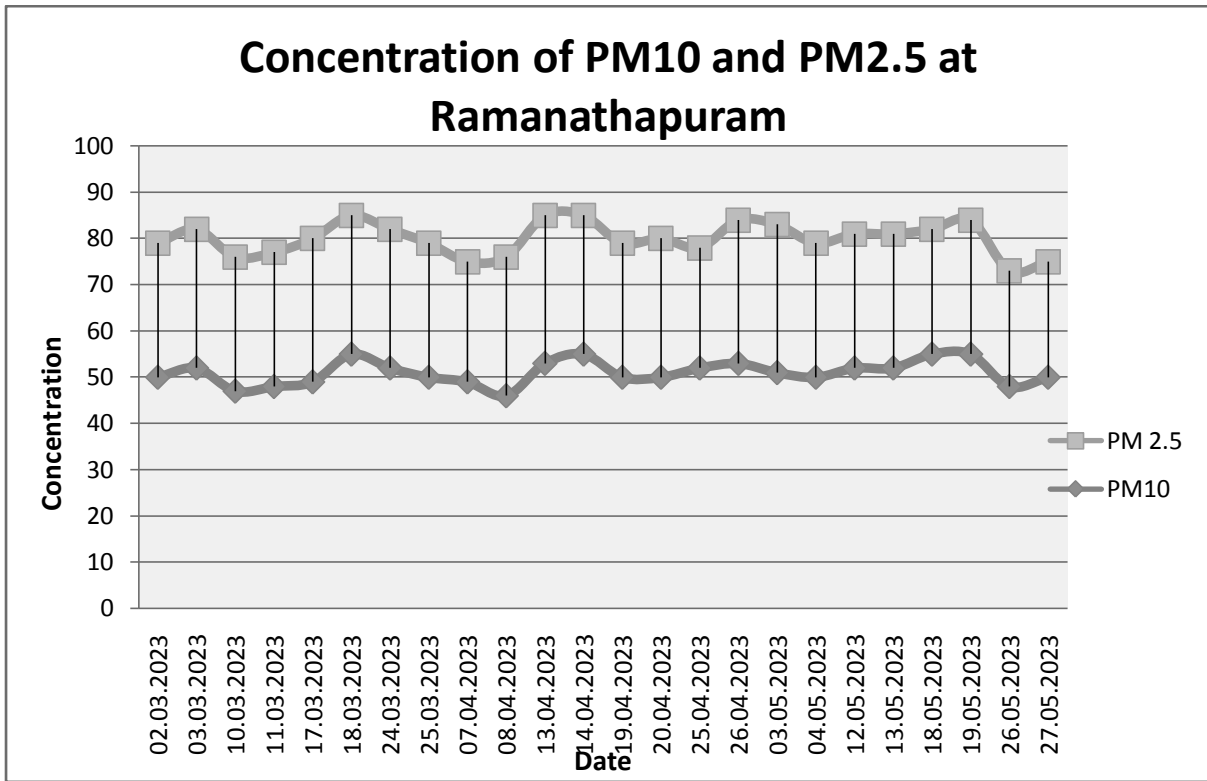
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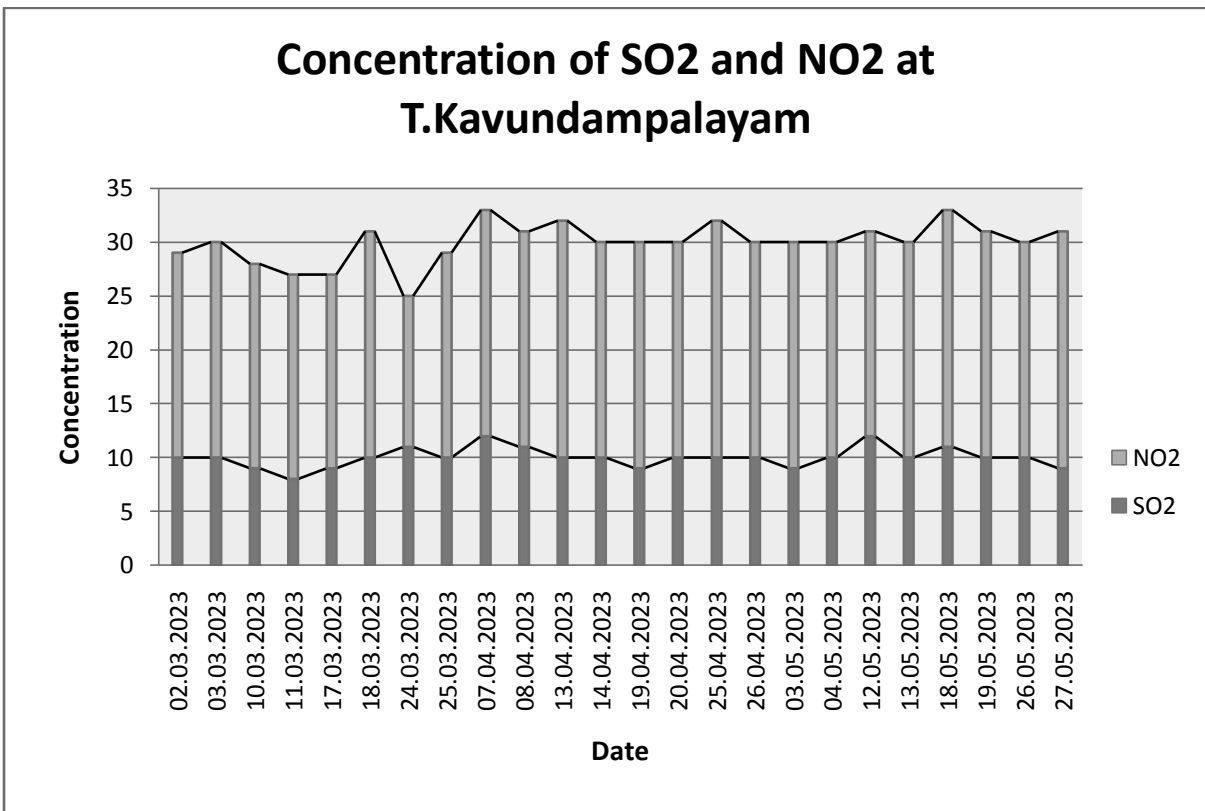
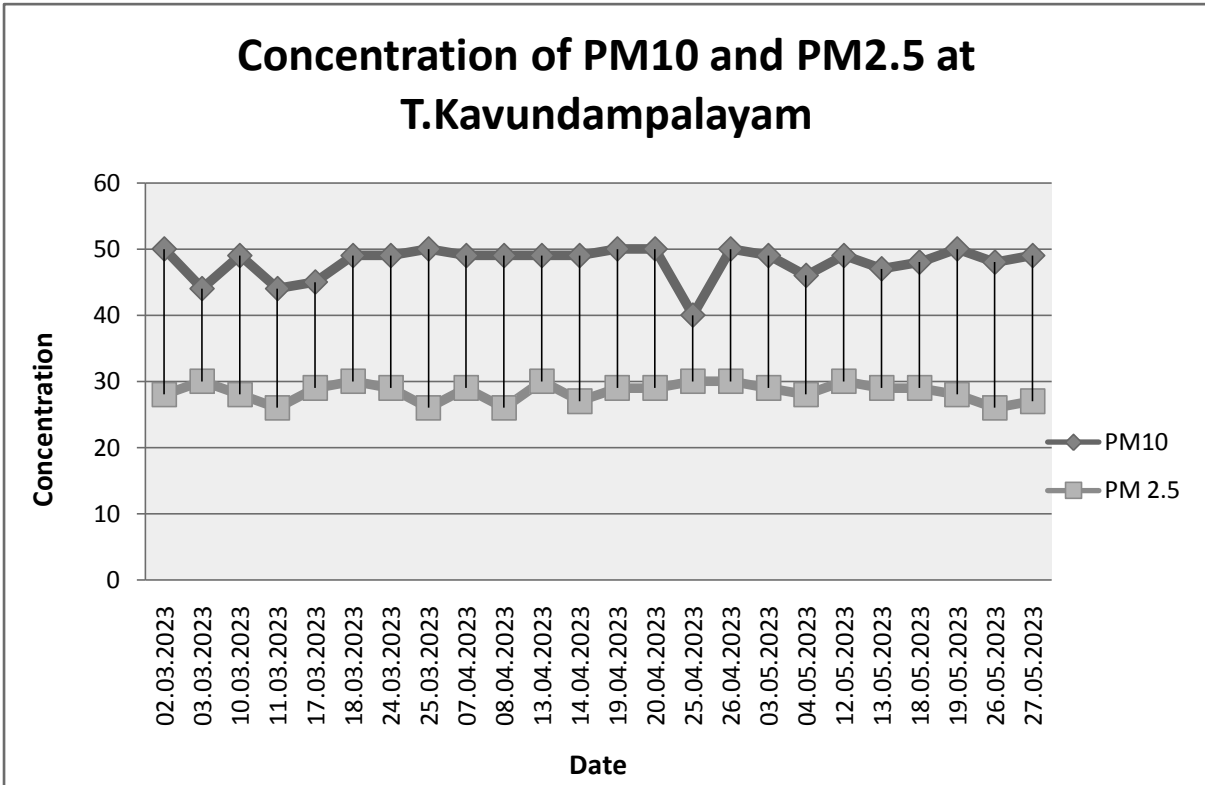
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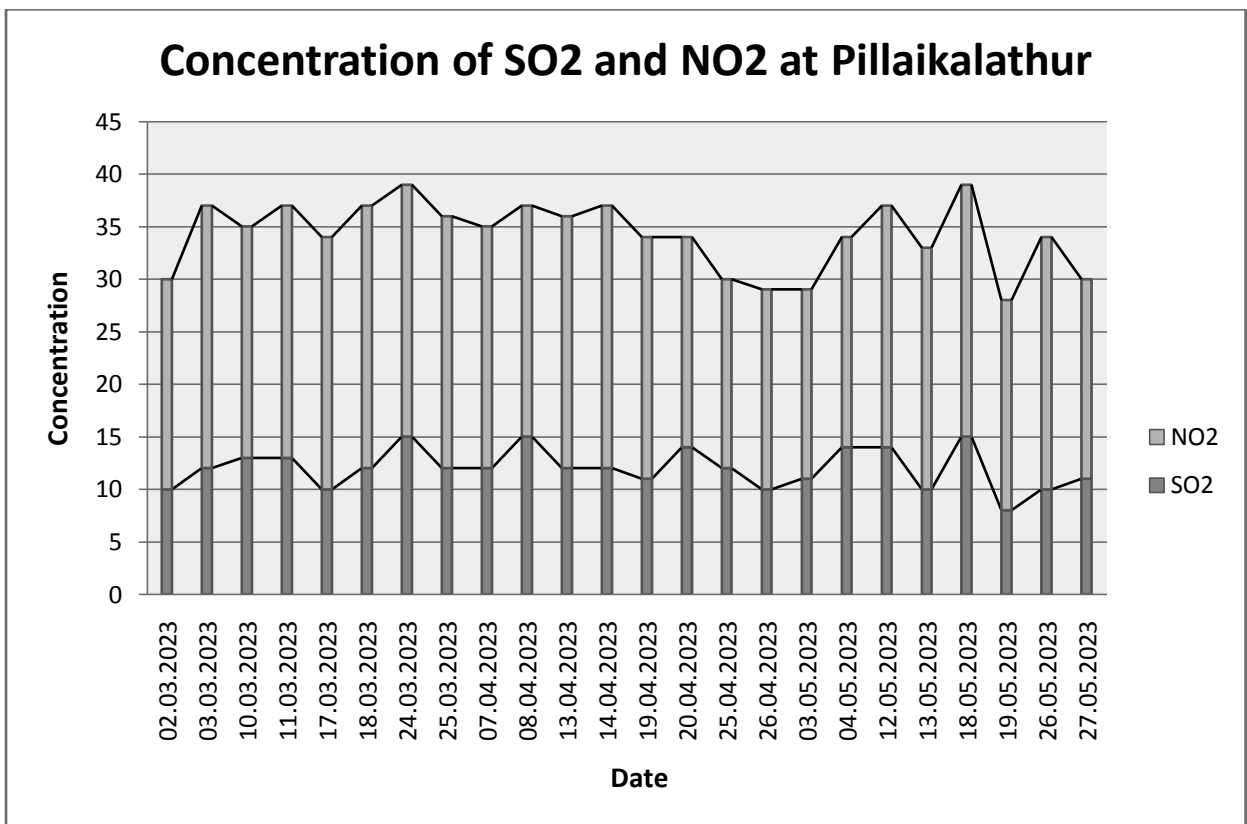
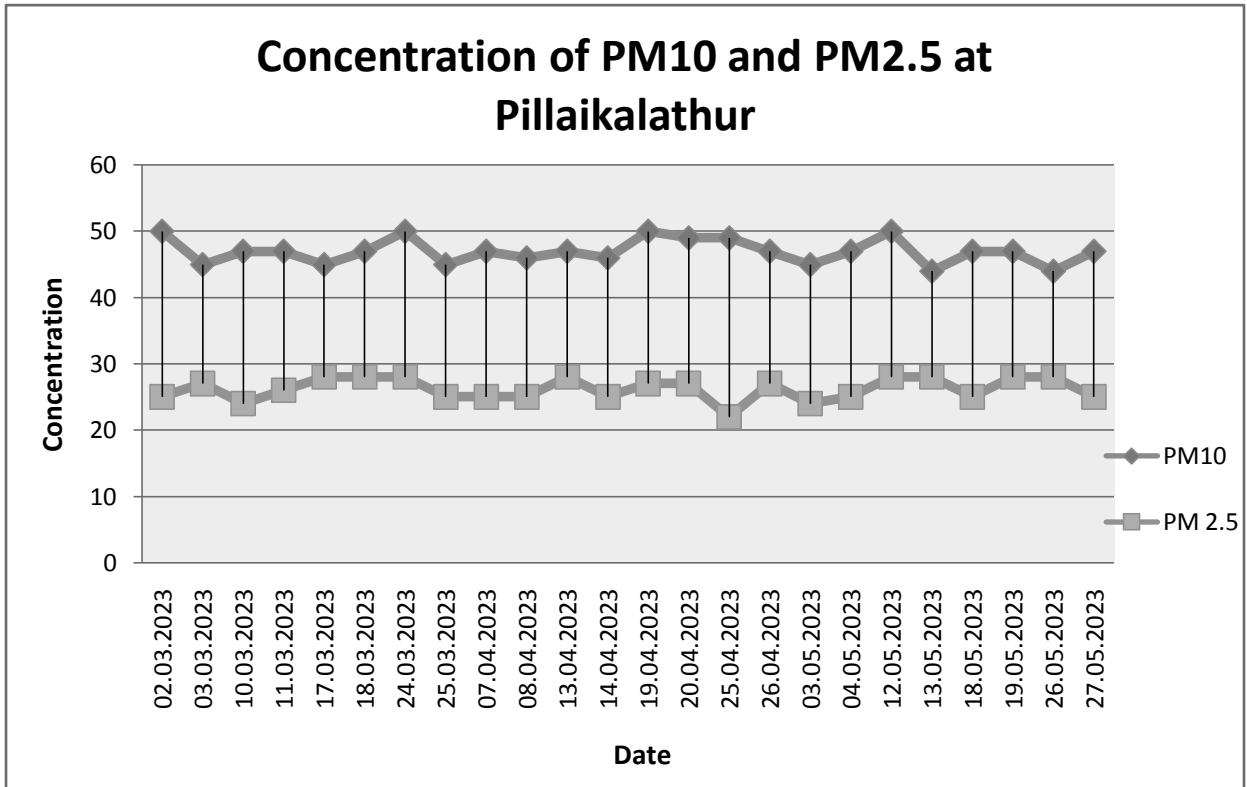
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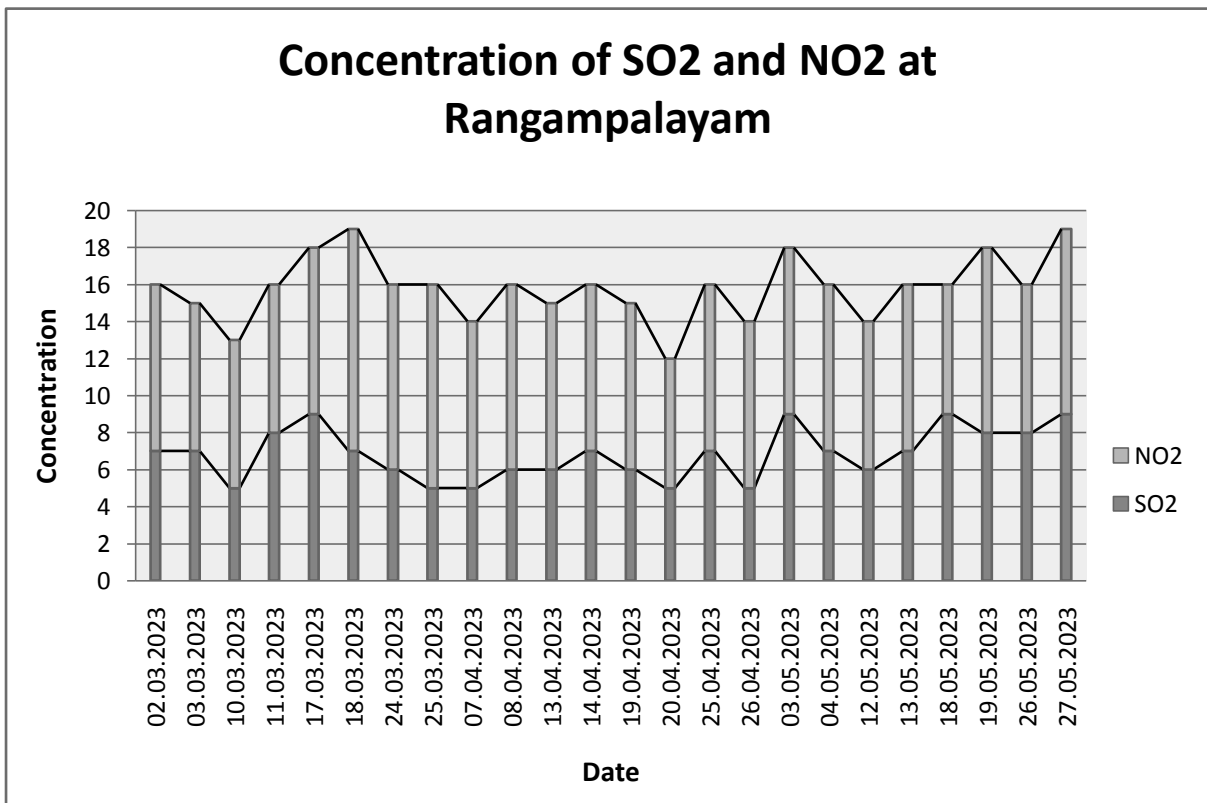
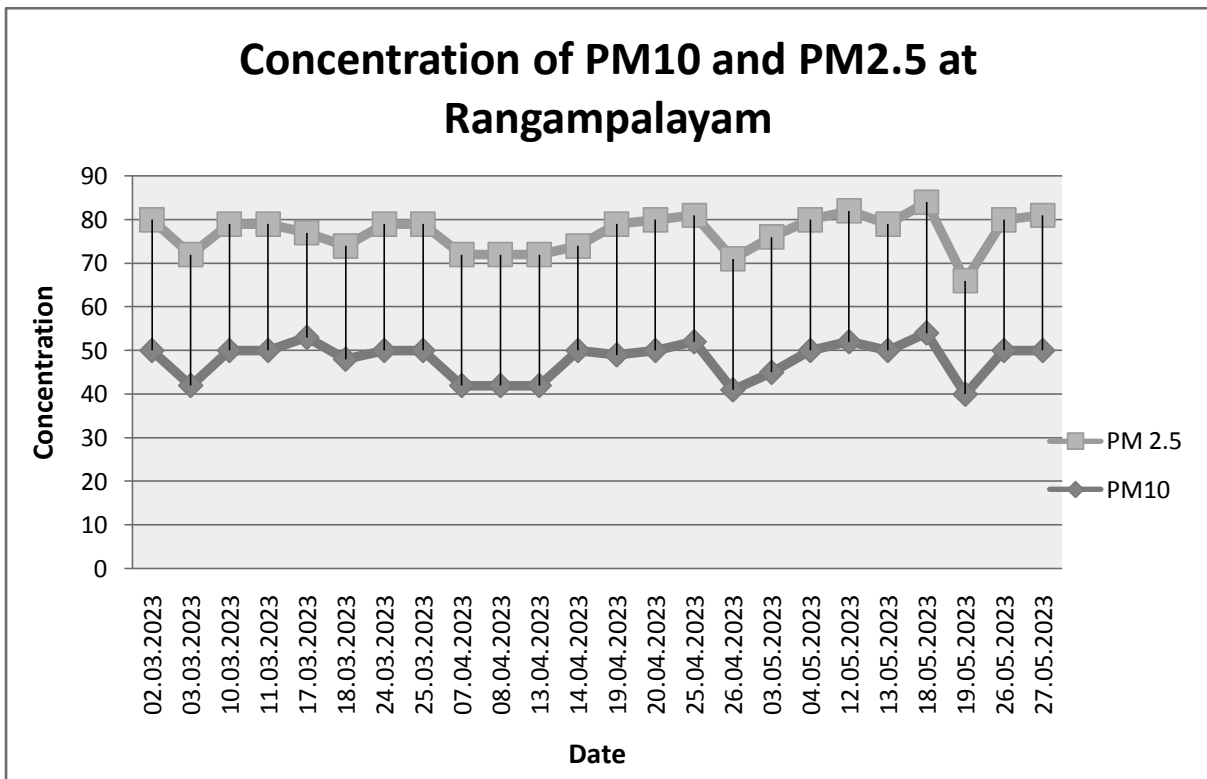


Fig No 3.4 Variation in Concentration of air pollutants



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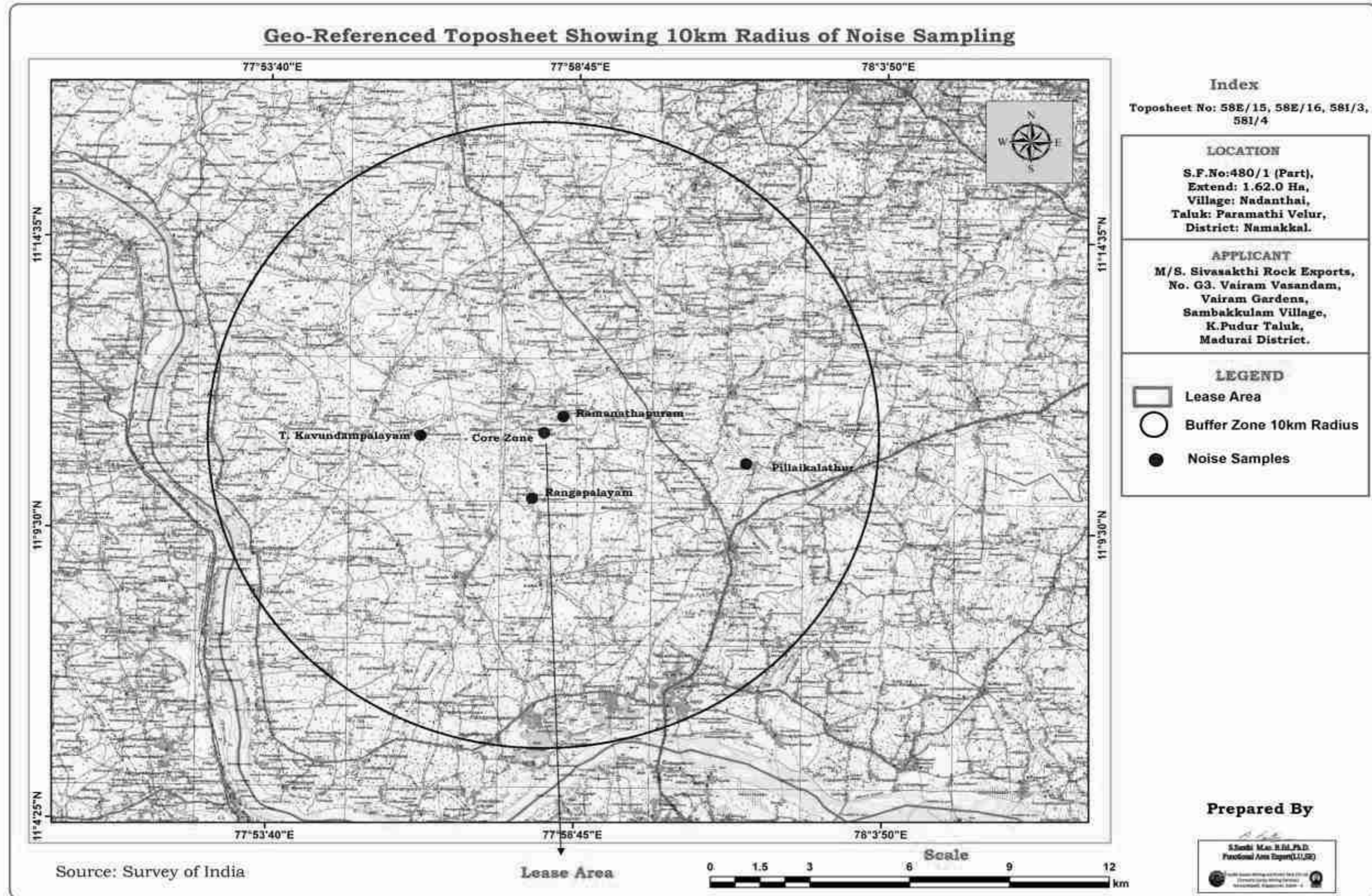
### 3.4.3 Observations of Primary Data

The area generally has low levels of pollutants in ambient air, which is well within the National Ambient Air Quality Standards for industrial or rural areas. This is due to the absence of any major pollution generating source in the vicinity.

- ✚ Ambient Air Quality Monitoring (AAQM) reveals that the minimum concentration of PM<sub>10</sub> for all the 5 stations was found to be 38µg/m<sup>3</sup> at T.Kavundampalayam village. The maximum concentration was observed in Ramanathapuram as 55µg/m<sup>3</sup>. The average PM<sub>10</sub> level at all stations varies from 47µg/m<sup>3</sup> to 51µg/m<sup>3</sup>
- ✚ The average PM<sub>2.5</sub> level at all stations varies from 26µg/m<sup>3</sup> to 29µg/m<sup>3</sup>. The minimum concentrations of PM<sub>2.5</sub> for all the 5 stations were found to be at T.Kavundampalayam and Rangampalayam village as 20µg/m<sup>3</sup>. The maximum concentration was found to be 32µg/m<sup>3</sup> at Ramanathapuram.
- ✚ The maximum concentrations of SO<sub>2</sub> were found to be 15µg/m<sup>3</sup> at Rangampalayam village. The minimum concentration was found to be 5µg/m<sup>3</sup> at T.Kavundampalayam village. The average SO<sub>2</sub> level at all stations varies from 7µg/m<sup>3</sup> to 12µg/m<sup>3</sup>
- ✚ The minimum NO<sub>x</sub> concentrations were recorded as 10µg/m<sup>3</sup> at T.Kavundampalayam village. The maximum concentration was found to be 25µg/m<sup>3</sup> at Ramanathapuram. The average NO<sub>x</sub> level at all stations varies from 17µg/m<sup>3</sup> to 22µg/m<sup>3</sup>. The concentration levels of the above pollutants were observed to be well within the limits of AAQS prescribed by CPCB.

### 3.5 NOISE ENVIRONMENT

A preliminary reconnaissance was undertaken to identify the major noise generating sources in the area. Nine locations (Core Zone & Buffer Zone) were identified based on the activities in the study area, traffic and sensitive areas like hospitals and schools. The noise monitoring locations are shown in Fig No. 3.5 & 3.6. The sampling locations are shown in Table No. 3.3.



**Fig No 3.5 Geo Referenced Toposheet showing Noise sampling stations around 10km radius**

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**Table 3.3 Noise Sampling Locations**

Sl. No	Location	Station code	Distance (km)	Direction
1	Core area	NQ1	--	--
	Lease boundary pillar (North)	NQ2	0.1	N
	Lease boundary pillar (South)	NQ3	0.1	S
	Lease boundary pillar (East)	NQ4	0.1	E
	Lease boundary pillar (West)	NQ5	0.1	W
2	Ramanathapuram	NQ6	0.74	N
3	T.Kavundampalayam	NQ7	3.61	W
4	Pillaikalathur	NQ8	6.35	E
5	Rangampalayam	NQ9	1.95	S

### 3.5.1 Method of Monitoring

One reading per hour was taken for 24 hours. The day time noise levels were monitored during 6 am to 10 pm and night time levels during 10 pm to 6 am at all the monitoring locations within the study area (Table 3.4).

**Table 3.4 Noise Monitoring Results in Core and Buffer Zone**

Sample code	Location	Decibel dB (A)		TNPCB Standards
		Day Time	Night Time	
NQ1	Core area	39.7	37.5	<u>Industrial</u> Day Time- 75 dB(A) Night Time – 70 dB(A)
NQ2	Lease boundary pillar (North)	41.3	38.5	
NQ3	Lease boundary pillar (South)	38.2	37.1	
NQ4	Lease boundary pillar (East)	40.4	38.2	
NQ5	Lease boundary pillar (West)	39.5	37.3	
NQ6	Ramanathapuram (N)	42.5	39.4	<u>Residential</u> Day Time - 55 dB(A) Night Time - 45 dB (A)
NQ7	T.Kavundampalayam (W)	44.6	42.7	
NQ8	Pillaikalathur (E)	38.6	34.5	
NQ9	Rangampalayam (S)	41.4	37.1	
Remarks	Day Time	Leq (6.00 AM to 10.00 PM)		
	Night Time	Leq (10.00 PM to 6.00 AM)		

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**Fig No 3.6 Noise Monitoring stations at Core & Buffer Zone**

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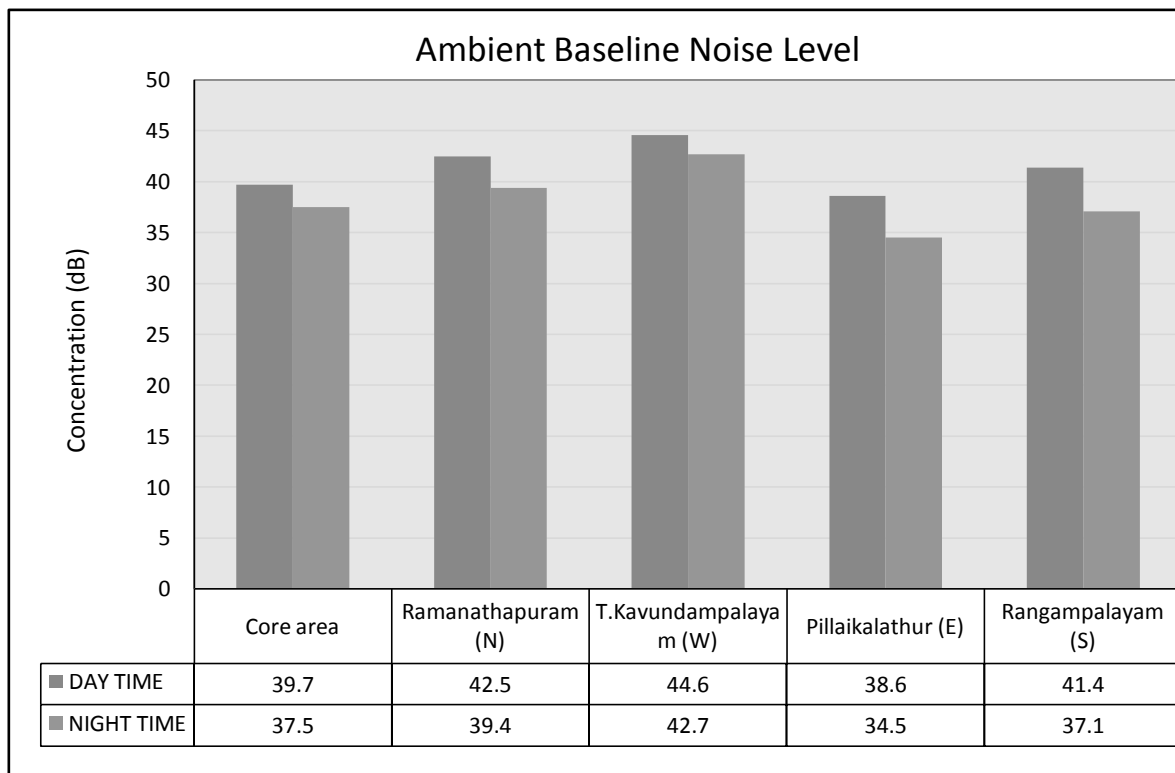
### 3.5.2 Observations

#### 3.5.2.1 Day Time Noise Levels

Noise Monitoring reveals that the maximum & minimum noise levels at day time were recorded as 44.6 dB (A) at T.Kavundampalayam (NQ-7) & 38.6 dB (A) at Pillaikalathur (NQ-8) respectively in buffer zone. The minimum and maximum noise level at core area - **M/s. Sivasakthi Rock Exports** is 38.2 dB (A) and 41.3 dB (A) respectively. The Noise level measured is found within the permissible limits during day time as specified by CPCB Standard.

#### 3.5.2.2 Night Time Noise Levels

The night time noise levels, the maximum & minimum noise levels at Night time were recorded as 42.7 dB (A) at T.Kavundampalayam (NQ-7) & 34.5 dB (A) at Pillaikalathur (NQ-8) respectively in buffer zone. The minimum and maximum noise level at core area - **M/s. Sivasakthi Rock Exports** is 37.1 dB (A) and 38.5 dB (A) respectively. The Noise level measured is found within the permissible limits during night time as specified by CPCB Standard.



**Fig No 3.7 Noise Level of the Study Area – M/s. Sivasakthi Rock Exports**

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### 3.6 Water Environment

Assessment of baseline data on Water environment includes:

- Identification of surface and ground water sources
- Collection of water samples
- Analyzing water samples collected for Physico–chemical and biological parameters

#### 3.6.1 Selection of Sampling Stations

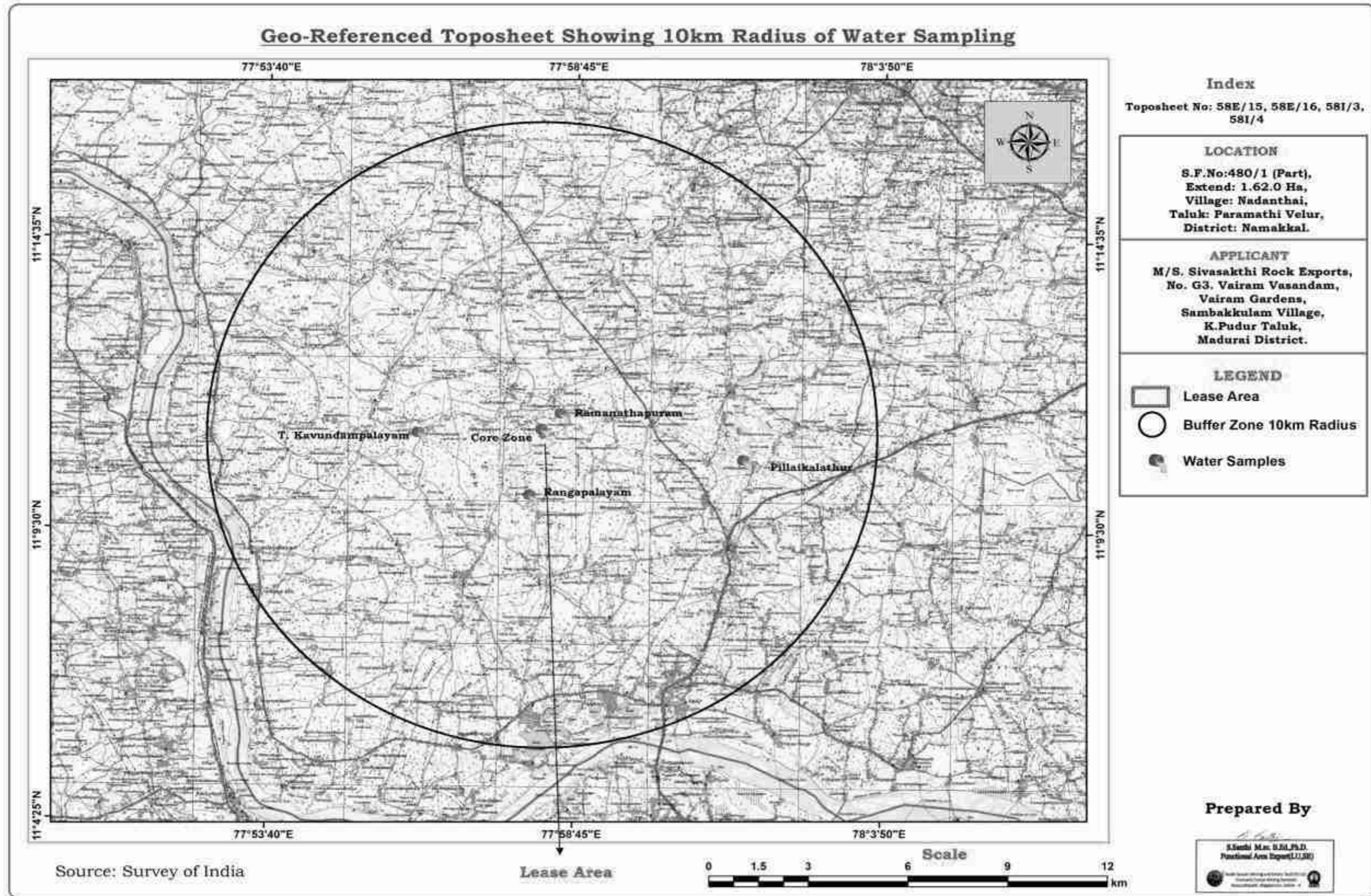
The samplings were taken from the identified monitoring locations within the 10km radius of the study area. Water samples were collected to study the water quality of the study area.

#### 3.6.2 Water Quality

Water samples from various locations in and around the project site within 10 km radius were collected for assessment of the physic–chemical and bacteriological quality to know the baseline status of water quality. Parameters for analysis of water quality were selected based on the utility of the particular source of water as per MoEF & CC guidance. Methodologies adopted for sampling and analysis of water in according to the Bureau of Indian Standards. The parameters thus analyzed were compared with IS10500:2012. Details of water sampling locations are present in Table 3.5. In addition, water quality details are given in the Table 3.6. The following image of Geo referenced Topomap showing locations of water samples are given in the Figure No. 3.8. Locations of Core and Buffer Zone water samples are given in the Figure No. 3.9.

**Table 3.5 Water Sampling Locations**

Sampling Code	Location	Surface/ Ground water	Latitude	Longitude	Distance (km)	Direction
WQ1	Core Zone	Ground Water	11°11'12.53"N	77°58'13.15"E	–	–
WQ2	Ramanathapuram		11°11'29.36"N	77°58'31.78"E	0.74	N
WQ3	T.Kavundampalayam		11°11'8.32"N	77°56'10.57"E	3.61	W
WQ4	Pillaikalathur		11°10'41.83"N	78° 1'33.20"E	6.08	E
WQ5	Rangampalayam		11°10'3.46"N	77°58'1.88"E	1.96	S



**Fig No 3.8 Geo Referenced Toposheet showing water sampling station around 10km radius**

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**Fig No 3.9 Water Sample collection at Core Zone and Buffer Zone**



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**Table 3.6 Result of Water Quality Analysis**

Parameters	Units	As per IS 10500:2012		PROTOCOL: IS Methods	Core Zone	Buffer Zone			
		Requirement (Acceptable limit)	Permissible limit in the absence of alternate source			Ramanathapuram	T.Kavundampalayam	Pillaikalathur	Rangampalayam
pH value at 25°C	-	6.5 – 8.5	6.5 – 8.5	IS 3025:P.11:1983:R.2019	7.16	7.18	7.17	7.30	7.64
Electrical conductivity at 25°C	Micro mhos/cm	-	-	IS 3025:P.14:1984:R.2019	1200	1400	1600	823	1800
Turbidity	NTU	1	5	IS 3025:P.10:1984:R.2017	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
Temperature	°C	-	-	IS 3025:P.09:1984:R.2017	25	25	25	25	25
Total Suspended Solids (TSS)	mg/l	-	-	IS 3025:P.17:1984:R.2017	4	4	4	2	4
Total Dissolved Solids (TDS)	mg/l	500	2000	IS 3025:P.16:1984:R.2012	710	850	960	480	1110
Total Hardness as CaCO <sub>3</sub>	mg/l	200	600	IS 3025:P.21:2009:R.2019	444	240	710	218	755
Calcium as Ca	mg/l	75	200	IS 3025:P.40:1991:R.2019	128	64	192	43	192

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Magnesium as Mg	mg/l	30	100	IS 3025:P.46: 1994:R.2019	22	15	43	24	54
Chloride as Cl <sup>-</sup>	mg/l	250	1000	IS 3025:P.32: 1988:R.2019	248	255	419	156	381
Total Alkalinity as CaCO <sub>3</sub>	mg/l	200	600	IS 3025:P.23: 1986:R.2019	150	150	200	80	180
Carbonate	mg/l	-	-	IS 3025:P.51: 1986:R.2017	BDL (DL:1)	BDL (DL:0.1)	BDL (DL:1)	BDL (DL:0.1)	BDL (DL:0.1)
Bicarbonate	mg/l	-	-	IS 3025:P.51: 1986:R.2017	150	150	200	80	180
Sulphate	mg/l	200	400	IS 3025:P.24: 1986:R.2019	20	26	32	10	38
Iron	mg/l	0.3	0.3	IS 3025:P.53: 1984:R.2017	0.07	0.08	0.08	0.04	0.08
Total Coliforms	MPN / 100ml	Shall not be detectable in any 100 ml		IS:1622-1981 Amd.4 RA 2012	22	26	30	13	34
E.coli	MPN / 100ml	Shall not be detectable in any 100 ml		IS:1622-1981 Amd.4 RA 2012	<2	<2	<2	<2	<2

### 3.6.3 Interpretation of Water Quality Data

**Water Quality results** were compared with acceptable limits for Drinking Water as per the Standard IS 10500:2012. All the parameters of Water samples meet the acceptable limits of IS 10500: 2012 and found to be within the limits.

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- pH of the water samples ranged from 7.16-7.64. pH in water samples collected from the locations is within the permissible limit between 6.5-8.5.
- EC of the water samples ranged from 823 to 1800 Micro mhos/cm in the samples collected.
- Turbidity from the water samples collected from both core and buffer area was observed to be in below detectable limit BDL (DL: 0.1).
- Total suspended solids are observed as 2-4 mg/l in all the water samples collected from both core and buffer area.
- Total Dissolved Solids found in the range of 480-1110 mg/l. In all the samples TDS was found beyond the acceptable limit of 500mg/l and maximum value of 1110 mg/l was recorded at Rangampalayam Village except Pillaikalathur village. In Pillaikalathur village the value was found to be 480mg/l which is within the acceptable limit.
- Total Hardness of water sample of all the locations including core and buffer zone was found exceeding the acceptable limit of 500 mg/l. The maximum value of 755 in mg/l was found in Rangampalayam Village and minimum value of 218 mg/l was observed in Pillaikalathur village.
- Calcium values observed in entire buffer locations were in the range of 43-192 mg/l. In Core Zone (128 mg/l), T.Kavundampalayam & Rangampalayam (192 mg/l) Calcium value exceeds the acceptable limit of 75 mg/l as per Drinking water standards. Whereas in Ramanathapuram (64 mg/l) and Pillaikalathur (24 mg/l) the value was observed to be well within the limit of 75 mg/l.
- Magnesium value recorded in locations such as T.Kavundampalayam (43 mg/l) and Rangampalayam (54 mg/l) were found to exceed the acceptable limit such as 30 mg/l. Other locations the value was found to be within the acceptable limit of 30 mg/l.
- Chlorides in all the water samples were recorded as highest and were found above the acceptable limit except in Pillaikalathur village (156 mg/l). The observed value was within the range of 156-381 mg/l.
- Iron & Sulfates in water samples collected from both core and buffer location were observed to be well within the limits.
- On Microbiological parameters, the water sample from both the villages has few counts of Total Coliform as the count is observed as 13-34 MPN/100ml. E.coli was found to be absent in all the villages. In account of the microbial quality the water without disinfection is not advised for drinking purposes.

### **3.7 Hydro Geology**

#### **3.7.1 Geological details of the study area**

Geology of the Paramathi Velur Taluk consists by Weathered and fractured Archaean crystalline rocks with recent alluvial deposits occurring along the river courses and Colluvium at the foot hills construct the major aquifer systems. Generally, the groundwater occurs under phreatic conditions in the weathered formation and under semi-confined conditions in the fractured zones at deeper levels. The occurrence and movement of ground water are controlled by various factors such as physiography, Rainfall, climate, geology and structural features. The normal annual rainfall over the district varies from about 640 to about 880 mm.

#### **3.7.2 Scope of the study**

- To understand the aquifer characteristics by pumping test
- To delineate the fresh groundwater potential zone and sub surface lithology using electrical resistivity method
- To estimate mass quantity and quality of Granite for Commercial use.

#### **3.7.3 Geophysical Investigation Method**

##### **3.7.3.1 Methodology**

In the present study to identify sub surface map prepared by using PQWT-TC 500 series geophysical prospecting instrument used to measure M, N copper electrode probe via a cable earth's magnetic field into electrical signal shown in Fig No.3.10, where in the entire measurement process, high-speed central processing unit (CPU) of the instrument with automatic range conversion and frequency selection.

The resistivity varies in accordance with rock formation, groundwater, and measuring the natural electric field at the surface with "n" different frequency electric field shown in Fig No.3.11. Electric field phenomenon varies differently for different types of rocks, nature of weathering, aquifers etc which help to study abnormal changes in geological settings using electrical prospecting method. This method measures the electrical component of the electromagnetic field of the earth, so called natural electric field method.

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The basic principle of the instrument is measuring the existing natural electric field of subsurface water / minerals /geological structures / ore bodies. Instrument working on the principle of electrical difference of natural earth magnetic field (frequency 0 - 30 kHz), the several different frequencies of electromagnetic field changes is the law to study the underground field / material changes to interpret the Geological structure. The profile map generated results are very accurate with depth, quantity, quality, shape of subsurface layers either the source is continuing or perched or dry fractures and in the geological structure's / material's information getting exact changes depth / boundary / contact zones to decipher the size and shape of rock formation and fracture controlled aquifers.

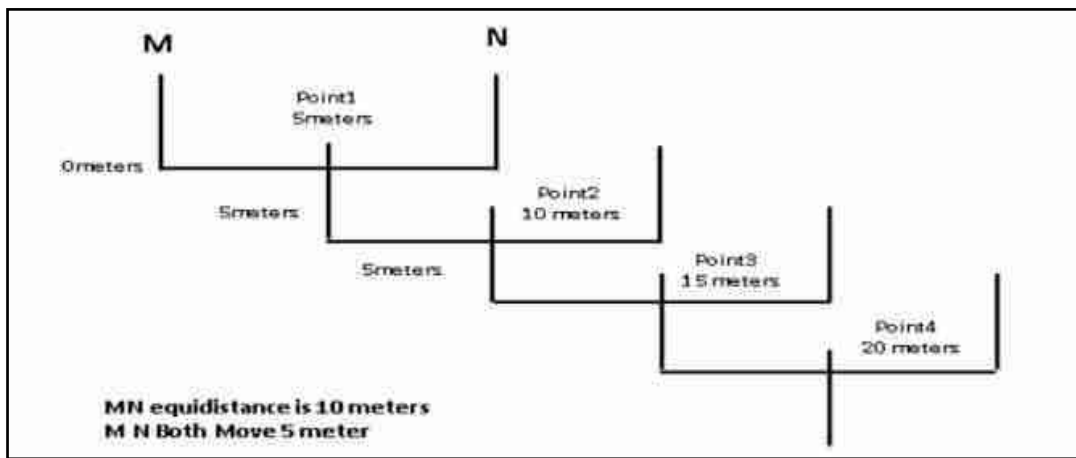


Fig No 3.10 Electrode Configuration of M & N rods

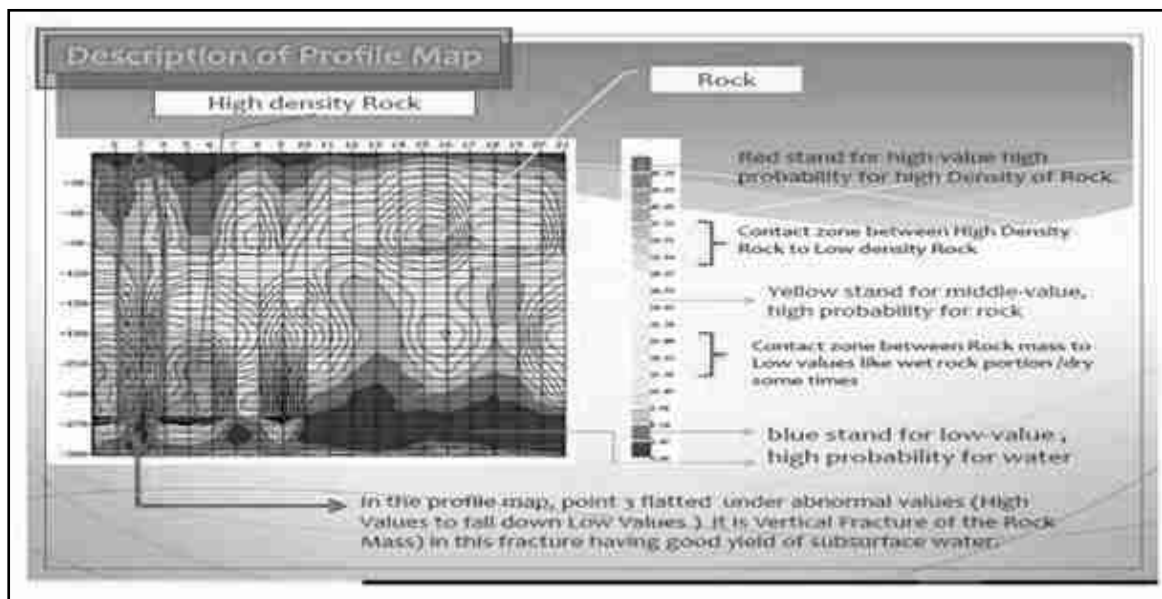


Fig No 3.11 Frequencies of Subsurface Materials

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### 3.7.3.2 Resistivity Profile Interpretation of the Lease area

The present attempt of 2D magneto telluric (MT) method has carried out in 2 profile directions (SW-NE and N-S) in the Lease area of Sivasakthi Rocks Exports, Nadandhai Village, Namakkal District. 2D Profile scanning were performed up to 80m along the traverse depends upon available space, each electrodes spacing with 5 meters interval. Location map shown in Google image Fig No 3.12



**Fig No 3.12 Electrode traverse line for 2D scanning by Profiling**

From the 2D scanning image developed based on measurements of the natural electric field received from M - N electrodes, the Electric frequency of the site varied from  $<0.01$  kHz to 30 kHz based of density and electromagnetic properties of rock formation as under in Table 3.6 (a). The depth of investigation in the lease area is taken as 100m for 2D scanning. The various formation as interpreted based on frequencies are given Table 3.6 (a).

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Table 3.6 (a) Frequency verses rock formation

Frequency range kHz		Depth m	Formation
0.5	1.5	10 - 15	Low density rock/ weathered/highly porous formation/Water bearing formation
1.5	5	10-20	Medium density rock
>5		>20	High density rock/ massive granite formation

The 2D scanning image of pseudo section prepared on the basis of the natural potential frequency using software shown in Fig No 3.13

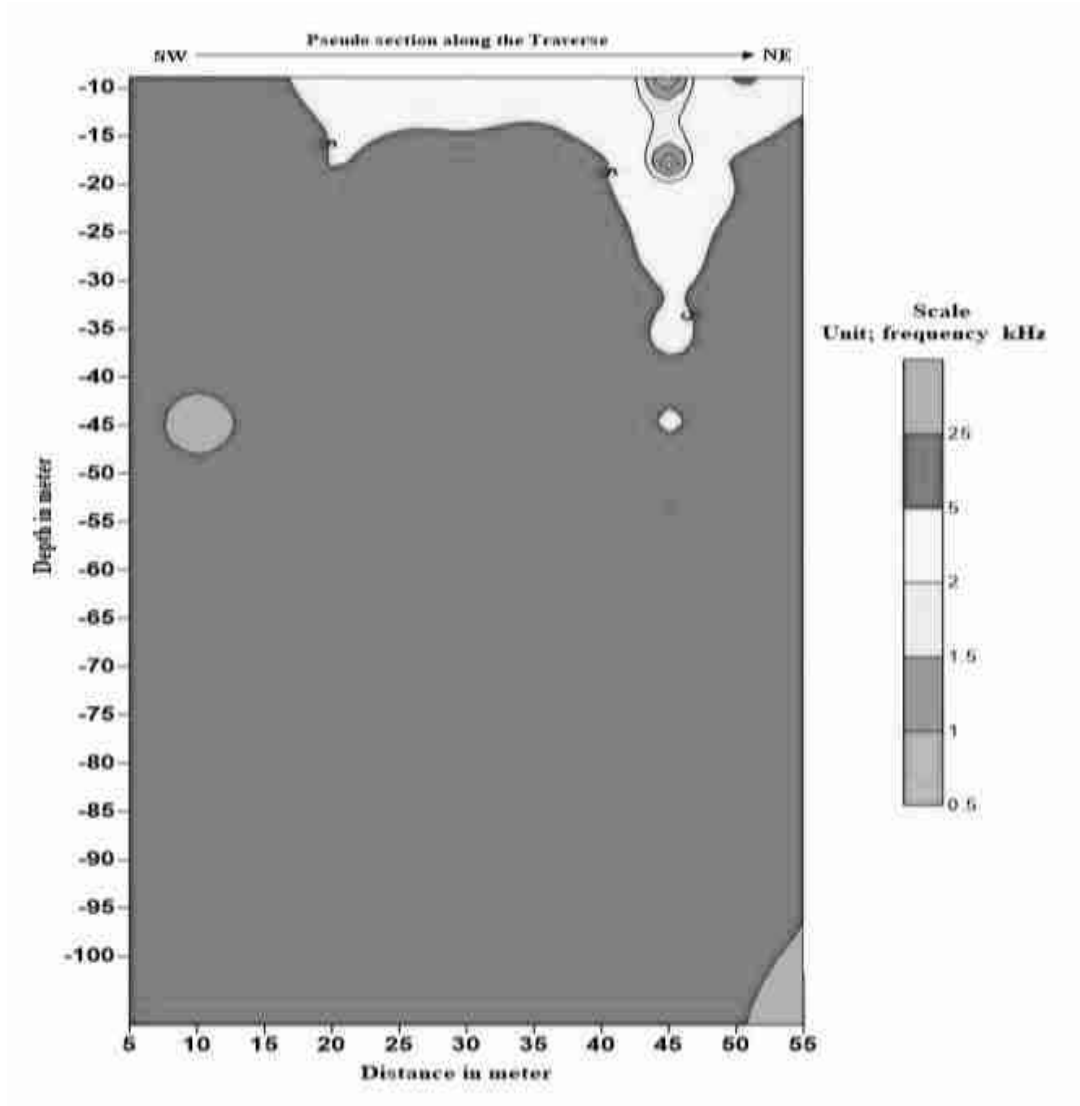


Fig No 3.13 Pseudo section of rock formation up to 100m depth

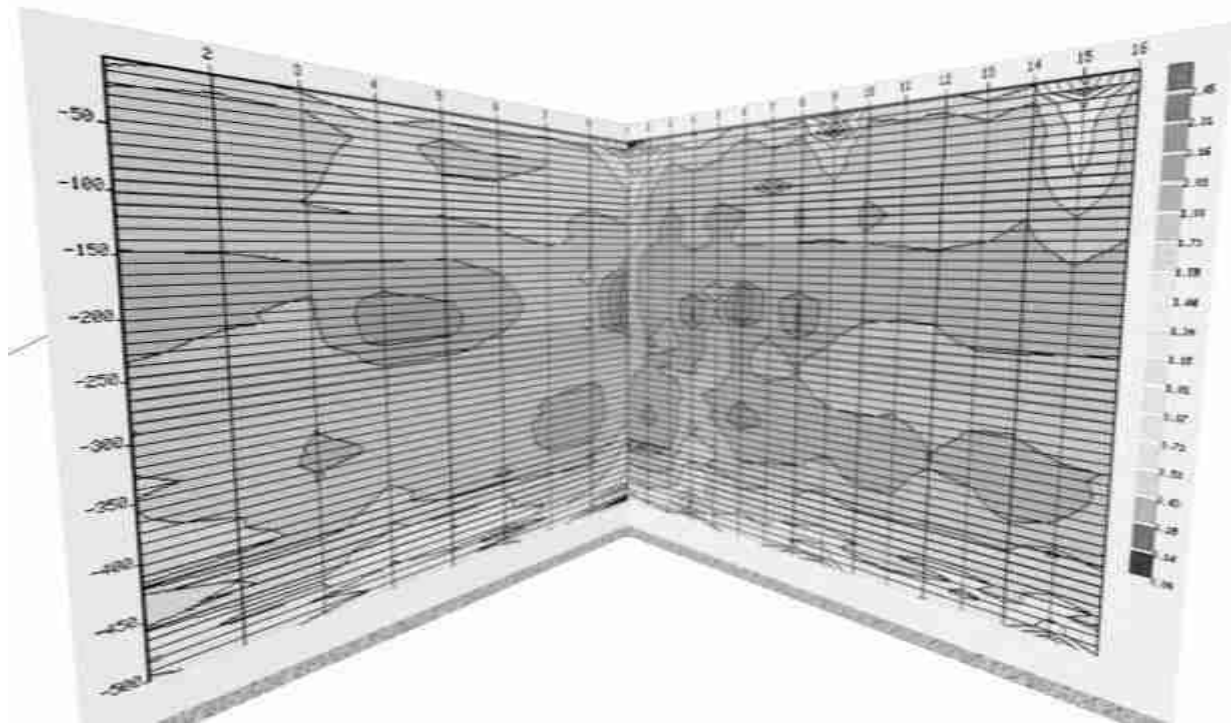
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The yellow colour indicates granite formation which is thinning out at depth below 30m. The blue colour indicates fracture zone with or without water bearer.

### 3.7.3.3 Interpretation of Earth magneto telluric field frequencies:

The blue to light blue indicates fracture zones and yellow indicated medium hard formation and orange to red indicates massive rock formations



**Fig No 3.14 Longitudinal and Cross section of rock formation in 2D imaging up to 500m depth**

### 3.7.4 Aquifer Performance Test

Aquifer performance tested (APT) to assess the groundwater potential of the hard rock terrain. There are few bore wells located around 10 km radius of buffer zone. One of the bore well is located is reported to be 280 meter depth and gives moderate yield. The bore well is fitted with 7.5 HP submergible pumps and water is pumped using for Domestic use. These data of pumping test are used to estimate the hydraulic properties like drawdown, transmissivity using Jacob's straight-line method, while the recovery transmissivity was determined by the Theis recovery method.

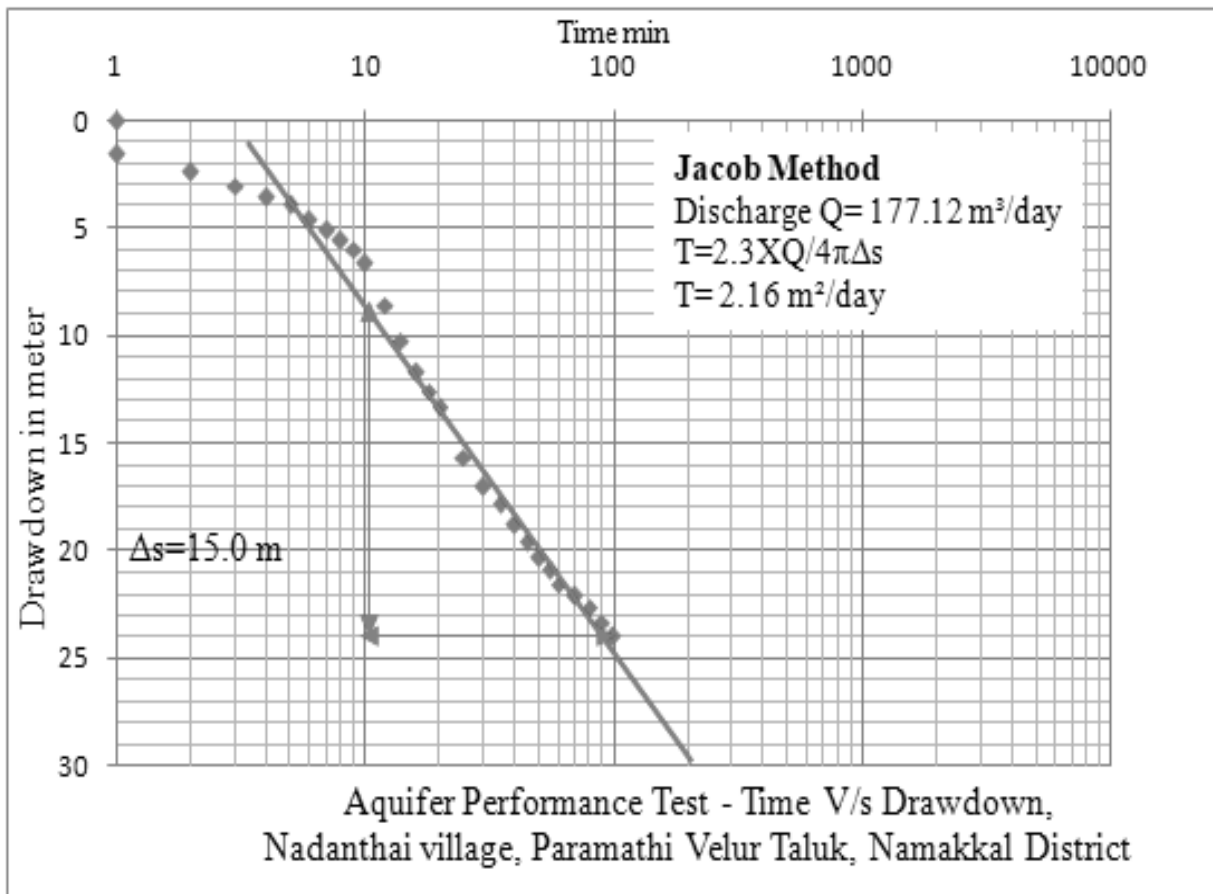


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Pumping well with constant discharge of 2.05 LPS for 100 minutes pumping duration. The depth to water level was 25.90 m bgl. The recuperation data was collected for duration of 100 minutes. The data plot showing Time V/s Drawdown and Residual Drawdown V/s  $t/t'$  - shown in Fig No 3.15 and data in Table 3.6 (b).

<u>Parameter</u>	:	<u>Observations</u>
Date	:	22.08.2023
Static Water Level (m)	:	25.90
Duration of the test(Time in min)	:	100
Discharge (Q) m <sup>3</sup> /day	:	177.12
Total Drawn down (m)	:	24.20
Specific capacity (lpm/m)	:	7.31
Transmissivity (Jacob method) m <sup>2</sup> /day	:	2.16
Transmissivity (Theis recovery method) m <sup>2</sup> /day	:	2.49



**Fig No 3.15 Aquifer Performance Test data plot- Time V/s Drawdown of Nadanthai Village, Namakkal District**

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**Table 3.6 (b) Aquifer Performance Test (APT)**

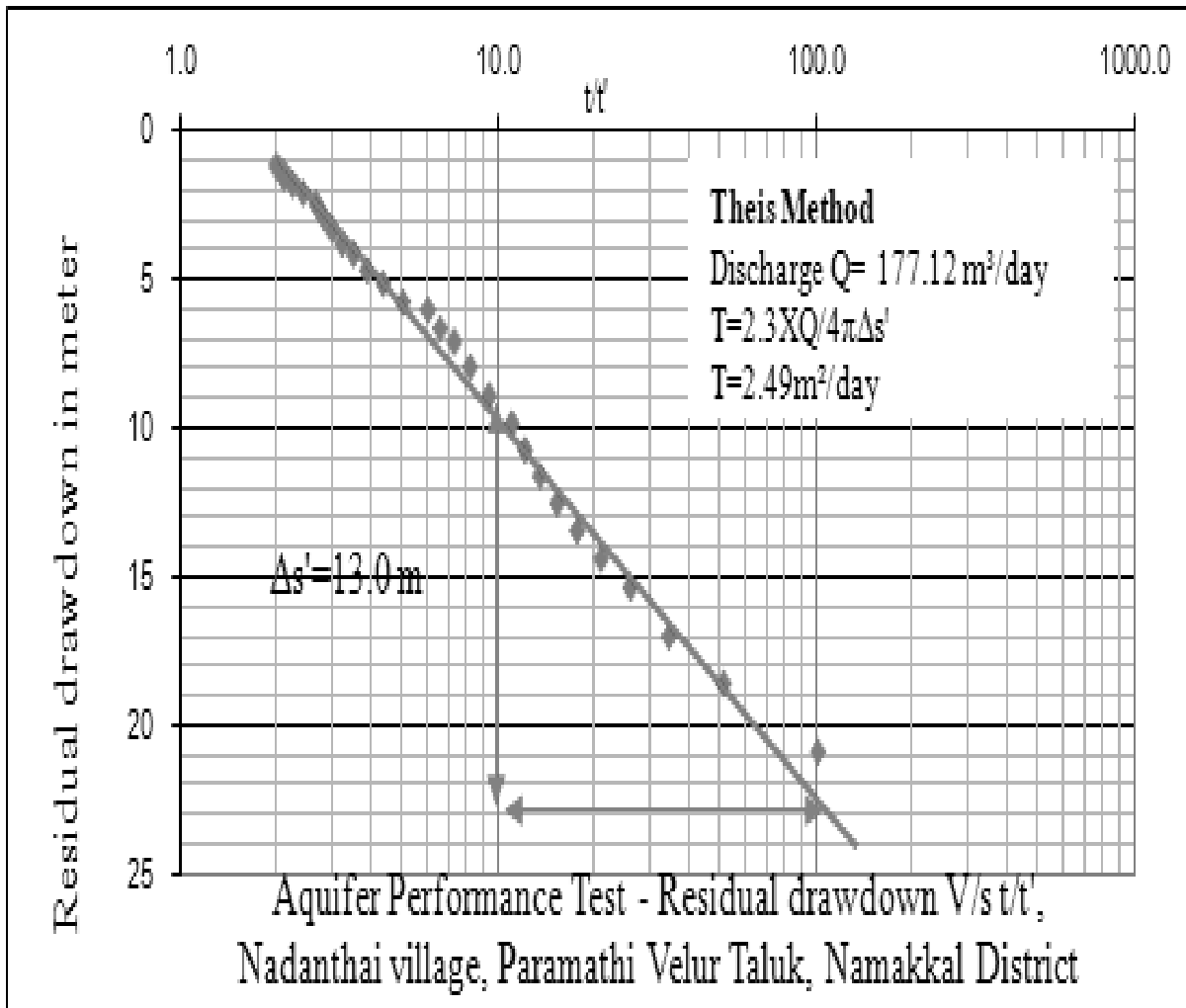
<b>Village Name</b>		Nadandhai					
<b>Depth of the well</b>		280.0 m					
<b>Static water level</b>		25.90 m					
<b>Discharge Ips</b>		2.05 Ips					
<b>Discharge (Q m<sup>3</sup>/day)</b>		177.12 m <sup>3</sup> /day					
<b>Time since pump started (min)</b>	<b>Depth to water (m)</b>	<b>Drawdown (m)</b>	<b>Time (t)</b>	<b>Time since pump stopped (min) (t')</b>	<b>Depth to water (m bgl)</b>	<b>Residual Drawdown (m bgl)</b>	<b>t/t'</b>
0	25.9	0	100	0	49.92	24.02	0
1	27.45	1.55	101	1	46.83	20.93	101.00
2	28.32	2.42	102	2	44.54	18.64	51.00
3	28.95	3.05	103	3	42.97	17.07	34.33
4	29.47	3.57	104	4	41.32	15.42	26.00
5	29.84	3.94	105	5	40.36	14.46	21.00
6	30.56	4.66	106	6	39.42	13.52	17.67
7	30.96	5.06	107	7	38.49	12.59	15.29
8	31.47	5.57	108	8	37.57	11.67	13.50
9	31.87	5.97	109	9	36.7	10.8	12.11
10	32.51	6.61	110	10	35.82	9.92	11.00
12	34.48	8.58	112	12	34.88	8.98	9.33
14	36.12	10.22	114	14	33.92	8.02	8.14
16	37.62	11.72	116	16	33.07	7.17	7.25
18	38.51	12.61	118	18	32.63	6.73	6.56
20	39.26	13.36	120	20	32.01	6.11	6.00
25	41.56	15.66	125	25	31.74	5.84	5.00
30	42.95	17.05	130	30	31.12	5.22	4.33
35	43.77	17.87	135	35	30.67	4.77	3.86
40	44.66	18.76	140	40	30.11	4.21	3.50
45	45.5	19.6	145	45	29.77	3.87	3.22
50	46.21	20.31	150	50	29.32	3.42	3.00
55	46.85	20.95	155	55	28.88	2.98	2.82
60	47.45	21.55	160	60	28.43	2.53	2.67

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70	47.99	22.09	170	70	28.07	2.17	2.43
80	48.53	22.63	180	80	27.8	1.9	2.25
90	49.23	23.33	190	90	27.56	1.66	2.11
100	49.92	24.02	200	100	27.17	1.27	2.00

Estimation of the hydraulic parameters is very essential to optimal management of this resource. The hydraulic parameters are estimated from pumping test carried out on Nadandhai village which showed that the transmissivity T values ranged from Jacob method  $2.16 \text{ m}^2/\text{day}$  and Theis recovery method  $2.49 \text{ m}^2/\text{day}$ . The result of the pumping test data shows that there are limited groundwater prospects in the region which certainly needs careful planning and management of the available water resource as given in Fig No 3.16.



**Fig No 3.16 Aquifer Performance Test data plot - Residual Drawdown V/s  $t/t'$  of Nadanthai village**

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### 3.7.5 Computation of Transmissivity of Pumping Well

#### By Jacobs Method

Transmissivity calculated from Drawdown vs time data plots.

$$\begin{aligned}T &= 2.3 Q/4\pi\Delta s \\Q &= 177.12\text{m}^3/\text{day} \\ \Delta s &= 15.0 \text{ m} \\ T &= \frac{2.3 \times 177.12}{4 \times 3.14 \times 15.0} \\ T &= \mathbf{2.16 \text{ m}^2/\text{day}}\end{aligned}$$

#### By Theis Method

Transmissivity calculated from Residual Drawdown vs t/t' data plots.

$$\begin{aligned}T &= 2.3 Q/4\pi\Delta s \\Q &= 177.12 \text{ m}^3/\text{day} \\ \Delta s &= 13.0 \text{ m} \\ T &= \frac{2.3 \times 177.12}{4 \times 3.14 \times 13.0} \\ T &= \mathbf{2.49 \text{ m}^2/\text{day}}\end{aligned}$$

### 3.7.6 Conclusion

An integrated approach of pumping test and 2D resistivity survey method is helped to understand the groundwater potential zones, ground water table, aquifer geometry and direction of groundwater movement and subsurface lithology variations. Present scenario is shallow aquifers Zone identified 20m bgl the movement of water flow towards NE direction and the hydrological condition 10 km radius of buffer zone depth to the static water levels of the aquifer ranges from **48.51 to 75.60 m bgl.**

### 3.8 Soil Environment

The type of soil is an important factor for the growth of plants and crops in any area. The soil system has various criteria to classify the soils of a region such as geology, humidity, rainfall pattern, soil texture, soil salinity etc.

Soil quality study has been carried out at the site and in the study area of 10 km radius around the project site to understand the physical-chemical nature of the soil. Soil sampling was carried out at 5 selected locations.

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The frequency and methodology of soil quality sampling process is given in Table No.3.7. Moreover, Georeferenced soil Map of around 10 km radius is given in Fig No.3.17. Table 3.8 presents the soil quality monitoring locations of the study area. The sampling was carried out once in the study period.

**Table 3.7 Frequency and Methodology for Soil sampling & monitoring**

S.No	Particulars	Details
1	Frequency	One sample from each station— once during the Study Period
2	Methodology	Soil Sample has been collected as per the CPCB standard

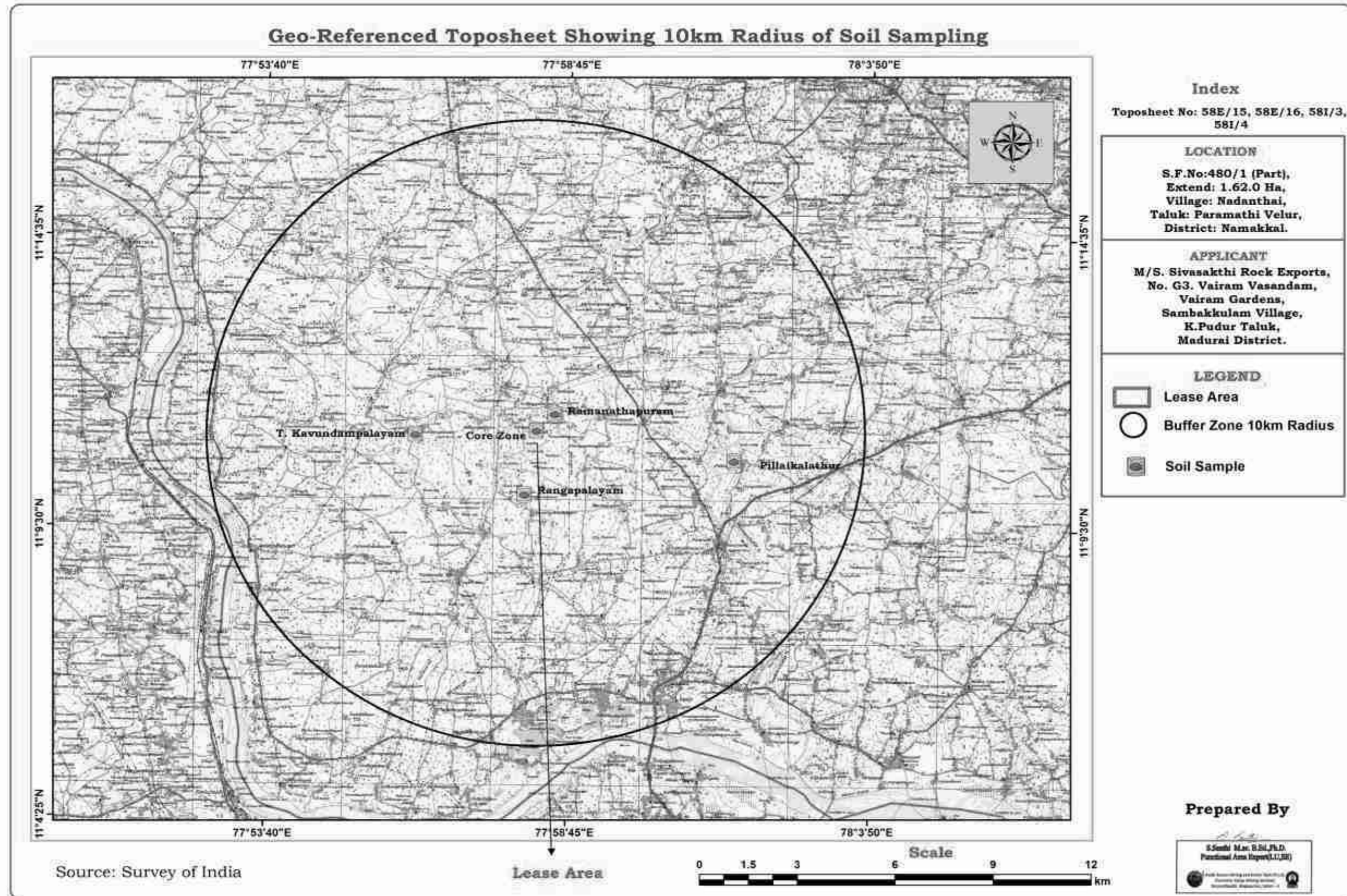
### 3.8.1 Methodology of Soil Environment

Soil samples were collected from different depth below the surface. The samples were filled in polythene bags, labeled in the field with number and site name and sent to laboratory for analysis. The samples were homogenized and the quality was reduced using the coning and quartering method to provide a respective sample for analysis. The samples were analyzed as per Indian Standards IS: 2720 (Revised Parts).

- ❖ To determine the baseline soil characteristics of the study area
- ❖ To determine the impact of the project on soil characteristics and
- ❖ To determine the impact on soils more importantly loss of fertility from agricultural productivity point of view.

**Table 3.8 Soil Sampling Locations**

CODE	Place	Latitude (N)	Longitude (E)	Distance w.r.t Mine Site	Direction w.r.t Mine Site
SQ1	Core Zone	11°11'11.92"N	77°58'12.73"E	-	-
SQ2	Ramanathapuram	11°11'29.51"N	77°58'31.13"E	0.73	N
SQ3	T.Kavundampalayam	11°11'7.19"N	77°56'10.60"E	3.61	W
SQ4	Pillaikalathur	11°10'41.54"N	78° 1'32.32"E	6.08	E
SQ5	Rangampalayam	11°10'4.76"N	77°58'1.10"E	1.96	S



**Fig No 3.17 Geo referenced Toposheet showing Soil sampling Locations around 10km radius**

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**Fig No 3.18 Soil Sampling at Core and Buffer Zone**

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**Table 3.9 Result of Soil Sample Analysis**

S.No	Parameters	Core Zone	Buffer Zone				
		M/s. Sivasakthi Rock Exports	Ramanathapuram	T.Kavundam-palayam	Pillaikalathur	Rangampalayam	
<b>Physical Parameters</b>							
1	pH Value	8.64	8.54	7.85	8.16	8.11	
2	EC@25C (Micromhos/cm)	51	558	945	251	173	
3	Moisture %	0.36	1.49	2.18	1.31	2.33	
4	Bulk density g/cc	1.44	1.03	1.12	1.11	1.33	
5	Water Holding capacity %	88	76	77	42	44	
6	Texture %	Sand	45	35	40	35	39
		Silt	41	49	52	58	52
		Clay	14	16	8	6	9
		Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam	Silt Loam
<b>Chemical Parameters</b>							
7	Organic Matter %	0.86	1.59	2.27	1.54	2.45	
8	Calcium %	0.001	0.004	0.005	0.006	0.004	
9	Magnesium %	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	BDL(DL:1)	
10	Chlorides %	0.003	0.004	0.005	0.004	0.003	
<b>BDL = Below Detectable Limit: DL = Detection Limit</b>							



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### 3.8.2 Observations

Soil characteristics were delineated through specific parameters viz. moisture, bulk density, texture, water holding capacity, organic matter and other parameters as depicted in Table 3.9.

**pH** is an important parameter indicative of alkaline or acidic nature of soil. It greatly affects the microbial population as well as solubility of metal ions and regulates nutrient availability. The pH varies from 7.85 to 8.64 in the soil samples. In all the samples the pH value was found to be 8.11 (Rangampalayam), 8.16 (Pillaikalathur), 8.54 (Ramanathapuram), 8.64 (Core Zone) which is slightly basic except T.Kavundampalayam.

**Electrical conductivity (EC)**, a measure of soluble salts in the soil was in the range of 51  $\mu\text{S/cm}$  to 9 45  $\mu\text{S/cm}$ .

Regular cultivation practices increase the **bulk density** of soils thus inducing compaction. This results in reduction in water percolation rate and penetration of roots through soils. The soils with low bulk density have favorable physical conditions whereas those with high bulk density exhibit poor physical conditions for agriculture crops. The bulk density of the soil samples are in the range of 1.03g/cc to 1.44g/cc respectively, which indicate favorable physical condition for plant growth.

**Water holding capacity** was found to be in the range of 42% to 88% in all the soil samples collected from core and buffer villages.

**Organic matter** present in soil influences its physical and chemical properties and is responsible for stability of soil aggregates. Organic matter was found to be in the range of 0.86- 2.27%. This shows that soil was deficient in organic matter content.

**Available Chlorides** content range of between 0.003-0.005 mg/kg in both core and buffer villages. **Magnesium** level of soil sample in the core zone and buffer zone was found to be BDL (DL:1) in all the soil samples collected.

**Calcium** content in these soils ranges between 0.001–0.006 mg/kg thereby indicating that the soils are with low levels of available Calcium content.

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### **3.9 ECOLOGY AND BIOLOGICAL ENVIRONMENT**

#### **3.9.1 Description of Krishnagiri District Environment**

Namakkal District is a newly formed district from Salem District. It is functioning from 01-01-1997. It consists of 8 Taluks namely Namakkal, Rasipuram, Tiruchengode, Paramathi Velur, Kolli Hills, Senthamangalam, Komarapalayam and Mohanur. The district is bounded by Salem on the north, Karur on the south, Trichy and Salem on the east and Erode on the West. The Geographical area of the district is 3368.21 Sq.kms. This lies between 11.00 and 11.360 North Latitude and 77.280 and 78.300 East Longitude.

Namakkal district covers an area of 3,368.21 km<sup>2</sup>. The district is bounded by Salem district on the north; on the east Tiruchirapalli District, Karur District on the south and on the west by Erode district.

The average annual rainfall is 716.54 mm. This district receives rainfall mainly from North East Monsoon. Namakkal District comes under the North Western Agro climatic zone of Tamil Nadu. Tiruchengode Taluk alone is placed under Western Agro-climatic zone. Temperature ranges between maximum of 40 °C and minimum of 18 °C.

#### **3.9.2 Agriculture activities in Namakkal District**

The main occupation for most of the people in the district is agriculture, with a gross cropped area of around 336,700 Ha, out of which about 60,939 Ha are irrigated and about 80,598Ha are rainfed. The cultivation generally depends on monsoon rains, wells, and tanks. Major soil in this district is red soil (77%). Nearly 90 percent of the cultivated area is under food crops.

The principal cereal crops of this district are paddy, cholam, cumbu and ragi, Panivaragu, Kuthiraivali, Samai Varagu and horsegram. Among oil, seeds, groundnut, castor, and gingelly (sesame) occupy important places. Of the commercial crop, Sugarcane, cotton and tapioca are some of the important. Using tapioca as raw material about 350 factory units are engaged in the production of Starch and Sago in Namakkal District. Around 800 jaggery manufacturing units were located around Paramathi velur

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**Table 3.10 Details of Important/cash crops in Namakkal District**

Sl. No	Common name	Scientific name	Family
1.	Paddy	<i>Oryza sativa</i>	Poaceae
2.	Cholam	<i>Sorgham bicolor</i>	Poaceae
3.	Cumbu	<i>Pennisetum glaucum</i>	Poaceae
4.	Ragi	<i>Eleusine coracana</i>	Poaceae
5.	Groundnut	<i>Arachis hypogaea</i>	Fabaceae
6.	Sugarcane	<i>Saccharum officinarum</i>	Poaceae
7.	Black gram	<i>Vigna mungo</i>	Fabaceae
8.	Cotton	<i>Gossypium herbaceum</i>	Malvaceae
9.	Vargu	<i>Paspalums crobiculatum</i>	Poaceae
10.	Maize	<i>Zea mays</i>	Poaceae
11.	Green gram	<i>Vigna radiata</i>	Fabaceae
12.	Red gram	<i>Cajanus cajan</i>	Fabaceae
13.	Castor	<i>Ricinus communis</i>	Euphorbiaceae
14.	Kuthiraivali	<i>Echinochloa frumentacea</i>	Poaceae
15.	Horse gram	<i>Macrotyloma uniflorum</i>	Fabaceae
16.	Jasmine flower	<i>Jasminum officinale</i>	Asteraceae
17.	Marigold plant	<i>Tagetes erecta</i>	Asteraceae
18.	Firecracker flower	<i>Crossandra infundibuliformis</i>	Acanthaceae

### 3.9.3 Forest resources

Namakkal is one among the districts of Tamil Nadu, which with natural resources having 512.5 Sq. Kms of forest cover is its unique feature (15.4%).

Besides the above two zones, Kolli Hills (a part of the Eastern Ghats mountain range) and a few isolated hills and ridges are scattered over Namakkal, Rasipuram, and Tiruchengode and along with the valleys and rolling hills, make up the characteristic topography of the district.

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### **3.9.4 Water resources**

The river Kaveri flows south and southwest hugging the district's borders with Karur and Erode. The other rivers flowing through the district are Aiyaru, Karaigottan Aaru and Thirumanimutharu.

The district is situated in the dividing portion of two watersheds between Cauvery and the Vellar System with the Taluks of Attur, Rasipuram and Namakkal on the East and Salem, Omalur and Mettur on the West. Mettur East Bank canal irrigates Pallipalayam Block with an area of 4,585 Ha. Rajavaikal canal irrigates an area of 4,215 Ha. Mohanur vaikal irrigates about 355 Ha. Kumarapalayam vaikal irrigates about 1,146 ha (2,830 acres) and Poiyeri vaikal irrigates about 323 ha (800 acres).

### **3.9.5 Study Area Ecology**

A survey was conducted to study the flora around 10 km radius. Some of the information was gathered from the local habitants. All the collected data were classified to interpret the impact of pollution on the flora and fauna of that region. Survey of the mild plants as well as cultivated crop plants was made and all the available information was recorded. The primary data collected was compared with the Secondary data collected from Forest Department. There are no ecologically sensitive areas such as Biosphere reserves, Wildlife Sanctuaries, national Parks and other protected areas in or around the project site in a radius of 10 km. Generate Baseline Data from field observations.

### **3.9.6 Methodology of Sampling**

A methodology of Sampling Flora and fauna studies were carried out during the winter season to assess the list of terrestrial plant and animal species that occur in the core area and the buffer area up to 10 km radius from the project site. No damage is created to flora and fauna during the sampling. None of the specimens were collected as voucher specimens and for the herbarium. It is basically done through field observations only. The study of flora is conducted as per the guidelines of the Ministry of Environment Forest and Climate Change (MoEFCC) and Botanical Survey of India (BSI).

The study involved in the collection of primary data by conducting a survey in the field, examination of flora and fauna records in previously published reports and records. Analysis of the information is the view of the possible alteration in the

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environment of the project site. For the survey of fauna, both direct and indirect observation methods were used

### **3.9.7 Flora**

The present study on the floral assessment for the existing project activity is based on extensive field survey of the area. The plant species were identified with the help of plant taxonomy manual, literatures and Botanical Survey of India website (efloraindia.nic.in). In addition besides the collection of plant species, information was also collected with vernacular names of plant species made by local inhabitants.

#### **3.9.7.1. Flora in Core Zone**

Taxonomically a total of 27 species distributed in 16 families have been recorded from the core mining lease area. Based on habitat classification of the enumerated plants the majority of species were tree 15 (56%) followed by shrubs 6 (22%), herbs 5 (19%) and creeper 1(3%) Details of flora with the scientific name were mentioned in Table No. 3.11 and Fig No. 3.19. No ecologically sensitive plant species has been reported from this area.

#### **3.9.7.2. Flora in Buffer Zone**

Taxonomically a total of 49 species distributed among 30 families have been recorded from the buffer area. Based on habitat classification of the enumerated plants the majority of species were tree 25 (51%) followed by shrubs 12 (24%), herbs 8 (16%) and rest 4 (4%) is a climber. Details of flora with the scientific name were mentioned in Table No. 3.11 and Fig No 3.19.

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**Table 3.11 Floral Diversity in Core and Buffer area (M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District)**

Sl. No.	Common Name	Local Name	Family	Scientific Name	Core	Buffer
<b>TREES</b>						
1.	Neem	Vempa Maram	Meliaceae	<i>Azadirachta india</i>	+	+
2.	Khejri Tree	Vanni Maram	Fabaceae	<i>Prosopis spicigera</i>	-	+
3.	Ceylon olive	Ularga karai Maram	Elaeocarpaceae	<i>Elaeocarpus serratus</i>	+	-
4.	Palmyra palm	Panai Maram	Arecaceae	<i>Borassus flabellifer</i>	+	+
5.	Mango	Maa Maram	Anacardiaceae	<i>Mangifera indica</i>	+	+
6.	Papaya Tree	Papali Maram	Caricaceae	<i>Carica Papaya</i>	-	+
7.	Teak	Tekku Maram	Lamiaceae	<i>Tectona grandis</i>	+	+
8.	Sandal wood	Santhana Maram	Santalaceae	<i>Santalum album</i>	-	+
9.	Chebolicmyro balan	Kudukkai Maram	Combretaceae	<i>Terminalia chebula</i>	+	+
10.	Pungamin	Pungai Maram	Fabaceae	<i>Pongamia pinnata</i>	+	+
11.	Lemon-Scented Gum	Thaila Maram	Myrtaceae	<i>Eucalyptus citriodora</i>	+	+
12.	Black plum	Naval Maram	Myrtaceae	<i>Syzygium cumini Sps.</i>	+	+
13.	Banana	Vaazhai Maram	Musaceae	<i>Musa paradisia</i>	-	+
14.	Thorn mimosa	Karuvelam Maram	Mimosaceae	<i>Acacia nilotica</i>	+	-
15.	Coconut	Tennai Maram	Arecaceae	<i>Coccus nucifera</i>	+	+
16.	Guava	Koija Maram	Myrtaceae	<i>Psidium guajava</i>	-	+
17.	Indian date	Elandhai Maram	Rhamnaceae	<i>Ziziphus jujuba</i>	+	+
18.	Sweet acacia	Kastuurivel Maram	Fabaceae	<i>Vachellia farnesiana</i>	-	+

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19.	Iron wood	Savukku Maram	Casuarinaceae	<i>Casuarina equisetifolia</i>	+	+
20	Broome rain Tree	Vagai Maram	Fabaceae	<i>Albizia lebbek</i>	-	+
21.	Custard apple	Seethe pazham Maram	Annonaceae	<i>Annona squamosa</i>	+	+
22.	Cannonbal tree	Nagalinga Maram	Lecythidaceae	<i>Couropita guianensis</i>	-	+
23.	Tanner's cassia	Avaram poo Maram	Fabaceae	<i>Senna auriculata</i>	-	+
24.	Blackboard Tree	Aezhilai Paalai Maram	Apocynaceae	<i>Alstonia scholaris</i>	-	+
25.	Drumstick tree	Murungai	Moringaceae	<i>Moringaoleifera</i>	-	+
26.	Banyan	Ala Maram	Moraceae	<i>Ficus benghalensis</i>	-	+
27.	Tamarind	Puliya Maram	Fabaceae	<i>Tamarindus indica</i>	+	+
<b>SHRUBS</b>						
1.	Gwar patha	Katrazai	Liliaceae	<i>Aloe vera (or) Aloe barbadensis miller</i>	+	+
2.	Spiral cactus	Thirugu kalli	Euphorbiaceae	<i>Euphorbi tortilis</i>	+	+
3.	Indian Abutilon	Thuthi keerai	Meliaceae	<i>Abutilon indicum</i>	+	+
4.	Peacock flower	Mayil kontai	Fabaceae	<i>Caesalpinia pulcherrima</i>	+	+
5.	Marigold	Samanthi cheedi	Asteraceae	<i>Tagetes erecta</i>	-	+
6.	Jasmine	Mali cheedi	Oleaceae	<i>Jasminum officinale</i>	-	+
7.	Firecracker flower	Kanagamparam	Acanthaceae	<i>Crossandra infundibuliformis</i>	-	+
8.	Hibiscus	Cembarutti	Malvaceae	<i>Hibiscus rosanaceae</i>	-	+
9.	Crown flower	Erukku cheedi	Apocynaceae	<i>Calotropis gigantean</i>	+	+
10.	Jimson weed	Ummathai cheedi	Solanaceae	<i>Datura stramonium</i>	+	+
11.	Coat buttons	Seruppadithazhai	Asteraceae	<i>Tridax porcumbens</i>	-	+

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12.	Rose	Rosa	Rosaceae	<i>Rosa rubiginosa</i>	-	+
<b>HERBS &amp; GRASS</b>						
1.	Indian Copper leaf	Kuppaimeni	Euphorbiaceae	<i>Acalypha indica</i>	-	+
2.	Devil bean	Kilukiluppai	Fabaceae	<i>Crotalaria retusa</i>	+	+
3.	Indian comet grass	Narival	Poaceae	<i>Perotis indica</i>	-	+
4.	Villosa	Kavali	Fabaceae	<i>Tephrosia villosa</i>	-	+
5.	Sickle senna	Thagarai	Fabaceae	<i>Senna tora</i>	+	+
6.	Indian doab	Arugampul	Poaceae	<i>Cynodon dactylon</i>	+	+
7.	Carrot grass	Mookkuthi poo	Asteraceae	<i>Parthenium hysterophorus</i>	+	+
8.	Black nightshade	Manathakkali	Solanaceae	<i>Solanum nigrum</i>	+	+
<b>CREEPERS/CLIMBERS</b>						
1.	Bitter cucumber	Petikari	Cucurbitaceae	<i>Citrullus colocynthis</i>	-	+
2.	Bitter melon	Pavakkai	Cucurbitaceae	<i>Momordica charantia</i>	-	+
3.	Veldt grape	Perandai	Vitaceae	<i>Cissusqua dranqularis</i>	+	+
4.	Ivy gourd	Kovakkai	Cucurbitaceae	<i>Coccinia grandis</i>	-	+



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Fig a. *Azadirachta indica*



Fig b. *Borassus flabellifer*



Fig c. *Cissusqua dranquularis*



Fig d. *Euphorbi tortilis*



Fig e. *Acacia nilotica*



Fig f. *Aloe vera* sps



Fig g. *Acalypha indica*



Fig h. *Cocos nucifera*

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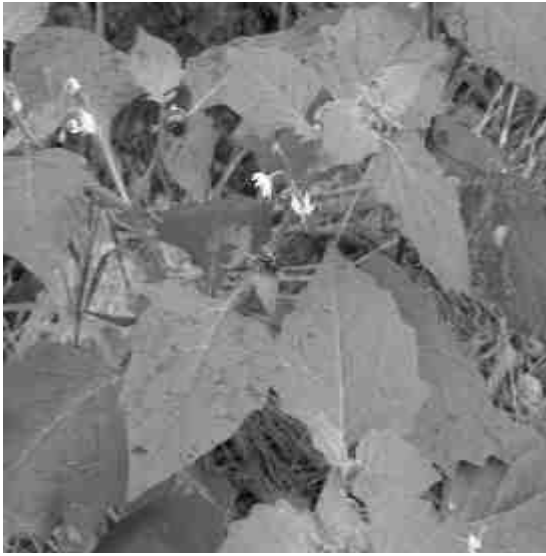
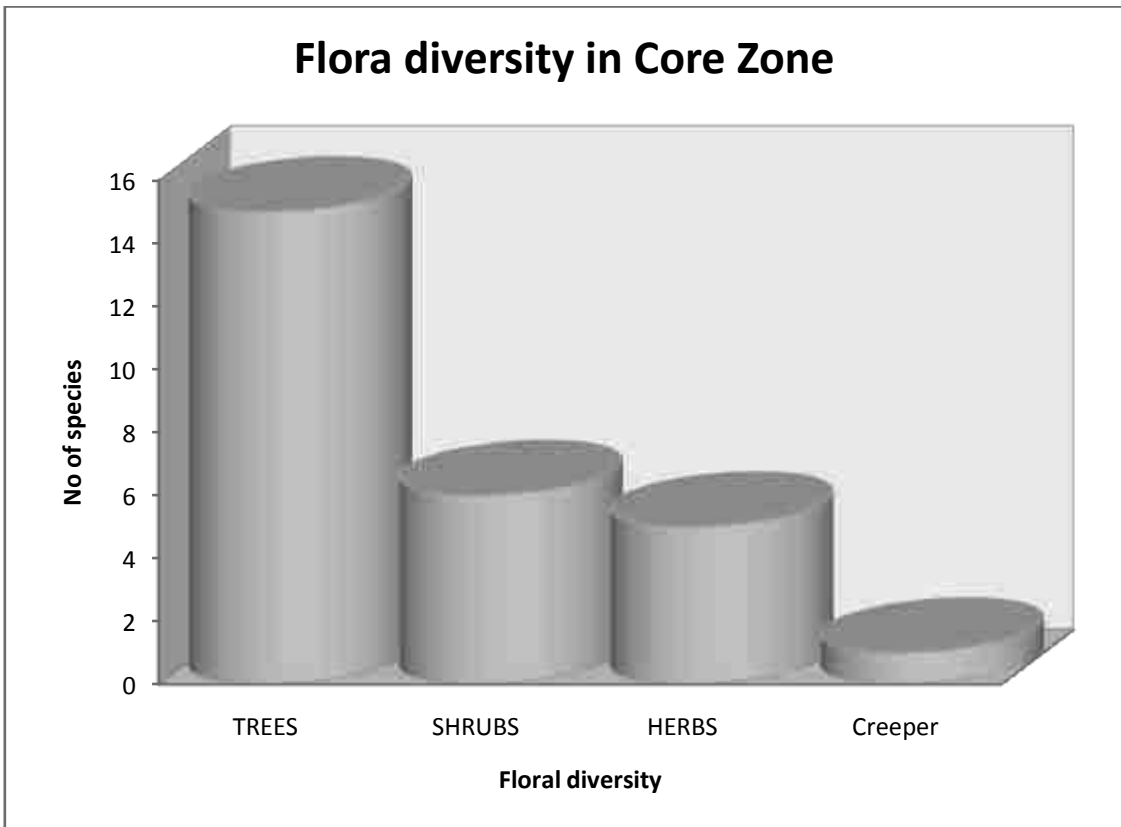


Fig i. *Solanum nigrum*

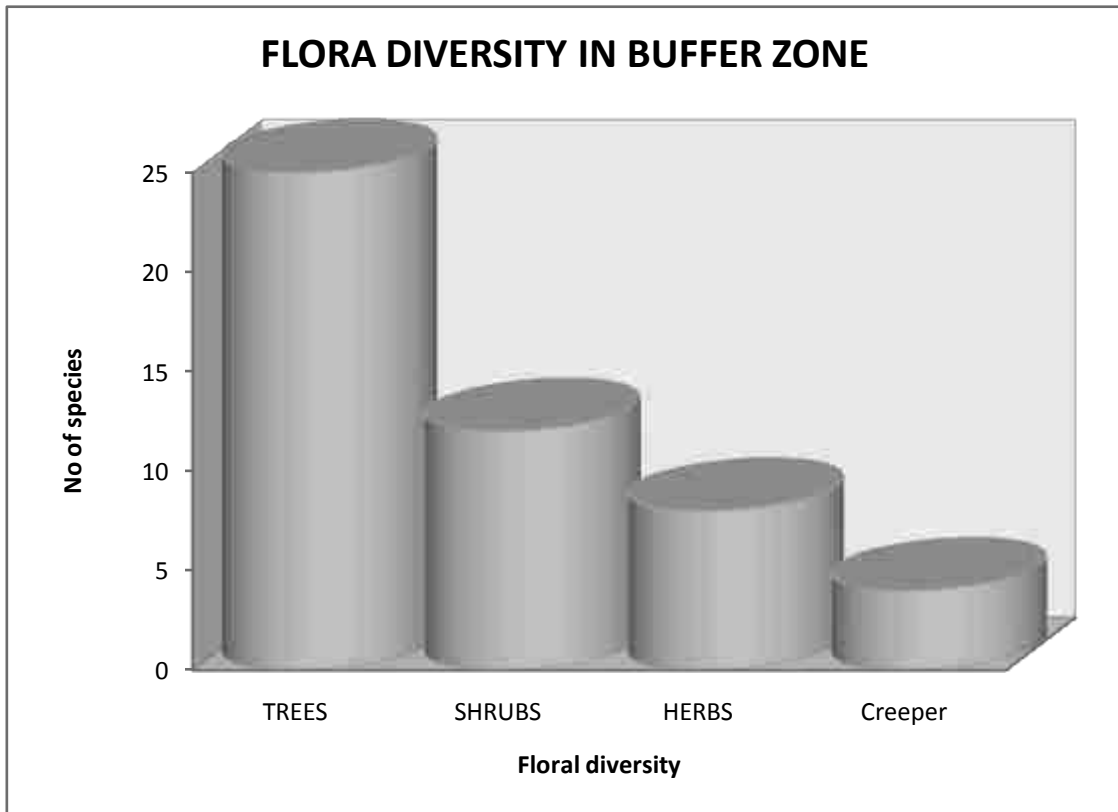


Fig j. *Calotropis gigantea*

**Fig No 3.19 Photos of Flora in Core and Buffer Area**



**Fig No 3.20 Flora diversity in Core Zone**



**Fig No 3.21 Flora diversity in Buffer Zone**

### **3.9.8. 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.

The study of fauna takes a substantial amount of time to understand the specific fauna characteristics of the area. The assessment of fauna has been done on the bases of primary data collected from the lease sites. The presence was also confirmed from the local inhabitants depending on the animal sightings and the frequency of their visits in the project area. In addition officials, local peoples were another source of information for studying the fauna of the area. Field activities are physical/active search, covering rocks, burrows, hollow inspection and location of nesting sites and habitat assessment etc. Taxonomical identification was done by the field guide book and wildlife envis database ([wiienviis.nic.in/Database/Schedule Species Database](http://wiienviis.nic.in/Database/ScheduleSpeciesDatabase)) and Zoological Survey of India (ZSI).

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**Table 3.12 Methodology applied during survey of fauna**

S. No	Taxa	Method of Sampling	References
1	Insects	Random walk, Opportunistic observations	Pollard (1977); Kunte (2000)
2	Reptiles	Visual encounter survey (Direct Search)	Daniel J.C (2002)
3	Amphibians	Visual encounter survey (Direct Search)	
4	Mammals	Tracks and Signs	Menon V (2014)
5	Avian	Random walk, Opportunistic observations	Ali S (1941); Grimmett R (2011); Collins 2015

### 3.9.8.1. Fauna in Core Zone

Varieties of species were observed in the core zone (0-2km radius) of the Quarry. Number of species decreases towards the mining area this might be due the lack of vegetation and forest cover in mining lease area. None of these species are threatened or endemic. Taxonomically a total of 21 species belonging to 16 families have been recorded from the core mining lease area. Based on habitat classification the majority of species were birds 10 (47%) followed by insects 7 (33%), reptiles 2 (9%) and mammals 2(9%). Dominant species were mostly birds and insects no amphibians were observed during the extensive field visit. Details of fauna with the scientific name were mentioned in Table 3.13

There are no critically endangered, endangered, vulnerable and endemic species were observed.

### 3.9.8.2. Fauna in Buffer Zone

Taxonomically a total of 31 species belonging to 20 families have been recorded from the buffer mining lease area. Based on habitat classification the majority of species were birds 12 (39%) followed by insects 12 (39%), reptiles 3 (10%) and mammals 4 (13%). There were no critically endangered, endangered, vulnerable and endemic species were observed. Details of fauna with the scientific name were mentioned in Table 3.13

There were no critically endangered, endangered, vulnerable and endemic species were observed.

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**Table 3.13 Faunal in Core and Buffer area (M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District)**

Sl. No	Common Name	Family Name	Scientific Name	Core Area	Buffer Area	Schedule list wildlife protection act 1972	IUCN Red list data
<b>MAMMALS</b>							
1.	House mouse	Muridae	<i>Musmus culus</i>	+	+	NL	LC
2.	Common mongoose	Herpestidae	<i>Herestes edwardsii</i>	-	+	NL	NL
3.	Bat	Pteropodidae	<i>Pteropus medius</i>	+	+	NL	NL
4.	Palm squirrel	Sciuridae	<i>Funambulus pennantii</i>	-	+	NL	NL
<b>INSECTS</b>							
1.	Mottled emigrant	Pieridae	<i>Catopsilia pyranthe</i>	+	+	Schedule IV	LC
2.	Common grass yellow	Pieridae	<i>Eurema brigitta</i>	-	+	Schedule IV	LC
3.	Marbled white	Nymphalidae	<i>Melanargia galathea</i>	-	+	Schedule IV	LC
4.	Banded hairstreak	Lycaenidae	<i>Satyrium calanus</i>	-	+	Schedule IV	NE
5.	Blue basher	Libellulidae	<i>Pachydiplax longipennis</i>	+	+	NL	LC
6.	Slaty skimmer	Libellulidae	<i>Libellula incesta</i>	-	+	NL	LC
7.	White butterfly	Pieridae	<i>Pieris rapae</i>	-	+	Schedule IV	LC
8.	Baronet	Nymphalidae	<i>Euthalia nais</i>	+	+	Schedule IV	NE
9.	Milkweed butterfly	Nymphalidae	<i>Danaus plexippus</i>	+	+	NL	LC
10.	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	+	+	NL	LC
11.	Common Tiger	Nymphalidae	<i>Dananus genutia</i>	+	+	NL	NE
12.	Plain Tiger	Nymphalidae	<i>Dananus chrysippus</i>	+	+	NL	NE

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<b>REPTILES</b>							
1.	Peninsular rock agama	Agamidae	<i>Psammophilus dorsalis</i>	+	+	NL	NL
2.	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	-	+	NL	NL
3.	Fan-Throated Lizard	Agamidae	<i>Sitana ponticeriana</i>	+	+	NL	LC
<b>BIRDS</b>							
1.	Common cuckoo	Cuculidae	<i>Cuculuscanorus</i>	+	+	NL	LC
2.	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	-	+	NL	LC
3.	Japanese quail	Phasianidae	<i>Coturnix japonica</i>	-	+	NL	LC
4.	House crow	Corvidae	<i>Corvus splendens</i>	+	+	NL	LC
5.	White-breasted waterhen	Rallidae	<i>Amaurornisphoenicurus</i>	+	+	NL	LC
6.	Rose-ringed parakeet	Psittacidae	<i>Psittacula krameri</i>	+	+	NL	LC
7.	Common myna	Sturnidae	<i>Acridotheres tristis</i>	+	+	NL	LC
8.	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	+	+	NL	LC
9.	Crow Pheasant	Cuculidae	<i>Centropus sinensis</i>	+	+	Schedule IV	LC
10.	Koel	Cuculidae	<i>Eudynamys scolopaceus</i>	+	+	Schedule IV	LC
11.	House sparrow	Passeridae	<i>Passer domesticus</i>	+	+	Schedule IV	LC
12.	White throated king fisher	Alcedinidae	<i>Halcyon smyrnensis</i>	+	+	Schedule IV	LC

**((+) Symbol indicate presence of Species, (-) Symbol indicate absence of Species, \*NL- Not listed, NE- Not evaluated, LC- Least concern**

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Fig a *Psammophilus dorsalis*



Fig b *Catopsilia pyranthe*

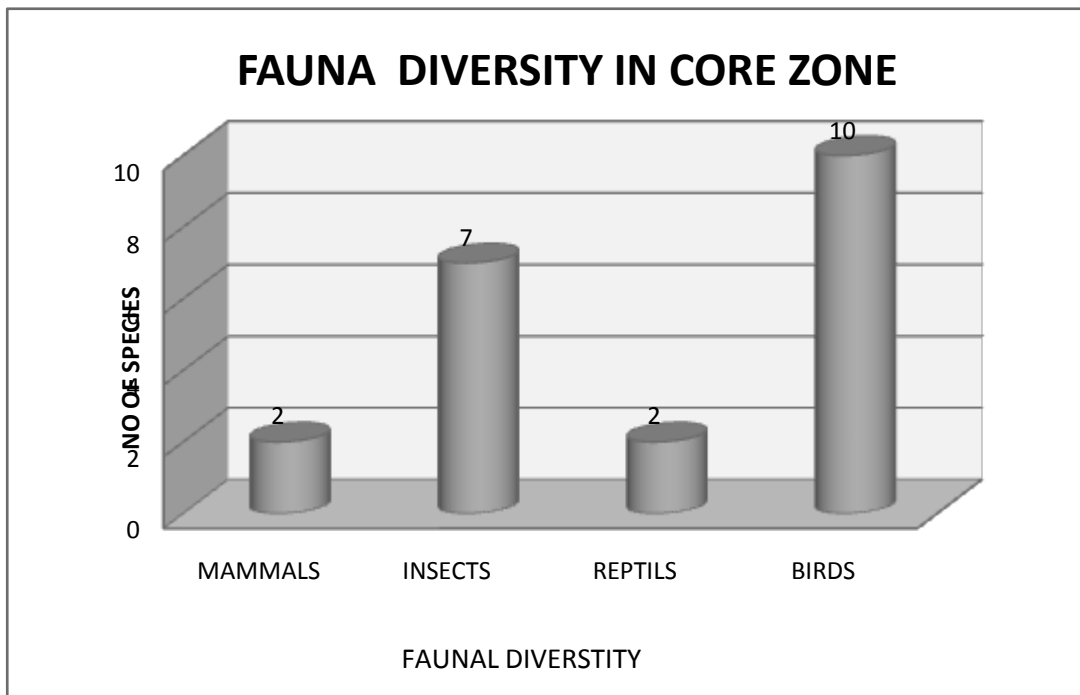


Fig c *Cuculus canorus*

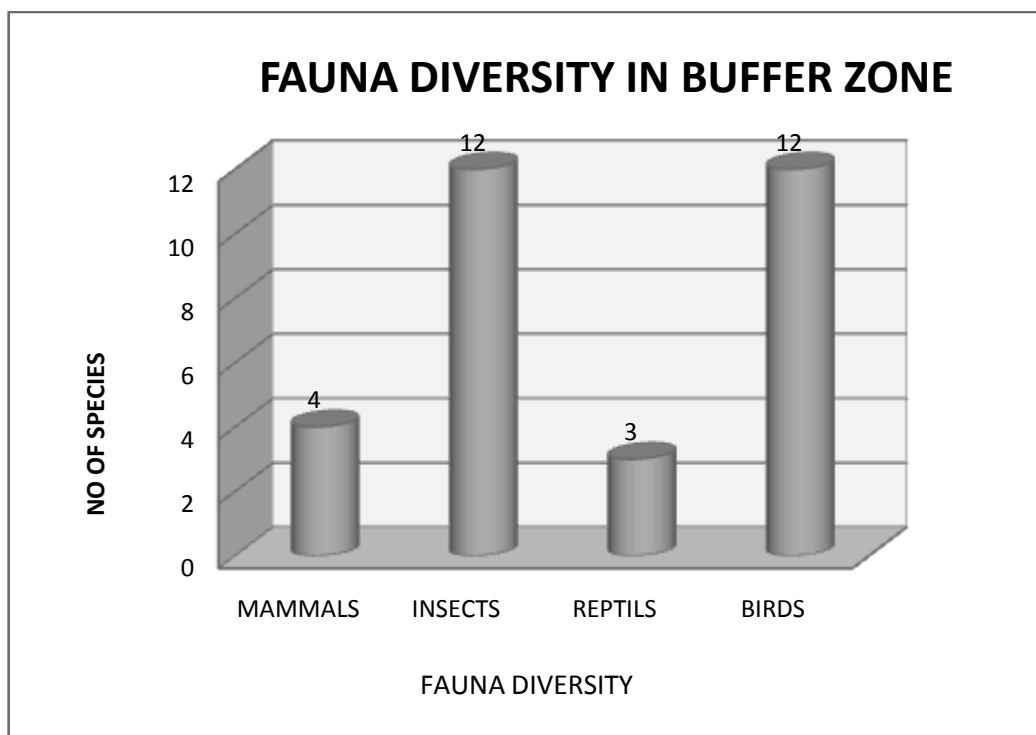


Fig d *Dicrurus macrocercus*

**Fig No 3.22 Photos of Fauna in Core Area**



**Fig No 3.23 Fauna diversity in Core Zone**



**Fig No 3.24 Fauna diversity in Buffer Zone**

### **3.10 SOCIO-ECONOMIC ENVIRONMENT**

#### **3.10.1 Introduction**

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.

#### **3.10.2 Objectives of the Study**

The report deals with the Socio-Economic Impact Assessment of the multi-colour granite quarry promoted by proponent M/S. Sivasakthi Rock Exports, 480/1 (Part)



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respectively located in Nadanthai Village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu.

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 examine the socio-economic benefits and demerits of granite stone quarry mines on workers livelihood and estimate the current mitigation measure can be used to regulate the negative impacts.
- To appraise the impact of quarrying on local environment.
- To present a brief account of the namakkal district in 1.62.0 Ha in Nadanthai village, paramathi velur Taluk, Siva sakthi exports quarries to be taken up in the study Area.

### **3.10.3 Scope of Work**

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

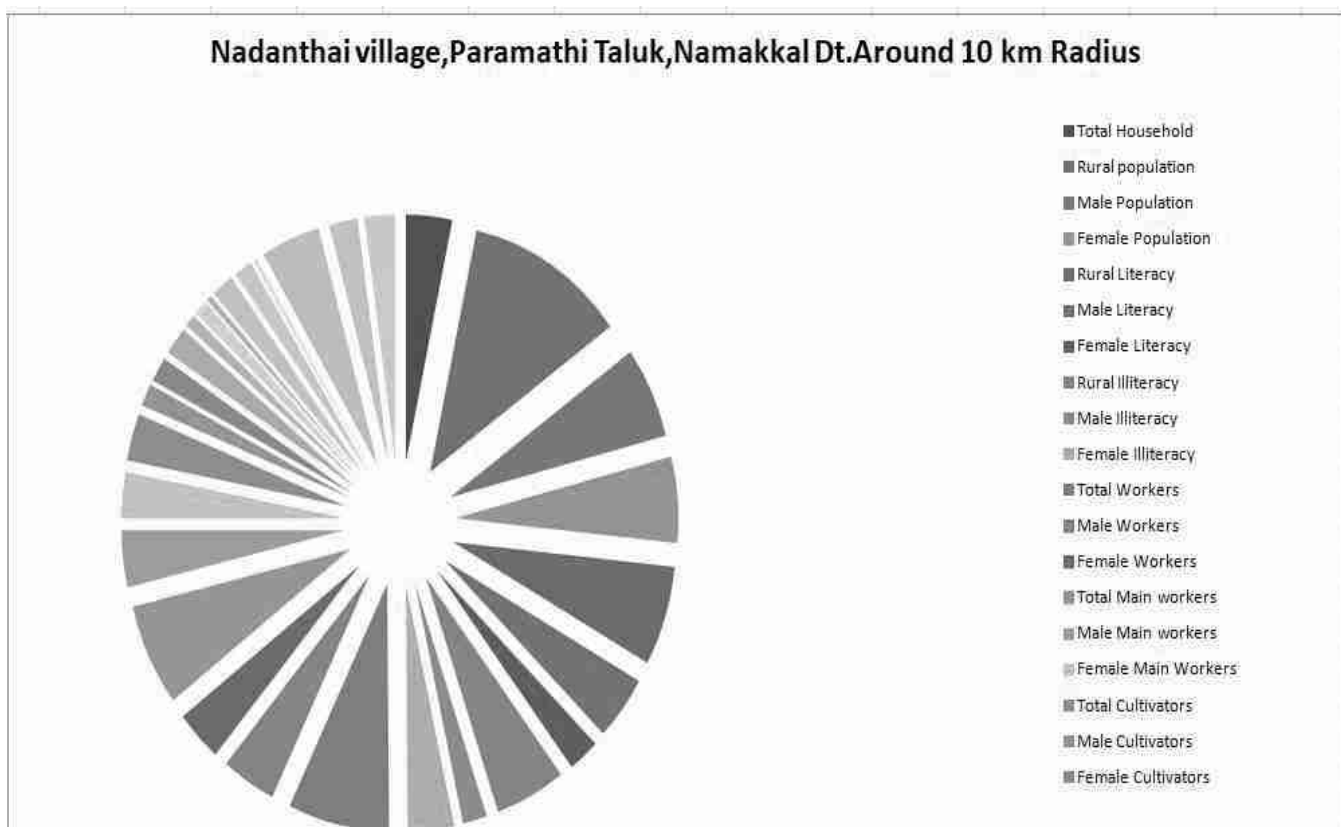
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**Table 3.14 2001 census Data**

<b>Village Names</b>	<b>Nadandai</b>	<b>Maniekanatham</b>	<b>Kabilakkurichi</b>	<b>T.Kavundampala yam</b>	<b>Kunnamalai</b>	<b>Melsathambur</b>	<b>Kudacheri</b>	<b>Vilipalayam</b>	<b>Paramathi (TP)</b>	<b>Velur (TP)</b>	<b>Pandamangalam (TP)</b>	<b>Vadagarai Attur</b>	<b>E.Nallagoundam palayam</b>	<b>Sittampoondi</b>
<b>Total Household</b>	790	517	871	286	696	345	536	594	2907	4644	1541	1471	276	898
<b>Rural population</b>	2751	1765	3160	1036	2307	1202	1850	2259	11124	18413	5952	5500	939	2845
<b>Male Population</b>	1421	899	1583	557	1175	641	941	1161	5565	9316	2990	2772	487	1415
<b>Female Population</b>	1330	866	1577	479	1132	561	909	1098	5559	9097	2962	2728	452	1430
<b>Rural Literacy</b>	1543	971	1924	480	1122	523	895	1214	7596	12264	4097	3118	380	1546
<b>Male Literacy</b>	1005	622	1113	304	692	337	556	769	4204	6880	2278	1832	255	942
<b>Female Literacy</b>	538	349	811	176	430	186	339	445	3392	5384	1819	1286	125	604
<b>Rural Illiteracy</b>	1208	794	1236	556	1185	679	955	1045	3528	6149	1855	2382	559	1299
<b>Male Illiteracy</b>	416	277	470	253	483	304	385	392	1361	2436	712	940	232	473
<b>Female Illiteracy</b>	792	517	766	303	702	375	570	653	2167	3713	1143	1442	327	826
<b>Total Workers</b>	1736	1271	2000	770	1603	750	1199	1541	5553	8783	2766	3594	621	1852
<b>Male Workers</b>	933	667	1133	407	805	414	636	788	3530	5789	1893	1912	341	972
<b>Female Workers</b>	803	604	867	363	798	336	563	753	2023	2994	873	1682	280	880
<b>Total Main workers</b>	1588	1210	1959	734	1165	497	842	1436	5280	8598	2492	3511	619	1655
<b>Male Main workers</b>	877	656	1117	392	718	356	518	757	3449	5708	1716	1883	340	945
<b>Female Main Workers</b>	711	554	842	342	447	141	324	679	1831	2890	776	1628	279	710
<b>Total Cultivators</b>	729	739	636	303	500	234	395	333	1162	892	116	596	355	635
<b>Male Cultivators</b>	344	381	379	148	319	173	238	149	641	519	90	383	191	396
<b>Female Cultivators</b>	385	358	257	155	181	61	157	184	521	373	26	213	164	239
<b>Total Main Agricultural Labourers</b>	433	277	498	174	233	173	245	803	1614	3184	877	1884	230	525
<b>Male Agri.Labourers</b>	192	124	232	63	93	107	115	382	1035	1632	516	859	120	234
<b>Female Agri.Labourers</b>	241	153	266	111	140	66	130	421	579	1552	361	1025	110	291
<b>Total Main HHI</b>	45	2	283	0	75	3	16	16	291	164	24	486	23	21
<b>Male HHI</b>	27	1	124	0	36	2	8	9	131	66	7	243	19	15
<b>Female HHI</b>	18	1	159	0	39	1	8	7	160	98	17	243	4	6
<b>Total Main Other Tertiary workers</b>	381	192	542	257	357	87	186	284	2213	4358	1475	545	11	474
<b>Male OT</b>	314	150	382	181	270	74	157	217	1642	3491	1103	398	10	300
<b>Female OT</b>	67	42	160	76	87	13	29	67	571	867	372	147	1	174
<b>Total Nonworkers</b>	1015	494	1160	266	704	452	651	718	5571	9630	3186	1906	318	993
<b>Male Nonworkers</b>	488	232	450	150	370	227	305	373	2035	3527	1097	860	146	443
<b>Female Non workers</b>	527	262	710	116	334	225	346	345	3536	6103	2089	1046	172	550

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### 3.10.4 Study Area – Nadanthai village

Gram Panchayat name of the Nadanthai village is Nadanthai. Nadanthai village is in Paramathi Velur taluk of Namakkal district in Tamil Nadu, India. It is situated 8km away from sub-district headquarter Paramathi Velur (tahsildar office) and 7.74km away from district headquarter Namakkal. As per 2009 stats, Nadanthai village is also a gram panchayat. Pincode of Nadanthai village is 6372006.

**Table 3.15 Nadanthai village Census 2011 Data**

S.No	Description	Census 2011 Data
1	Village Name	Nadanthai
2	Tehsil Name	Paramathi Velur
3	District Name	Namakkal
4	State Name	TamilNadu
5	Total Population	2838
6	Total Area	1.62.0(Hectares)

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### 3.10.5 Population Characteristics – Nadanthai Village, Paramathi Velur Taluk, Namakkal District (2001-2011)

Nadanthai village had a total household 790 in 2001, which is increased to 882 in according to census 2011. Village had a total person of 2838 in 2011 census previous census 2751 persons in 2001. There were about 1424 men (50.18%) according to 2011 census and 1421 men (51%) in 2001 census marking increase of about 3 men over the previous census. During 2001 there were about 1330 women (48.35%), which is an increase to 1414 (49.82%) in 2011 census.

In Nadanthai village had a literate accounted for 1543 persons (56.09%) in 2001 and increased to 1711 persons (60.29%) in 2011. There were about 36.53 percent males in 2001 and 60.29 percent in 2011. There were about 19.56 percent females increased to 24.21 percent classes as literates in 2011.

Sex composition is the most important demographic characteristics that affect the incidence of birth and death. The average sex ratio in Paramathi Velur taluk, Nadanthai village was 935 during 2001 and increased to 992 the year of 2011. The highest sex ratio may be either due to the migrants for educational purpose and employment opportunities and due to infant birth of female is very high. The population characteristics of Nadanthai Village (2001-2011) are shown in Table 3.15 and Fig no. 3.20.

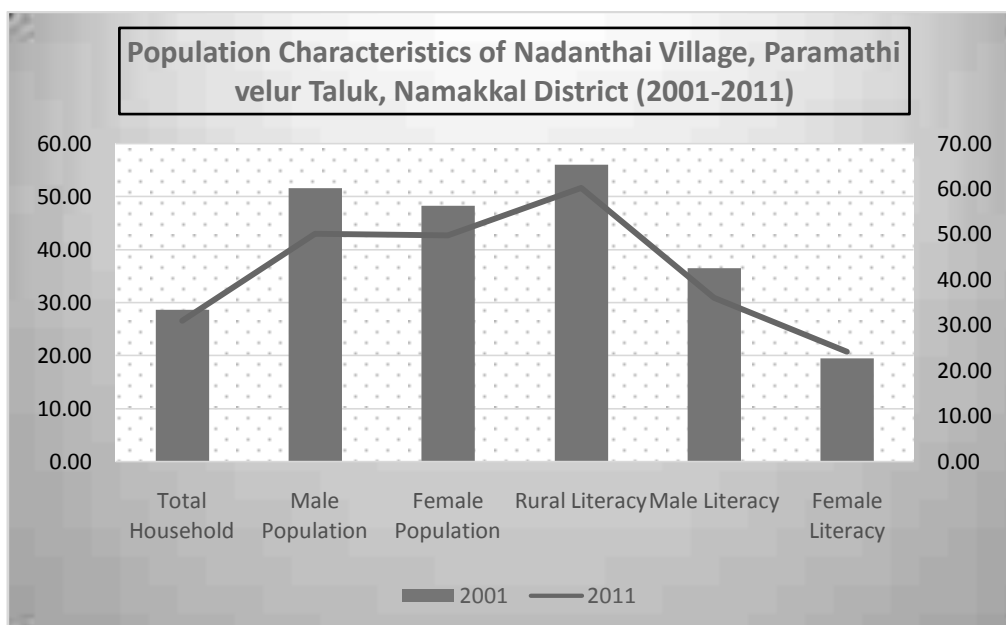
**Table 3.16 Nadanthai Village Population Facts**

S. no	Characteristics	2001	%	2011	%
1	Total Household	790	28.72	882	31.08
2	Rural population	2751		2838	
3	Male Population	1421	51.65	1424	50.18
4	Female Population	1330	48.35	1414	49.82
5	Rural Literacy	1543	56.09	1711	60.29
6	Male Literacy	1005	36.53	1024	36.08
7	Female Literacy	538	19.56	687	24.21
8	Sex Ratio		935.96		992.97

Source: <https://www.census2011.co.in/data/village/635204-Nadanthai-tamil-nadu.html>

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**Fig No 3.25 Population Characteristics of Nadanthai village Namakkal (2001-2011)**

### 3.10.6 Occupational profile of Nadanthai Village

The term workers denote the population engaged in primary, secondary and tertiary activities classified in the census reports of Indian government. During the year 2001 Nadanthai Village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu.

The Occupational structure in terms of analyzing the geographical, economic and technological development of various factors among these in this Nadanthai village denote the workers population are classified in the census reports in Indian government. Based on the social economic survey primary and secondary data collected from the EIA team likely impacts on the socio-economic scenario from the mining site in 10 km buffer zone implemented in this surrounding villages where its monitoring and analyzing the social consequences in this mine site area.

In Nadanthai village had a total main workers accounted of 1588 (57.72%) persons during 2001 census which is an decrease to 1533 (54.02%) persons during 2011. There were about 711 (25%) women in 2001 and 685(24.14) women according to the census 2011 marking a decreases 26 women over the previous census.

The study area has experienced a change in the occupational structure in the form of a decline in the proportion of cultivators, agricultural laborers and an increase in the

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proportion of Non workers. In Nadanthai village had non workers population accounted of 1222 (43.06% according to census 2011. Which decreased from census 2001 had population 1015 (36.90%). Compare to 2011 census has and increased previous census is 207 persons. Because of more number of people are educated most of people living the village had mining and household industries like tobacco, coolie etc., earn our daily life

There are three phases of occupational distributions and economic development and growth rate of populations in census of Indian government. In First phase the agriculture proportions of people are working in this site, the second phase where the populations are continuing in this agro-based industries and as well as migrating one place to another place for manufacturing or employ engaged, the third phase the distributions of the occupational characteristics growth rate of working population becomes greater than or differentiates in the secondary census data wise.

As per the occupational pattern differentiated in 2001 and 2011 census the workers are classified main workers, marginal workers, non-workers, cultivators and agricultural workers, marginal house hold workers. More opportunities' nearby villages for giving employing the local people for getting income and not for searching coolie job far away. It will increase their household income. From the data it was observed that occupational population decreased where the government and private entrepreneurs' should give an opportunity to develop an occupational pattern is restructure itself.

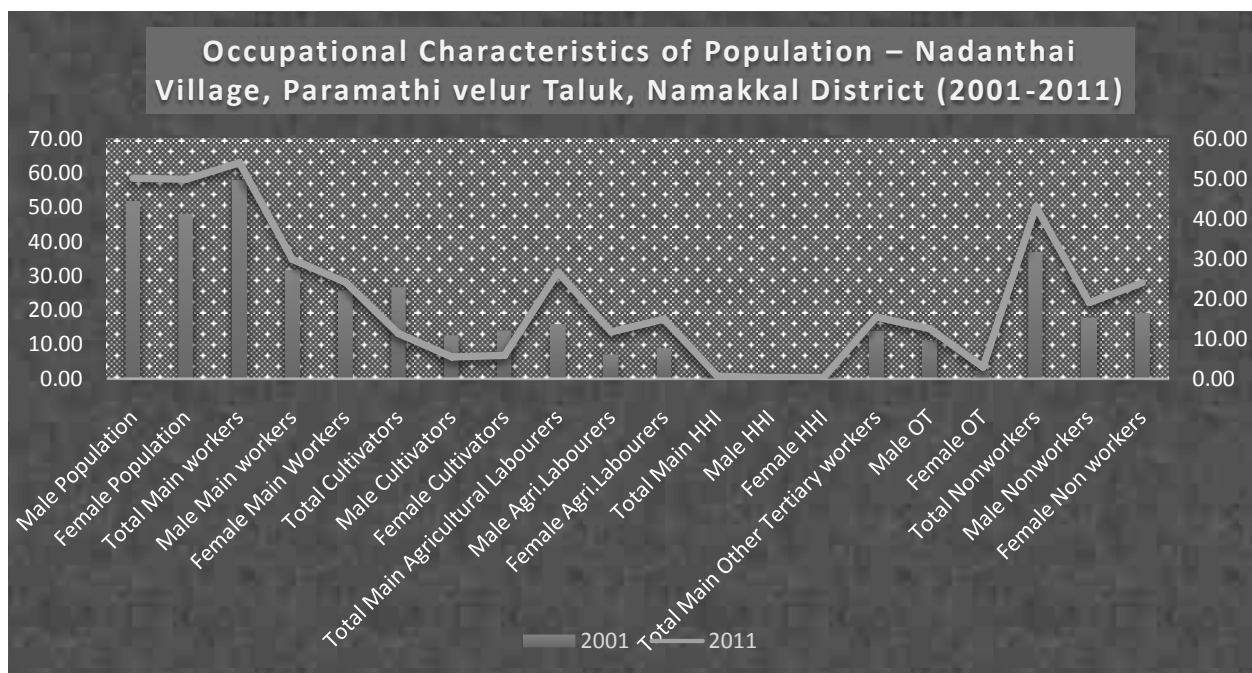
**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT****Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District****Table 3.17 Nadanthai Working Population-Census 2011**

<b>S.No</b>	<b>Census Parameters</b>	<b>2001</b>	<b>%</b>	<b>2011</b>	<b>%</b>
1	Total Population	2751		2838	
2	Total Workers	1421	51.65	1424	50.18
3	Male Workers	1330	48.35	1414	49.82
4	Female Workers	1736	63.10	1616	56.94
5	Total Main workers	933	33.91	884	31.15
6	Male Main workers	803	29.19	732	25.79
7	Female Main Workers	1588	57.72	1533	54.02
8	Total Cultivators	877	31.88	848	29.88
9	Male Cultivators	711	25.85	685	24.14
10	Female Cultivators	729	26.50	320	11.28
11	Total Main Agricultural Labourers	344	12.50	153	5.39
12	Male Agri.Labourers	385	13.99	167	5.88
13	Female Agri.Labourers	433	15.74	756	26.64
14	Total Main HHI	192	6.98	332	11.70
15	Male HHI	241	8.76	424	14.94
16	Female HHI	45	1.64	18	0.63
17	Total Main Other Tertiary workers	27	0.98	8	0.28
18	Male OT	18	0.65	10	0.35
19	Female OT	381	13.85	439	15.47
20	Total Nonworkers	314	11.41	355	12.51
21	Male Nonworkers	67	2.44	84	2.96
22	Female Non workers	1015	36.90	1222	43.06

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

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**Fig No 3.26 Occupational Characteristics – Nadanthai Village, Namakkal District (2001-2011)**

### 3.10.7 Socio economic studies in buffer area

It is mining project covering an extent of 1.62.0Ha and comes under B2 category. The impact of proposed project will be up to the distance of 10km surrounding the project site. The socio - economic benefits of proposed project is given below.

1. The proposed project will generate employment within 10km radius
2. As the workers and tippers from various villages move to and fro projects site, shops such as mechanic, welding, tea and hotels will be developed around the project site. It will generate indirect employment to the village people.
3. The surrounding village people will get benefits under CER and CSR Scheme. CER is 2.0% of project cost whereas CSR is 2.5% of the project profit.
4. When people get employment, it will upgrade the living standard of the people.
5. As the people getting employment in their native places, migration towards developed cities in search of employment may be prevented. Thereby, agricultural activities will not be affected.



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The list of revenue villages and its details within 10km radius are given as follows

**Table 3.18 List and Details of Revenue villages within 10km radius**

S.No	Village	Population
1	Nadandai	2838
2	Maniekanatham	1823
3	Kabilakkurichi	3775
4	T.Kavundampalayam	1381
5	Kunnamalai	2157
6	Melsathambur	1284
7	Kudacheri	1989
8	Villipalayam	2339
9	Paramathi (TP)	11986
10	Velur (TP)	25012
11	Pandamangalam (TP)	7259
12	Vadagarai Attur	6960
13	E.Nallagoundampalayam	913
14	Sittampoondi	3131
	<b>Total</b>	<b>72847</b>

Source: www.census india.gov.in-Tamilnadu Census of India

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**Table 3.19 Population Data of Study Area**

<b>Village Name</b>	<b>No. of House Holds</b>	<b>Total Population</b>	<b>Male</b>	<b>Female</b>	<b>Total Literate Population</b>	<b>Male Litereate</b>	<b>Female Litereate</b>	<b>Total Illiterate Population</b>	<b>Male Illiterate</b>	<b>Female Illiterate</b>
Nadandai	882	2838	1424	1414	1711	1024	687	1127	400	727
Maniekanatham	547	1823	928	895	1157	678	479	666	250	416
Kabilakkurichi	1142	3775	1883	1892	2580	1440	1140	1195	443	752
T.Kavundampalayam	397	1381	699	682	741	436	305	640	263	377
Kunnamalai	655	2157	1076	1081	1218	790	428	939	286	653
Melsathambur	425	1284	650	634	757	451	306	527	199	328
Kudacheri	582	1989	993	996	1259	720	539	730	273	457
Villipalayam	630	2339	1187	1152	1273	754	519	1066	433	633
Paramathi (TP)	3353	11986	6022	5964	9036	4943	4093	2950	1079	1871
Velur (TP)	7055	25012	12417	12595	18565	9971	8594	6447	2446	4001
Pandamangalam (TP)	2071	7259	3645	3614	5357	2896	2461	1902	749	1153
Vadagarai Attur	2040	6960	3495	3465	4414	2504	1910	2546	991	1555
E.Nallagoundampalayam	276	913	450	463	453	266	187	460	184	276
Sittampoondi	1007	3131	1550	1581	1904	1108	796	1227	442	785

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**Table 3.20 Communication & Transport Facilities in the Study Area**

S.No	Village Name	PO	SPO	PTO	T	PCF	BS	PBS	RS	SH	MDR	BTR	GR	FP
1	Nadandai	1	0	0	0	0	1	1	0	0	1	1	1	1
2	Maniekanatham	1	0	0	0	0	1	1	0	0	1	1	1	1
3	Kabilakkurichi	0	0	0	0	0	1	1	0	0	1	1	1	1
4	T.Kavundampalayam	1	0	0	0	0	1	1	0	0	1	1	1	1
5	Kunnamalai	1	1	1	0	6	1	1	0	2	2	1	1	1
6	Melsathambur	1	0	0	0	1	1	1	0	1	1	1	1	1
7	Kudacheri	0	0	0	0	0	1	1	0	0	1	1	1	1
8	Villipalayam	1	0	0	0	0	1	1	0	0	1	1	2	1
9	Paramathi (TP)	2	0	0	0	0	1	1	0	0	1	1	1	1
10	Velur (TP)	3	1	0	0	1	1	1	0	0	1	1	1	1
11	Pandamangalam (TP)	0	0	0	0	1	1	1	0	0	1	1	1	1
12	Vadagarai Attur	0	0	0	0	0	0	0	0	0	0	0	0	0
13	E.Nallagoundampalayam	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Sittampoondi	0	0	0	0	0	0	0	0	0	0	0	0	0

**Abbreviations:** PO - Post Office; RS - Railway Station; GR - Gravel Roads; SPO - Sub Post Office; PTO - Post & Telegraph office; PCF - Private Courier Facility; SH - State Highways; FP - Foot path; T- Telephone (Landline); BS -Public Bus Service; MDR - Major District Road; PBS - Private Bus Service; BTR - Black Topped (Pucca Road).

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

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**Table 3.21 Water & Drainage Facilities in the Study Area**

S.No	Village Name	TP	CW	UCW	HP	TW/BH	S	R/C	T/P/L	CD	OD	CT
1.	Nadandai	1	1	1	1	1	2	2	1	1	1	2
2.	Maniekanatham	1	2	1	1	1	2	2	2	1	1	2
3.	Kabilakkurichi	1	2	1	1	1	2	2	2	1	1	2
4.	T.Kavundampalayam	1	1	1	2	1	1	2	2	1	1	2
5.	Kunnamalai	1	1	1	2	2	2	2	2	1	1	2
6.	Melsathambur	1	1	1	1	1	1	2	1	1	1	2
7.	Kudacheri	1	1	1	1	1	2	2	2	1	1	1
8.	Villipalayam	1	1	1	2	1	1	2	2	1	1	2
9.	Paramathi (TP)	1	1	1	1	1	2	2	2	1	1	2
10.	Velur (TP)	1	1	1	1	1	2	2	2	1	1	2
11.	Pandamangalam (TP)	1	1	1	2	1	2	2	2	1	1	2
12	Vadagarai Attur	0	0	0	0	0	1	1	0	0	1	1
13	E.Nallagoundampalayam	1	0	0	0	0	1	1	0	0	1	1
14	Sittampoondi	2	0	0	0	0	1	1	0	0	1	1

**Abbreviations:** TP-Tap Water; R/C-River/Canal; CW-Covered Well; T/P/L-Tank/Pond/Lake; UCW-Uncovered Well; CD-Covered Drainage; HP-Hand Pump; OD-Open Drainage; TW/BH-Tube/Bore Well; CT-Community Toilet Complex for General public; S- Spring

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

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**Table 3.22 Other Facilities in the Study Area**

S.No	Village Name	ATM	CB	COB	ACS	SHG	PDS	AMS	NC	NC-AC	CC	SF	PL	NPS	APS	BDRO	PS
1	Nadandai	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	1
2	Maniekanatham	2	2	2	2	2	1	2	2	1	1	1	1	1	1	1	1
3	Kabilakkurichi	2	2	2	2	2	1	2	2	1	2	2	1	1	1	1	1
4	T.Kavundampalayam	9	8	2	2	2	1	2	2	1	2	2	2	1	1	1	1
5	Kunnamalai	2	1	1	2	2	1	2	2	1	2	2	2	1	1	1	1
6	Melsathambur	2	1	2	2	2	1	2	2	1	1	1	1	1	1	1	1
7	Kudacheri	2	2	2	2	2	1	2	2	1	1	1	1	1	1	1	1
8	Villipalayam	2	2	2	2	2	1	2	2	1	1	1	2	1	1	1	1
9	Paramathi (TP)	2	2	1	2	2	1	2	1	1	1	1	2	1	1	1	1
10	Velur (TP)	2	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1
11	Pandamangalam (TP)	2	1	1	2	2	1	2	2	1	2	2	2	1	1	1	1
12	Vadagarai Attur	2	1	2	2	2	1	2	2	1	1	1	1	1	1	1	1
13	E.Nallagoundampalayam	2	2	2	2	2	1	2	2	1	1	1	1	1	1	1	1
14	Sittampoondi	2	1	1	2	2	1	2	2	1	2	2	2	1	1	1	1

**Abbreviations:** ATM - Automatic Teller Machine; PDS - Public Distribution System (Shop); CB - Commercial Bank; COB - Co-operative Bank; AMS - Agricultural Market Society; ACS –Agricultural Credit Societies; NC- Nutritional Centre; SHG-Self Help Group; NC-AC-Nutritional Centre – Anganwadi Centre; BDRO-Birth & Death Registration Office; PS-Power Supply; CC- Community Centre (without TV); SF – Sports field; PL- Public library, NPS – News paper supply; APS – Assembly polling station.

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

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**Table 3.23 Educational Facilities in the Study Area**

S.No	Village 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	Nadandai	1	2	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	Maniekanatham	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	Kabilakkurichi	1	2	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4	T.Kavundampalayam	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	Kunnamalai	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
6	Melsathambur	1	2	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
7	Kudacheri	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8	Villipalayam	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
9	Paramathi (TP)	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
10	Velur (TP)	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
11	Pandamangalam (TP)	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
12	Vadagarai Attur	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
13	E.Nallagoundampalayam	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
14	Sittampoondi	1	2	1	2	1	2	1	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

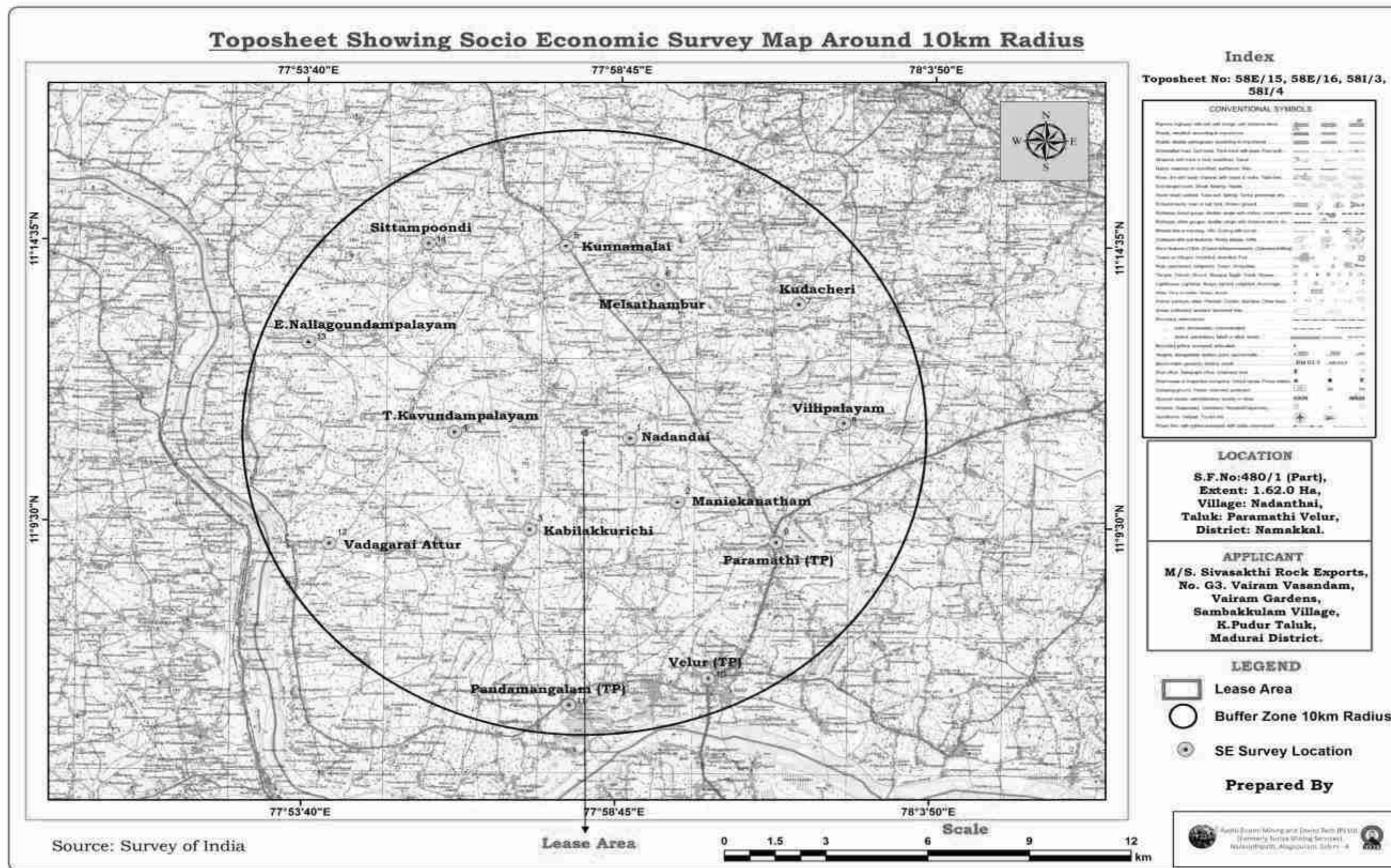
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**Table 3.24 Medical Facilities in the Study Area**

Sl.No	Village Name	CHC	PHC	PHSC	MCW	TBC	HA	HAM	D	VH	MHC	FWC	NGM-I/O
1	Nadandai	2	1	1	2	2	2	2	2	1	2	2	a
2	Maniekanatham	2	1	1	2	2	2	2	2	1	2	2	b
3	Kabilakkurichi	2	2	1	2	2	2	2	2	2	2	2	b
4	T.Kavundampalayam	2	2	1	2	2	2	2	2	1	2	2	b
5	Kunnamalai	2	2	1	2	2	2	2	2	1	2	2	b
6	Melsathambur	2	1	1	2	2	2	2	2	2	2	2	c
7	Kudacheri	2	1	1	2	2	2	2	2	1	2	2	b
8	Villipalayam	2	2	1	2	2	2	2	2	2	2	2	a
9	Paramathi (TP)	2	2	1	2	2	1	2	2	1	2	2	b
10	Velur (TP)	2	1	2	2	2	2	2	2	2	2	2	b
11	Pandamangalam (TP)	2	1	1	2	2	2	2	2	1	2	2	b
12	Vadagarai Attur	2	2	1	2	2	2	2	2	1	2	2	b
13	E.Nallagoundampalayam	2	1	1	2	2	2	2	2	2	2	2	c
14	Sittampoondi	2	1	1	2	2	2	2	2	1	2	2	b

**Abbreviations:** CHC-Community Health Centre; TBC- TB Clinic; VH- Veterinary Hospital; PHC-Primary Health Centre; HA-Allopathic Hospital; FWC-Family Welfare Centre; PHSC-Primary Health Sub Centre; HAM-Alternative Medicine Hospital; MHC-Mobile Health Clinic; MCW-Maternity and Child Welfare Centre; D-Dispensary; NGM-I/O-Non Government Medical Facilities In & Out Patient

Note-1-Available within the village; 2 -Not available; a- Facility available at <5kms; b- Facility available at >10kms



**Fig No 3.27 Socioeconomic Survey Location**



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### **3.10.8 Primary survey conducted by FAE- SE**

Primary survey conducted 10 villages total population is 2838. Nadanthai village has approximately 1 percent of total population of the village area. This calculation is total sample size has 250 around 10km radius core and buffer zone from mine lease boundary.

#### **3.10.8.1 Primary survey methodology**

The study was carried out with a participatory approach by involving the stakeholders, particularly the project beneficiaries and probable affected persons through a series of consultative process. The population groups that were consulted include beneficiary group of people in the project influence area, particularly the shopkeepers, farmers, Gram Panchayat members, village elders etc. Proportionate and purposive sampling methods were used for selecting respondents for household survey. Male and female respondents, both were selected for household survey. Structured questioners were used for survey.

#### **3.10.8.2 Data structures**

The data collected with the help of questionnaire survey for list of villages of Bargur Taluk were suitably converted into uni-variate, bi-variate and multivariate tables. The selection of these blocks were meaningfully done in order to get complete details of the surveyed population, their living environment, socio economic and socio-cultural and healthcare practices so as to conceptualize the findings with the help of interrelationships between Occupation and income status. the surveyed population were examined and interpreted with reference to socioeconomic living area, family structure and Educational, Sanitation etc.,

The Survey was conducted by SE expert Mrs. S.Santhi (FAE) along with her team.

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Fig No 3.28 Primary Survey Photographs of village wise, Krishnagiri District



### 3.10.9 Summary and Conclusion

From the primary survey, it is found that the basic facilities such as water road, PHSC, schools are available within the surveyed villages. The people stated that they did not get benefits under CER and CSR activities. Also they suggested that to operate the truck at minimum speed while crossing villages, schools, hospitals. The strongly asked to provide the employment opportunities only to the village people and registered their complaint on employment opportunities to other state people.

The proponent assured that he will improve facilities in government schools and hospitals under CER and CSR Schemes.

The socio-economic wellbeing of the area and its people is represented by the infrastructure and the social assets available in the area. The study area constituted of various infrastructures related to education, health care, communication, transportation, drinking waters etc.

### **3.11 LAND ENVIRONMENT**

#### **3.11.1 General**

In order to assess impacts of project activities on existing physical, biological and social environment, it is necessary to collect information of Land Environment

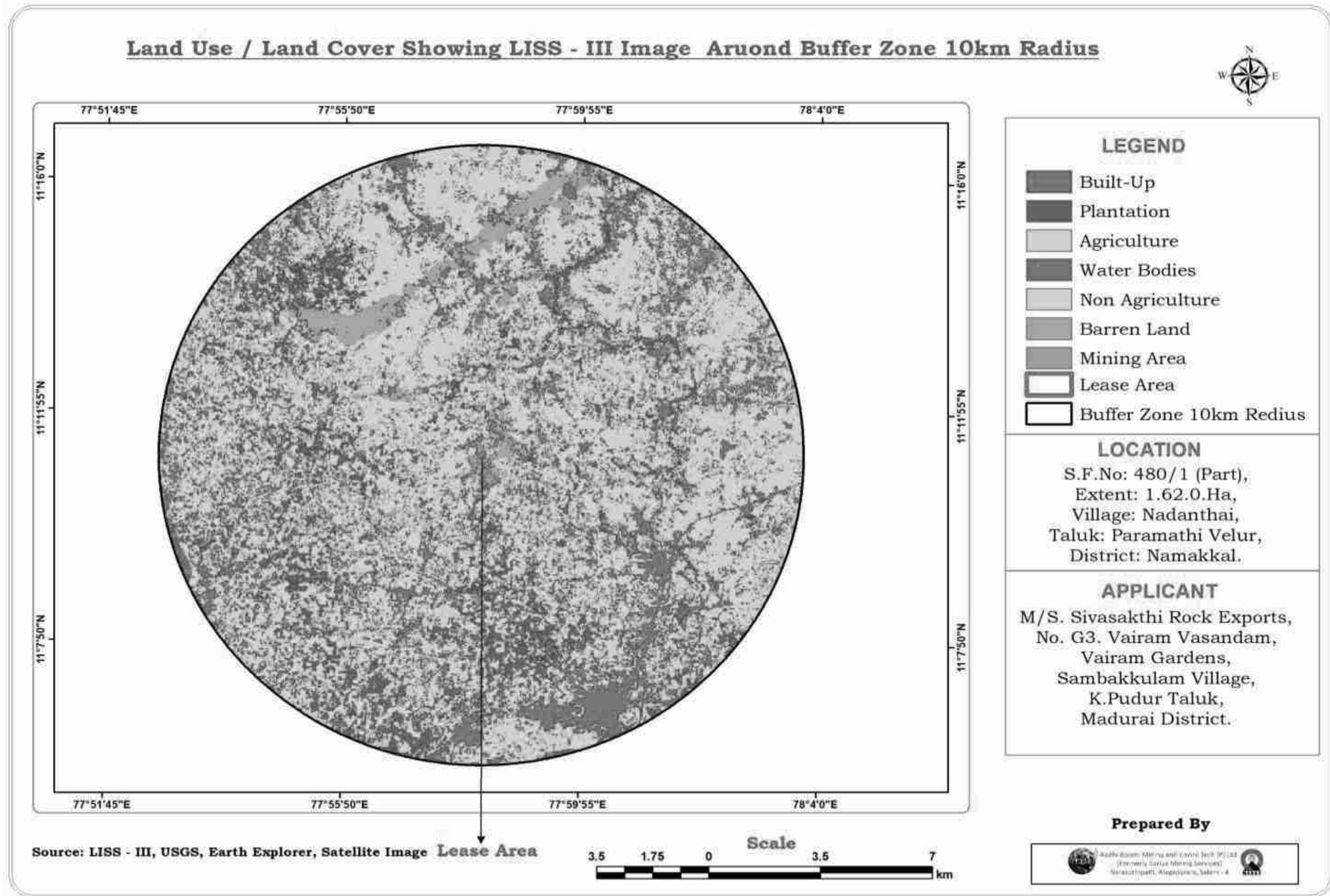
#### **3.11.2 LAND ENVIRONMENT**

This section includes the study of natural features like topography, climate, drainage pattern etc. which has been discussed below:

**Land Use Studies-** Studies on Land use aspects of eco-system play an imperative role in identifying susceptible issues and to take appropriate action to uphold ecological equilibrium in the region. The mining and allied activities involved in river bed mining are creation of temporary haul roads / transportation track and formation of mined pits inside river, etc. The main objective of this section is to provide a baseline status of the study area covering 10km radius around the exiting cluster site so that temporal changes due to the mining activities on the surroundings can be assessed in future.

#### **3.11.3 Objectives**

- To determine the present land use pattern;
- To ascertain the temporal changes in land use pattern due to mining.
- To scrutinize the impacts on land use due to existing mining activities in the study area;



**Fig No. 3.29 Land use / Land cover statistics of project study area Land Use cover of 10km radius**

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Table 3.25 Land use/Land cover statistics of study area

S.No	Description	Area (Ha)	Percentage (%)
1	Built-up	7141.571	22.31
2	Plantation	2916.769	9.11
3	Agriculture	9646.625	30.14
4	Water Bodies	297.3055	0.93
5	Non-Agriculture	10645.09	33.26
6	Barren Land	1258.889	3.93
7	Mining Area	101.8908	0.32

### 3.11.4 Methodology for Baseline Data Generation

Land use/Land cover map preparation, Base map creation; Geometric and Radiometric correction of satellite image have been processed using ERDAS Imagine 9.2 and Arc GIS 10.8 Software. The methodology used for present LU/LC of study area is shown and is detailed below:

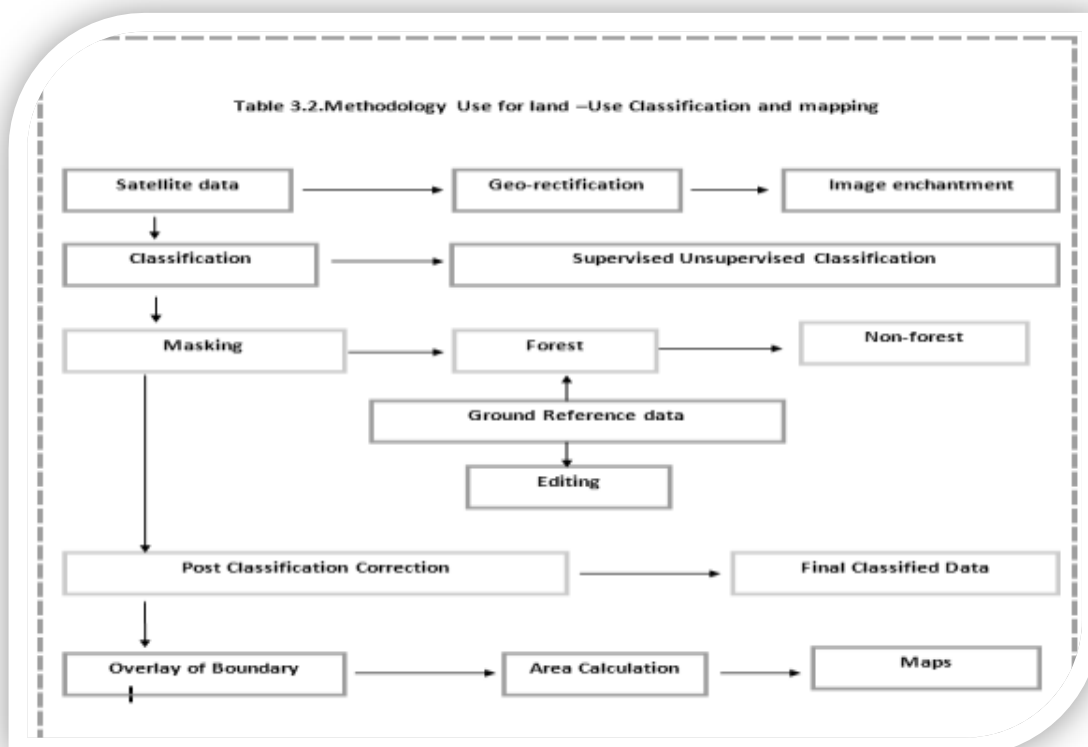


Fig No. 3.29 (a) Methodology use for land- use classification and mapping

**3.11.4.1 Methodology Adopted For Thematic Data Extraction From The Satellite Imageries:**

ERDAS image processing software and ArcGIS Software were used for the project. Erdas 9.2 Image Processing Software was used for digital processing of the spatial data. Digital image processing techniques were applied for the mapping of the land use/land cover classes of the provided area from the satellite data. The methodology applied comes under following steps:

- a. Image Extraction:** Satellite imageries were obtained and a sub set for the Area of Interest was created through ERDAS image processing software. Processing functions primarily done to improve the appearance.
- b. Geo-Rectification:** Geometric correction includes correction for geometric distortions due to sensor, earth geometry variations and conversion of the data to real world coordinates (e.g. Latitude and Longitude) on the Earth's surface. The satellite imagery was geometrically rectified with reference to the geo-referenced toposheets and vector data.
- c. Image Enhancement:** Image enhancement is one of the important images. Imagery to assist in visual interpretation and analysis. Various options of image enhancement techniques were tried out to get the best image for visual interpretation. Histogram equalized stretch enhancement techniques was applied to the imagery of the study area for better interpretation of different features in the satellite imagery.
- d. Classification:** Satellites images are composed of array of grid, each grid have a numeric value that is known as digital number. Smallest unit of this grid is known as a pixel that captures reflectance of ground features represented in terms of Digital number, which represent a specific land features. Using image classification technique, the satellite data is converted into thematic information map based on the user's knowledge about the ground area.

Hybrid technique has been used i.e. visual interpretation and digital image processing for identification of different land use and vegetation cover classes based on spectral signature of geographic feature. Spectral signature represents various land use classes. Image interpretation keys are developed based on image

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characteristics like colour, tone, size, shape, texture, pattern, shadow, association etc which enables interpretation of satellite images for ground feature. Training sites are then assigned based on their spectral signature and interpretation elements.

Land use/Land cover Map has been broadly classified into five classes namely, Built-up Area, Plantation, Agriculture, Water Bodies, Non-agriculture, Barren Land and mining areas have been categorized in others class. Using image classification algorithm land use map is then generated.

### **3.11.4.2 Topography**

The district is situated Data covering approximately northern latitude of 11°11'06.7372"N to 11°11'12.6115"N latitude and 77°58'09.5551"E to 77°58'14.6753"E longitude and elevation 175 meter are used as per the project site confined within that area. Namakkal district is came into existence from bifurcation of Salem district on 01.01.1997 is bounded by Salem District in North and East, Tiruchirapalli District in South & East, Erode District in West and Karur District in South. It is located between latitudes N 11° 00' to 11° 36' and longitudes E 77° 28' to 78° 30' with total geographical area of 3363.35 sq km. The base maps of the study area were prepared, with the help of Survey of India Toposheet on 1:50,000 scale.

This project site is located in S.F.No: 480/1(P), Nadanthai village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu and Latitude: 11°11'06.7372"N to 11°11'12.6115"N. Longitude: 77°58'09.5551"E to 77°58'14.6753"E.

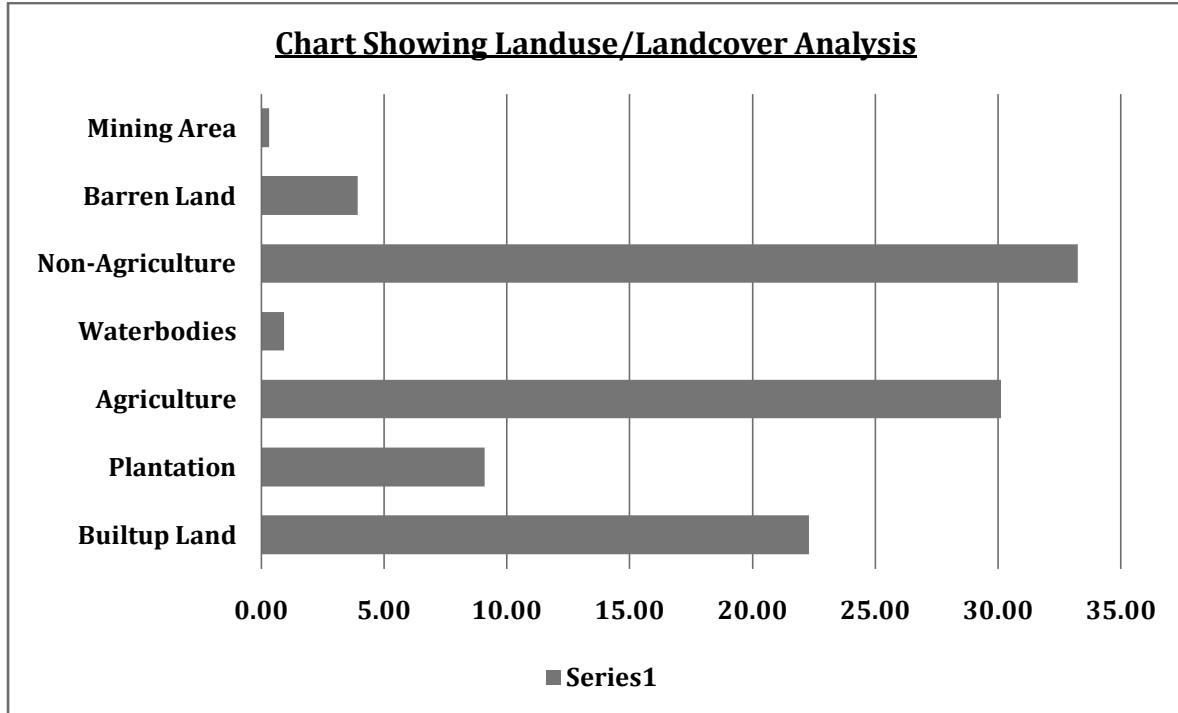
The district economy is mainly agrarian as well as industry in nature. Nearly 50-60% of the workforce is dependent on agriculture and allied activities. The district is famous for its poultry farm, weaving, spinning mills and lorry body building. The hottest period of the year is generally for the month of March to June, the highest temperature going up to 40°C in May. The climate become cool in December and continues so up to February, touching a minimum of 25°C. On an average the district receives an average annual rainfall of 58 to 70 cm. Namakkal district holds Nature's beauty; historical temples, famous rock fort and hill station i.e. Kolli Hill. The Namakkal town in the District Headquarters and known as the "Egg City" as it contains a number of poultry farms. It finds a place in the map of India for its lorry building industry hence called as "Transport City".

Agriculture, micro to mesoscale industry and Trade play vital role for its economic growth. Principal crops like tapioca, paddy, sugarcane, cotton, coconut, groundnut and various kinds of fruits and vegetables viz. Horse gram, turmeric, mango, banana,

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and gingili are being cultivated in this district. Sago and Starch production in Rasipuram Taluk are exported to other countries.

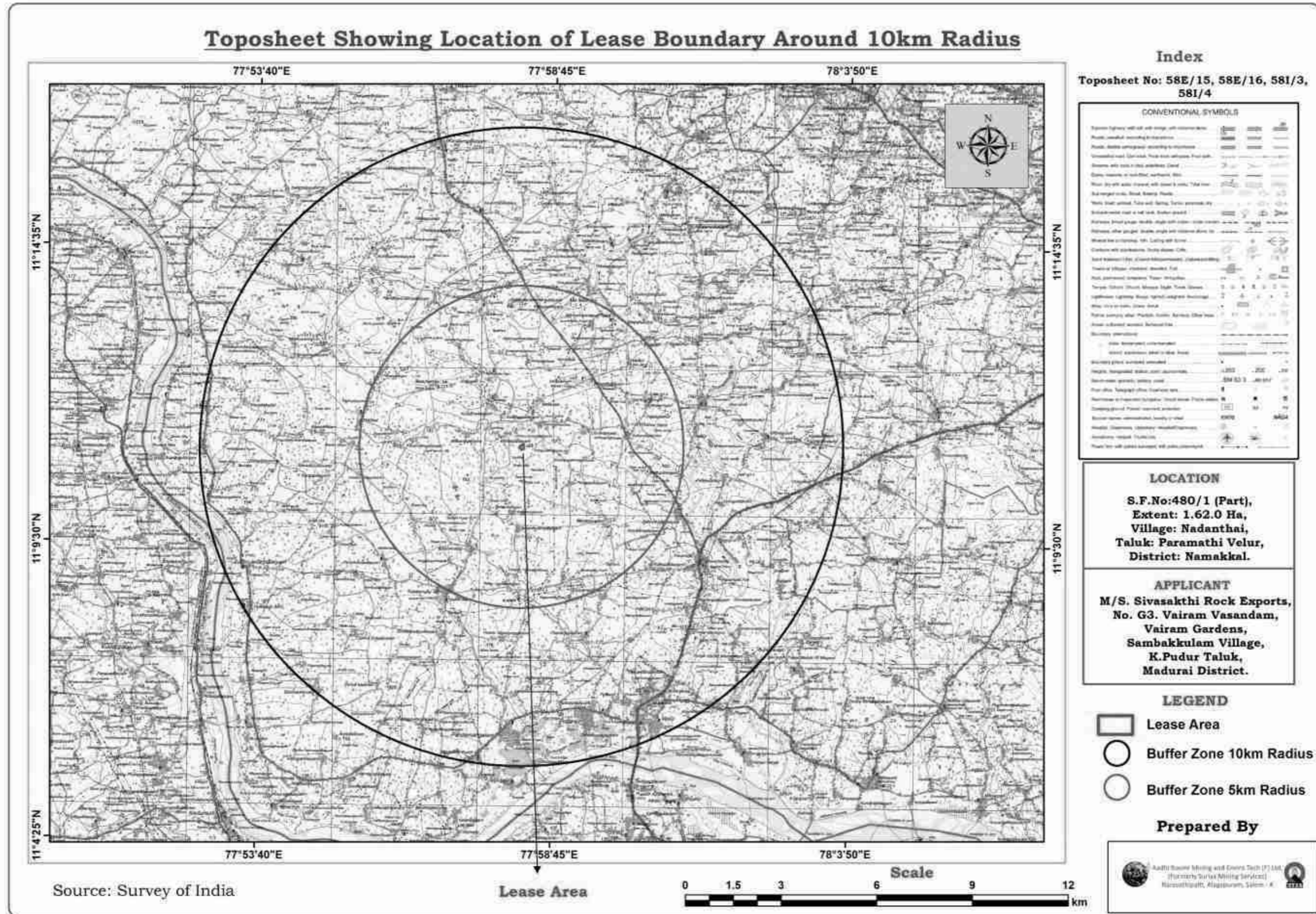


**Fig No. 3.30 Chart showing Land use/ Land cover Analysis**

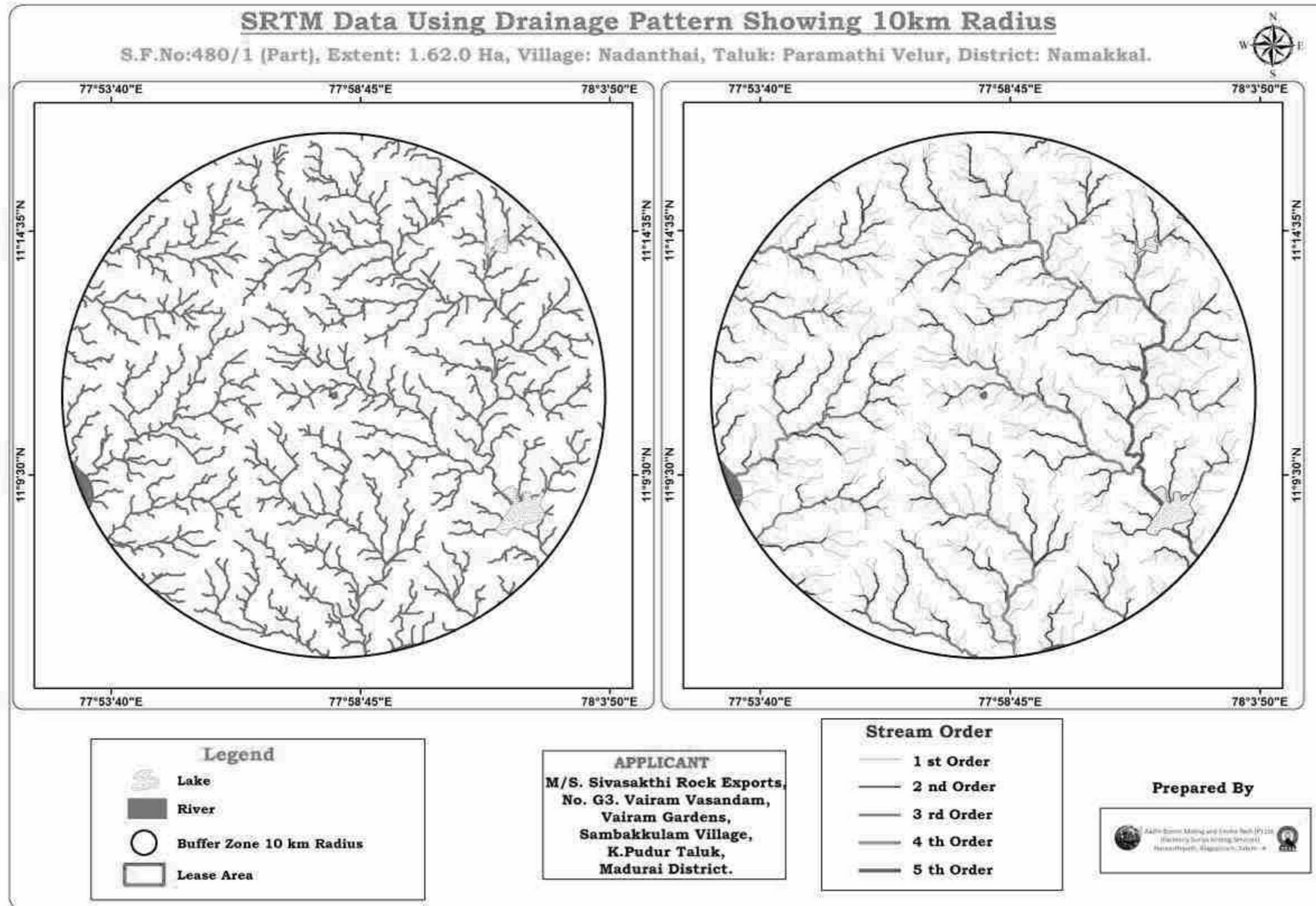
### 3.12 Drainage Pattern of the Area

Drainage pattern of the area is dendritic with high stream density due to rugged topography. Drainage is mostly westerly and south westerly. In the cluster no permanent Nalla/river throwing in the lease area. The rainwater flows down toward the slope of the area and flows into the nearby fields outside the lease area. Ground water occurs under phreatic conditions. The maximum saturated thickness of these aquifers is up to 5m depending upon the topographic conditions. The area lying at the foot hill zones which are seen in the northern parts of the district is underlain by the colluvial material derived from the nearby hill ranges comprising sands and gravels. The maximum saturated thickness of these aquifers is up to 20 m depending upon the topographic conditions. Ground water occurs under phreatic conditions





**Fig No. 3.31 Toposheet Showing Location Lease Boundary around 10km radius**



**Fig No. 3.32 Image Representing the River/Streams (Drainage) of the study area within 10km radius from the project site**

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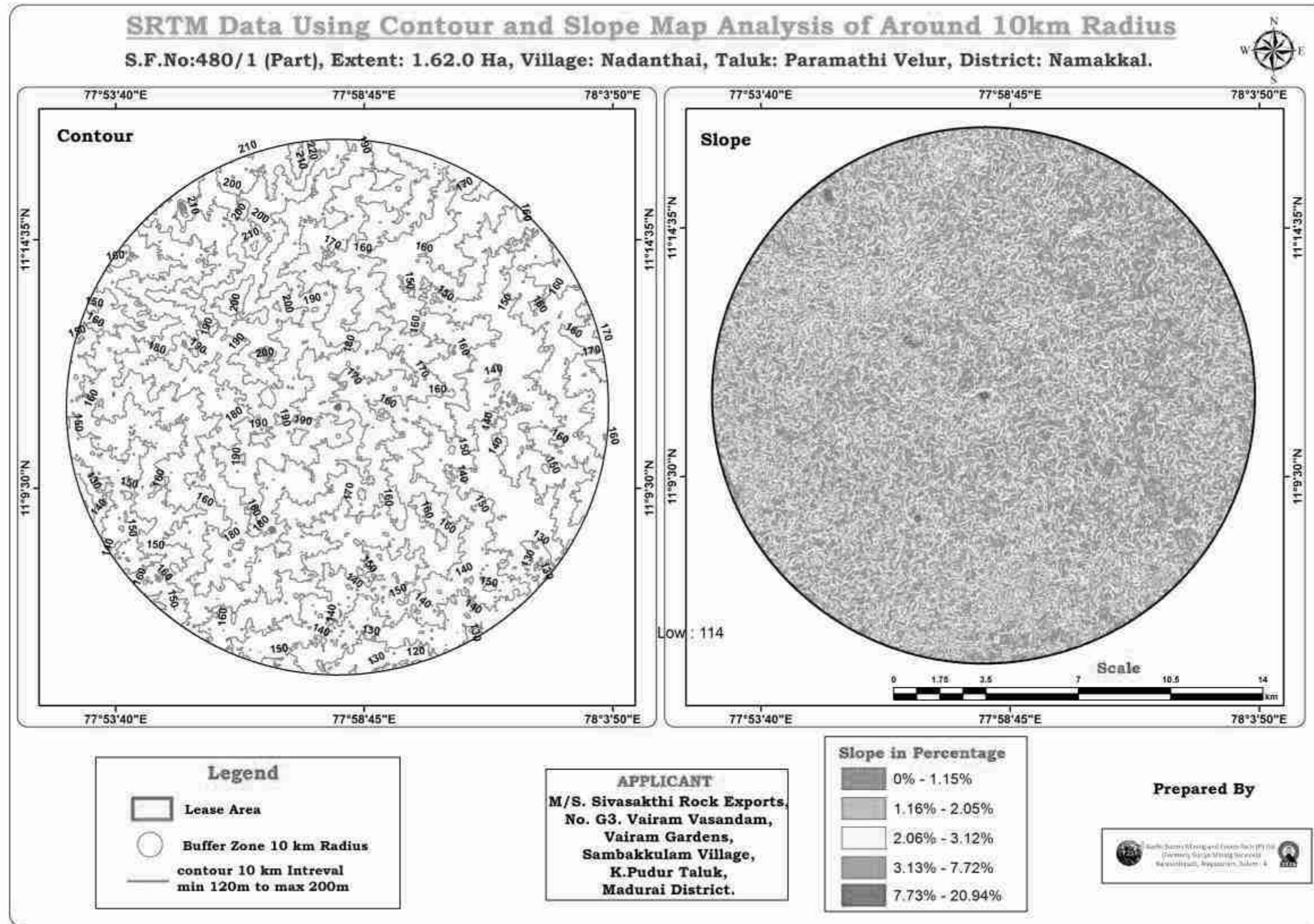
The hard consolidated crystalline rocks of Archaean age represent weathered and fractured formations of Granite Gneiss, Granite, Charnockite and other associated rocks. Rainwater expected to be accumulated in the pit will recharge the ground water table. Dendritic patterns, small area in the north eastern part, which is drained mainly by Vasista Nadi and Sweta Nadi rivers, which are tributaries of Vellar River which are by far the most common, develop in areas where the rock (or unconsolidated material) beneath the stream has no particular fabric or structure and can be eroded equally easily in all directions. Thirumanimuthar River is one of the tributary of River Cauvery. Thirumanimuthar river originating from Arunuthi malai Hills and Shevroy's hills in the northern part of Salem District. It traverses through Valappadi, Yercaud, Salem, Rasipuram, Namakkal and Paramathivelur taluks in Salem and Namakkal Districts and Confluences with river Cauvery near Nanchai Idayar village in Paramathi Velur Taluk of Namakkal District. Total length of the river is about 105 km. The drainage pattern of the area is dendritic – sub dendritic.

### **3.13 Contour**

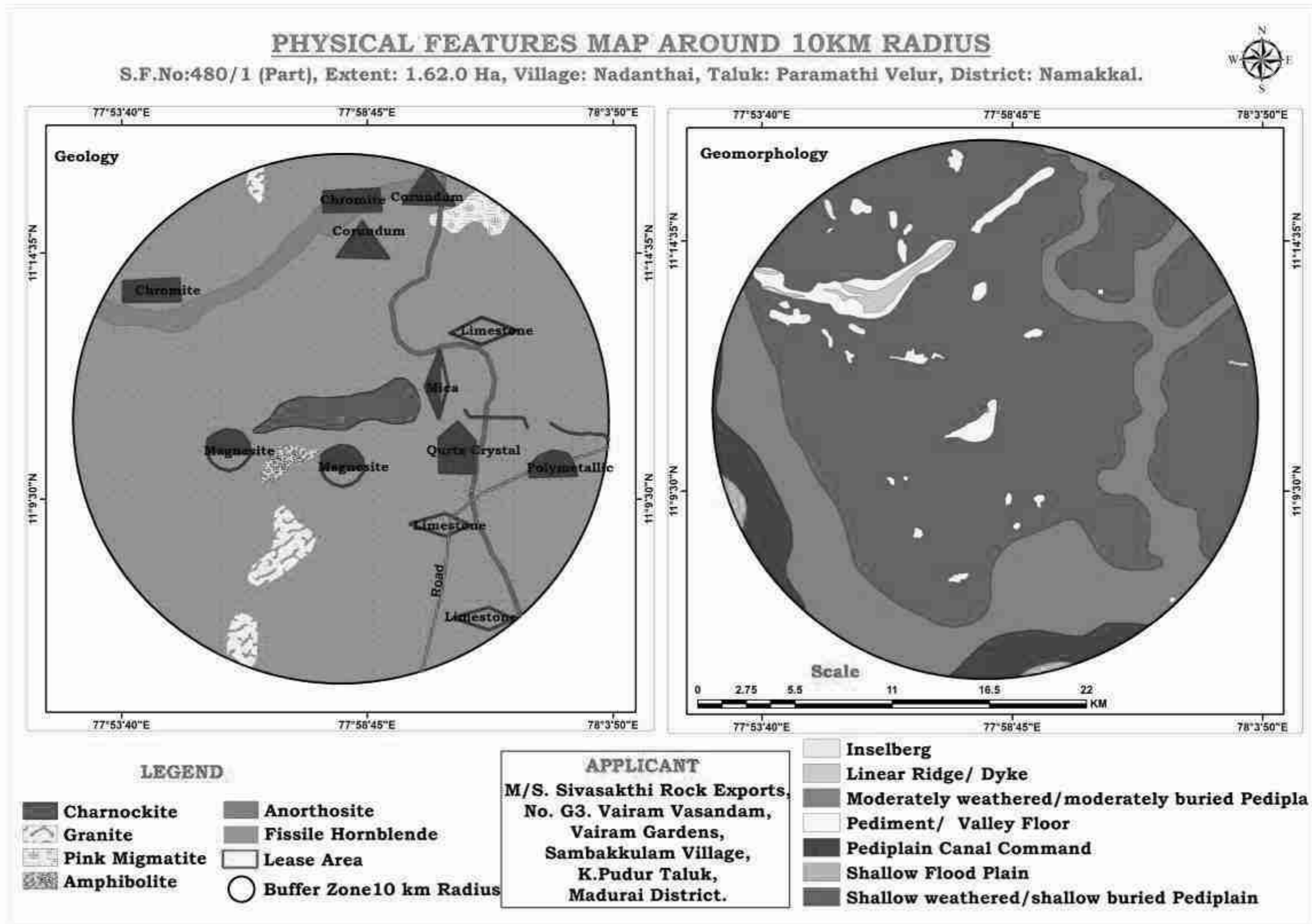
Contour lines are the greatest distinguishing feature of a topographic map. Contour lines are lines drawn on a map connecting points of equal elevation, meaning if you physically followed a contour line, elevation would remain constant. Contour lines show elevation and the shape of the terrain in the study area. The slope map was derived from a SRTM data of the study area. Contour interval at 10m, minimum 120m has very hilly with plain landforms and general terrain is quite elevated at maximum 200m above. To make topographic maps easier to read, because it's impractical to mark the elevation of every contour line on the map, the index contour lines are the only ones labeled.

### **3.14 Slope**

The slope map was derived from a SRTM data of the study area. The slope of the study area was classified into five classes, such as less than 10 Percent/degree flat to almost flat no meaningful denudation process. The contour map is prepared in 1:50000 scale from SOI topo sheets. TIN map is created from contour map. Based on the TIN map, slope map is prepared for the study area. The slope map of the study area reveals that the slope is high in hilly 22 terrains which are present in north and east parts. The most part of the study area contains a gentle slope of 0- 1 degree especially landslides that area flat. 30-40° and above 40° very steep, rocks generally begin to unfold a very intensive denudation process have begun to produce rework material.



**Fig No. 3.33 Image Showing Contour and Slope of the lease area around 10km radius**



**Fig No. 3.34 Image Showing Geology and Geomorphology of the lease area**

### **3.15 Geology**

Namakkal District is mostly underlain by the Archaean crystalline and metamorphic complex. The geology of the district is complicated due to recurring tectonic and magmatic activities occurred during Pre-Cambrian period. The famous Sittampundi Anorthosite Complex which is known for its complex geology and occurrences of Platinum Group of Elements is situated in this district. Hornblende Biotite Gneisses are the oldest rocks in four taluks of the district. It is very fissile and present widely in plains. The gneisses are highly weathered upto 30 m at some places. The geology of the district is complicated due to recurring tectonic and magmatic activities occurred during Pre-Cambrian period. The famous Sittampundi Anorthosite Complex which is known for its complex geology and occurrences of Platinum Group of Elements is situated in this district. Hornblende Biotite Gneisses are the oldest rocks in four Taluks of the district. It is very fissile and present widely in plains.

#### **3.15.1 Minor Mineral Wealth of Namakkal District**

**Granite:** Granite is found mainly in Paramathivelur Taluk. Generally, two type of granite are mined commercially viz. normal granite (Leuco Granite) and multi coloured granite. The hard consolidated crystalline rocks of Archaean age represent weathered and fractured formations of Granite Gneiss, Granite, Charnockite and other associated rocks. Ground water occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fractured zones. The normal variety is light colour, coarse grained, mainly non foliated but developed crude foliation at places, hard and compact, composed of quartz, orthoclase and rich in plagioclase with little amount of hornblende and intruded criss cross by thin quartz veins. These are per-aluminous to meta-aluminous A-type granitoids of Neo-Proterozoic age. Multicoloured granites are mainly migmatite. These are pink to red colour, coarse grained, foliated, exhibit flow structure, ptygmatic folding, composed of quartz plagioclase and rich in orthoclase with less amount of garnet and amphibole. Due to migmatization, the rock exhibits beautiful colour banding and high demand in market. The Granite quarries are located mainly in Paramathi-Velur Taluk.

At places, metamorphic gneissic banding (alternate dark and black colour) in charnockite is noticed. Top portion, it gives gneissic appearance but 1-5m depth below it is typical charnockite of grey colour. The amount of feldspar in the body of

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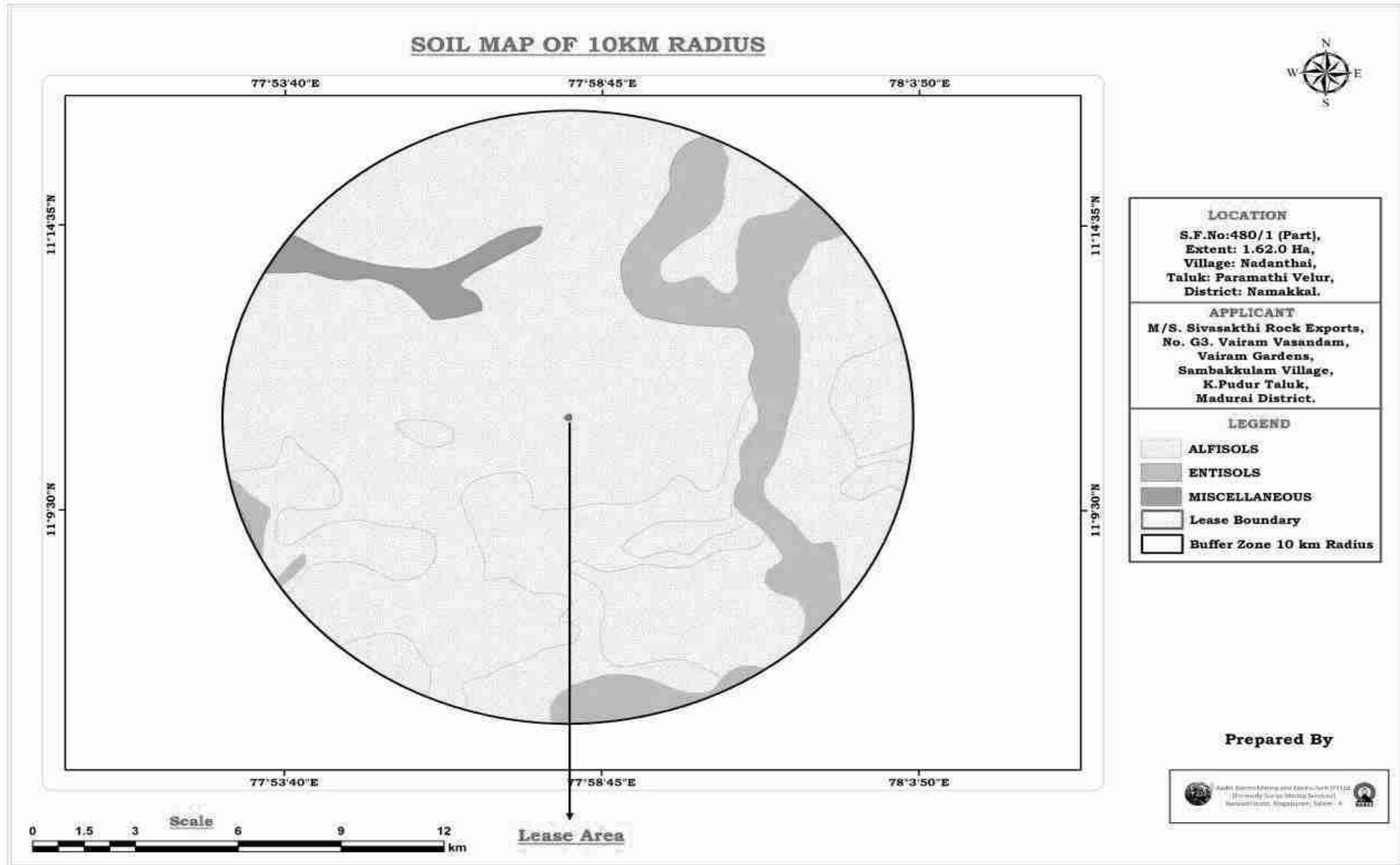
these wares generally falls between 15 and 35 per cent, though in some it is less and in some more. In glazes the percentage of feldspar is as a rule between 30 and 50.

### **3.16 Geomorphology**

The prominent geomorphic units identified in the district through interpretation of satellite imagery are structural hills in the prominent geomorphic units identified in the district through interpretation of Satellite imagery are 1)Structural hills, 2)Bazada zone, 3)Valley fill, 4)Pediments, 5)Shallow Pediments and 6) Deep Pediments. A number of hill ranges are located in the eastern and northeastern parts of the district, whereas the southern, western and northern parts of the district are plain to undulating, dotted with a few isolated hillocks. The important hill ranges in the district are Kollimalai hills, Bodamalai hills, Naraikinaru hills and Pachamalai hills. denudational land forms like buried pediments in the plains and inselbergs and plateaus represented by conical hills aligned with major lineaments. To understand the land form changes and potential hazards for populations. To predict future changes through a combination of field observations, physical experiments and numerical modeling.

### **3.17 Soils**

The 10km study area is covered with Alfisols, Entisols and Miscellaneous. The type of soil found in the lease area is Hill soil. Soil is one of the natural resources that impact the agricultural development of an area. The soils of Namakkal district can be broadly classified into 5 major soils types' viz. Red Soil, Black Soil, Brown soil, Alluvial and Mixed Soil The major part of the area is characterized by red gravelly soil (in deeply buried pediments and moderately buried pediments) with red loamy soil. The red soils are medium to heavy textured soils with moderate to higher permeability. Red loamy soil is a product of weathered granite of Archaean age. The black soils are limited Namakkal taluk. They are fine textured with low permeability. The brown soils are limited to small part of Tiruchengode taluk and they characterized by low permeability. The alluvial soil (in the flood plains) is seen along the river courses in Namakkal, Paramathi and Tiruchengode taluks. Mixed soil is the second major soil type occurring all the taluks of the district.



**Fig No. 3.35 Image Representing the Soil Characteristics around 10km of the Lease area**



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### **CHAPTER – 4: ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Open cast mechanized mining, bench height of 6m and a width not less than the height will be carried out by using excavators and dumpers combination. Scientific mining by proper benches with width and slope will be adopted as per MMR, 1961. Jack hammers with compressors will be deployed for drilling. Manual labors will be engaged for jack hammer drilling, sorting of waste and Cranes will be used for loading the multi color granite into trucks. During future development of quarrying, removal of rock mass will be done by mild blasting with explosives in holes drilled by Jack hammer of 32dia especially. No deep hole blasting is proposed. Sizing of materials shall be done by wire saw cutting.

All these operations can disturb the environment in various ways, such as removal of mass, change of landscape, flora and fauna of the area, surface drainage, and change in air, water and soil quality. Therefore, it is essential to assess the impacts of mining on different environmental parameters before starting the mining operations, so that abatement measures could be planned in advance for eco-friendly mining in the area. The likely impacts on various environmental aspects and mitigation measures are discussed below.

#### **4.1 Air Environment**

The air borne particulate matter is the main air pollutant by opencast mining. The mining operation will be carried out by jack hammer drilling, blasting, excavation, loading and transportation.

##### **4.1.1. Anticipated Impact**

The air borne particulate matter generated by operations of quarry and transportation of multi color granite are the main air pollutant. The emissions of sulphur dioxide (SO<sub>2</sub>), oxides of Nitrogen (NO<sub>x</sub>) contributed by diesel operated excavation/loading equipment and vehicles plying on haul roads are marginal. Prediction of impacts on air environment has been carried out by considering generation of rejects and overburden per annum of this existing multi color quarry of 1.62.0 Ha.

##### **4.1.2 Emissions Details**

Drilling, blasting, loading, unloading and transportation of multi color granite and wind erosion of the exposed area and movement of light vehicles will be the main polluting source in the mining activities that releasing Particulate Matter (PM<sub>10</sub> & PM<sub>2.5</sub>) affecting Ambient Air of the area. Emission during blasting, loading and

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unloading was calculated as the area sources. Transportation of the granite by trucks operated on the haul road was calculated as the line sources. Details of emission during loading/unloading and transportation on the haul road, wind erosion of the exposed area and road maintenance were discussed and combined impact was predicted in the worst case scenario under worst meteorological condition given as follows:

### 4.1.2.1 Drilling

Drilling is the process of making holes in multi color granite to carry out smooth blasting. The drilling is most representative for point source. The rate of emission from the drilling process will be very high when compared to loading, unloading, transporting and blasting. So wet drilling will be proposed for the multi color granite quarry which completely suppresses the dust emitted during drilling process.

### 4.1.2.2. Loading of rejects and weathered rocks

Chakraborty et al. (2002) was used to calculate emission of particulate matter released into the atmosphere during loading of Mineral.

$$E = [(100 - m) (m)^{-1}]^{0.1} [(s) (100 - S)^{-1}]^{0.3} h^{0.2} [(u) (0.2 + 1.05u)^{-1}] [(xl) (15.4 + 0.87xl)^{-1}]$$

**Table 4.1: Source Parameters (Loading of granite rejects and weathered rock)**

S.No	Description	Symbol	Quantity
1	moisture content (%)	m	1(approx)
2	silt content (%)	s	3(approx)
3	wind speed (m s <sup>-1</sup> )	u	3.0
4	drop height (m)	h	1m above the tipper body
5	size of loader (m <sup>3</sup> )	l	1.7
6	frequency of loading(no.h <sup>-1</sup> )	x	3 times
7	Area of Source (m <sup>2</sup> )	a	16200
8	Uncontrolled emission rate (g s <sup>-1</sup> )	UE	0.39
9	Control efficiency (%)	c	90
10	Controlled emission rate (g s <sup>-1</sup> )	CE	0.039

Totally 1 tipper and 1 hydraulic excavator will be proposed for existing multi color granite quarry.

Rejects – 35,128m<sup>3</sup> for 5 years or 3m<sup>3</sup>/hr

Weathered rock – 5,896m<sup>3</sup> for 2 years or 2m<sup>3</sup>/hr

The generation of rejects and weathered rock per hour are calculated as 5m<sup>3</sup>. The loading capacity of excavator is 1.7m<sup>3</sup>.

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$x = \text{frequency of loading (no. h}^{-1}\text{)} = 5/1.7 = 3 \text{ times}$

### 4.1.2.3 Unloading of rejects and weathered rocks

Chakraborty et al. (2002) was used to calculate emission of particulate matter released into the atmosphere during unloading of rejects.

$$E = 0.023 [(100-m) s h \{m (100-s)^{-1}\}]^2 (u^3cy)^{0.1}$$

**Table 4.2 Source Parameters (unloading of Rejects and weathered rocks)**

S.No	Description	Symbol	Quantity
1	moisture content (%)	m	1 (approx)
2	silt content (%)	s	3 (approx)
3	wind speed (m s <sup>-1</sup> )	u	3.0
4	drop height (m)	h	1.5 from ground surface
5	capacity of tipper (t)	c	10
6	frequency of unloading (no.h <sup>-1</sup> )	y	2 times (maximum)
7	Area of Source (m <sup>2</sup> )	a	16200
8	Uncontrolled emission rate (g s <sup>-1</sup> )	UE	0.63
9	Control efficiency (%)	c	90
10	Controlled emission rate (g s <sup>-1</sup> )	CE	0.063

Rejects and weathered rock per hour = 5 x 2.5 = 12.5MT;

Capacity of tipper (t) = 10MT

$y = \text{frequency of unloading (no.h}^{-1}\text{)} = 12.5/10 = 2 \text{ times/hr}$

### 4.1.2.4 Loading of Overburden (Top Soil)

Chakraborty et al. (2002) was used to calculate emission of particulate matter released into the atmosphere during loading of Top soil.

$$E = [0.018\{(100-m) (m)^{-1}\}^{1.4}\{s (100-s)^{-1}\}^{1.4}(uhxl)^{0.1}]$$

**Table 4.3: Source Parameters (Loading of Top soil)**

S.No	Description	Symbol	Quantity
1	moisture content (%)	m	0.36 (Lab report)
2	silt content (%)	s	41
3	wind speed (m s <sup>-1</sup> )	u	3.0
4	drop height (m)	h	1m above the tipper body
5	size of loader (m <sup>3</sup> )	l	1.7
6	frequency of loading(no.h <sup>-1</sup> )	x	2 times ( maximum)
7	Area of Source (m <sup>2</sup> )	a	16200
8	Uncontrolled emission rate (g s <sup>-1</sup> )	UE	1.05
9	Control efficiency (%)	c	90
10	Controlled emission rate (g s <sup>-1</sup> )	CE	0.105

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Topsoil – 6624m<sup>3</sup> for 2 years or 2m<sup>3</sup>/hr

The generations of top soil per hour are calculated as 2m<sup>3</sup>. The loading capacity of excavator is 1.7 m<sup>3</sup>.

x = frequency of loading (no. h<sup>-1</sup>) = 2/1.7 = 2 times

### 4.1.2.5 Unloading of Overburden (Top Soil)

Chakraborty et al. (2002) was used to calculate emission of particulate matter released into the atmosphere during unloading of overburden.

$$E = 1.76h^{1/2}\{(100-m) (m)^{-1}\}^{0.2}\{(s) (100-s)^{-1}\}^2u^{0.8} (cy)^{0.1}$$

**Table 4.4 Source Parameters (Unloading of overburden or top soil)**

S.No	Description	Symbol	Quantity
1	moisture content (%)	m	0.36 (Lab report)
2	silt content (%)	s	41
3	wind speed (m s <sup>-1</sup> )	u	3.0
4	drop height (m)	h	1.5 from the ground surface
5	capacity of dumpers (t)	c	10
6	frequency of unloading(no.h <sup>-1</sup> )	y	1
7	Area of Source (m <sup>2</sup> )	a	16200
8	Uncontrolled emission rate (g s <sup>-1</sup> )	UE	0.72
9	Control efficiency (%)	c	90
10	Controlled emission rate (g s <sup>-1</sup> )	CE	0.072

Generation of top soil per hour = 2 x 1.5 = 3MT;

Capacity of tipper (t) = 10MT

y = frequency of unloading (no.h<sup>-1</sup>) = 3/10 = 1 time/hr

### 4.1.2.6 Haul Road

Chaulya (2006) was used to calculate emission of particulate matter released into the atmosphere during transportation of granite by truck operated per hour on haul road.

$$E = \{[(100-m) (m)^{-1}]^{0.35} \{(us) (100-s)^{-1}\}^{0.7}\{0.5 + 0.1(f + 0.42v)\} 10^{-3}$$

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**Table 4.5: Source Parameters (During Vehicle Movement on Haul Road)**

S.No	Description	Symbol	Quantity
1	Moisture content (%)	m	0.36 (Lab report)
2	silt content (%)	s	41
3	wind speed ( $\text{ms}^{-1}$ )	u	3.0
4	frequency of transporting ( $\text{no. h}^{-1}$ )	f	6 times (maximum)
5	average vehicle speed( $\text{ms}^{-1}$ )	v	4.1
6	Area of Source ( $\text{m}^2$ )	a	16200
7	Uncontrolled emission rate ( $\text{g s}^{-1}$ )	UE	0.002
8	Control efficiency (%)	c	80
9	Controlled emission rate ( $\text{g s}^{-1}$ )	CE	0.0004

Frequency of unloading for rejects ( $\text{no.h}^{-1}$ ) = 2 times/hr

Frequency of unloading for top soil ( $\text{no.h}^{-1}$ ) = 1time/hr

Frequency of transporting ( $\text{no. h}^{-1}$ ), f =6 times (up and down)

### 4.1.2.7 Blasting

In another scenario when controlled blasting is carried out at the mine site and all the other activities are brought to halt. Significant amount of  $\text{PM}_{10}$  is released during blasting at mining site for very short-term.

$$E = E_f \times Q$$

**Table 4.6: Source Parameters (During Blasting)**

S.No	Description	Symbol	Quantity
1	Uncontrolled Particulate matter emissions rate in pounds per year	UE	20.0
2	Emission factor in unit of pounds of particulate per ton shifted by blasting	$E_f$	TSP $E_f = 0.0001$ pounds/ton $\text{PM}_{10}E_f = 0.0008$ pounds/ton $\text{PM}_{2.5}E_f = 0.0008$ pounds/ton
3	Amount of material of all types shifted by blasting during the year in tons	Q	25091
4	Control efficiency (%)	c	30
5	Controlled Particulate matter emissions rate in pounds per year	CE	14

(Reference: Mojave Desert Air Quality Management District, 1403 Park Avenue, Victoria, CA 92392 -2310).

Loading and unloading of granite rejects, overburden, movement of trucks on haul roads were considered as combined action. So the emission during loading, unloading and transportation were taken combined and US EPA based Dispersion

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AERMOD model was used for prediction of impact with 1-h meteorological data of the study period for the assessment of incremental GLC. Then blasting was considered as separate action and US EPA based Dispersion AERMOD model was used for prediction of impact separately.

### 4.1.2.8 Summary of calculated Emission Rates

Table 4.7: Emissions Rates of PM<sub>10</sub>

Source type	Controlled Emission Rate (g/s/m <sup>2</sup> )
Loading of Granite reject and weathered rock	$2.4 \times 10^{-6}$
Unloading of Granite reject and weathered rock	$3.8 \times 10^{-6}$
Over burden loading	$6.4 \times 10^{-6}$
Over burden unloading	$4.4 \times 10^{-6}$
Haul road	$2.4 \times 10^{-8}$
Blasting	$4.5 \times 10^{-8}$

Table 4.8: Emissions Rates of SO<sub>2</sub>

Source type	Average Emission rate for HDDV as per EPA	Emission rate (Proposed Project)
Tipppers	0.012 g/mile	$1.5 \times 10^{-10}$ g/s/m <sup>2</sup>
Excavators	0.012 g/mile	$6.4 \times 10^{-8}$ g/s/m <sup>2</sup>
Total Emission Rate		$6.4 \times 10^{-8}$ g/s/m <sup>2</sup>

Average emission rate of SO<sub>x</sub> as per EPA, 2010 is 0.012g/mile or 0.00746 g/km or 0.00746g/200ml of diesel consumption or 0.0373g/litre.

#### Tipper

Transporting distance by tipper per hour = 1.2km/hr

$$\begin{aligned}\text{SOx emission rate} &= 1.2\text{km/hr} \times 0.00746\text{g/km} \\ &= 0.008952\text{g/hr or } 2.4 \times 10^{-6} \text{ g/s} \\ &= 1.5 \times 10^{-10}\text{g/s/m}^2\end{aligned}$$

#### Excavators

Diesel consumption by excavator per hour = 10 litre

$$\begin{aligned}\text{SOx emission rate} &= 10 \text{ litre/hour} \times 0.373\text{g/lit} \\ &= 3.73\text{g/hr or } 0.00104\text{g/s} \\ &= 6.4 \times 10^{-8}\end{aligned}$$

Table 4.9: Emissions Rates of NO<sub>2</sub>

Source type	Average Emission rate for HDDV as per EPA	Emission rate (Proposed Project)
Tipppers	0.725 g/mile	$9.2 \times 10^{-9}$ g/s/m <sup>2</sup>
Excavators	0.725 g/mile	$3.8 \times 10^{-7}$ g/s/m <sup>2</sup>
Total Emission Rate		$3.8 \times 10^{-7}$ g/s/m <sup>2</sup>

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Average emission rate of NO<sub>x</sub> as per EPA, 2010 is 0.725g/mile or 0.450g/km or 0.450g/200ml of diesel consumption or 2.25g/ litre.

### Tipper

Transporting distance by tipper per hour = 1.2km/hr  
NO<sub>x</sub> emission rate = 1.2km/hr x 0.450g/km  
= 0.54g/hr or 0.00015g/s  
=  $9.2 \times 10^{-9}$  g/s/m<sup>2</sup>

### Excavators

Diesel consumption by excavator per hour = 10 litre  
SO<sub>x</sub> emission rate = 10 litre/hour x 2.25g/lit  
= 22.5g/hr or 0.00625g/s  
=  $3.8 \times 10^{-7}$  g/s/m<sup>2</sup>

### **4.1.3 Frame work of Computation & Model details**

By using the above-mentioned inputs, ground level concentrations due to the mining activities have been estimated to know the incremental rise 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 modeling is an important tool for prediction of dispersion of pollutants with GLC and it is used to find the air pollution control activities which controls the emission rates of different activities.

#### **4.1.3.1 Model Input data**

The air pollution modeling carried out represents the normal operating scenarios. As the proposed activity is mining the major source of pollution is particulate matter and gaseous emission. The following data has required as input data for dispersion pattern.

- 1) Baseline data of PM<sub>10</sub>, SO<sub>x</sub> and NO<sub>2</sub> is needed along with meteorological data. Meteorological data preprocessor (AERMET) needs meteorological data which calculates atmospheric turbulence characteristics, mixing heights, surface heat flux for finding the atmospheric dispersion. Site specific data recorded during post monsoon season (1<sup>st</sup> March 2023 to 31<sup>st</sup> May 2023) at project site for executing modeling studies.
- 2) The emission rates of PM<sub>10</sub>, SO<sub>x</sub> and NO<sub>2</sub> from the various sources was taken.
- 3) Location of the project.

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### 4.1.3.2 Model Results

The Air Quality Impact Prediction has been done by using AERMOD of USEPA". The main sources of air pollution with regard to the proposed project for the purpose of estimation of increase in PM<sub>10</sub>, SO<sub>x</sub> and NO<sub>2</sub> are identified due to –

#### 1. Scenario 1 – PM<sub>10</sub>

- (i) Loading/unloading of granite rejects and overburden
- (ii) Transportation of granite rejects, overburden by trucks on the Haul roads from mining benches.

#### 2. Scenario 2 - PM<sub>10</sub>

- (i) Due to blasting

#### 3. Scenario 3 – SO<sub>x</sub> and NO<sub>2</sub>

- i. From Operation of Excavator and movement of transporting vehicle

#### Scenario1:

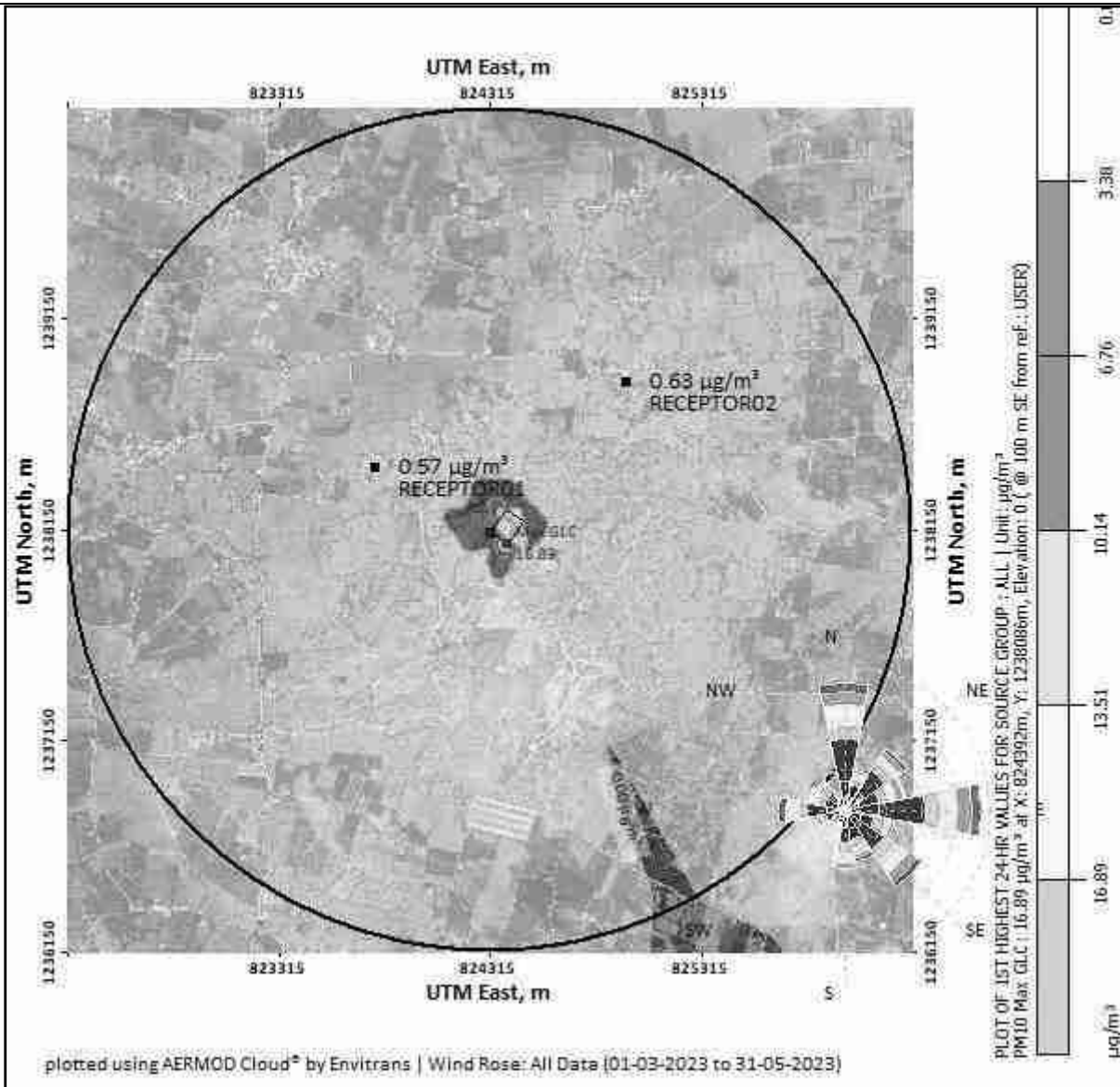
**Table 4.10: Total predicted GLC of PM<sub>10</sub> in core and buffer zone due to combined action of loading, unloading and Transportation of Granite by trucks on the haul road, open pit source of the mining lease area.**

Location	Location Code	Background value in µg/m <sup>3</sup>	Incremental GLC in µg/m <sup>3</sup>	Total Predicted GLC in µg/m <sup>3</sup>
Mine site	AQ1 - Centre	51	16.89	67.89
Receptor 01	AQ2 - 430m- NW	51	0.57	51.57
Receptor 02	AQ3 - 710m- NE	51	0.63	51.63
<b>National Ambient Air Quality Standards (NAAQS)</b>				<b>100</b>



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**Fig No.4.1 Isopleth indicating Incremental value of PM10 due to combined action of loading, unloading, transportation of granite on haul road**

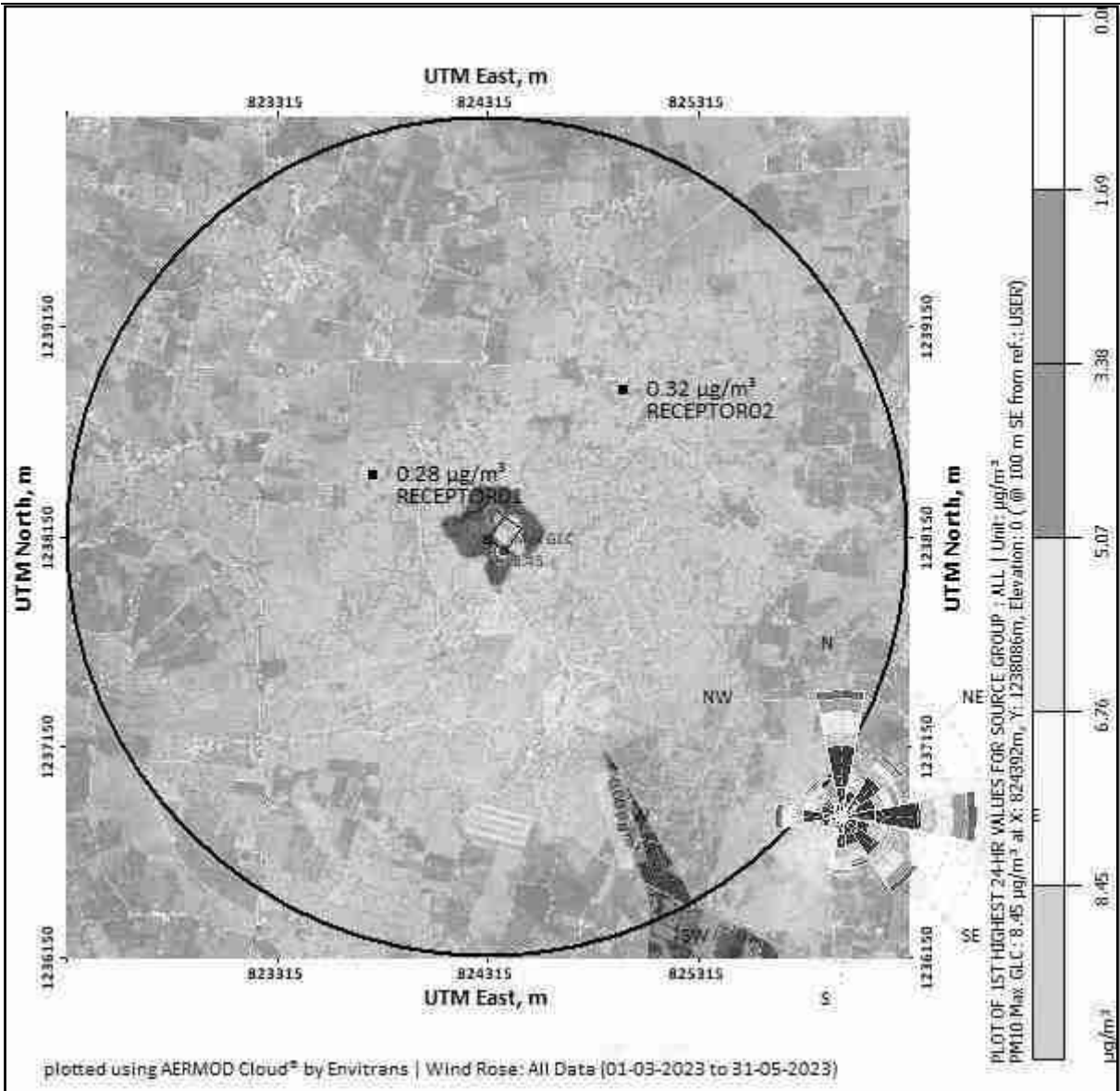
**Scenario 2:**

**Table 4.11: Total predicted GLC of PM<sub>10</sub> in core and buffer zone due to blasting activity in the mining lease area.**

Location	Location Code	Background value in µg/m <sup>3</sup>	Incremental GLC in µg/m <sup>3</sup>	Total Predicted GLC in µg/m <sup>3</sup>
Mine site	AQ1 - Centre	51	8.45	59.45
Receptor 01	AQ2 - 430m- NW	51	0.28	51.28
Receptor 02	AQ3 - 710m- NE	51	0.32	51.32
<b>National Ambient Air Quality Standards (NAAQS)</b>				<b>100</b>

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**Fig No 4.2 Chart indicating Incremental value of PM10 due to blasting action. Scenario 3:**

**Table 4.12: Impact of SOx due to Operation of Excavator and Movement of Vehicle in the mining lease area**

Location	Location Code	Background value in $\mu\text{g}/\text{m}^3$	Incremental GLC in $\mu\text{g}/\text{m}^3$	Total Predicted GLC in $\mu\text{g}/\text{m}^3$
Mine site	AQ1 - Centre	11	BDL	11
<b>National Ambient Air Quality Standards (NAAQS)</b>				<b>80</b>

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**Table 4.13: Impact of NOx due to Operation of Excavator and Movement of Vehicle in the mining lease area**

Location	Location Code	Background value in $\mu\text{g}/\text{m}^3$	Incremental GLC in $\mu\text{g}/\text{m}^3$	Total Predicted GLC in $\mu\text{g}/\text{m}^3$
Mine site	AQ1 - Centre	20	BDL	20
<b>National Ambient Air Quality Standards (NAAQS)</b>				<b>80</b>

AERMOD was used for prediction of impact of  $\text{PM}_{10}$  during conditions i) Loading/unloading and transportation of granite and weathered rock by trucks on Haul ii) During blasting of minerals. Total predicted 24-h maximum GLC of  $\text{PM}_{10}$  at project site for scenario 1 i.e loading-unloading and transportation and scenario 2 i.e. Blasting was  $67.89\mu\text{g}/\text{m}^3$  and  $59.45 \mu\text{g}/\text{m}^3$  occurred at the project site after superposition of base-line value  $51 \mu\text{g}/\text{m}^3$  over the incremental value of  $16.89\mu\text{g}/\text{m}^3$  and  $8.45\mu\text{g}/\text{m}^3$  due to combined impact of loading and unloading and transportation over the haul road and due to blasting. Meteorological data under worst case scenario providing 24-h maximum average GLC was discussed above.

### 4.1.4. Air Quality Index

An air quality index is defined as an overall scheme that transforms the weighed values of individual air pollution related parameters (for example, pollutant concentrations) into a single number or set of numbers (Ott, 1978). Air quality standards are the basic foundation that provides a legal framework for air pollution control. The basis of development of standards is to provide a rational for protecting public health from adverse effects of air pollutants, to eliminate or reduce exposure to hazardous air pollutants, and to guide national/ local authorities for pollution control decisions.

The objective of an AQI is to quickly disseminate air quality information (almost in real-time) that entails the system to account for pollutants which have short-term impacts. To present status of the air quality and its effects on human health, the following description categories have been adopted for IND-AQI.

AQI breakpoints for eight pollutant parameters considered for AQI and these are summarized below in Table with color scheme to represent the AQI bands.

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**Table 4.14: AQI and its associated Health Impacts**

AQI	Associated Health Impacts
Good	Minimal Impact
Satisfactory	May cause minor breathing discomfort to sensitive people
Moderate	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults
Poor	May cause breathing discomfort to the people on prolonged exposure and discomfort to people with heart disease with short exposure
Very Poor	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases
Severe	May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity

**Table 4.15: Proposed Breakpoints for AQI Scale 0-500  
(Units:  $\mu\text{g}/\text{m}^3$  unless mentioned otherwise)**

AQI Category (Range)	PM <sub>10</sub> 24-hr	PM <sub>2.5</sub> 24-hr	NO <sub>2</sub> 24-hr	O <sub>3</sub> 8-hr	CO 8-hr (mg/m <sup>3</sup> )	SO <sub>2</sub> 24-hr	NH <sub>3</sub> 24-hr	Pb 24-hr
Good (0-50)	0-50	0-30	0-40	0-50	0-1.0	0-40	0-200	0-0.5
Satisfactory (51-100)	51-100	31-60	41-80	51-100	1.1-2.0	41-80	201-400	0.5-1.0
Moderately polluted (101-200)	101-250	61-90	81-180	101-168	2.1- 10	81-380	401-800	1.1-2.0
Poor (201-300)	251-350	91-120	181-280	169-208	10-17	381-800	801-1200	2.1-3.0
Very poor (301-400)	351-430	121-250	281-400	209-748*	17-34	801-1600	1200-1800	3.1-3.5
Severe (401-500)	430+	250+	400+	748+*	34+	1600+	1800+	3.5+

\*One hourly monitoring (for mathematical calculation only)

### 4.1.4.1. Interpretation of Air quality using IND-AQI:

**Table 4.16: Computation of AQI with Baseline data**

Air pollutants	Total Predicted GLC due to proposed quarry $\mu\text{g}/\text{m}^3$	AQI	Associated Health Impacts
PM <sub>10</sub>	67.89	Satisfactory (51-100)	May cause minor breathing discomfort to sensitive people
SO <sub>x</sub>	7	Good (0-50)	Minimal Impact
NO <sub>2</sub>	14	Good (0-50)	Minimal Impact

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The above table shows the AQI quality due to total predicted GLC of quarry in core area. PM<sub>10</sub> value is between 51-100 of AQI which is satisfactory and may cause minor breathing discomfort to sensitive people. SO<sub>2</sub> and NO<sub>2</sub> are between 0-40 of AQI which is good and may cause Minimal Impact. When all the quarries in the cluster area are working together the incremental GLC will be high and it may cross the prescribed limits by NAAQS. To overcome such situation, cluster committee should be formed and adopt the environmental management plan effectively as per EIA report.

### 4.1.5. Mitigation Measures

The pollutants from nearby ongoing mining activities, residential and commercial activities are the primary sources of air pollution. However, in the study area adequate control measures will be implemented in future at the time of mining operation. Mitigation measures suggested for air pollution controls are based on the baseline ambient air quality of the area. From the point of view of maintenance of an acceptable ambient air quality in the region, it is desirable that air quality is monitored on a regular basis to check compliance of standards as prescribed by regulatory authorities. However, to further minimize the pollutant concentration especially PM<sub>10</sub>, the following control measure should be adopted by the project proponent.

- ❖ Regular water sprinkling on haul roads, blasted heaps, service roads and overburden dumps at regular intervals will help in reducing considerable dust pollution
- ❖ 1.0 KLD of water will be used for dust suppression of two quarries.
- ❖ Use of Sharp drill bits for drilling holes and charging the holes by using optimum charge and using time delay detonator.
- ❖ Conventional low explosives are being used.
- ❖ The scale of blasting is however very less considering the rate of production.
- ❖ Covering of material when transport through trucks/dumper
- ❖ The drilling and blasting are being carried out as per the proposals laid down in the approved plan.
- ❖ Proposed to follow up muffle blasting so as to prevent fly rock fragments
- ❖ Avoiding blasting during high windy periods and temperature inversion periods
- ❖ Delay blasting under unfavorable wind and atmospheric conditions
- ❖ Use of appropriate explosives for blasting and avoiding overcharging of blast holes

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- ❖ The vehicles and machinery will be kept in well maintained condition so that emissions will minimize
- ❖ Provision of green belt all along the periphery of the lease area for control of dust
- ❖ Information on wind direction and meteorology will be considered while planning, so that pollutants, which cannot be fully suppressed by engineering technique, will be prevented from reaching the residential areas
- ❖ Cabins for shovel and dumpers and dust masks to workmen will be provided
- ❖ The dust respirators should be provided to all workers working in dusty environment
- ❖ Regular health check-up of workers and nearby villagers in the impacted area should be carried out and also regular occupational health assessment of employees should be carried out as per the Factories Act
- ❖ Ambient Air Quality Monitoring will be conducted on regular basis to assess the quality of ambient air.

As discussed above under each activity, there will be increase in terms of dust load and gaseous emissions. However, it can be stated that these incremental contributions will remain within the prescribed limits/norms. Further, the mitigation measures will further bring down these concentrations making the mining activities more eco-friendly.

### **4.2 Carbon emission and carbon sinks due to proposed mining activity**

#### **4.2.1 Carbon emissions**

There are both natural and human sources of carbon dioxide emissions. Natural sources include decomposition, ocean release and respiration. Human sources come from industrial activities such as cement production, deforestation as well as the burning of fossil fuels like coal, oil and natural gas.

##### **4.2.1.1 Carbon emission due to natural activity in project site and carbon sinks**

###### **a) Carbon from decomposition**

As the proposed mining activity is carried out in existing mining pit, there will be no need of cutting of any trees or plants. So the process of decomposition will not take place which emits carbon dioxide into the atmosphere.

###### **b) Carbon from respiration**

The carbon dioxide we exhale does not contribute to global warming for the simple reason. Since all the carbon dioxide we exhale captured by plants during photosynthesis, we are not disturbing the carbon dioxide content of the atmosphere by breathing.

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### 4.2.1.2 Carbon emission due to human activity in project site and carbon sinks

#### a) Carbon from Vehicles

The proposed method of mining is semi mechanized which involves activity of excavator and tippers. The burning of fossil fuels used for the tippers and excavators releases carbon monoxide, carbon dioxide and nitrogen oxide into the atmosphere. When those gases are emitted into the atmosphere it affects the amount of greenhouse gases, which are linked to climate change and global warming. In average based on the production per day, 2 tippers can travel 9.6 miles within the lease area for transporting the rejects and overburden. Plants not only absorb carbon dioxide but also absorb other gases and remove the impurities from it.

**Table 4.17: Emission of carbon monoxide carbon dioxide from vehicle**

Source type	Average Emission rate of CO for HDDV as per EPA	Emission rate of CO
Tippers	2.311 g/mile	0.0222 kg/day
Excavators	2.311 g/mile	0.718kg day
Total Emission Rate		0.7402 kg/day

Average emission rate – 2.311 g/mile or 1.436 g/km or 1.436 g/200ml of diesel  
For one liter of diesel consumption by HDDV, ER – 7.18g

#### Tippers

Travel distance – 9.6 mile/day

Emission rate by tipper per day –  $9.6 \times 2.311 = 22.2$  g/day or 0.0222kg/day

#### Excavators

Diesel requirement per day – 100 liters

Emission rate by excavators per day –  $100 \times 7.18 = 718$ g/ day or 0.718kg/day

#### **Remediation**

The project proponent proposed to plant nearly 500 numbers of one year taller tree sapling along the safety zone of mining lease area to overcome the emission of carbon gases and other gases by vehicles in the quarry. Moreover, they will plant trees along the village road and government schools under CER and CSR schemes. BS –VI model of tippers are proposed to use in the quarry for the controlled emission of gases.

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### 4.3 Soil Carbon stock

Soil carbon sequestration is a process in which CO<sub>2</sub> is removed from the atmosphere and stored in the soil carbon pool. This process is primarily mediated by plants through photosynthesis, with carbon stored in the form of SOC. Carbon is the main component of soil organic matter and helps give soil its water-retention capacity, its structure, and its fertility. The dense carbon stocks below and above the soil are mostly seen in dense forest where more process of photosynthesis takes place and tons of leaves, branches gets decomposed. The agricultural activity in field can degrade and deplete the SOC levels during the process of tillage in paddy, sugarcane turmeric crop field.

There is no reserve forest located within 10km radius. Hence the proposed project does not have any impact on soil carbon stock.

### 4.4 Noise Environment

Noise survey has been conducted in the study area to assess the background noise levels in different zones. The anticipated noise level due to proposed mining activity has been assessed considering baseline noise level, distance involving mining site to nearest village and noise generated due to proposed mining activity. Following are the sources of noise in the proposed open cast granite quarry project.

- Drilling;
- Blasting;
- Vehicular Movement.

The drilling operation is being carried out by Jack hammer operated by compressor mounted with tractor. The noise levels in the working environment are being and will be maintained within the standards prescribed by Occupational Safety and Health Administration (OSHA). These standards were established with the emphasis on reducing the hearing loss. The permissible limits, as laid down by CPCB, are presented in below Table 4.18.

Noise generated from blasting is always instantaneous. The noise produced by blasting is for extremely short duration of around 0.5 seconds, though with a high intensity. Blasting time is generally fixed at lunch interval or after the working shift taking. Noise of blast is site specific and depends on type, quantity of explosives, dimensions of drill holes, degree of compaction of explosive in the hole and rock. Blasting, in addition to easing the hard strata, generates ground vibrations and instantaneous noise. The noise levels in many situations will be above Threshold Limit Value. Exposure to noise levels, above Threshold Limit Value may have detrimental effect on the workers' health. The adverse effects of high noise levels on



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exposed workers may result in Annoyance, Fatigue, Temporary shift of threshold limit of hearing, Permanent loss of hearing and Hypertension and high blood cholesterol, etc.

Noise pollution poses a major health risk to the mine workers. When noise in the form of waves impinges the eardrum, it begins to vibrate, stimulating other delicate tissues and organs in the ear. If the magnitude of noise exceeds the tolerance limits, it is manifested in the form of discomfort leading to annoyance and in extreme cases to loss of hearing. Detrimental effects of noise pollution are not only related to sound pressure level and frequency, but also on the total duration of exposure and the age of the person.

**Table 4.18: Permissible Exposures in Cases of Continuous Noise (CPCB)**

Sound Level (dB A)	Continuous Duration (Hours)
85	8
88	4
91	2
94	1
97	0.5
100	0.25

**Table 4.19: Noise Exposure Levels & Its Effects**

Noise Levels dB(A)	Exposure Time	Effects
85	Continuous	Safe
85-90	Continuous	Annoyance and Irritation
90-100	Short term	Temporary shift in hearing threshold, generally with complete recovery
Above 100	Continuous	Permanent loss of hearing
100-110	Several years	Permanent deafness
110-120	Few months	Permanent deafness
120	Short term	Extreme discomfort
140	Short term	Discomfort with actual pain
150 and above	Single exposure	Mechanical damage to the ear

**Source: Hand Book of EIA, Rao & Wooten**

### 4.4.1 Anticipated Impacts due to Noise in Core Zone

During the operation phase of mining, movement of HEMM also add some noise level whose impact is being minimized by continuous maintenance of vehicle. The likely generations of noise levels due to operation of HEMM are given in Table 4.20.

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**Table 4.20: Expected Noise Levels**

Equipment's	Expected Noise Levels dB(A)
<b>Mining</b>	
Drilling	90-100
Shovel	75-80
Tipper	75-80
Dozers	85-90
Crusher	85-95

The mine site where heavy earth moving machinery will operate, noise level will be within the stipulated 90 dB (A) norm of DGMS. The protection measures for the operators of this equipment will reduce the impact/exposure.

**Predicted noise levels due to mining operations using Mathematical Equations**

$L_2 = L_1 - 20 \log_{10} (R_2/R_1)$  Where  $L_1$  dB (A) = Noise level at a distance  $R_1$  (m)

$L_2$  dB (A) = Noise level at a distance  $R_2$  (m) &

$L = 10 \log_{10} (10^{L_1/10} + 10^{L_2/10} + \dots + 10^{L_n/10})$

Where  $L_1$ ,  $L_2$  and  $L_n$  are noise level dB (A)

**Table 4.21: Predicted Noise levels in Core Zone and buffer zone**

Location Code	Distance km	Source Noise Level, dB(A)	L(Day) dB(A)	L(Night) dB(A)	Noise level at Receptor from Mining sources, dB(A)	Resultant noise level, dB(A) day time	Resultant noise level, dB(A) Night time
Core Zone	--	100	39.7	37.5	100	100	37.5
LB Pillar (North)	0.060	100	41.3	38.5	70	70	38.5
LB Pillar (South)	0.060	100	38.2	37.1	70	70	37.1
LB Pillar (East)	0.060	100	40.4	38.2	70	70	38.2
LB Pillar (West)	0.060	100	39.5	37.3	70	70	37.3
Ramanathapuram (N)	0.74	100	42.5	39.4	48.2	49.2	39.4
T.Kavundampalayam (W)	3.61	100	44.6	42.7	34.4	44.9	42.7
Pillaikalathur (E)	6.35	100	38.6	34.5	29.5	39.10	34.5
Rangampalayam (S)	1.95	100	41.4	37.1	39.7	43.6	37.1

**Green colour- Baseline Value, Red Colour – Noise level due to mining,**

**Blue colour- Baseline + Noise level due to mining**

Although the noise level due to the operation of various mining machineries is 100dB(A), the noise level at different receptors is lower due to the distance involved and other topographical features adding to the noise attenuation. The calculated values at the receptors and resultant noise level are based on the mathematical formula as mentioned above.

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The anticipated noise level in buffer villages due to mining activity is calculated by considering operation of one quarry only. **When all the quarries in the cluster work together in same time, the resultant noise level may increase up to 5 decibel.**

To overcome the noise pollution due to operation of quarries in the cluster area the following mitigation measure should be followed.

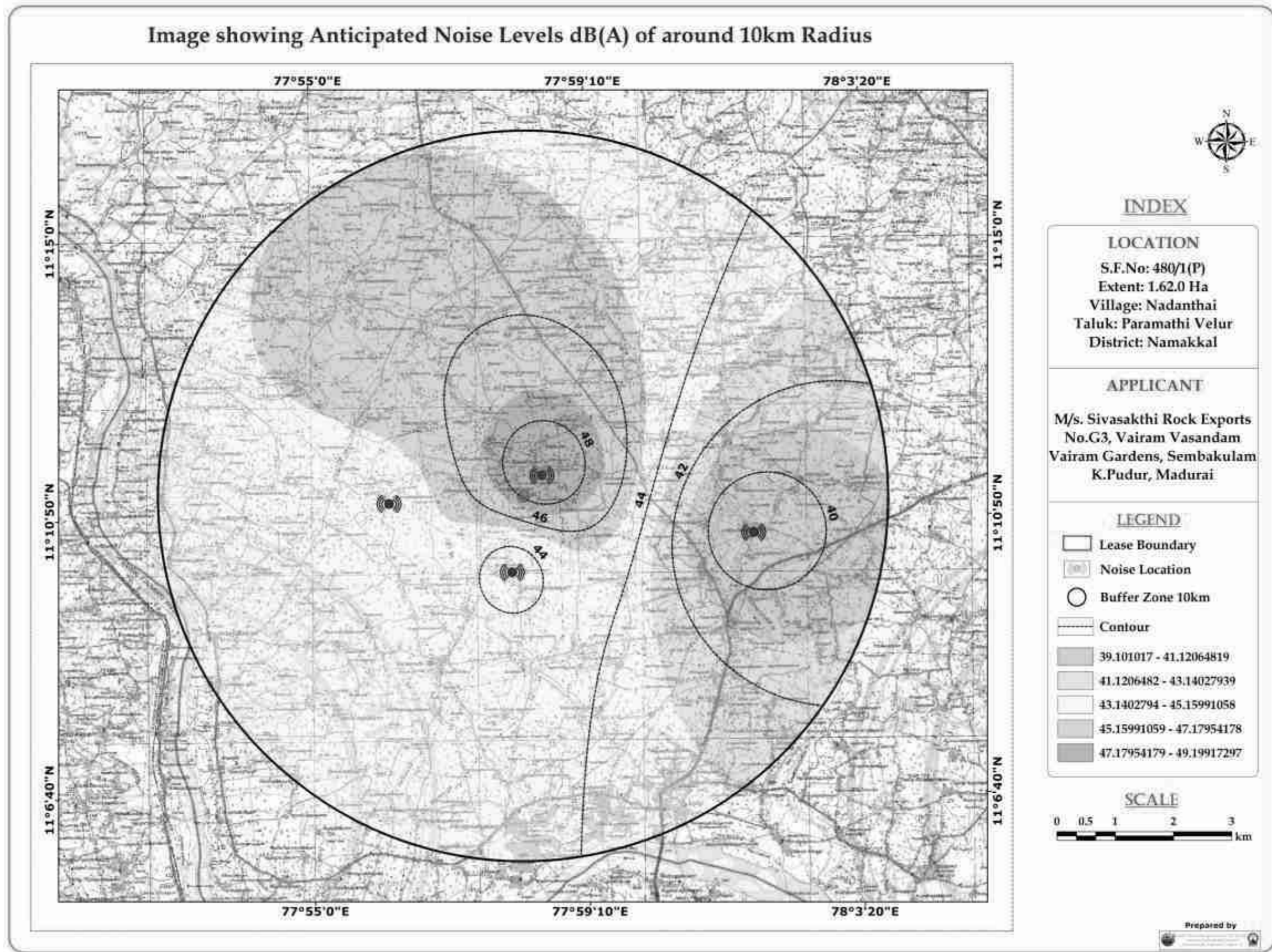
### 4.4.2 Mitigation measures for Control of Noise

The following noise mitigation measures are proposed for control of Noise.

- ❖ Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.
- ❖ Limiting time exposure of workers to excessive noise.
- ❖ Proper and regular maintenance of vehicles, machinery and other equipments.
- ❖ The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments.
- ❖ Speed of trucks entering or leaving the mine will be limited to moderate speed to prevent undue noise from empty vehicles.
- ❖ Carrying out blasting only during day time and not on cloudy days.
- ❖ Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
- ❖ Providing proper noise proof enclosure for the workers separated from the noise source and noise prone equipment
- ❖ Provision of Quiet areas, where employees can get relief from workplace noise.
- ❖ The development of green belts around the periphery of the mine to attenuate noise.
- ❖ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

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**Fig 4.3: Noise dispersion in Buffer zone due to proposed mining activity**

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### 4.5 Ground Vibrations

Ground vibration due to mining activities in the area are anticipated due to operation of mining machines like excavators, wheel loaders, drilling and blasting, transportation vehicles, etc. However, the major source of ground vibration from this mine is blasting. Another impact due to blasting activities is fly rocks. These may fall on the houses or agriculture fields nearby the mining lease area and may cause injury to persons or damage to the structures. The nearest major habitation, Surampalayam village is located in northwest Side. The study area does not involve any mining activity so anticipated impact has been assessed using the empirical equation. The empirical equation used for assessment of peak particle velocity (PPV) is:

$$V = 417.8 \{D / (Q^{0.5})\}^{-1.265}$$

Where

V= Peak particle velocity in mm/s

D= Distance between location of blast and gauge point in m

Q=Quantity of explosive per blasting in kg.

The standards for safe limit of PPV are established by Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. Permissible standards of Ground vibration due to blasting as per guidelines of Director General of Mines Safety (DGMS), Dhanbad are given in Table 4.23.

**Table 4.22: Estimated Peak Particle velocities for different Explosive Charges**

Nearest Habitation	Quantity of Explosive/Blast, Kg	PPV, mm/s
150m – NW	12	3.5
150m – NW	15	4.0
150m – NW	20	4.9
150m – NW	21	5.0
150m – NW	22	5.2
350m – NW	12	1.2
350m – NW	100	4.6
350m – NW	110	4.9
350m – NW	115	5.0

ROM for five years = 50,182m<sup>3</sup>

ROM for a year = 50,182/5 = 10,036.4 m<sup>3</sup>  
= 10,036.4x 2.5 = 25,091MT.

Per day ROM = 84MT

Explosives requirement= 84/7 = 12 kg/day

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**Note:** The empirical formula does not take into account the delay factor in blasting due to use of Delay Detonators.

**Table 4.23: Permissible Peak Particle Velocities (mm/s)**

S. No	Type of Structure	Dominant excitation Frequency		
		< 8 Hz	8 – 25 Hz	> 25 Hz
<b>A)</b>	<b>Buildings/structures not belonging to the owner</b>			
1	Domestic houses/structures (Kuchcha brick and cement)	5	10	15
2	Industrial Buildings (RCC and framed structures)	10	20	25
3	Objects of historical importance and sensitive structure	2	5	10
<b>B)</b>	<b>Buildings belonging to the owner with limited life span</b>			
1	Domestic houses/structures (Kuchcha brick and cement)	10	15	25
2	Industrial buildings (RCC & framed structures)	15	25	50

**Source: DGMS Circular No. 7 dated 29/08/1997**

From the above results (Table 4.22), it can be seen that the charge per blast of 12kg is below the Peak Particle Velocity of 5mm/s for the habitation located at the distance of 148m. So ground vibrations due to blasting activities will not cause any impact to the nearest habitations.

### 4.5.1 Mitigation measures for Control of Vibration

Blasting is the major source of vibration and fly rocks. The following mitigation measures are proposed for control of vibration and fly rocks.

- ❖ Specific charge pattern has to be designed by proper trial vibration studies with varying charge ratios.
- ❖ Milli second detonators shall be used preferably 25–50ms per delay to control vibrations.
- ❖ Inclined holes shall minimize back brake and intensive shocks.
- ❖ In case of development work if any, cushion blasting and Deck loading system shall be adopted to minimize throw of fragments and ground vibration.
- ❖ Air blast due to usage of Detonating Cord with 10gms/m shall be reduced to 5gms/m to minimize air reverberation.
- ❖ If the vibration still exceeds the limit a long Trench to a depth of 6m may cut in the direction of wave's movement to break longitudinal waves which travel close to surface, preferably near mine buffer zone.
- ❖ No deep hole blasting shall be practiced.
- ❖ Heavy machineries with high ground pressure shall not be used in the mines.

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- ❖ Proper warning signals should be used.
- ❖ In spite of all measures periodical testing of vibration and noise using approved seismograph by DGMS has to be followed as a part of Environmental monitoring.

Though all mitigation measures are pointed out, as such no adverse effects on human life, wild life and other biotic system.

### 4.6 Water Environment

Mining operations can affect groundwater quality in several ways. The most obvious occurs in mining below the water table, either in underground workings or open pits. This provides a direct conduit to aquifers. Groundwater quality is also affected when waters (natural or process waters or wastewater) infiltrate through surface materials (including overlying waste or other material) into ground water.

Whereas Impacts on surface water include the build-up of sediments or other toxic products, short and long-term reductions in pH levels (particularly for lakes and reservoirs), destruction or degradation of aquatic habitat, and contamination of drinking water supplies and other human health issues. The water balance for the proposed project is presented in Fig 4.4.

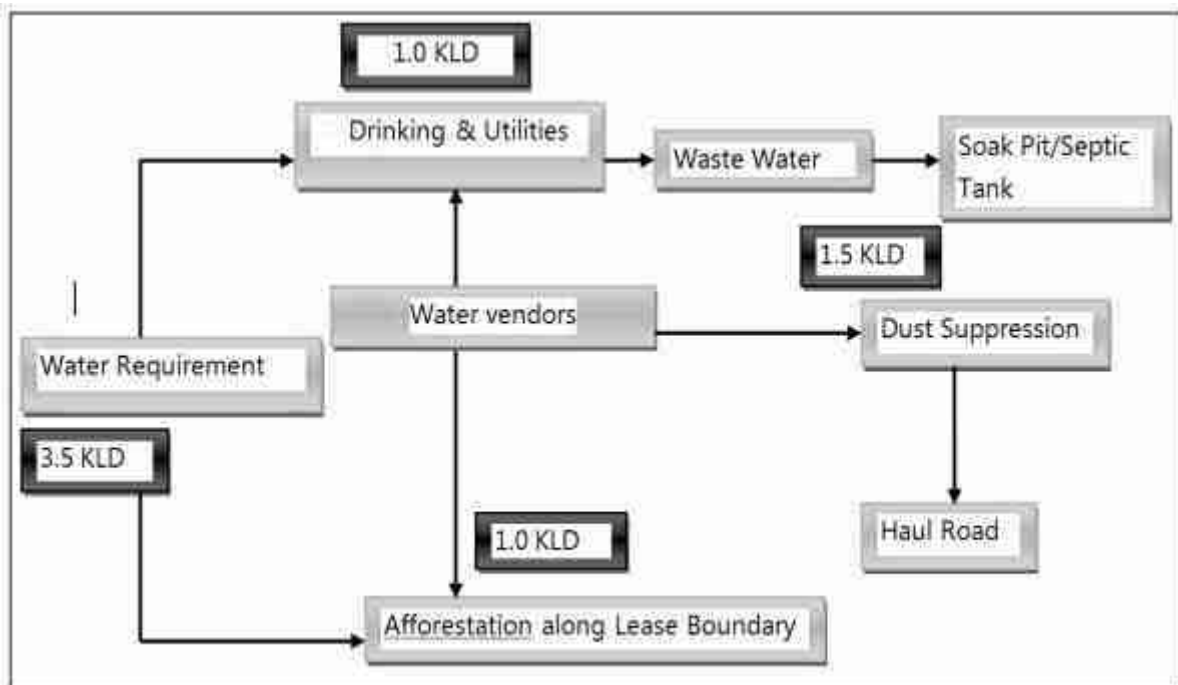


Fig. 4.4 Water Balance chart

There are no probable sources of liquid effluents in this project. The domestic effluent/ wastewater generated from office will be discharged into soak pit via septic tank.

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### 4.6.1. Anticipated Impact on Surface Water body due to proposed projects

There is no water bodies located within 1 km radius of mining lease area. The details of major water bodies within 10km radius are below.

1. A lake – 2.3km – SE
2. Thirumanimutharu river – 5.0km – NE
3. Mavureddy lake – 5.1km – SE
4. Pallapalayam lake – 7.2km – SW
5. Idumbankulam lake – 7.4km – SE
6. Cauvery River – 9.6km – SW.
7. Mariyamman padugai dam across Cauvery River – 9.7km - SW

From the drainage pattern map, it is found that there is no stream order crossing within the lease area. So the proposed project does not affect any natural drainage patters. However, the following mitigation shall be followed to protect the natural drainage pattern in adjacent area.

#### 4.6.1.1 Mitigation Measures:

- i. The garland drainage will be provided around the dump to prevent the escape of runoff along with silt and stone from the dump.
- ii. The repair works of the machineries are strictly prohibited within the lease area to prevent the spillage of grease, oil etc.



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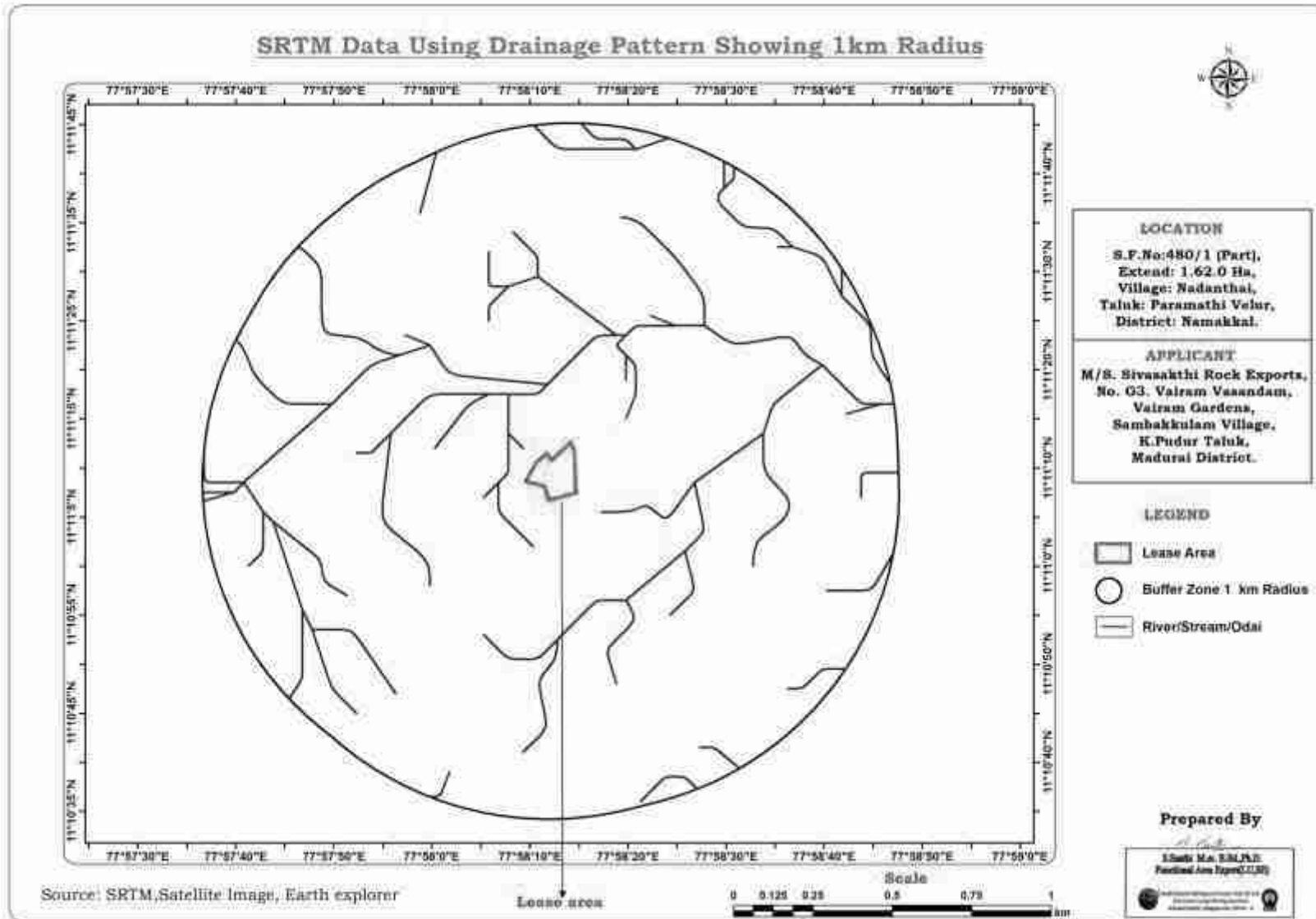


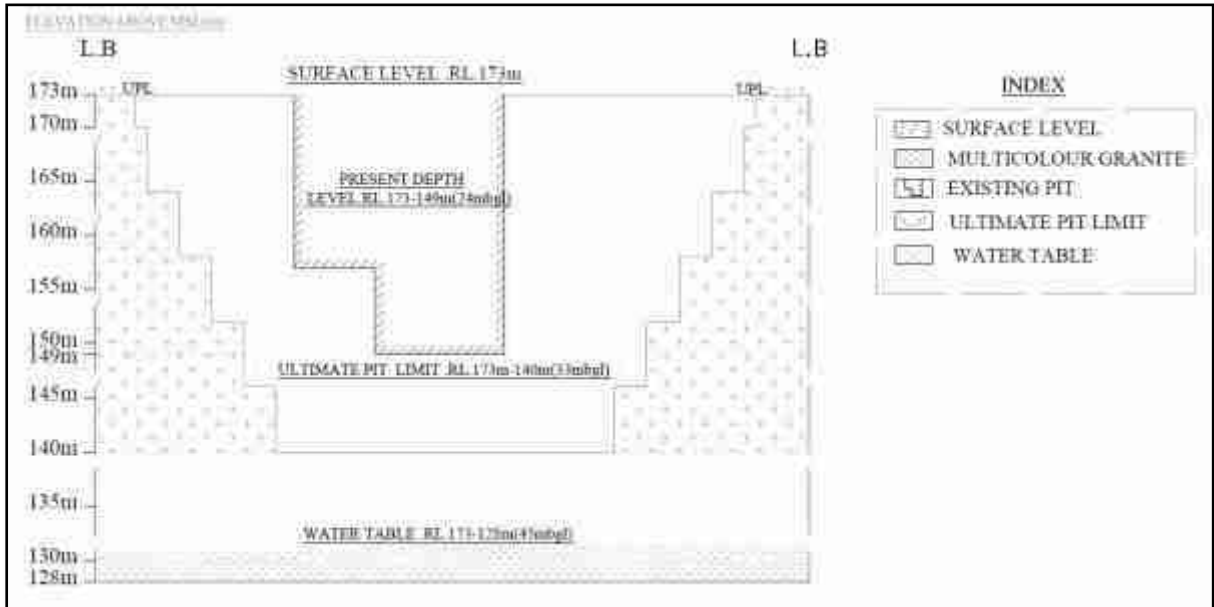
Fig No 4.5 Map Showing drainage pattern within 1km radius of the project site

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### 4.6.2 Anticipated Impact on Ground water due to proposed project

The water table in this region is about 45m bgl. The proposed depth of mining for is 33m bgl. Thus, the mining activity will not intersect ground water table. No chemical having toxic elements will be used for carrying out mining activity. Also granite does not contain any kind of toxic element which can contaminate the water. So the rain water or water used for drilling purposes which infiltrates into the ground in the lease area does not affect the quality of ground water. The schematic representation of depth of mining and water table is given in Figure 4.6.



**Fig.4.6 Schematic representation of depth of mining and ground water level**

### 4.6.3 Management of rain water in the pit during Monsoon Season

During monsoon season, the rain water gets stored in the quarried out pit. For the working purpose, rain water will be pumped and allowed to store in the surface setting tank to remove suspended solids if any. After the sedimentation process, the water from the settling tank will be used for dust suppression, and green belt development within the lease area.

### 4.6.4 Water Quality Index

Water Quality Index value has been calculated for the observed values and compared with drinking water specification as per IS 10500:2012 and results were discussed. The WQI has been calculated by using the standards of drinking water quality recommended by the World Health Organization (WHO), Bureau of Indian Standards (BIS) and Indian Council for Medical Research (ICMR). The weighted arithmetic index method (Brown et. al.,) has been used for the calculation of WQI of the water body.

Water Quality Index =  $\frac{\sum q_n W_n}{\sum W_n}$

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Further quality rating or sub-index (qn) was calculated using the following expression.

$qn = 100 * [ Vn - Vio ] / [ Sn - Vio ]$  Where,

qn = Quality rating for the nth water quality parameter.

Vn = Estimated value of the nth parameter at a given sampling station.

Sn = Standard permissible value of the nth parameter.

Vio = Ideal value of nth parameter in a pure water.

Ideal value in most cases Vio = 0 except in certain parameters like PH and dissolved oxygen. Vio for PH = 7 and Vio for DO = 14.6

Wn = Unit weight for the nth parameter.

The overall Water Quality Index (W.Q.I.) was calculated by aggregating the quality rating with the unit weight linearly.

**Table 4.24: Water Quality Index (W.Q.I.) and Status of water quality (Chatterji and Raziuddin 2002)**

Water Quality Index Level	Water Quality Status
0 – 25	Excellent water quality
26 - 50	Good water quality
51 - 75	Poor water quality
76 - 100	Very Poor water quality
>100	Unfit for Drinking

**Table 4.25: Analyses of water quality using Water Quality Index**

Parameters	As Per IS 10500:2012	Unit Weight (Wn)	Core Zone	Ramanatha puram	T.Kavundam palayam	Pillai kalathur	Rangam palayam
<b>Water Quality Index Level</b>			<b>49.1</b>	<b>48.0</b>	<b>73.6</b>	<b>30.9</b>	<b>79.8</b>
<b>Water Quality Status</b>			<b>Nearly Good water quality</b>	<b>Nearly Good water quality</b>	<b>Poor water quality</b>	<b>Good water quality</b>	<b>Very Poor water quality</b>
pH value at 25°C	6.5 – 8.5	0.079	7.16	7.18	7.17	7.30	7.64
Turbidity , NTU	Max 1 NTU	0.0853	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
Total Dissolved Solids, mg/L	Max 500 mg/L	0.135	<b>710</b>	<b>850</b>	<b>960</b>	480	<b>1110</b>
Total Hardness as CaCO <sub>3</sub> , mg/L	Max 200 mg/L	0.059	<b>444</b>	<b>240</b>	<b>710</b>	<b>218</b>	<b>755</b>

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Chlorides as Cl, mg/L	Max 250 mg/L	0.132	248	<b>255</b>	<b>419</b>	156	<b>381</b>
Sulfates as SO <sub>4</sub> , mg/L	Max 200, mg/L	0.097	20	26	32	10	38
Total Iron as Fe, mg/L	Max 0.3 mg/L	0.088	0.07	0.08	0.08	0.04	0.08

Note: Water Quality is calculated only for Physical and Chemical Parameters

The value of TDS in water sample of all the stations except Pillakalathur village and the values of TH in all stations are above the acceptable limits. Chloride level in water samples from the villages of Ramanathapuram, T.Kavundampalayam Rangampalayam are above acceptable limits. Based on the Water Quality Index calculated, water quality from Pillaikalathur village is good, water quality from T.Kavundampalayam and Rangampalayam village is poor and very poor quality respectively and water quality from core zone and Ramanathapuram is nearly good. For excellent quality, the water should be treated by reverse osmosis to reduce dissolved solids and total hardness to the required rate. Boiling of water will remove the microorganisms effectively from all waters in the above said villages and core zone making the water aseptically fit for drinking purposes.

### 4.6.5 Impact on Hydrogeology

#### i. Geophysical Investigation Method - Resistivity Profile Interpretation of the Lease area

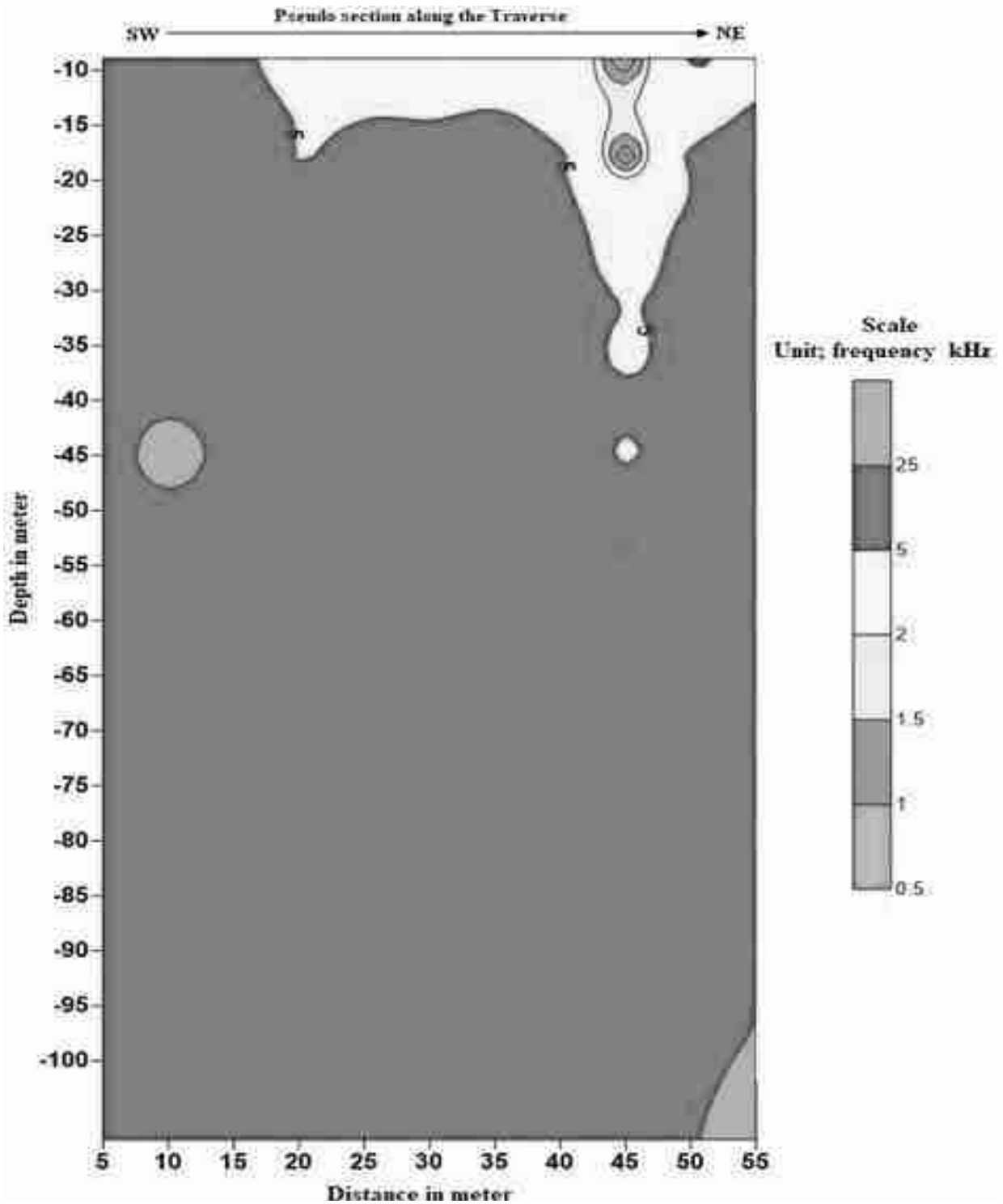
The present attempt of 2D magneto telluric (MT) method has been carried out in 2 profile directions (SW-NE and N-S) in the Lease area of Sivasakthi Rocks Exports, Nadandhai Village, Namakkal District. 2D Profile scanning were performed up to 80m along the traverse depends upon available space, each electrodes spacing with 5 meters interval.

**Table 4.26: Frequency verses rock formation**

Frequency range kHz		Depth m	Formation
0.5	1.5	10 - 15	Low density rock/ weathered/highly porous formation/Water bearing formation
1.5	5	10-20	Medium density rock
>5		>20	High density rock/ massive granite formation

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**Fig No 4.7: Pseudo section of rock formation up to 100m depth**

Weathered rock formation is found up to the depth 10-15m depth which can store water for temporary. Beyond 15m, there is no fractured zone found upto 100m depth particularly in the lease area. So the proposed project will not impact the ground water resources.

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### 4.7 Soil Environment

#### 4.7.1 Impact on Soil Environment

For the entire life of mine, the generation of top soil is estimated as 6932m<sup>3</sup>. It will be dumped along mining lease boundary as earth bund and it will be utilized for green belt development within the lease area. No chemical or toxic elements will be used during mining activity. So the health of soil in and around the quarry will not be affected.

#### 4.7.2 Mitigation measures for Soil Conservation

- ❖ Low height retaining wall will be provided along the toe of dumps to prevent the soil along the slopes being carried away by the rain water.
- ❖ Top soil should not be mixed with other waste or reject materials. It should be conserved by judicious utilization in the mine premises.

### 4.8 Waste Dump Management

#### 4.8.1 Anticipated Impact

The proposed rate of production of multi color granite for five years (Plan period) is about 15,054m<sup>3</sup> at the rate of 30% recovery up to permissible depth. The 70% of rejects which will be generated from the quarry operation during plan period is estimated as 35,128 m<sup>3</sup> and for the life of mine it is estimated as 64,650m<sup>3</sup>. The generation of weathered rock during the plan period is estimated as 5,896m<sup>3</sup> and for the life of mine it is estimated as 7,072m<sup>3</sup>. During quarry operation and at the end of life of mine, all the rejects and weathered rock will be dumped place in North west side as per approved scheme of mining. During monsoon seasons, the runoff from the dump will carry silts and small stones and it affect the land use around the project site which means it may affect the carrying capacity of stream, water holding capacity of lakes and affect nearest agricultural lands.

#### 4.8.2 Mitigation measures

The mineral rejects and waste shall be dumped systematically with proper repose angle and stabilization as given below,

- ❖ The rejects\ waste dump shall be properly terraced in to 1.5m benches with proper repose angle and then the top soil shall be spread over the dumps and slope to make them humus for some time, after the soil suitable for water

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retention, trees will be planted at the top, slope and toe of the stabilized dumps to form vegetation.

- ❖ Gradation of dump shall be done automatically as coarser materials go to the bottom and finer at the top and therefore drain of rain water flow freely to the bottom without endangering the stability of dump,
- ❖ More over the dump height shall be less than 6m with natural repose angle and hence dump will be more stable.
- ❖ Garland drainage around dump shall prevent under wash of dump by hydrostatic pressure to be developed by surface water and control wash outs and collapse.
- ❖ The runoff from the slopes of dump will be collected by garland drainage around the dump and it will be taken up to settling tank to settle down the suspended solids. After that the water will be used for greenbelt development and dust suppression purposes.

### 4.9 Municipal solid waste management

The human waste shall be treated by temporarily built septic tank and soak pit within the mine lease area. The municipal solid waste generated by workers will be properly segregated into biodegradable and non-biodegradable and disposed through garbage collector of particular location in Namakkal District.

### 4.10 Ecology and Biodiversity

#### 4.10.1 Impact on Ecology and Biodiversity

The details and list of flora, fauna, reserved forest and cropping pattern within the 10km radius of study area is given in chapter 3. The impact on ecology and biodiversity due to the proposed mining activity has to be studied in detail to prepare the management plan to safeguard the flora, fauna, forest products and aquatic living organism etc.

A detailed anticipated impact of Ecology and Biodiversity due to mining activity is described in Table 4.27 & 4.28.

**Table 4.27: Ecological Impact Assessments and Its Mitigations -Part 1**

Sl. No	Issues	Assessment	Mitigations
1	Proximity to national park/ wildlife sanctuary / reserve forest / mangroves / coastline/estuary/sea	Forest within 10km radius:  There is no reserve forest or any other forest located within 10km radius. The proposed project is not a forest land. So, the proposed project does not	-

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		<p>attract Forest Conservation Act, 1980.</p> <p>There is no wild life sanctuaries found around 10km radius. Vellode Birds Sanctuary – 34.78km – NW</p> <p>It is notified birds sanctuary. This project doesn't fall under the Wildlife (Protection) Act, 1972.</p> <p>Quarry area is 176.80km (SE) away from the Bay of Bengal. Hence the project does not attract C.R.Z. Notification, 1991.</p>	
2	Activities of the project affects the breeding/nesting sites of birds and animals	No breeding and nesting site was identified in mining lease site. The fauna sighted mostly migrated from buffer area. The fauna in the buffer zone may be affected by noise generated due to mining activity.	The noise due to the mining activity will be controlled by developing green belt all along the lease boundary, regular maintenance of tippers, excavators, transporting the empty tipper within the speed of 20 km/hr.
3	Located near an area populated by rare or endangered species	No endangered, critically endangered, vulnerable species sighted in core mining lease area and also in buffer zone.	Nil
4	Proposed project restricts access to waterholes for wildlife	No waterholes are in core zone. No Wild life sanctuary within 10km radius.	Nil
5	Proposed mining project impact surface water quality that also provide water to wildlife	'NO' scheduled or threatened wildlife animal sighted regularly in core area.	Nil
6	Proposed mining project increase siltation that would affect nearby Biodiversity area.	Yes, the runoff from the dump which carries the solid materials may get silt in the adjacent agricultural land and affect the cropping pattern.	Garland drainage will be excavated around the dump and quarry area to collect the runoff during monsoon season. The water collected in the garland drainage will be diverted to settling tank



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			or mine pits to settle down the silts and other suspended solids. This will prevent the siltation in the adjacent area. The drainage will be desilted after every precipitation.
7	Risk of fall/slip or cause death to wild animals due to project activities	'NO'. No Wild life sanctuary within 10km radius. Also S1 type wire fence will be made around the mining lease area.	Nil
8	The project release effluents into a water body that also supplies water to a wildlife	As the proposed project is mining activity there will be no possibilities of release of effluents. Also no Wild life sanctuary located within 10km radius.	Nil
9	Mining project effect the forest based livelihood/ any specific forest production which local livelihood depended	There is no forest located within 10km radius of mining lease area.	-
10	Project likely to affect migration routes	No migration route observed during monitoring period.	Nil
11	Project likely to affect flora of an area, which have medicinal value	No flora having medicinal value found within the lease area	The flora such as Neem and pirandai having medicinal value found in the study area of buffer zone. Those floras will not be affected by the proposed mining activity at it will be carried out only within the lease area.
12	Forestland is to be diverted, has carbon high sequestration	'NO'. There is no forest land within the lease area.	Nil
13	The project likely to affect wetlands, fish breeding grounds, marine ecology	'NO'. No wetland, fish breeding grounds, marine ecology present in core mining area.	Nil

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

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**Table 4.28: Ecological Impact Assessments – Part 2**

Ecological Criteria	Identified Impacts	Ecological significance of Impact	Magnitude	Duration /Timing/ Frequency	Reversibility	Mitigation	Cumulative Impact
<b>Zone of Influence</b>	<b>Project site Habitat due to Site Clearance.</b>	The existing granite quarry is located in Nadanthai village. As it is existing quarry there are no trees or shrubs found within the quarry area. Pp has developed greenbelt around the mining lease boundary. During quarrying activity, PP will not cut any trees in and around the lease area.	<b>Low Impact</b>	-	<b>Irreversible in quarry area</b>	The quarried out pit will be used as water storage pond which increase agricultural activity in the buffer zone. PP will develop green belt along haul road and approach road.	<b>No Cumulative Impact</b>
<b>Zone of Influence</b>	<b>Ecological Impact Surrounding habitat due to fugitive emission</b>	The fugitive emission due to the mining activities such as drilling, blasting, loading and transportation on the haul road will be deposited on the flora and crop field in the buffer zone which affects growth and its productivity.	<b>Temporary Impact</b>	During the mining period	<b>Reversible</b>	The sprinkling of water over the haul road will be done. The transportation vehicles will be maintained and serviced Properly.	<b>No Cumulative Impact</b>
<b>Accessibility</b>	<b>Ecological Impact due to road construction</b>	No Road construction is required to assess the project site. As it is existing quarry, the approach road is already available which connect the lease area to nearest Surampalayam village Tar road.	<b>No Impact</b>		-	-	<b>No Impact</b>
<b>Zone of Influence</b>	<b>Ecological Impact on Surrounding/ Eco sensitive habitat due to waste water</b>	Since the proposed project is an mining activity no waste water generation is expected. Human waste and municipal solid waste	<b>No Impact</b>	-	-	Human waste will be properly treated by septic tank and soak pit in the lease area and dispose	<b>No Impact</b>

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	generated from the project activity.	will be generated due to the workers.				periodically. The municipal solid waste generated by workers will be properly segregated into biodegradable and non-biodegradable and disposed through garbage collector of Namakkal Municipality.	
<b>Zone of Influence</b>	<b>Ecological Impact on Surrounding / Eco sensitive habitat due to Noise generated from the project activity.</b>	During drilling or blasting, transportation of granite, noise will be generated and it may slightly affect the movement of fauna around the lease area.	<b>Temporary impact</b>	Only during drilling, blasting operation and transportation period.	No	Avenue trees will be planted along the lease area to minimize the noise level. Milli second detonators shall be used preferably 25–50ms per delay to control vibrations. Regular maintenance of vehicles and driving the empty tipper within 20km/hr speed also control the noise generations.	<b>No Impact</b>
<b>Zone of Influence</b>	<b>Ecological Impact on Surrounding/ Eco sensitive habitat due to Transportation</b>	There is no eco sensitive habitat found around the lease area. The fugitive emission from drilling, blasting, vehicle movement will form layer in leaves thus reducing the gaseous exchange process. This ultimately affects the growth of plants. The animals like dog, cattle may get accident due to truck movement.	<b>Temporary impact</b>	During Operation Phase	No	The truck driver will be advised to drive the vehicle within 20km/hr inside the lease area and 40km/hr outside the lease area. The truck will be covered with tarpaulin. The sprinkling of water over the haul road will be done.	<b>No Impact</b>

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<b>Zone of Influence</b>	<b>Ecological Impact on Natural ecosystem, the soil micro flora and fauna and soil seed banks.</b>	There is no reserved forest, wildlife sanctuaries located within 10km radius and no water bodies located within 1km radius. So the proposed project will not affect Natural ecosystem, the soil micro flora and fauna and soil seed banks. Also, the mining activity will be carried out strictly within the lease area.	<b>No Impact</b>	Nil	--	Garland drainage will be excavated around the dump and quarry area to collect the runoff during monsoon season. The water collected in the garland drainage will be diverted to settling tank or mine pits to settle down the silts and other suspended solids. This will prevent the siltation in the adjacent water bodies or any other land use.	<b>No Impact</b>
<b>Zone of Influence</b>	<b>Fish habitats and the Food web/food chain in the water body and Reservoir</b>	No major water body or reservoir is situated within 2km radius of the project site.	<b>No Impact</b>	Nil	--	--	<b>No Impact</b>

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Table 4.29: Afforestation Plan of the M/s Sivasakthi Rock Exports

Year	Place	Type of Trees	Number	Spacing	Rate of survival
2023-24	Lease Boundary	Neem, Teak, Eucalyptus and other regional trees	30	5m X 5m	80%
2024-25	Lease Boundary	Neem, Teak, Eucalyptus and other regional trees	30	5m X 5m	80%
2025-26	Lease Boundary	Neem, Teak, Eucalyptus and other regional trees	30	5m X 5m	80%
2026-27	Lease Boundary	Neem, Teak, Eucalyptus and other regional trees	30	5m X 5m	80%
2027-28	Lease Boundary	Neem, Teak, Eucalyptus and other regional trees	30	5m X 5m	80%

### 4.11 Socio Economic

#### 4.11.1 Anticipated Impact

This project will generate direct and indirect employment for more than 50 persons. Preference will be given to the local population for employment in all categories including semi-skilled and unskilled. The villages and their inhabitants in the buffer zone will not be disturbed from their settlements due to the mining operations.

It is obvious to assume that the activities of the mining operations will improve the socio-economic levels in the study area. The anticipated impact of this project on various aspects is described in the following sections

- Impact on human settlement: Overall, due to employment generation and economic progress, there will be positive changes in the socio-economic condition of the people residing in the vicinity of the project site. The local population will have preference to get an employment. No resettlement has occurred due to mining activity. Built up land has been increased marginally.
- Impact on Population Growth: Population rate grows annually and demand of primary needs and employment will increase due to population growth. It will provide some direct and indirect employment to the people in and around the villages.
- Impact on Vegetation: No decline in agricultural land. It has been increased over a period of time by utilizing the water stored in the working pits. No deforestation will be happened.

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Therefore due to mining, per capita income of local people will be improved. The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as Sanitary facilities, Solar Lighting to Govt school, Health Care to the villages in buffer zone, Maintenance of village road or Providing funds to local body or Prime minister's fund on Socio economic Development and relief measures. The job/ business opportunities will improve the economic condition of the persons. They are in a position to utilize this money for purchase of tractors, trucks, etc. which may be put into use for business purposes. Many **positive impacts** can be resulted from a long-term mine unit. In this context, provision of job opportunities, business, transport and communication, laborer etc are the major ones. Thus, this unit is highly favorable to poor and landless people.

### 4.11.2 Mitigation Measures

- Good maintenance practices will be adopted for plant machinery and equipment, which will help to avert potential noise problems.
- Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.
- Drilling, blasting etc at specified location will be followed with proper schedule.
- Appropriate air pollution control measure will be taken so as 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 has been provided which meet 'BIS' (Bureau of Indian Standards).

Thus, no significant impact on health and safety will be occurred due to this project.

### 4.12 Land Environment

#### 4.12.1 Anticipated Impact on Land Use / Land Cover

Grey granite Quarry project will result in disturbance of the land use pattern of the mine lease area. The impact on the topography in the form of changed landscape is unavoidable during mining activities like excavation, overburden dumping, soil extraction etc. Land requirement for the project has been assessed considering functional needs. So reclamation of mined out land will be given due importance as a step for sound land resource management. There is no release of toxic elements into the ground. No adverse impact is anticipated on land use of buffer zone associated due to the mining activity, as all the activities will be confined within the project site.

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The mining operations will impact the land usage and land aesthetics of quarry lease area.

The land use analyses show that the Neem plantation was done along the boundary of mining lease area. The rate of plantation increases over a period of time due to quarry activity. At the end of the project, the quarried pit will be act as water storage pond. The stored water will increase the ground water resources. Thereby agricultural activity around the mining lease area will be enhanced.

### **4.12.2 Mitigation measures**

- ❖ The restoration of the degraded land would cover backfilling and terracing with the overburden / wastes and surfacing the same with top soil.
- ❖ Provision of Garland drainage around the dumps
- ❖ Fast growing trees and other native shrubs would be planted to stabilize the reclaimed land
- ❖ Appropriate measures will be taken for Green belt development.
- ❖ The rain water will be stored in the pit which will recharge the ground water as a part of rain water harvesting scheme for irrigating the nearby agricultural lands.

### **4.13 Occupational Health Risks**

#### **4.13.1 Anticipated Impact**

Occupational health and safety hazards occur during the operational phase of mining. The problem of occupational health, in the operation and maintenance phases is primarily due to dust, which could affect breathing. Health and Safety Measures to control dust inhalation; precautions would be adopted to prevent dust generation at site and dispersing in the environment. Long-term exposure to silica dust may cause silicosis. Workers are likely to get exposed to excessive noise levels during mining activities. Occupational Safety hazards related to blasting activities may result in accidental explosions, if not properly mitigated.

#### **4.13.2 Anticipated occupational and safety hazards**

- ❖ Health Impact due to Physical activity, Extremes of age, poor physical condition, fatigue, Cardiovascular disease, Skin disorders
- ❖ Noise
- ❖ Burns and shocks due to electricity
- ❖ Respiratory hazards due to Dust exposure
- ❖ Physical hazards
- ❖ Explosives
- ❖ Fire

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### **4.13.3 Anticipated health impacts on people in nearby villages**

The mining activity not only causes health hazards to quarry workers but also affect the health of nearby village people. The fugitive emission during heavy wind period travel along the predominant wind direction and people in village located along predominant wind direction gets affected. The chances of changing water quality in villages due to mining activities lead to causes various diseases in the nearby village people.

### **4.13.4 Mitigation measures**

**For the safety of workers at site, the following mitigation measures are proposed**

- ❖ Excavators, dumpers, drills other automated equipments will be enclosed
- ❖ Use of personal breathing protection will be made compulsory
- ❖ Spraying with water on all working faces & haul roads, by water-sprinkler
- ❖ Regular health monitoring of workers once in 6months for silicosis
- ❖ Random health check up village people around the lease area for identify diseases if any due to mining activity
- ❖ No employee will be exposed to a noise level greater than 75 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 75 dB(A).
- ❖ During mining operations, all the statutory provisions of the Indian Electricity Rules 1956, and Indian Standards for installation and maintenance of electrical equipment etc. will be observed.
- ❖ Care will be taken to evacuate the mining area completely at the time of blasting operations.
- ❖ A blasting SIREN will be used at the time of blasting for audio signal
- ❖ Before Blasting and after blasting, red and green flags will be displayed as visual signals.
- ❖ Warning notice boards indicating the time of blasting and NOT TO TRESSPASS are displayed prominently.
- ❖ First-aid facilities as per provisions under Rule (44) of Mines Rules 1955
- ❖ Initial and Periodical medical examination shall be conducted for the employees under Rule 29B & 45 (A).
- ❖ Insurance will be taken in the name of the labourers working in the mines.



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### **4.14 Agricultural Environment**

#### **4.14.1 General**

The general impacts on agricultural lands will be dust pollution, as volume of dust is discharged into the air during the process of quarrying. Dust gets deposited on the leaves of plants, flowers and soil. This affects the photosynthetic and fruiting ability of the crops.

Silt from the excavation, screening process and reject during monsoon season gets washed and chokes the agricultural fields, rendering them useless for the growth of crops. Due to blasting, fly rocks may fall on agricultural fields making it difficult for the farmer to cultivate.

There is a need for dust control on haul road movements. Vehicles emit fugitive gases during transportation of materials. Those gases enter the plants through the stomata pores; it destructs chlorophyll and affects photosynthesis leading to stunted growth or death of crops.

The pumping of water from the ground for the mining activity will reduce the availability of water for the agricultural purposes.

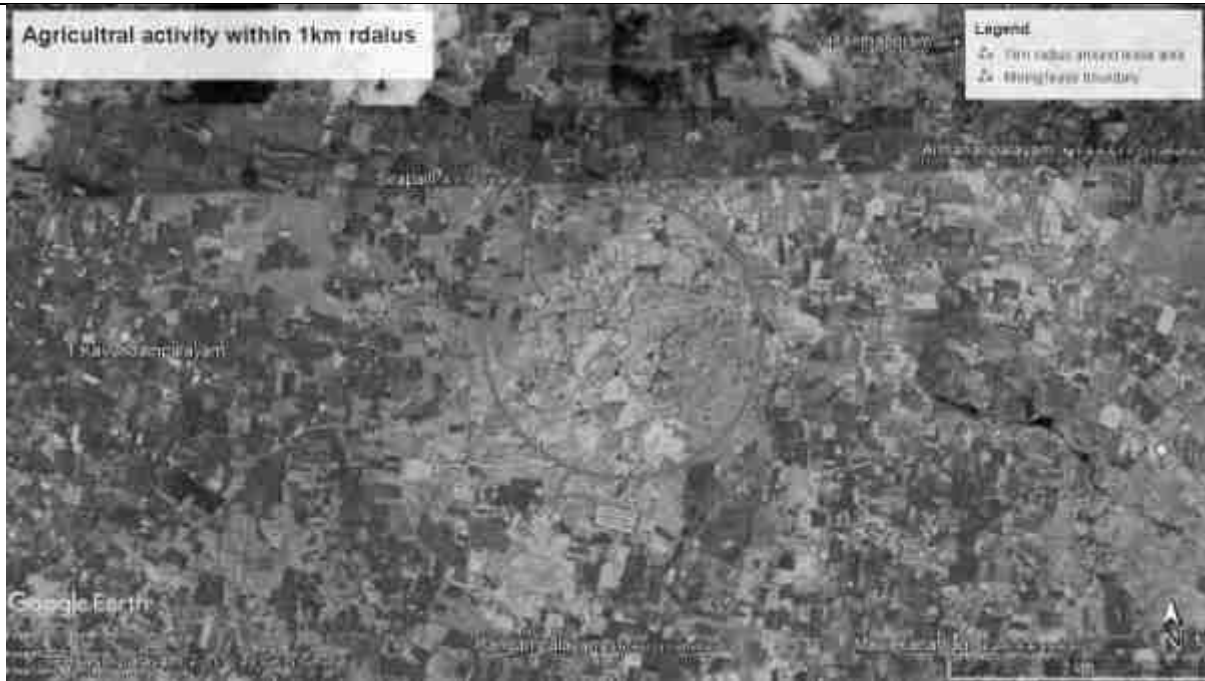
#### **4.14.2 Anticipated Impacts of Proposed project on Agriculture, Horticulture and livestock**

The land use analyst sighted that there are no major crop plantation within 1km radius of the project site. Only trees such as Neem trees, coconut trees, palm trees, Prosopis juliflora are found within 500m radius. Beyond 1km radius, agricultural lands are found in all directions.

As the villages are located around the project site, the people in the villages are farming animals like goat, cow, and sheep for their livelihood. The above mentioned impact may be observed on the nearest land during the quarrying activity. So the following mitigation measures will be suggested to protect the nearest farm. The requirement of water for the proposed project will be taken from bottom of the existing pit and water vendors. The ground water for the proposed project site will not be extracted at the same place and the proposed mining activity is 12m above ground water table. So the proposed mining activity does affect the ground water resource.

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**Fig No 4.8 Agricultural activity around the project site**

### 4.14.3 Mitigation Measures

- Spraying of water on the haul roads will be done to suppress the dust in the source itself. Interval of sprinkling depends on the environmental factors such as temperature, rainfall and humidity of the proposed site.
- The trees having tolerance to different air pollutants will be planted along the boundary to prevent the escape of dust to the surroundings.
- Garland drainage will be provided around the lease area to prevent the leach of silt into the farm.
- Regular check and proper maintenance of Vehicles will be carried out to minimize the emission of pollutants.
- Adequate Blast shield or blast mats will be provided wherever necessary for fly rock protection during blasting, thus to prevent the accident on the nearest farms.
- During monsoon season the dust deposited on the surface of plant body is washed out naturally.
- Making two bore holes which have direct conduit with the water table in the lease area will help ground water recharge during monsoon seasons. It helps the agricultural activity in the buffer area of project site.

**CHAPTER – 5: ANALYSIS OF ALTERNATIVES  
(TECHNOLOGY AND SITE)**

Consideration of alternatives to a project proposal is a requirement of the 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 environment friendly and cost effective options. Analysis of alternatives should be similar to the content of the approved mining plan.

The selection of the site is based on the following considerations which are feasible in terms of location, deposit characteristics, availability of reserves, percentage recovery, road facilities, labor availability, requirement of health and safety and environmental concerns, production scheduling, scope of mechanization/automation, land reclamation, and operating and capital cost estimates.

Mineral deposits are site specific, and therefore, selection of a quarry site has limited alternatives. Namakkal District is mostly underlain by the Archaean crystalline and metamorphic complex. The geology of the district is complicated due to recurring tectonic and magmatic activities occurred during Pre-Cambrian period. The famous Sittampundi Anorthosite Complex which is known for its complex geology and occurrences of Platinum Group of Elements is situated in this district. Hornblende Biotite Gneisses are the oldest rocks in four Taluks of the district. It is very fissile and present widely in plains. The gneisses are highly weathered upto 30 m at some places. The Charnockites are coarse grained, massive and foliated at places and their colour is bluish dark to grey. They are the second largest rock type present in the district. They are massive and less weathered than the gneisses. They exhibit 2 to 3 distinct set of joints and most of them are vertical with steep dips. Iron ore deposits associated with quartz feldspathic gneiss and garnetiferous quartz gneisses are present in some areas.

These rocks are highly folded and jointed and less weathered. Quartzite and crystalline lime stones are exposed in patches in north and central parts of the district. The thickness of these bands varies from a few metres to ten metres and the length extends to few kilometres. Numerous lenses of dunite with magnesite veins of various dimensions are exposed within gneiss. There are number of basic dykes present in the study area. Granites are found in some parts of the district. They are massive and jointed poorly. Thin veneer of alluvium is found along the course of the

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Cauvery and Thirumanimuthar. However, alluvium of few meters thickness is found near the junction of river Thirumanimuthar and river Cauvery. Several faults and shears are occurring mostly with north east-southwest trend. They are expected to influence the course of groundwater movement, its storage and developmental potentials in the district. The quarry site is dependent on the geology and Granite mineral deposition of the area. This project is mineral and site specific, hence no alternative site or technology is considered for this project.

**CHAPTER – 6: ENVIRONMENTAL MONITORING PROGRAMME**

Environmental Monitoring program is mandatory to check the impact of the mining activity in the core and buffer zone. Hence regular monitoring of various environmental parameters helps in maintaining sound operating practices of the mining in line with mining and environmental regulations. Environmental Monitoring program will be conducted for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB.

**6.1 Measurement methodologies**

The following instruments will be used for environment monitoring for various environmental parameters.

**Table No: 6.1 Instruments used for Monitoring**

<b>S. No</b>	<b>Instruments</b>	<b>Purpose of Monitoring</b>
1	Respirable Dust Sampler	Air Pollution
2	Fine Particulate Sampler	Air Pollution
3	Sound level meter	Noise level
4	Digital Seismograph	Vibration monitoring
5	Water level indicator	Water level
6	Geophysical Instruments (DDR3)	Water table
7	Camera, Binocular & Lens	Flora, Fauna
8	GPS & DGPS	For fixing the coordinates of sampling location
9.	Electronic Total station	Reduced level & topography monitoring

In addition to the above, Primary data on land use, socio economics will be collected by visiting the field and secondary data will be collected from Government Department and other sources.

**6.2 Monitoring Schedule and Frequency**

The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board (CPCB). Monitoring program will be followed till the mining operation ceases as per the schedule below.

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**Table 6.2: Monitoring Schedule**

S. No.	Environment Attributes	Location	Monitoring		Remarks
			Duration	Frequency	
1	Meteorology and Air Quality	Continuous monitoring weather station in core zone/ nearest IMD station	24 hours	Monthly Once	Wind speed, direction, Temperature, Relative humidity and Rainfall.
2	Air Pollution Monitoring – PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> and NO <sub>x</sub>	6 locations (One station in the core zone and at least one in nearby residential, area, one in the upwind, two station on the downwind direction and one in cross wind direction).	8 hours	Six months once	Fine Dust Sampler and Respirable Dust Sampler
3	Water Pollution Monitoring	Mine effluents, Set of grab samples during pre and post monsoon for ground and surface water in the vicinity.	–	Six months once	Physico–chemical, microbiological characteristics
4	Hydrogeology	Water level in open wells in buffer zone around 1km at specific wells	-	Six months once	Water level monitoring devices may be used.
5	Noise	Mine Boundary, high noise generating areas within the lease and at	24 hours	Monthly Once	Sound level meter

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		the nearest residential area			
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting operation	Digital Seismograph
7	Soil	Core Zone and Buffer zone (Grab samples)	–	Six months once	Physical and Chemical characteristics

### 6.3 Data Analysis

Data analysis will be done by MoEFCC/NABL approved laboratory as per CPCB guidelines & compliance reports shall be submitted to concerned authority (specified in Environment Clearance Letter issued by SEIAA, Tamil Nadu and Consent issued by TNPCB, Namakkal) on regular basis.

### 6.4 Emergency procedures

The mines manager monitors the emergencies that may occur in opencast mining operations and prepares an emergency plan to deal with emergency situations during the operation of the mine. Preparation of a preventive maintenance schedule program based on recommendations given and maintenance schedules for all equipments and instruments as per recommendations of the manufacturers user manuals.

### 6.5 Detailed Budget

Detailed budgetary provisions for monitoring program are detailed in the following Table No 6.3.

**Table No 6.3 Environment monitoring budget**

S. No	Environmental Monitoring Program	No. of samples per year	Cost per sample	Cost
1	Ambient Air Quality monitoring	2	Rs 5000	Rs 10,000
2	Water quality	2	Rs 4000	Rs 8,000
3	Soil quality	2	Rs 4000	Rs 8,000
4	Noise monitoring	10	Rs 1000	Rs 10,000
5	Hydro geology	5	Rs 2000	Rs 10,000
	<b>Total</b>			<b>Rs 46,000</b>

**CHAPTER – 7: ADDITIONAL STUDIES**

**7.1. Public Consultation**

The present Draft EIA report is for Public Consultation only. The proceedings of the Public Consultation will be included in the Final EIA report.

**7.2 Risk assessment and Disaster Management Plan**

Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening. The mining operation is carried out under the management control and direction of a qualified mines manager. The DGMS have been issuing a number of standing orders, model standing orders and circulars to be followed by the mine management in case of disaster, if any.

To overcome such risks, help/aid would be sought from emergency services providers like Police station, fire station, Hospital, Ambulance services in the vicinity of the mine site. Their telephone numbers and communication facilities are to be provided and displayed on the board at the mine office as well as mine site. Responsibility of coordinating rescue activities is entrusted to quarry-in-charge at the quarry site in addition to quarry-in-charge is also looking after statutory obligatory under Mines Act,1952. Name and Address of Contact Person coordinating in case of Eventuality is stated below:

<b>Name and Address of the Proponent</b>	<b>M/s. Sivasakthi Rock Exports</b> No.G3, Vairam Vasandam, Vairam Gardens Sambakulam, K.Pudur, Madurai, Tamil Nadu. Pincode-625007 Contact Number:+918778569017,+919842103246 <a href="mailto:sivasakthirockexports@gmail.com">sivasakthirockexports@gmail.com</a>
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However, the following natural/industrial hazards may occur during normal operations.

- i. Operational Phase,
- ii. Inundation of mine pit due to flood/excessive rains,
- iii. Accident due to transport & other equipments, Safety and Environmental aspects.



**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT****Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District****Table 7.1 Risk Assessment and Disaster Management Plan**

<b>S. No</b>	<b>Hazards</b>	<b>Mitigation measures</b>
1	Surface Fire	<ul style="list-style-type: none"><li>➤ Fire Extinguishers</li><li>➤ Sand Buckets</li></ul>
2	Explosives/Blasting	<ul style="list-style-type: none"><li>➤ The applicant is directly purchasing explosives from an authorized dealer and they are blasting with help of certified blaster. Agreement is made with License holder in Form-22 for store, use and sale of explosives.</li><li>➤ Shot holes blasting using compressor and Jack Hammers combination are adopted to release the mineral.</li></ul>
3	Flooding of Rain water	<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></ul>
4	Radioactive hazard	<ul style="list-style-type: none"><li>➤ Not Anticipated</li></ul>
5	Failure of Mine Benches and Pit Slope	<ul style="list-style-type: none"><li>➤ Ultimate or over all pit slope shall be 45° and each bench height shall be 6m height equal to the boom height of excavator and vertical.</li><li>➤ During working normally 3-6m will be maintained as per the plan.</li></ul>
6	Failure of Waste Dumps	<ul style="list-style-type: none"><li>➤ Stabilization of dump with top soil and tree plantation shall make the dump more stable.</li><li>➤ Garland drainage around dump shall prevent under wash of dump by hydrostatic pressure to be developed by surface water and control wash outs and collapse.</li></ul>
7	Dust	<ul style="list-style-type: none"><li>➤ Periodical wetting of land by spraying solutions.</li><li>➤ Regular water sprinkling on haulage roads</li><li>➤ Provision of Dust mask to workers</li><li>➤ Green Belt shall be carried out within the mine premises by planting trees, to improve the aesthetics of the area and also to reduce the pollution outside the activity area</li></ul>
8	Noise	<ul style="list-style-type: none"><li>➤ Rotation of workers to minimize exposure time of noise</li><li>➤ The equipments and machineries shall be</li></ul>

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District

		<p>maintained properly</p> <ul style="list-style-type: none"><li>➤ Provision of earmuffs to workers</li></ul>
9	Transportation	<ul style="list-style-type: none"><li>➤ Convex 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>➤ Regular checking of brakes to avoid failures</li><li>➤ Periodical maintenance of vehicles</li></ul>
10	General measures	<ul style="list-style-type: none"><li>➤ No entry for any unauthorized persons</li><li>➤ S1 type fencing as per DGMS circulars</li><li>➤ Quarrying as per Approved Plans only</li><li>➤ Provision of Personal Protective Equipments</li><li>➤ In case of any closure of mine the compensation under Industrial Dispute Act will be paid as per law</li></ul>

### 7.2.1 Care and Maintenance during temporary discontinuance

Watch and ward are provided permanently in the Mine premises to monitor the Mine openings to prevent inadvertent entry. Top soil bund is made partly and Stone fencing is proposed all around lease boundary to safe guard the mine and the adjacent livings. Temporary discontinuance will be minimal as there is good demand for this material in construction work.

### 7.2.2 Economic repercussions of closure of mine and manpower retrenchments

#### 7.2.2.1 Number of local residents employed in the mine, status of continuation of family occupation and scope of joining occupation back

There are 23 person employed in the quarry. Most of labors are Agriculturist. In case of closure of mine, they may continue their own work.

#### 7.2.2.2 Compensation given or to be given to the employees connecting with sustenance of himself and their family members

In case of any closure of mine the compensation under Industrial Dispute Act will be paid as per law. All workers shall get retrenchment benefits as per labour laws under enforcement.

#### 7.2.2.3 Satellite occupations connected to the mining industry – number of persons engaged therein – continuance of such business after mine closes

The quarrying activity shall lead to development of several ancillary units and business, which are explained below:

- i. Other than mine employment, workshops, spare parts, hotels, tea shop and related several self-employment opportunities.
- ii. Several shops and service providers shall grow in the public adjacent to mines.
- iii. Schools and city development shall also be possible owing to the fact of economic growth in the village.

#### **7.2.2.4 Continued engagement of employees in the rehabilitate status of mining lease area and any other remnant activities.**

In the event of closure of mine, the mine worker shall get alternate work or business like agriculture etc. No serious repercussions envisaged in the event of cessation of mining activity, as they will be provided employment in other mines belong to the company.

#### **7.2.2.5 Envisaged repercussions on the expectation of the society around due to closure of mine**

Persons on roll at the time of closure will get benefit as per State Govt. guidelines as applicable at the time of retrenchment.

#### **7.2.3 Time Scheduling for abandonment**

The following works are scheduled before abandoning the mine,

- i. Parapet wall of 2m height will be constructed around the pit,
- ii. Planting and monitoring of Afforestation program.

There is no proposal for closure of mine for the next 10 years. The parapet and plantations will be done during operation of mine. In case of any abandonment the following time is required,

<b>Activities</b>	<b>Days for schedule</b>
Time schedule for fencing	6 months
Time schedule for reclamation of mined out area	1 year

### 7.3 Social Impact Assessment, R&R Action Plans

The Multi Colour Granite quarry project of M/s. Sivasakthi does not involve any kind of displacement of the population since the mining will be concentrated only in the mining area only. Not much disturbance in respect of fauna, flora and human settlement of the villages. The impact of mining activity on the population will be insignificant. Hence, Rehabilitation of settlements is not anticipated under this project as it will not be required. Thus R&R Action Plans not proposed.

The project proponent will help in uplifting the poor section of the society as part of CSR activity by undertaking social welfare programs. The Project proponent contributes 2.5% of profit towards CSR activities. This project will have a positive impact on the socio economic as it will provide considerable employment to the families in the nearby villages. Improved health care facilities are expected to come up in the area for catering to the health needs of the miners. The impact of mining on the civic amenities will be substantial after the commencement of mining activities. The local people who are currently depending on forest and agriculture will have new avenue from the mine.

### 7.4 Detail study of Rainwater harvesting after the completion of project.

I. Total Pit Area	= 6925m <sup>2</sup>
II. Annual rainfall of the area	= 0.71654 m
III. Total rainwater available to store in pit area	= 4962m <sup>3</sup>
IV. Total volume of quarried pit	= 228525m <sup>3</sup>

Since the rainwater directly getting stored in the quarried pit, the runoff will not take place. The Quarried Pit will be act as **Artificial Ground Water Recharge Pond**.

After the rainwater getting stored in quarried pit, the water slowly infiltrates into the ground and reaches the ground water table. This will greatly increase the ground water table around the lease area.

By electrical resistivity survey it is found that there is massive rock formation at 33m bgl. So the infiltration rate of rain water is very less. If the rain water stored in pit for long period the evaporation loss will take place.

Meyer's Formula (1915) is used to find the loss of water in pit due to natural evaporation process.

**Meyer's Formula (1915)**

$$E_L = K_M (e_w - e_a) (1 + u_9/16)$$

Where

- $E_L$  = Evaporation Rate (mm/day)
- $e_w$  = the saturation vapor pressure at the water temperature in mm of mercury
- $e_a$  = the actual vapor pressure in the air in mm of mercury
- $u_9$  = monthly mean wind velocity in km/h at about 9m above ground
- $K_M$  = coefficient accounting for various other factors with a value of 0.36 for large deep and 0.50 for small shallow waters.

Here,

$e_w$  = 35.01 mm of Hg (considered average temperature in Namakkal district during summer season)

$e_a$  =  $0.61 \times 31.83 = 19.4$  mm of Hg. (0.61 is Humidity)

$u_1$  = 10.6 km/hr

$u_9$  =  $10.6(9)^{1/7} = 13.7$  km/hr

Substitute the above parameters in Meyer's equation,

$$E_L = 0.36 (35.01 - 19.4) (1 + 13.7/16)$$

$$E_L = \mathbf{10.4 \text{ mm/day or } 0.014\text{m/day}}$$

$$\mathbf{\text{Evaporated Volume per day} = 6925 \times 0.014 = 96.95\text{m}^3/\text{day or } 96.95 \text{ KLD}}$$

The total quantity of rain water to be stored in quarried pit is  $4962\text{m}^3$ . The evaporation rate of water per day is  $101\text{m}^3$  based on the average temperature in Namakkal District. It takes nearly 2 months for the complete evaporation of water. Before that the stored water will be used to irrigate the crop around the quarry area.

Other benefits are that the water will be used for the domestic purposes after the water properly treated by Sedimentation-Filtration processes. A higher quantity of about 20 liters **per capita per** day should be assured to take care of basic hygiene needs and basic food hygiene.

Thereby the Proposed quarry benefits the daily needs of water to so many families around the quarry area for every year. This is very important **positive impact** of the proposed Rock Exports, Multi Colour Granite Quarry, of M/s. Sivasakthi Rock Exports

### 7.5 Plastic/Microplastic waste Management Plan

This is proposed Multi Colour Granite quarry. So the project does not need any plastic related material for quarry operations. The plastic materials will be used by the employee and labours in the form of carry bags, water bottles, etc. To avoid such situations the employees and labours will be strictly instructed to avoid the plastic materials in the lease area. Moreover they will be advised to use cloth bags, jute bags and bring the food by Steel tiffin box.

Water will be provided by the project proponent for both drinking and domestic purposes. So the dustbins will not be needed in the quarry. To manage the unavoidable situations, Dustbins will be placed in the quarry for both decompose and non-decompose waste separately of Municipal solid waste. The collected waste will be disposed periodically as instructed by TNPCB. The board with the instruction "**Avoid plastics**" is placed in the two sides of quarry and awareness program will be conducted to the labours monthly once.

Microplastics are small pieces of plastics less than 5mm. As usage of plastics is totally devoid in the quarry premise, the chance of Microplastic pollution is negligible inside the lease area.



## **CHAPTER – 8: PROJECT BENEFITS**

Mining activity will help in improving the socio-economic benefits in areas like employment, communication and infrastructure development etc.

### **8.1 Physical Infrastructure**

The Multi Colour Granite project located in Nadanthai Village of Namakkal District has well established roads, communications and other facilities. The impact on the civic amenities will be substantial after increasing the mining capacity.

The following physical infrastructure facilities will further improve due to mine.

- ❖ Afforestation
- ❖ Road Transport facilities
- ❖ Communications
- ❖ Housing facilities
- ❖ Water supply and sanitation
- ❖ Medical, Educational and social benefits will be made available to the nearby civilian population in addition to the workmen employed in the mine.

Under plantation program, it is suggested to develop green belt further all along the boundary of mining lease area. The species to be grown in the areas will be dust tolerant and fast growing species so that a permanent green belt is created. Apart from the green belts and aesthetic plantation for eliminating fugitive emission and noise control, all other massive plantation efforts will be executed with the assistance of experts and cooperation of the local community.

### **8.2. Social Infrastructure**

The mining activity will create rural employment. It has been observed that local people mainly depend upon agricultural, where the income is irregular and low. The mining activity in the region will have positive impact on the social economic condition of the area by way of providing employment to the local in-habitants; wages paid to them will increase the per capita income, housing, education, medical and transportation facilities, economic status, health and agriculture by improving the life style of the people. 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. Part of the royalty is given to local bodies by the State Govt. for the welfare and development of the village. District Mineral Fund @30% of the Royalty shall be given to the Dept. of Geology and Mining, Namakkal District. The State Government

will also benefit directly from the mine, through increased revenue from royalties, excise duty and etc...

### **8.3 Employment Potential**

The proponent employed about 23 persons for carrying out the mining operations of which 4 are skilled, 8 semi-skilled, 6 unskilled worker personnel. In addition there will be indirect employment to many more people in the form of contractual jobs like construction of infrastructural facilities, transportation of Granite to destinations, sanitation, supply of goods and services to the mine and other community services, etc... The local population will have preference to get an employment. The economic status of the local people will be enhanced due to mining project.

### **8.4 Other tangible benefits**

#### **8.4.1 Corporate Social Responsibility**

Corporate Social Responsibility (CSR) refers to voluntary actions undertaken by the project proponent either to improve the living conditions (economic, social, environmental) of local communities or to reduce the negative impacts of mining activity. By definition, voluntary actions are those that go beyond legal obligations, contracts, and license agreements.

CSR programs usually invest in infrastructure (potable water, electricity, schools, roads, hospitals, hospital equipment, drainage repairs, etc.), building social capital (providing high-school and university education, providing information on HIV prevention, workshops on gender issues, information on family planning, improving hygiene, etc.), and building human capital (training local people to be employed by the mining enterprise or to provide outsourced services, promote and provide skills on micro business, aquaculture, crop cultivation, animal rearing, textile production, etc.)

#### **8.4.2 CSR activities**

The following activities which may be included by companies in their Corporate Social Responsibility Policies are notified as CSR activities under Schedule VII ((See section 135) of the Companies Act 2013:

- i. Eradicating extreme hunger and poverty;
- ii. Promotion of education;
- iii. Promoting gender equality and empowering women;



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- iv. Reducing child mortality and improving maternal health;
- v. Combating human immunodeficiency virus, acquired immune deficiency Syndrome, malaria and other diseases;
- vi. Ensuring environmental sustainability;
- vii. Employment enhancing vocational skills;
- viii. Social business projects;
- ix. Contribution to the Prime Minister's National Relief Fund or any other fund set up by the Central Government or the State Governments for socio-economic development and relief and funds for the welfare of the Scheduled Castes, the Scheduled Tribes, other backward classes, minorities and women; and
- x. Such other matters as may be prescribed.

The Board of every company referred to in sub-section (1), shall ensure that the company spends, in every financial year, at least 2% of the average net profits of the company made during the three immediately preceding financial years, in pursuance of its Corporate Social Responsibility Policy. Provided that the company shall give preference to local area and areas around it, where it operates for spending the amount earmarked for Corporate Social Responsibility activities. Provided further that if the company fails to spend such amount, the Board shall report under clause (d) of sub-section (3) of section 134, specify the reasons for not spending the amount.

**Explanation:** For the purposes of this section "average net profit" shall be calculated in accordance with the provisions of section 198.

### 8.4.2.1 CSR Cost Estimation

CSR activities will be taken up in the nearby villages 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.

i)	Sale value	=	Rs 18,000 per MT
ii)	Production cost	=	Rs 15,000 per MT
iii)	Profit	=	Rs 3000 per MT
iv)	Production	=	7,527 MT/year
v)	Hence, Total Profit	=	7,527 x 3000/MT
		=	Rs. 2,25,81,000/-
vi)	CSR @ 2.5 % Profit	=	Rs. 2,25,81,000 x 2.5%
		=	Rs 5,64,525/Year

**(As per the Companies Act, 2013 and CSR Rules, 2014)**

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Under this programme, the project proponents will take-up following activities for social and economical development of villages through local panchayat.

- ✚ Employment to eligible persons during operational phase of the mine
- ✚ Conducting Medical Camps
- ✚ Infrastructure Development like repair of roads, renovation of ponds, rainwater harvesting schemes, etc...
- ✚ Financial grant to the existing educational institutions for development of physical infrastructures
- ✚ Training for Self Employment
- ✚ Plantation in villages and all along roads.
- ✚ Providing solar lamps to nearby schools and villages by going eco-friendly.

### 8. 4.3 Corporate Environment Responsibility (CER)

<b>CER Activity</b>	<b>Project Cost (Rs. In Lakhs)</b>	<b>Cost allocated for CER activity (Rs. In Lakhs)</b>
Developing Sanitary facilities and Library Facilities, RO Water supply system, tree plantation and environmental awareness sign Boards to Government High School, Nadanthai Village.	85.5	5.0
Total Cost Allocation	85.5	5.0

**CHAPTER – 9: ENVIRONMENTAL COST BENEFIT ANALYSIS**

**9.0 PROJECT COST**

After making exhaustive study, it is considered that the mining project may be implemented.

Project cost for the existing Multi Colour Gravel Quarry of M/s. Sivasakthi over an area of 1.62.0 Ha falling in Nadanthi village in Namakkal district is Rs. 85,50,000/- and EMP Cost is Rs. 7,30,000/-

- This project provides direct employment to 23 people and indirect employment to nearly 20 people. In a family 5 persons, totally 215 persons will get benefit because of the project.
- Surrounding people will get benefit as they get Granite for construction purposes with less transportation cost.
- The Management will ensure good production and in turn there will be good revenue to the Government of Tamil Nadu and Government of India through taxes. The industry is an asset to the nation.
- At the end of the project the pit will act as rain water harvesting tank which is useful for agricultural purpose. Thereby it will increase the survival of people around the quarry.

**CHAPTER - 10: ENVIRONMENTAL MANAGEMENT PLAN**

The **Environment Management Plan (EMP)** is required to ensure sustainable development in the study area. Hence it needs to be a comprehensive plan for which the industry, Government, Regulating agencies likes Pollution Control Board working in the region and more importantly the population of the area need to extend their co-operation and contribution.

It has been evaluated that the project area will not be affected significantly due to mining activity. Mitigation measures at the source level and an overall Management Plan at the site level are elicited so as to improve the surrounding environment.

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**Table 10.1 Environmental Management Plan**

S.No	Parameters	Mining Activity	Mitigation measures
1	Air Environment	Drilling	<ul style="list-style-type: none"> <li>○ Dust extractor or wet drilling to be followed to control dust at source of emission</li> <li>○ Use of Sharp drill bits for drilling holes and charging the holes by using optimum charge and using time delay detonator</li> </ul>
		Blasting	<ul style="list-style-type: none"> <li>○ Regular water sprinkling on blasted heaps at regular intervals will help in reducing considerable dust pollution</li> </ul>
		Loading	<ul style="list-style-type: none"> <li>○ Water sprinkling be done before loading by making it moist</li> </ul>
		Transportation	<ul style="list-style-type: none"> <li>○ Water sprinklers along the sides of haul road shall be fixed to control fly of dust while transporting minerals and waste</li> <li>○ Overloading will be prevented</li> <li>○ Trucks/Dumpers covered by tarpaulin covers</li> </ul>
		DG Sets	<ul style="list-style-type: none"> <li>○ DG sets will be used only during power failure</li> <li>○ Adequate stack height for DG sets will be provided as per CPCB norms</li> </ul>
		General measures	<ul style="list-style-type: none"> <li>○ Avenue trees along roads around ML boundary shall be planted as per the norms of MoEF to control fly of dust.</li> <li>○ Labours engaged in such dust prone areas should be provided with safety devices like ear muff, mask, and goggles as per the MMR, 1961 amendments and circulars of DGMS.</li> <li>○ Regular health check-up of workers and nearby villagers in the impacted area should be carried out and also regular occupational health assessment of employees should be carried</li> </ul>

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			<p>out as per the Factories Act</p> <ul style="list-style-type: none"> <li>○ Ambient Air Quality Monitoring will be conducted on regular basis to assess the quality of ambient air.</li> </ul>
2	Water Environment	Surface water	<ul style="list-style-type: none"> <li>○ Wastewater discharge from mine if any will be treated in settling tanks before using for dust suppression and tree plantation purposes.</li> </ul>
		Ground water	<ul style="list-style-type: none"> <li>○ The mining activity will not intersect the ground water table</li> <li>○ De silting will be carried out before and immediately after the monsoon season</li> </ul>
		Storm water	<ul style="list-style-type: none"> <li>○ Pit will be used for Storage of rainwater</li> <li>○ Rain water 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.</li> <li>○ The proponent will collect and judiciously utilize the rainwater as part of rain water harvesting</li> </ul>
		General measures	<ul style="list-style-type: none"> <li>○ Regular monitoring and analyzing the quality of water</li> </ul>
3	Noise Environment	Drilling	<ul style="list-style-type: none"> <li>○ Limiting time exposure of workers to excessive noise</li> </ul>
		Blasting	<ul style="list-style-type: none"> <li>○ Carrying out blasting only during day time and not on cloudy days</li> <li>○ Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent</li> </ul>

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			<ul style="list-style-type: none"> <li>○ blow out of holes.</li> <li>○ Providing proper noise proof enclosure for the workers separated from the noise source and noise prone equipment</li> </ul>
		Transportation	<ul style="list-style-type: none"> <li>○ Proper and regular maintenance of vehicles, machinery and other equipments.</li> <li>○ The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments.</li> <li>○ Speed of trucks entering or leaving the mine will be limited to moderate speed to prevent undue noise from empty vehicles.</li> <li>○ Adequate silencers will be provided in all the diesel engines of vehicles.</li> <li>○ Minimum use of horns and speed limit of 10 km/hr in the village area.</li> <li>○ It will be ensured that all transportation vehicles carry a valid PUC Certificates</li> </ul>
		General measures	<ul style="list-style-type: none"> <li>○ Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas</li> <li>○ Provision of Quiet areas, where employees can get relief from workplace noise.</li> <li>○ The development of green belts around the periphery of the mine to attenuate noise.</li> <li>○ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.</li> </ul>
4	Vibration	Blasting	<ul style="list-style-type: none"> <li>○ No deep holes blasting envisaged.</li> </ul>

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			<ul style="list-style-type: none"> <li>○ Small dia shot holes are used for breaking boulders.</li> <li>○ Specific charge pattern has to be designed by proper trial vibration studies with varying charge ratios.</li> <li>○ If the vibration still exceeds the limit a long Trench to a depth of 6m may cut in the direction of wave's movement to break longitudinal waves which travel close to surface, preferably near mine buffer zone</li> <li>○ In spite of all measures periodical testing of vibration and noise using approved seismograph by DGMS has to be followed as a part of Environmental monitoring</li> </ul>
5	Soil Environment	Topsoil	<ul style="list-style-type: none"> <li>○ Humus top soil shall be preserved for reuse in afforestation and agriculture</li> <li>○ Top soil should not be mixed with other waste or reject materials. It should be conserved by judicious utilization in the mine premises</li> <li>○ Garland drains will be provided around the mine and dumps to arrest any soil from the mine area being carried away by the rain water. This will also avoid the soil erosion and siltation in the mining pits and maintaining the stability of the benches</li> </ul>
6	Waste Dump	Stabilization of Dumps	<ul style="list-style-type: none"> <li>○ The rejects\ waste dump shall be properly terraced in to 1.5m benches with proper repose angle and then the top soil shall be spread over the dumps and slope to make them humus for some time, after the soil suitable for water retention trees will be planted at the top, slope and toe of the stabilized dumps to form</li> </ul>



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			<p>vegetation.</p> <ul style="list-style-type: none"> <li>○ Garland drainage around dump shall prevent under wash of dump by hydrostatic pressure to be developed by surface water and control wash outs and collapse</li> <li>○ Dump should be terraced for every 5m height and stabilized</li> </ul>
7	Plantation	Mine lease boundary and waste dump	<ul style="list-style-type: none"> <li>○ Provision of green belt all along the periphery of the lease area for control of dust and to attenuate noise</li> <li>○ Stabilization of Dump with plantation</li> <li>○ It is strongly recommended that the loss of plant in each year will be counted and again planted in subsequent plantation.</li> <li>○ The plant should be planted taken from nursery, where the survival rate is high.</li> </ul>
8	Land Environment		<ul style="list-style-type: none"> <li>○ The restoration of the degraded land would cover backfilling and terracing with the overburden / wastes and surfacing the same with top soil.</li> <li>○ Provision of Garland drainage around the dumps</li> <li>○ Fast growing trees and other native shrubs would be planted to stabilize the reclaimed land</li> <li>○ Appropriate measures will be taken for Green belt development.</li> <li>○ The rain water will be stored in the pit which will recharge the ground water as a part of rain water harvesting scheme for irrigating the nearby agricultural lands.</li> </ul>
9	Socio Economic		<ul style="list-style-type: none"> <li>○ Good maintenance practices will be adopted for machinery and equipment, which will help to avert potential noise problems.</li> </ul>

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		<ul style="list-style-type: none"><li>○ Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.</li><li>○ Drilling, blasting etc at specified location will be followed with proper schedule.</li><li>○ Appropriate air pollution control measure will be taken so as to minimize the environmental impact within the core zone.</li><li>○ An emergency preparedness plan will be prepared in advance, to deal with firefighting, evacuation and local communication.</li><li>○ For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices has been provided which meet 'BIS' (Bureau of Indian Standards).</li><li>○ As a part of CSR activities, community welfare activities will be undertaken by the proponent which leads to socio economic development</li></ul>
10	Occupational Health	<ul style="list-style-type: none"><li>○ First-aid facilities as per provisions under Rule (44) of Mines Rules 1955</li><li>○ Initial and Periodical medical examination shall be conducted for the employees under Rule 29B &amp; 45 (A).</li><li>○ Insurance will be taken in the name of the labourers working in the mines</li><li>○ Workers involved in mining work shall be provided protective equipments such as Thick Gloves, Goggles, ear plugs, safety boot wears, etc...</li></ul>

### 10.1 Description of the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored, after approval of the EIA

In order to maintain the environmental quality within the standards, regular monitoring network to maintain environmental quality will be implemented.

**Table 10.2 EMP Budget for Plan period**

S. No	Description	Budget
1.	Personal protective equipment	Rs 1,00,000
2.	Environmental Monitoring	Rs 2,30,000
3.	Occupation Health	Rs 1,00,000
4.	Green Belt & Dust suppression	Rs. 3,00,000
	<b>Total</b>	<b>Rs.7.3 lakhs</b>

**Table 10.3 Budget Allocation for Mine Closure Plan as per ToR**

S. No	Description	Budget
1.	Parapet wall around dump (1m = Rs 500)	Rs 1,00,000
2.	Fencing around mines	Rs 2,00,000
3.	Making Pit for pond after the activity of mines	Rs 50,000
4.	Green belt development	Rs 1,00,000
	<b>Total</b>	<b>Rs 4.5 lakhs</b>

**CHAPTER – 11: SUMMARY AND CONCLUSIONS**

**11.0 INTRODUCTION**

The applicant, **M/s. Sivasakthi Rock Exports** having registered office at No: G3, Vairam Vasandam, Vairam Gardens, Sambakulam, K.Pudur, Madurai District and Tamilnadu are a partnership firm managed by Thiru.S.M.Govindaraj. They have been granted mining lease from the State Government over an extent of 1.62.0 Hectares in 480/1(part), Nadanthai Village, Paramathi Velur Taluk, Namakkal District for quarrying Multi colour granite blocks under G.O. (3D).No: 11 Industries (MMB-2) Dept. dated 12.03.2018 for the period of 20years.

The mining plan was prepared based on the precise area communication letter vide No. 15473/MMB.2/ 2017-1, Dated 07.12.2017 and the same was approved by the Commissioner of Geology and Mining, Chennai vide letter No. 7781/MM5/2017 dated 05.01.2018.

An environment clearance for M/s. Sivasakthi Rock Exports was obtained from District Environmental Impact Assessment Authority vide letter no. DEIAA-NMK-TN/F.No.259/Mines/03/EC.No.03/2018, Dated 23.02.2018 for operating multi color granite quarry for the period of five years. The lease deed was executed on 12.04.2018 and will expire on 11.04.2038.

Scheme of mining has to be prepared under Rule 18 (3) of GCDR, 1999 and Rule 41 of TNMMCR, 1959 for the existing mining lease once in five years for systematic and scientific development of quarry. Accordingly, the 1st scheme of mining has been prepared for the period from 2023-2024 to 2027-2028 for this existing quarry and it has been approved by Commissioner, Department of Geology and Mining, Guindy, Chennai, vide letter Rc.No.8442/MM4/2022 dated 10.01.2023.

Recently MoEF&CC has issued OM vide F.No.IA3-22/11/2023-IA.III (E-208230) dated 28.04.2023. In this notification, it is stated that the EC issued by DEIAA between 15.01.2016 and 13.09.2018 shall be reappraised through SEAC/SEIAA and EC shall be issued by SEIAA within the period of 1 year.

As per the cluster letter issued by Assistant Director, Department of Geology and Mining, Namakkal vide Rc.No.1250/Mines/2022 dated 30.05.2023, three existing quarries namely M.M.Exports with an extent of 2.75.5 Ha, Tmt.V.Punitha with an extent of 2.86.5 Ha and M/s.Sivasakthi Rock Exports with an extent of 1.62.0 Ha and one lease expired quarry namely J.A.Richard with an extent 1.76.0 Ha located within 500m radius of proposed project site. The total area of cluster is 9.00.0 Ha. The

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extents of lease area of all lessees as per cluster letter of M/s. Sivasakthi Rock Exports (1.62.0 Ha), are given below.

### **Existing Quarries**

1. J.A. Richard	–	1.76.0 Ha
2. M.M.Exports	–	2.75.5 Ha
3. Tmt.V.Punitha	–	2.86.5 Ha
4. M/s. Sivasakthi Exports	–	1.62.0 Ha

Based on MoEF&CC OM vide F.No.IA3-22/11/2023-IA.III (E-208230) dated 28.04.2023 and cluster letter issued by Assistant Director, Department of Geology and Mining, Namakkal, the lessee made TOR application through PARIVESH website to carry out EIA Studies for obtaining Environmental clearance. The details are given in below Table 1.1.

**Table 11.1 Details on Terms of Reference**

<b>S. No</b>	<b>Name of Applicant</b>	<b>ToR Application No</b>	<b>SEAC and SEIAA Meeting No</b>	<b>TOR Letter No</b>
1	M/s. Sivasakthi Rock Exports	SIA/TN/MIN/432724/2023 dated 09.06.2023	394 <sup>th</sup> SEAC Meeting, dated 21.07.2023 and 644 <sup>th</sup> SEIAA Meeting dated 07.08.2023	Lr.No.SEIAA-TN/F.No.10140/ToR-1529/2023 dated 07.08.2023

The Draft EIA report has been prepared based on the Terms of Reference issued by SEIAA. The points raised in the public hearing and the commitments of the project proponent will be given detail in the Final EIA Report which will be submitted to SEAC/SEIAA, TN for obtaining environmental clearance.

### **11.1 SCOPE OF THE PROJECT**

The proposal for Environmental Clearance of Existing Multi color granite quarry of **M/s. Sivasakthi Rock Exports** require EIA/EMP Report as per Terms of Reference for conducting public hearing and obtaining environmental clearance from SEAC/SEIAA.

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**11.2 PROJECT DESCRIPTION**

**Table No 11. 2 Project Details**

<b>Project Details</b>				
Proponent	M/s. Sivasakthi Rock Exports			
Total Mine Lease Area	1.62.0 Ha (Patta Land)			
Survey No.	480/1(P)			
Site Location	Nandanthai Village, Paramathi Velur Taluk, Namakkal District, TamilNadu.			
Geographical Co-ordinates	Latitude: 11°11'06.7372" N to 11°11'12.6115"N Longitude: 77°58'09.5551"E to 77°58'14.6753"E.			
Toposheet No.	58E/16			
Elevation	Elevation of the area is 196m above MSL			
<b>Accessibility</b>				
Nearest Habitation	150m - NW			
Nearest Village	Surampalayam – 0.35km – NW			
PMHC	Paramathi Government Primary Hospital – 6.39 km - SE			
Nearest Settlement	<b>Name of Village</b>	<b>Direct-ion</b>	<b>Distance from Mines (km approx.)</b>	<b>Population</b>
	Sirapalli	NW	1.39	1342
	Rangampalayam	S	1.95	2583
	Kabilakuruchi	SW	3.45	3775
	Manickanatham	SE	3.40	1823
Nearest Town	Paramathi– 6.0km - SE			
Nearest Roadway	NH - 44 (Kashmir – Kanyakumari) – 6.6km - SE SH-86 (Thiruchengode – Paramathy velur)– 2.9km – NE MDR-885 (Pasur – Vellodu) –1.08km –W Surampalayam Village Road – 450m - NW			
Nearest Railway station	Unjalur Railway station – 11.84km - SW			
Nearest Airport	1. Salem Domestic Airport – 66.60 km – NE 2. Trichy International Airport – 93.13km - SE			
<b>Environmental Sensitiveness</b>				
Interstate Boundary	Karnataka-Tamil Nadu interstate boundary is located at a distance of 86.84 km in NW direction.			
Coastal Zone	Bay of Bengal – 176.80 km - SE.			
Reserve Forest	No forest is located within 10km radius of the project site.			

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	The nearest R.F is Selur Extension R.F – 34km – E. The proposed project site is not a forest land. Hence it does not attract Forest Conservation Act, 1980
National Park/Wildlife sanctuary	Vellode Birds Sanctuary – 34.78km – NW. It is notified birds sanctuary. There is no wild life sanctuary found within 10 Km radius from the proposed area and this project doesn't fall under the Wildlife (Protection) Act, 1972.
Water bodies	Important water bodies within 10 km radius 1. A lake – 2.3km – SE 2. Thirumanimutharu river – 5.0km – NE 3. Mavureddy lake – 5.1km – SE 4. Pallapalayam lake – 7.2km – SW 5. Idumbankulam lake – 7.4km – SE 6. Cauvery River – 9.6km – SW. 7. Mariyamman Padugai dam across Cauvery River – 9.7km - SW
Defense Installations	Nil within 10km radius
Critically Polluted area	Nil within 10km radius
Quarries around 500m radius (AD Letter furnished)	Three existing quarries namely M.M.Exports with an extent of 2.75.5 Ha, Tmt.V.Punitha with an extent of 2.86.5 Ha and M/s. Sivasakthi Rock Exports with an extent of 1.62.0 Ha and Lease expired quarry namely J.A.Richard with an extent 1.76.0 Ha located within 500m radius of project site as per AD cluster letter Roc.No.1250/Mines/2022 dated: 30.05.2023.
<b>Mining Details</b>	
<b>Particulars</b>	<b>Details</b>
Method of Mining	Open cast – mechanized mining
Geological resources	3,73,294m <sup>3</sup>
Mineable reserves	92,356m <sup>3</sup>
Production	15,054m <sup>3</sup> @30% of granite for five years and 3,011m <sup>3</sup> per annum.
Reject	3,5128 m <sup>3</sup> @ 70% for five years (2023-24 to 2027-28)
Top soil	Top soil– 6,624m <sup>3</sup> for plan period
Weathered rock	5,896m <sup>3</sup>
Ore: Waste ratio	1: 3.16
Depth of Mining	33m
Water Table	45m bgl

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Road design	1: 10 inside the pit and ramp 1:16 for transport			
Overall Pit Slope	45°			
Period of Lease	20 Years (12.04.2018-11.04.2038)			
Existing pit dimension	<b>Pit</b>	<b>L(m)</b>	<b>W(m)</b>	<b>D(m) RL</b>
	I	56m	42m	173-159m
	II	26m	14m	159-151m
	III	62m	39m	173- 157m
	IV	37m	22m	157-149m

### 11.3 Description of the environment

#### 11.3.1 Base line environmental study

Collection of base line data is an integral part of the preparation of environmental impact assessment reports. The baseline monitoring study has been carried out during March 1<sup>st</sup> 2023 – May 31<sup>st</sup> 2023 to assess the existing environmental scenario in the area. For the purpose of EIA studies, mine lease area was considered as the core zone and area outside the mine lease boundary up to 10km radius from the lease boundary was considered as buffer zone.

**Table No 11.3 Baseline Data**

Particulars	Details	Standards
<b>Meteorology (March 1<sup>st</sup> 2023 – May 31<sup>st</sup> 2023)</b>		
Rainfall (Avg.)	19-117 mm	--
Temperature (Avg.)	29-31°C	--
Wind speed	2.19-2.25 m/s	--
Wind Direction	Predominantly from North, North east, West	
<b>Ambient Air Quality (NAAQS)</b>		
PM <sub>10</sub>	47-51 µg/m <sup>3</sup>	100 µg/m <sup>3</sup>
PM <sub>2.5</sub>	26-29 µg/m <sup>3</sup>	60 µg/m <sup>3</sup>
SO <sub>2</sub>	7-12 µg/m <sup>3</sup>	80 µg/m <sup>3</sup>
NO <sub>x</sub>	17-22 µg /m <sup>3</sup>	80 µg/m <sup>3</sup>
<b>Noise Level (CPCB Standards)</b>		
Day time (6:00 am - 10:00 pm)	Core zone – 38.2-41.3 dB (A)	<b>Industrial Area</b> Day Time - 75 dB (A)
	Buffer zone – 38.6- 44.6 dB (A)	<b>Residential Area</b> Day Time – 55 dB (A)



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Night time (10:00 pm - 06:00 am)	Core zone – 37.1 – 38.5 dB (A) Buffer zone – 34.5 - 42.7 dB(A)	<b>Industrial Area</b> Night Time – 70 dB(A) <b>Residential Area</b> Night Time – 45 dB (A)
<b>Water Quality IS 10500:2012 (Desirable limits)</b>		
pH	7.16-7.64	6.5 to 8.5
TDS	480-1110 mg/l	500 mg/l
Electrical conductivity at 25°C	823-1800 micromhos/cm	-
Total Hardness as CaCO <sub>3</sub>	218-755 mg/l	200 mg/l
Silica SiO <sub>2</sub>	-	-
Total suspended solids	2-4	IS:3025:P.16:1984:R.2012
Chlorides Cl	156-419mg/l	250
Total iron Fe	0.04-0.08mg/l	0.3mg/l
Sulfates SO <sub>4</sub>	10-38mg/l	200 mg/l
<b>Soil Quality</b>		
pH	7.85-8.64	Neutral to slightly alkaline
Bulk density	1.03-1.44 g/cc	Favorable physical condition for plant growth
<b>Hydro Geology</b>		
Depth of Mining	33m bgl	
Water Table	45m bgl	

**11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES****11.4.1 Air Environment**

The air borne particulate matter is the main air pollutant by opencast mining. The mining operation will be carried out by adopting mechanized methods which involves Jack Hammer drilling and blasting, excavation, loading and transportation.

AERMOD - Model was used for prediction of impact of PM<sub>10</sub> during conditions  
i) Loading/unloading and transportation of ore by trucks on Haul roads ii) Blasting by using area source model to predict GLC of PM<sub>10</sub> during these conditions. Total predicted 24-h maximum GLC of PM<sub>10</sub> at project site for scenario 1 i.e loading-

unloading and transportation and scenario 2 i.e blasting was  $67.89\mu\text{g}/\text{m}^3$  and  $59.45\mu\text{g}/\text{m}^3$  respectively occurred at the project site after superposition of base-line value  $51\mu\text{g}/\text{m}^3$  over the incremental  $16.89\mu\text{g}/\text{m}^3$  and  $8.45\mu\text{g}/\text{m}^3$  respectively due to combined impact of loading and unloading and transportation over the haul road and due to blasting.

The predicted incremental GLC of  $\text{SO}_x$  and  $\text{NO}_x$  for scenario 3 i.e. due to the operation of excavator and movement of vehicle in the project site were found to be BDL  $\mu\text{g}/\text{m}^3$  for both  $\text{SO}_x$  and  $\text{NO}_x$ . Maximum Impact of  $\text{PM}_{10}$  was observed close to the source within the lease area due to moderate wind speeds.

#### **11.4.2 Noise Environment**

Noise pollution poses a major health risk to the mine workers. The sources of noise in the existing open cast granite quarry are such as Drilling, Blasting, and during movement of vehicles.

The noise generated by the mining activity is dissipated within the core zone. This is because of distance involved and other topographical features adding to the noise attenuation. From the results, it can be seen that the ambient noise levels (day time and night time) at all the locations will remain within permissible limits prescribed by CPCB and 90dB (A) norms of DGMS. At present there is no mining activity carried out. However, the expected noise levels are not likely to have any effect. Precaution will be made to keep down the noise exposure level of 85 dB (A) to the operating personnel for 8 hrs duration. The charge per blast of 12kg is below the Peak Particle Velocity of 5mm/s for the habitation located at the distance of 148m. So ground vibrations due to blasting activities will not cause any impact to the nearest habitations.

#### **11.4.3 Water Environment**

Mining operations can affect groundwater quality in several ways. The most obvious occurs in the mining below the water table, either in underground workings or open pits. This provides a direct conduit to aquifers. Groundwater quality is also affected when waters (natural or process waters or wastewater) infiltrate through surface materials (including overlying waste or other material) into ground water. But this multi colour granite quarry is devoid of any such impacts.

The impact due to mining on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during mining process. The

mining activity will not intersect ground water table as the depth of mining is 33m bgl whereas the depth of ground water table is identified as 45m bgl.

The value of TDS in water sample of all the stations except Pillakalathur village and the values of TH in all stations are above the acceptable limits. Chloride level in water samples from the villages of Ramanathapuram, T.Kavundampalayam Rangampalayam are above acceptable limits. Based on the Water Quality Index calculated, water quality from Pillaikalathur village is good, water quality from T.Kavundampalayam and Rangampalayam village is poor and very poor quality respectively and water quality from core zone and Ramanathapuram is nearly good. For excellent quality, the water should be treated by reverse osmosis to reduce dissolved solids and total hardness to the required rate. Boiling of water will remove the microorganisms effectively from all waters in the above said villages and core zone making the water aseptically fit for drinking purposes.

#### **11.4.4 Soil Environment**

For the entire life of mine, the generation of top soil is estimated as 6932m<sup>3</sup>. It will be dumped along mining lease boundary as earth bund and it will be utilized for green belt development within the lease area. No chemical or toxic elements will be used during mining activity. So the health of soil in and around the quarry will not be affected.

#### **11.4.5 Waste Dump**

The proposed rate of production of multi color granite for five years (Plan period) is about 15,054m<sup>3</sup> at the rate of 30% recovery up to permissible depth. The 70% of rejects which will be generated from the quarry operation during plan period is estimated as 35,128 m<sup>3</sup> and for the life of mine it is estimated as 64,650m<sup>3</sup>. The generation of weathered rock during the plan period is estimated as 5,896m<sup>3</sup> and for the life of mine it is estimated as 7,072m<sup>3</sup>. During quarry operation and at the end of life of mine, all the rejects and weathered rock will be dumped place in Northwest side as per approved scheme of mining. During monsoon seasons, the runoff from the dump will carry silts and small stones and it affect the land use around the project site which means it may affect the carrying capacity of stream, water holding capacity of lakes and affect nearest agricultural lands.

#### **11.4.6 Biological Environment**

There are no notified endangered species in the area, which may be affected due to the mining activities; therefore the biological environment will not have significant

impact due to mining activity. The impact on the biological environment due to amount of dust generation is minimized by well-developed green belt in and around mining lease area.

#### **11.4.7 Land Environment**

The Multi colour granite quarry will result in disturbance of the land use pattern of the mine lease area. The land degradation is unavoidable during mining activities like excavation, overburden dumping, soil extraction etc. So reclamation of mined out land and proper formation of benches will be given due importance.

The land use analyses show that the Neem plantation was done along the boundary of mining lease area. The rate of plantation increases over a period of time due to quarry activity. At the end of the project, the quarried pit will be act as water storage pond. The stored water will increase the ground water resources. Thereby agricultural activity around the mining lease area will be enhanced.

#### **11.4.8 Socio Economic Environment**

The mining activity will definitely increase the employment opportunity (directly as well as indirectly) in the project area. Some of these impacts would be beneficial. The expectation of the people of the area is concerned towards employment, education, and health facilities.

Direct Employment – 23 persons

Indirect Employment - 20 persons

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<b>Table 11.4 Environmental Management Plan</b>			
<b>S.No</b>	<b>Parameters</b>	<b>Mining Activity</b>	<b>Mitigation measures</b>
1	Air Environment	Drilling	<ul style="list-style-type: none"> <li>○ Dust extractor or wet drilling to be followed to control dust at source of emission.</li> <li>○ Use of Sharp drill bits for drilling holes and charging the holes by using optimum charge and using time delay detonator.</li> </ul>
		Blasting	<ul style="list-style-type: none"> <li>○ Regular water sprinkling on blasted heaps at regular intervals will help in reducing considerable dust pollution.</li> </ul>
		Loading	<ul style="list-style-type: none"> <li>○ Water sprinkling be done before loading by making it moist.</li> </ul>
		Transportation	<ul style="list-style-type: none"> <li>○ Water sprinklers along the sides of haul road shall be fixed to control fly of dust while transporting minerals and waste.</li> <li>○ Overloading will be prevented.</li> <li>○ Trucks/Dumpers covered by tarpaulin covers.</li> </ul>
		DG Sets	<ul style="list-style-type: none"> <li>○ DG sets will be used only during power failure.</li> <li>○ Adequate stack height for DG sets will be provided as per CPCB norms.</li> </ul>
		General measures	<ul style="list-style-type: none"> <li>○ Avenue trees along roads around ML boundary shall be planted as per the norms of MoEF to control fly of dust.</li> <li>○ Labours engaged in such dust prone areas should be provided with safety devices like ear muff, mask, goggles as per the MMR, 1961 amendments and circulars of DGMS.</li> <li>○ Regular health check-up of workers and nearby villagers in the impacted area should be carried out and also regular</li> </ul>

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			<p>occupational health assessment of employees should be carried out as per the Factories Act.</p> <ul style="list-style-type: none"> <li>○ Ambient Air Quality Monitoring will be conducted on regular basis to assess the quality of ambient air.</li> </ul>
2	Water Environment	Surface water	<ul style="list-style-type: none"> <li>○ Wastewater discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.</li> </ul>
		Ground water	<ul style="list-style-type: none"> <li>○ The mining activity will not intersect the ground water table.</li> <li>○ Desilting will be carried out before and immediately after the monsoon season.</li> </ul>
		Storm water	<ul style="list-style-type: none"> <li>○ Pit will be used for Storage of rainwater.</li> <li>○ Rain water 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.</li> <li>○ The proponent will collect and judiciously utilize the rainwater as part of rain water harvesting.</li> </ul>
		General measures	<ul style="list-style-type: none"> <li>○ Regular monitoring and analyzing the quality of water.</li> </ul>
3	Noise Environment	Drilling	<ul style="list-style-type: none"> <li>○ Limiting time exposure of workers to excessive noise.</li> </ul>
		Blasting	<ul style="list-style-type: none"> <li>○ Carrying out blasting only during day time and not on cloudy days.</li> <li>○ Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to</li> </ul>

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			<p>prevent blow out of holes.</p> <ul style="list-style-type: none"> <li>○ Providing proper noise proof enclosure for the workers separated from the noise source and noise prone equipment.</li> </ul>
		Transportation	<ul style="list-style-type: none"> <li>○ Proper and regular maintenance of vehicles, machinery and other equipments.</li> <li>○ The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments.</li> <li>○ Speed of trucks entering or leaving the mine will be limited to moderate speed to prevent undue noise from empty vehicles.</li> <li>○ Adequate silencers will be provided in all the diesel engines of vehicles.</li> <li>○ Minimum use of horns and speed limit of 10 km/hr in the village area.</li> <li>○ It will be ensured that all transportation vehicles carry a valid PUC Certificates.</li> </ul>
		General measures	<ul style="list-style-type: none"> <li>○ Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.</li> <li>○ Provision of Quiet areas, where employees can get relief from workplace noise.</li> <li>○ The development of green belts around the periphery of the mine to attenuate noise.</li> <li>○ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.</li> </ul>
4	Vibration	Blasting	<ul style="list-style-type: none"> <li>○ Specific charge pattern has to be designed by proper trial</li> </ul>

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			<p>vibration studies with varying charge ratios.</p> <ul style="list-style-type: none"><li>○ Milli second detonators shall be used preferably 25–50ms per delay to control vibrations.</li><li>○ If the vibration still exceeds the limit a long Trench to a depth of 6m may cut in the direction of wave’s movement to break longitudinal waves which travel close to surface, preferably near mine buffer zone.</li><li>○ In spite of all measures periodical testing of vibration and noise using approved seismograph by DGMS has to be followed as a part of Environmental monitoring.</li></ul>
5	Soil Environment	Topsoil	<ul style="list-style-type: none"><li>○ Humus top soil shall be preserved for reuse in afforestation and agriculture.</li><li>○ Top soil should not be mixed with other waste or reject materials. It should be conserved by judicious utilization in the mine premises.</li><li>○ Garland drains will be provided around the mine and dumps to arrest any soil from the mine area being carried away by the rain water. This will also avoid the soil erosion and siltation in the mining pits and maintaining the stability of the benches.</li></ul>
6	Waste Dump	Stabilization of Dumps	<ul style="list-style-type: none"><li>○ The rejects\ waste dump shall be properly terraced in to 1.5m benches with proper repose angle and then the top soil shall be spread over the dumps and slope to make them humus for some time, after the soil suitable for water retention trees will be planted at the top, slope and toe of the stabilized dumps to</li></ul>



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**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

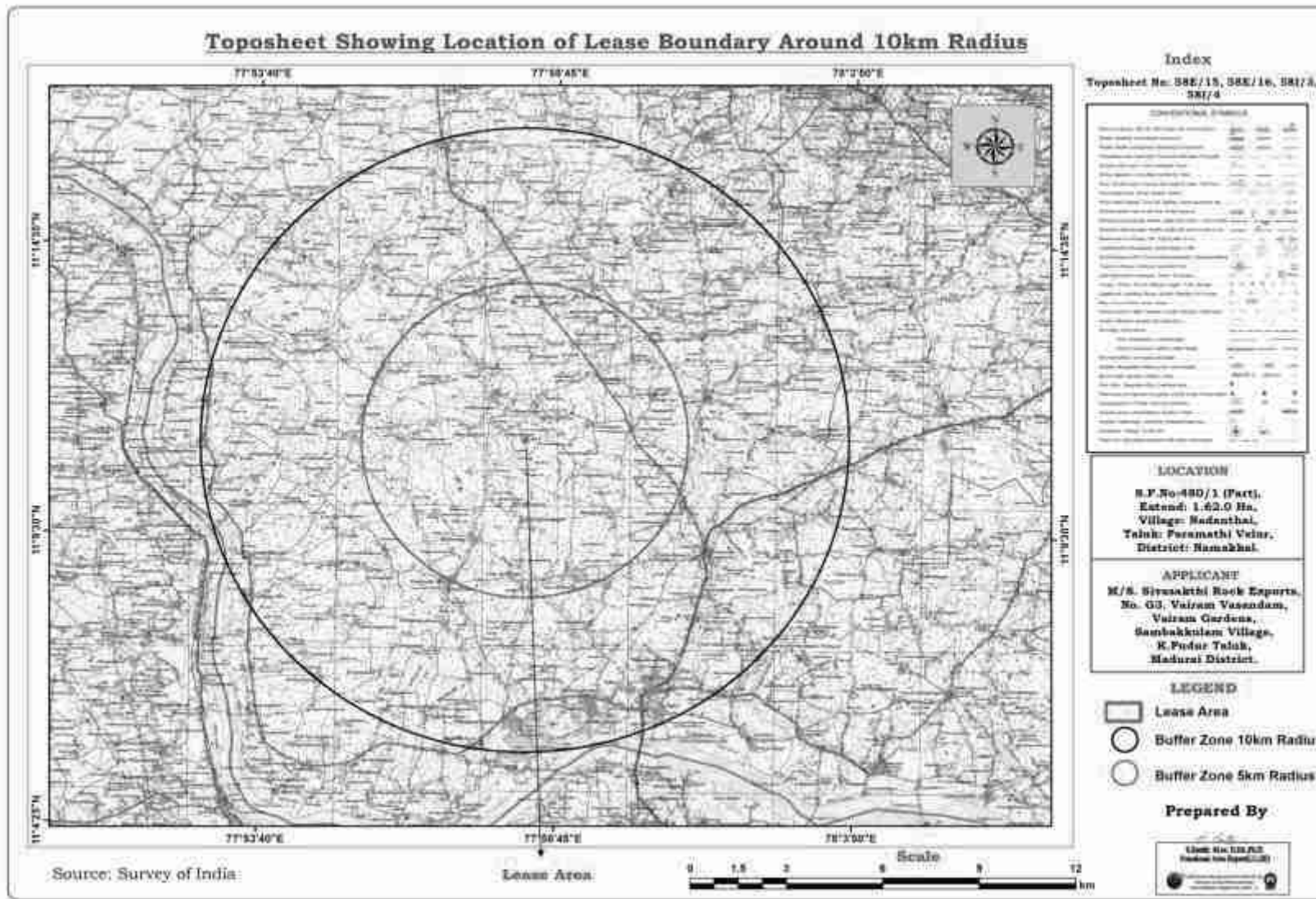
			<p>form vegetation.</p> <ul style="list-style-type: none"> <li>○ Garland drainage around dump shall prevent under wash of dump by hydrostatic pressure to be developed by surface water and control wash outs and collapse.</li> </ul>
7	Plantation	Mine lease boundary and waste dump	<ul style="list-style-type: none"> <li>○ Provision of green belt all along the periphery of the lease area for control of dust and to attenuate noise.</li> <li>○ Stabilization of Dump with plantation.</li> <li>○ It is strongly recommended that the loss of plant in each year will be counted and again planted in subsequent plantation.</li> <li>○ The plant should be planted taken from nursery, where the survival rate is high.</li> </ul>
8	Land Environment		<ul style="list-style-type: none"> <li>○ The restoration of the degraded land would cover backfilling and terracing with the overburden / wastes and surfacing the same with top soil.</li> <li>○ Provision of Garland drainage around the dumps.</li> <li>○ Fast growing trees and other native shrubs would be planted to stabilize the reclaimed land.</li> <li>○ Appropriate measures will be taken for Green belt development.</li> <li>○ The rain water will be stored in the pit which will recharge the ground water as a part of rain water harvesting scheme for irrigating the nearby agricultural lands.</li> </ul>
9	Socio Economic		<ul style="list-style-type: none"> <li>○ Good maintenance practices will be adopted for machinery and equipment, which will help to avert potential noise problems.</li> <li>○ Green belt will be developed in and around the project site as</li> </ul>

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

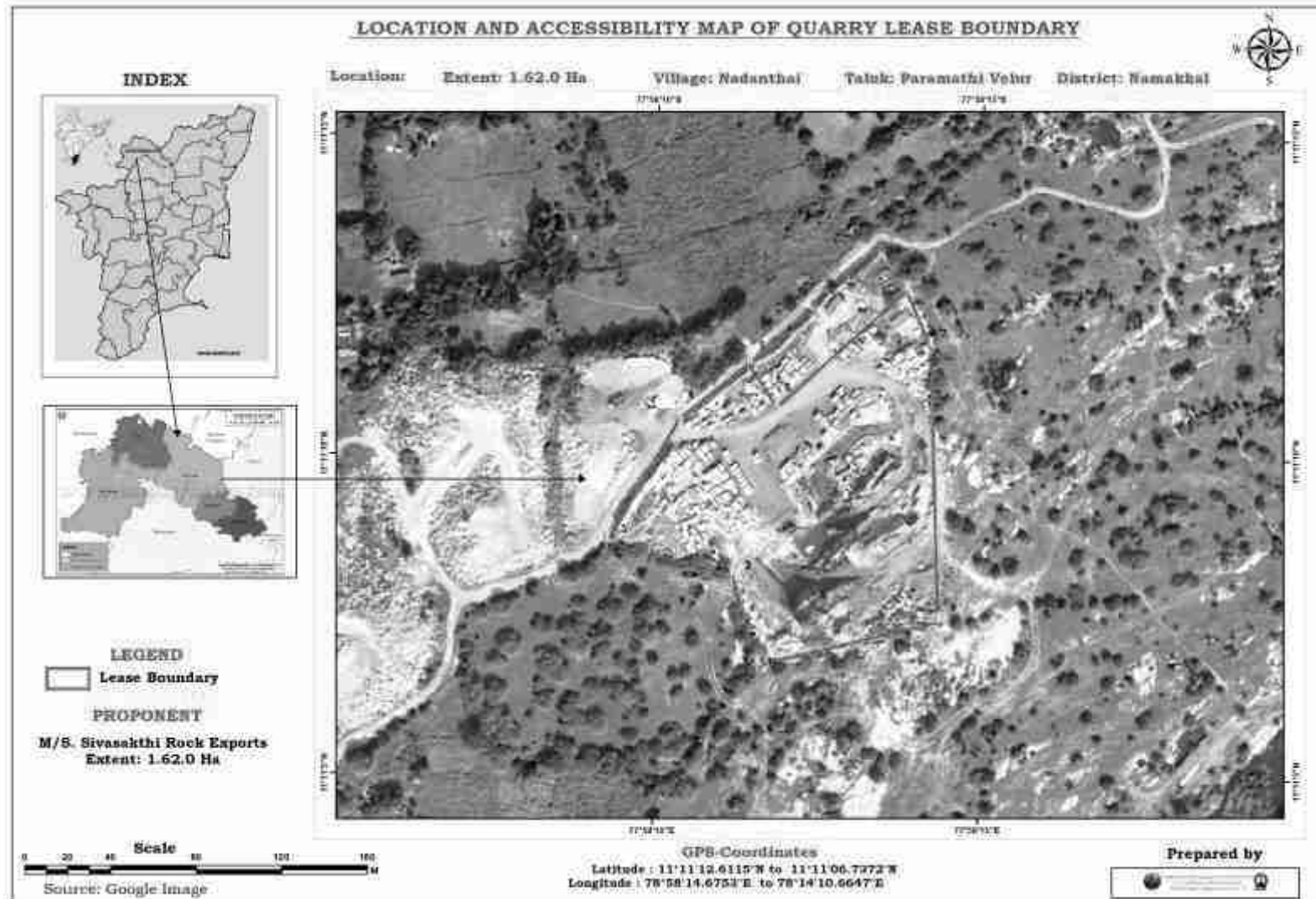
			<p>per Central Pollution Control Board (CPCB) guidelines.</p> <ul style="list-style-type: none"><li>○ Drilling, blasting etc at specified location will be followed with proper schedule.</li><li>○ Appropriate air pollution control measure will be taken so as to minimize the environmental impact within the core zone.</li><li>○ An emergency preparedness plan will be prepared in advance, to deal with firefighting, evacuation and local communication.</li><li>○ For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices has been provided which meet 'BIS' (Bureau of Indian Standards).</li><li>○ As a part of CSR activities community welfare measures will be taken by Proponent through local Panchayat.</li></ul>
10	Occupational Health		<ul style="list-style-type: none"><li>○ First-aid facilities as per provisions under Rule (44) of Mines Rules 1955.</li><li>○ Initial and Periodical medical examination shall be conducted for the employees under Rule 29B &amp; 45 (A).</li><li>○ Insurance will be taken in the name of the labourers working in the mines.</li><li>○ Workers involved in mining work shall be provided protective equipments such as Thick Gloves, Goggles, ear plugs, safety boot wears, etc...</li></ul>

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**  
**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**



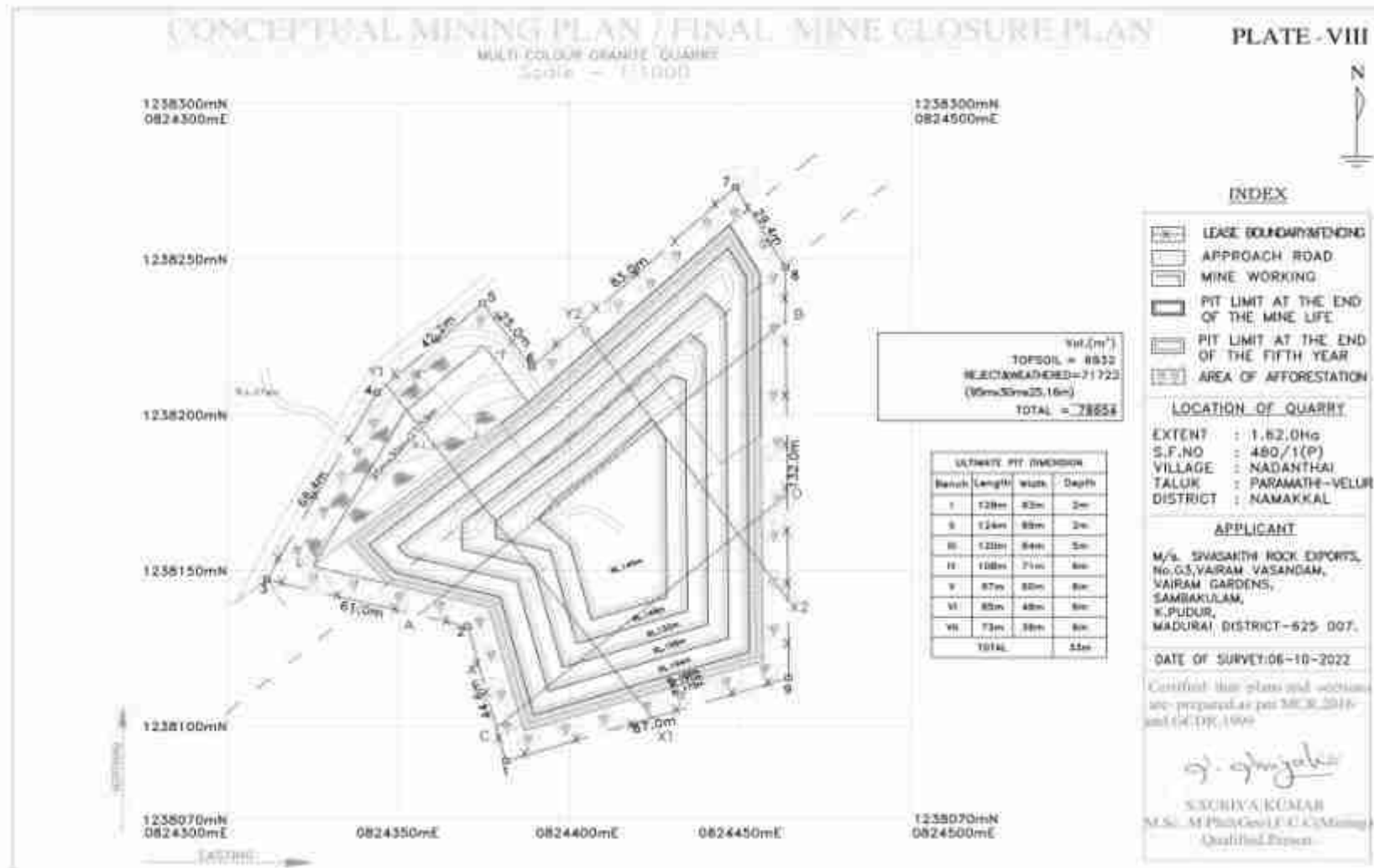
**Fig No 11.1 Toposheet showing location of existing multi color granite quarry with 10km radius study area**

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**  
**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**



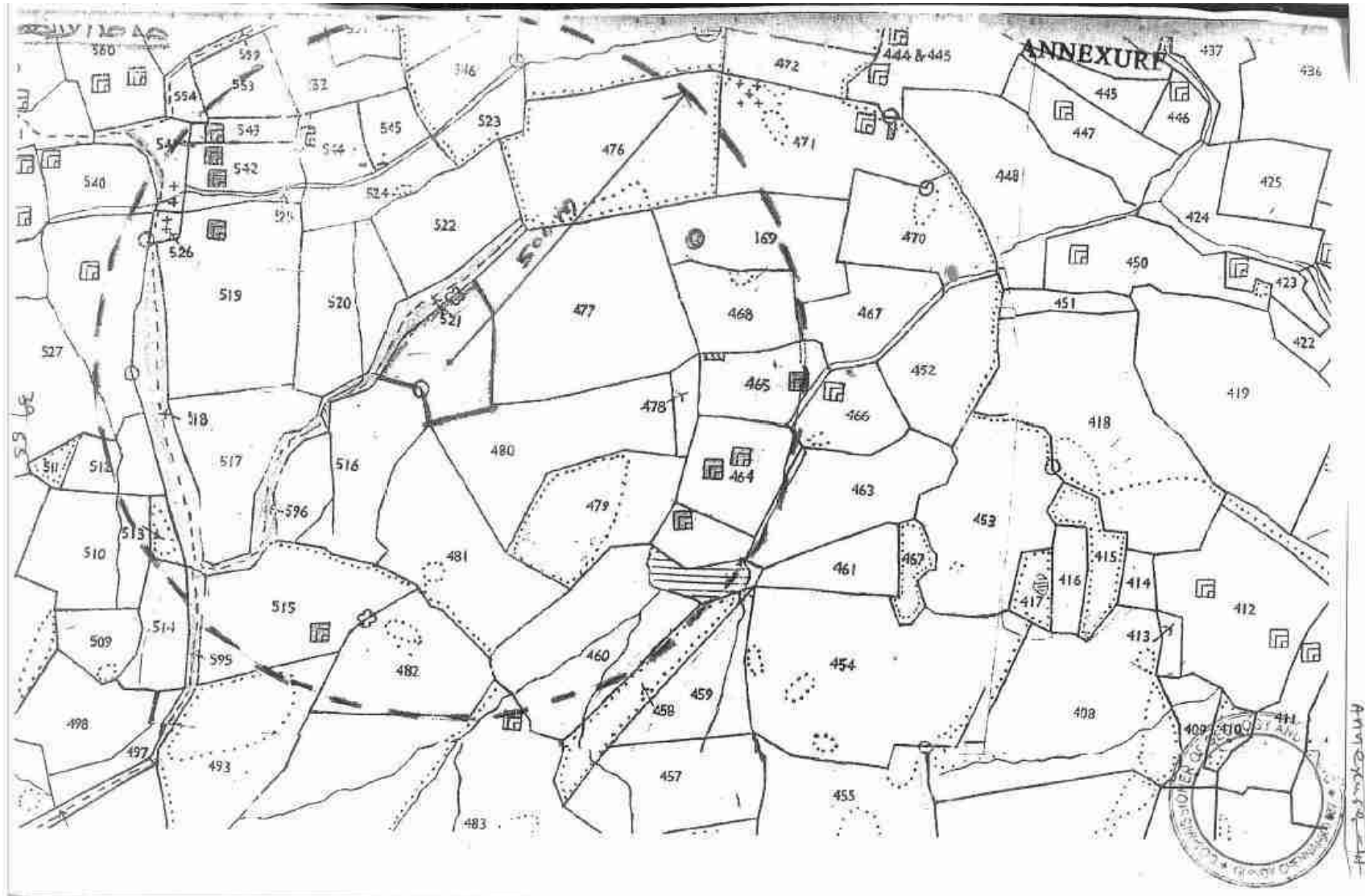
**Fig No 11.2 Google earth image showing location and route for existing multi color granite quarry**

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**  
**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**



**Fig No 11.3 Conceptual mining plan**

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**  
**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**



**Fig No 11.4 Combined sketch**

### **11.5 Analysis of Alternatives**

The mining site is dependent on the geology and mineral deposition of the area. Hence, this project is mineral and site specific and no alternative site considered for this project.

### **11.6 Environmental Monitoring Program**

Environmental Monitoring program will be conducted for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB.

**Table No: 11.5 Post Project Environmental Monitoring Program**

S. No.	Environment Attributes	Location	Monitoring		Remarks
			Duration	Frequency	
1	Meteorology and Air Quality	Continuous monitoring weather station in core zone/ nearest IMD station	24 hours	Monthly Once	Wind speed, direction, Temperature, Relative humidity and Rainfall.
2	Air Pollution Monitoring – PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> and NO <sub>x</sub>	5 locations (One station in the core zone and at least one in nearby residential, area, one in the upwind, two station on the downwind direction and one in cross wind direction).	8 hours	Once in six months	Fine Dust Sampler and Respirable Dust Sampler
3	Water Pollution Monitoring	Mine effluents, Set of grab samples during pre and post monsoon for ground and surface water in the vicinity.	-	Once in six months	Phyiso-chemical, microbiological characteristics
4	Hydrogeology	Water level in open wells in buffer zone around 1km at specific wells	-	Once in six months	Water level monitoring devices may be used.

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

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5	Noise	Mine Boundary, high noise generating areas within the lease and at the nearest residential area	24 hours	Monthly Once	Sound level meter
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting operation	Digital Seismograph
7	Soil	Core Zone and Buffer zone (Grab samples)	–	Once in six months	Physical and Chemical characteristics

### 11.7 Project Benefits

The proponent is very much conscious of their obligations to society at large. Under plantation program, it is suggested to develop green belt further all along the boundary of mining lease area. Apart from the green belts and aesthetic plantation for eliminating fugitive emission and noise control, all other massive plantation efforts will be executed with the assistance of experts and cooperation of the local community.

The mining activity will create rural employment. In addition there will be indirect employment to many more people in the form of contractual jobs like construction of infrastructural facilities, transportation to destinations, sanitation, supply of goods and services to the mine and other community services, etc...The local population will have preference to get an employment. Part of the royalty is given to local bodies by the State Govt. for the welfare and development of the village. The proponent help in socio economic development of the village by providing education facilities to children's, procuring sports equipments, welfare amenities like drinking water to school, road facilities to villages and employment opportunities to nearby villagers. CSR budget is allocated as 2.5% of the profit.

### 11.8 Conclusion

As discussed, it is safe to say that the project is not likely to cause significant impact on the ecology and environment of the area, as adequate preventive measures will be adopted to contain the pollutants within permissible limits. The total operation shall be carried out with ease & minimum risk of the workers. The proposed



## **DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

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Environmental Management Plan will keep the area in a safe environment with negligible impact on the environment. Plantation will substantiate the impact due to the mining activity. Mining activity will help in improving the socio-economic benefits in areas like employment, communication and infrastructure development etc.

**CHAPTER - 12: DISCLOSURE OF CONSULTANTS ENGAGED**

**AADHI BOOMI MINING AND ENVIRO TECH (P) LTD**, a QCI/NABET accredited EIA Consultant Organization having its Registered Office at Salem and Branch at Porur, Chennai were promoted by a team of professional Geologists\ Mining\ Environment\ Civil\ Mechanical\ Chemical Engineers\Scientists. The company has vast experience in various disciplines including Exploration and mining of minerals and was incorporated in 2002 in the name of Suriya Mining Services providing expert advice and solutions for clients' requirement in the field of Mineral prospecting, Exploration, Mining, Geo-technical, Techno economic Feasibility reports\evaluation, Mineral Engineering, Environment Impact Assessment (EIA), Environment Management Plan (EMP), Environment Monitoring and related liaison jobs like Environment Clearance, Wild life and Forest clearance from DEIAA/SEIAA/NBWL/CRZ, MoEF& CC etc of all accredited sectors.

**12.1 SCOPE**

- EIA & EMP for all accredited sectors and Monitoring as per SPCB/CPCB/MoEF & CC
- Environment/ Wild life/ CRZ/ Forest Clearance
- Social Impact Analysis (SIA) and Eco-Biodiversity studies for Mine Closure Plan
- Remote Sensing & GIS including Satellite data processing, ASTER, DEM etc for application in Forest, Agriculture, Disaster, Mineral Exploration, Environment Modelling, Town planning etc.
- Geological Surveying, Mapping, Exploration and Project Management
- Geophysical, Geochemical & Geotechnical studies to locate concealed deposit\ formation including structural studies.
- Noise and Vibration studies as per DGMS\MoEF & CC to design controlled blasting where inhabitations are located within 300m.
- Mine Design and costing, selection of Machineries and Project Evaluation.
- Statutory Mine Plans & Sections, Mining Plan and other mandatory projects.
- Design and development of Mineral Beneficiation Plant including mineral separation studies.

**12.2 INFRASTRUCTURE**

- Our Human resources are well expertise in all functional areas as per Ver. 3 of NABET\QCI. Our Hi Tech ISO certified Office and Lab are accredited by NABL and MoEFCC.

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Proponent: **M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

- And have latest field Investigation devices like Respirable and Fine Dust Samplers, Digital Seismograph, DDR3 Resistivity Meter, Echo sounder, DGPS, Total Station, Water level monitoring meters, GPS 62S, Sound Level Meter etc.

### 12.3 DISCLOSURE OF CONSULTANT FOR EIA STUDY

**M/s. SIVASAKTHI ROCK EXPORTS**, appointed **AADHI BOOMI MINING AND ENVIRO TECH PRIVATE LTD**, having its office at 3/216, K.S.V Nagar, Narasothipatti, Alagapuram, Salem – 636 004, Tamil Nadu, for preparation of EIA/EMP report for obtaining Environment Clearance from SEIAA/SEAC, Tamil Nadu.

**AADHI BOOMI MINING AND ENVIRO TECH PRIVATE LTD** has MoU with **EKDANT ENVIRO SERVICES (P) LTD** laboratory at Chennai and has own Laboratory named **ABM ENVIRONMENTAL AND ANALYTICAL LABORATORY, accredited by NABL** for sampling and testing of air, water, noise and soil samples. Ekdant Enviro Services are recognized by the Ministry of Environment and Forests, Government of India under the relevant provision of Environment (Protection) Act 1986 and Accredited by NABL and NABET, Quality Council of India, New Delhi.

S. No.	Study	Consultants/LAB
1	Generation of Base Line Data	Aadhi Boomi Mining & Enviro Tech P Ltd, Salem Ekdant Enviro Services (P) Ltd, Chennai
2	Remote Sensing and Land use/Land cover Studies	Aadhi Boomi Mining & Enviro Tech P Ltd, Salem
3	Preparation of EIA and EMP Report	Aadhi Boomi Mining & Enviro Tech P Ltd, Salem

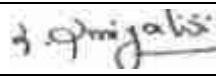
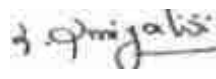
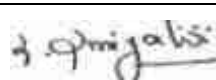
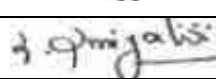
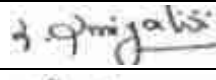
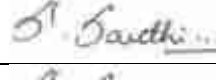
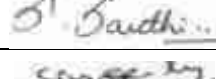
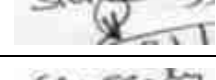
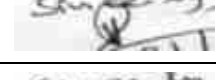
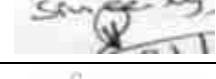
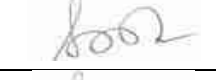


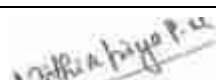
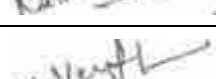
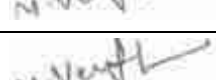
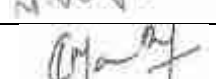
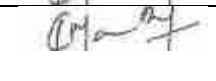
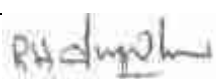
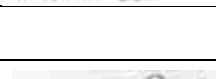
### 12.4 DECLARATION OF EXPERTS INVOLVED IN THE EIA REPORT PREPARATION

Names of the EIA coordinator, Functional Area Experts and other Team Members engaged and nature of consultancy rendered is provided in NABET Annexure –VII of EIA report. The multidisciplinary team comprises of Environmental Engineers, Geologists and Geographers who involved in preparation of Environmental Impact Assessment Report and Environment Management Plan for various functions like Air quality, Water quality, Noise levels, Soil Conservation, Hydro geology, Ecology and bio-diversity, Land use and Socio–Economics.

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

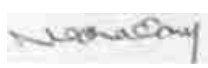



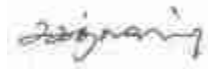





**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

**Table 12.1: Declaration of Experts**

S.No	Name of the Expert	Category	Functional Areas	Signature
<b>In-House Experts</b>				
1.	Mr.S.Suriyakumar	A	EIA Co-ordinator	
		A	Solid and Hazardous Waste SHW*- HW* only	
		A	Risk Assessment and Hazard Management (RH)	
		A	Land Use (LU)	
		A	Soil Conservation (SC)	
2.	Mrs. S. Santhi	B	Land Use (LU)	
		B	Socio Economics (SE)	
3.	Mr.K.Thirumeni	B	EIA Co-ordinator - Building and Construction	
		B	EIA Co-ordinator - Highways	
		B	Land use (LU)	
4.	R.R Prakash Babu	B	Air Pollution, Monitoring, Prevention and Control (AP)	
		B	Noise and Vibration (NV)	
5.	Dr. Nithia Priya P.M	B	Air Pollution, Monitoring, Prevention and Control (AP)	
		B	Water Pollution Monitoring, Prevention and Control (WP)	
6.	Mr. M. Venkatesh Prabhu	B	Meteorology, Air Quality Modelling & Prediction (AQ)	
		B	Noise and Vibration (NV)	
7.	Mr. K. Manuraj	B	Geology (GEO)	
			Hydrogeology (HG)	
8.	V. Sudha	B	Ecology and Biodiversity	
<b>Empanelled Experts</b>				
	Dr. Nallathambi	A	Geology (Geo)	

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

**Proponent: M/s. Sivasakthi Rock Exports, Multi Colour Granite Quarry, Namakkal District**

9.	Varadarajan	A	Hydrology, ground water and water conservation (HG)	
10.	Bidisha Roy	B	Meteorology, Air Quality Modelling & Prediction (AQ)	
<b>Team Member Involved in Report Preparation</b>				
11.	Mrs. S. Sri Vidhya	Team Member	Water Pollution Monitoring, Prevention and Control (WP) under FAE - Dr. Nithia Priya P.M	
			Meteorology, Air Quality Modelling & Prediction (AQ) under FAE - Mr. M. Venkatesh Prabhu	
12.	Mr. S. Sagath Srikrishnan	Team Member	Solid hazardous Waste (SHW) under FAE Mr. Suriyakumar. S	
			Water Pollution Monitoring, Prevention and Control (WP) under FAE - Dr. Nithia Priya P.M	
13.	Mrs. A. Nagadevi	Team Member	Water Pollution Monitoring, Prevention and Control (WP) under FAE - Dr. Nithia Priya P.M	
			Ecology and Biodiversity (EB) under FAE – V. Sudha	
14.	Mr. A. Jagadeesh Kumar	Team Member	Noise and vibration under FAE - Mr. M. Venkatesh Prabhu	
			Meteorology, Air Quality Modelling & Prediction (AQ) under FAE - Mr. M. Venkatesh Prabhu	



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

STATE LEVEL ENVIRONMENT IMPACT  
ASSESSMENT AUTHORITY-TAMILNADU

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

**TERMS OF REFERENCE (ToR)**

**Lr.No.SEIAA-TN/F.No.10140/ToR- 1529/2023 Dated: 07.08.2023.**

To

M/s. Sivasakthi Rock Exports  
No G3, Vairam Vasandam, Vairam Gardens,  
Sambakulam, K.Pudur,  
Madurai – 625007.

Sir / Madam,

**Sub:** SEIAA, Tamil Nadu – Terms of Reference with public Hearing (ToR) for the Proposed Multi Colour Granite quarry lease area over an extent of Extent 1.62.0 Ha at S.F.No. 480/1 (Part) of Nadanthai Village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu by M/s. Sivasakthi Rock Exports - under project category – “BI” and Schedule S.No.1 (a) – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

**Ref:** 1. Online proposal No.SIA/TN/MIN/432724/2023, dated: 09.06.2023.  
2. Your application submitted for Terms of Reference dated: 19.06.2023.  
3. Minutes of the 394<sup>th</sup> SEAC meeting held on 21.07.2023.  
4. Minutes of the 644<sup>th</sup> Authority meeting held on 07.08.2023.

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

The proponent, M/s. Sivasakthi Rock Exports has submitted application for Terms of Reference (ToR), for the proposed Multi Colour Granite quarry lease area over an extent of Extent

  
MEMBER SECRETARY  
SEIAA-TN

1.62.0 Ha at S.F.No. 480/1 (Part) of Nadanthai Village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu.

**SEAC Remarks: -**

The proposal was placed in 394<sup>th</sup> SEAC meeting held on 21.07.2023. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

**The SEAC noted the following:**

1. The Project Proponent, M/s. Sivasakthi Rock Exports has applied for Terms of Reference for the Proposed Multi Colour Granite quarry lease area over an extent of Extent 1.62:0 Ha at S.F.No. 480/1 (Part) of Nadanthai Village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006.
3. As per mining plan, the lease period is for 20 years. The mining plan is for 5 years & production should not exceed ROM – 50,182m<sup>3</sup>, Granite recovery @ 30% - 15,054m<sup>3</sup> & Granite waste @ 70% - 35,128m<sup>3</sup>. The annual peak production 10,134m<sup>3</sup> of ROM & 3,040m<sup>3</sup> of Granite (@ 30%). The ultimate depth of mining is 33 BGL.

Now, the proposal was placed in the 394<sup>th</sup> Meeting of SEAC held on 21.07.2023. Based on the presentation made by the proponent **SEAC recommended grant of Terms of Reference (TOR) with Public Hearing**, subject to the following TORs as per the **Annexure I** of this minute, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. The PP shall furnish the details such as number of days the quarry worked, the details of production of the granite blocks, stocks, pit mouth value of the granite blocks, export details, etc., in the half yearly return in Form-F for every half year ending 30th September and 31st March before the 15th of the following month for the proceeding half year period and the annual return in Form-G before 1st July of each year for the preceding year to the District Collector under the provision under Rule 41 of the Granite Conservation and Development Rules, 1999.
2. As per Rule 31(1) of Granite Conservation and Development Rules, 1999, the over burden, waste stock and non-saleable granites generated during mining operation for granite shall be stored separately in properly formed dumps on the ground earmarked in the lease hold area.

  
**MEMBER SECRETARY**  
SEIAA-TN

As per clause I of Appendix-IV of the Tamil Nadu Minor Mineral Concession Rules, 1959, the mining waste shall be dumped in the lease hold area as specified in each mining plan. Hence, the PP shall submit the revised 'Plan and Sections' duly approved by the competent authority indicating the existence of the dump is within the mine lease area.

3. The proponent shall carry out a survey and enumerate waterbody located within 1km radius and shall submit a comprehensive hydrogeological report covering the impacts on the waterbody and the mitigation measures that will be adopted.
4. The PP shall submit Certified Compliance Report obtained from the office of the concerned DEE/TNPCB (or) IRO, MoEF& CC, Chennai and appropriate mitigating measures for the non-compliance items, if any.

#### ANNEXURE-I

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

  
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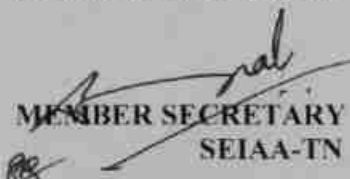


indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.

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

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

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

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

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

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

#### Appendix -I

##### List of Native Trees Suggested for Planting

1. *Aeglemarmelos*-Vilvam
2. *Adenaantherapavonina*-Manjadi
3. *Albizialebeck*-Vaagai
4. *Albiziaamara*-Usil
5. *Bauhinia purpurea* - Mantharai
6. *Bauhinia racemosa* - Aathi
7. *Bauhinia tomentosa*-Iruvathi
8. *Buchananiaaillaris*-Kattuma
9. *Borassuslabellifer*- Panai
10. *Buteamonosperma* - Murukkamaram
11. *Bobaxceiba*- Ilavu, Sevvilavu
12. *Calophylluminophyllum* - Punnai

  
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13. *Cassia fistula*- Sarakondrai
14. *Cassia roxburghii*- Sengondrai
15. *Chloroxylonswietenia* - Purasamaram
16. *Cochlospermumreligiosum*- Kongu, Manjallavu
17. *Cordiadichotoma*- Mookuchalimaram
18. *Cretevaadansonii*-Mavalingum
19. *Dilleniaindica*- Uva, Uzha
20. *Dilleniapentagyna*- SiruUva, Sitruzha
21. *Diospyrosebenum*- Karungali
22. *Diospyroschloroxylon*- Vaganai
23. *Ficusamplissima*- Kalltchi
24. *Hibiscus tiliaceous*-Aatrupoovarasu
25. *Hardwickiabinata*- Aacha
26. *Holopteliaintegrifolia*-Aayili
27. *Lanneacoromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthustetraphylla*- Neikottaimaram
30. *Limoniaacidissima* - Vila maram
31. *Litseaaglutinosa*-Pisinpattai
32. *Madhucalongifolia* - Illuppai
33. *Manilkarahexandra*-UlakkaiPaalai
34. *Mimusopselengi* - Magizhamaram
35. *Mitragynaparvifolia* - Kadambu
36. *Morindapubescens*-Nuna
37. *Morindacitrifolia*- VellaiNuna
38. *Phoenix sylvestre*-Eachai
39. *Pongamiapinnata*-Pungam
40. *Premnamollissima* - Munnai
41. *Premnaserratifolia*- Narumunnai
42. *Premnatomentosa*-PurangaiNaari, PudangaNaari
43. *Prosopiscinerea* - Vannimaram

44. *Pterocarpus marsupium* - Vengai
45. *Pterospermum canescens* - Vennangu, Tada
46. *Pterospermum xylocarpum* - Polavu
47. *Puthranjiva roxburghii* - Puthranjivi
48. *Salvadora persica* - Ugaamaram
49. *Sapindus marginatus* - Manipungan, Soapukai
50. *Saraca asoca* - Asoca
51. *Streblus asper* - Pirayamaram
52. *Strychnos nuxvomica* - Yetti
53. *Strychnos potatorum* - Therthang Kottai
54. *Syzygium cumini* - Naval
55. *Terminalia bellerica* - Thandri
56. *Terminalia arjuna* - Venmarudhu
57. *Toona ciliata* - Sandhanavembu
58. *Thespesia populnea* - Puvarasu
59. *Walsura trifoliata* - valsura
60. *Wrightia tinctoria* - Vep

**SEIAA Remarks: -**

The subject was placed in 644<sup>th</sup> Authority meeting held on 07.08.2023. The authority noted that the subject was appraised in 394<sup>th</sup> SEAC meeting held on 21.07.2023.

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

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

  
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**Annexure 'B'****Cluster Management Committee**

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

**Impact study of mining**

12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
  - a) Soil health & soil biological, physical land chemical features.
  - b) Climate change leading to Droughts, Floods etc.

  
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- c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
- d) Possibilities of water contamination and impact on aquatic ecosystem health.
- e) Agriculture, Forestry & Traditional practices.
- f) Hydrothermal/Geothermal effect due to destruction in the Environment.
- g) Bio-geochemical processes and its foot prints including environmental stress.
- h) Sediment geochemistry in the surface streams.

#### **Agriculture & Agro-Biodiversity**

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

#### **Forests**

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

  
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**Water Environment**

23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.
24. Erosion Control measures.
25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.
28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.

**Energy**

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

**Climate Change**

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

  
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**Mine Closure Plan**

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

**EMP**

35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.

36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.

**Risk Assessment**

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

**Disaster Management Plan**

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

**Others**

39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.

40. As per the MoEF& CC office memorandum F.No.22-65/2017-1A.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.

41. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

**A. STANDARD TERMS OF REFERENCE**

1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the

  
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highest production achieved prior to 1994.

- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.

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

  
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periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.

- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range'. (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e., March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the

  
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monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.

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

  
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in AMSL and bgl. A schematic diagram may also be provided for the same.

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

  
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- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed: -
  - a) Executive Summary of the EIA/EMP Report
  - b) All documents to be properly referenced with index and continuous page numbering.
  - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
  - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
  - e) Where the documents provided are in a language other than English, an English translation should be provided.
  - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
  - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA, II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
  - h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC

  
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with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.

- i) As per the circular no. J-11011/618/2010-LA. II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.

  
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SEIAA-TN

11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.

  
MEMBER SECRETARY  
SEIAA-TN

30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

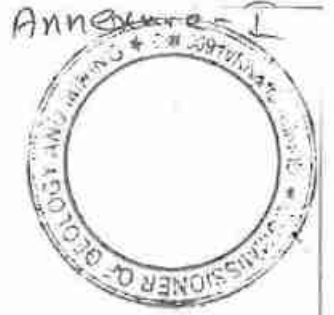
- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables,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

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

  
MEMBER SECRETARY  
SEIAA-TN

**Copy to:**

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Namakkal District.
7. Stock File.

**ABSTRACT**

Mines and Quarries - Minor Mineral - Multi Colour Granite - Namakkal District - Paramathi -Velur Taluk - Nadanthai Village - Over an extent of 1.62.0 hecets of patta lands - S.F.No.480/1 (Part) - Quarry Lease Application of M/s. Sivasakthi Rock Exports - Grant of quarry lease - Sanctioned - Orders - Issued.

Industries (MMB.2) Department

G.O. (3D) No.11

Dated:12.03.2018  
ஹேவிளம்பி-மாசி 28  
திருவள்ளூர் ஆண்டு 2049

**Read:**

- 1) From M/s. Sivasakthi Rock Exports (Thiru S.M.Govindaraj, Thiru R.Ravichandran, Thiru K.Srinivasan and Thiru D.G.Sudhakar - Partners) Quarry Lease Application dated 04.09.2017.
- 2) From the District Collector, Namakkal, Letter Roc.No.770/Mines/2017, dated 02.10.2017.
- 3) From the Commissioner of Geology and Mining, Chennai, File No.7781/MM5/2017, dated 27.10.2017.
- 4) Government Letter No.15473/MMB.2/2017-1, Dated 07.12.2017.

**Read also:**

- 5) From the Commissioner of Geology and Mining Letter No.7781/MM5/2017, dated 05.01.2018.
- 6) From the Chairman, DEIAA/District Collector, Namakkal Letter No.DEIAA-NMK-TN/F.No.259/Mines/03/EC.No.03/2018, dated 23.02.2018.

**ORDER:**

In the reference first read above, M/s. Sivasakthi Rock Exports (Thiru S.M.Govindaraj, Thiru R.Ravichandran, Thiru K.Srinivasan and Thiru D.G.Sudhakar - Partners) have applied for grant of lease for quarrying Multi Colour Granite over an extent of 1.62.0 hectares of patta lands in S.F.No.480/1 (Part) of Nadanthai Village, Paramathi-Velur Taluk, Namakkal District for a period of 20 years under rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959.



2. In the reference second and third read above, the District Collector, Namakkal and the Commissioner of Geology and Mining have recommended and forwarded the quarry lease application of M/s. Sivasakthi Rock Exports to the Government for passing orders.

3. Based on the reports of the District Collector, Namakkal and the Commissioner of Geology and Mining, the Government have examined the quarry lease application of the applicant company and communicated the area recommended by the Commissioner of Geology and Mining as precise area and requested the applicant company in the reference fourth read above to furnish the approved Mining Plan as per sub-rule (13) of rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959 through the Commissioner of Geology and Mining and to produce environment clearance certificate from the DEIAA. The Commissioner of Geology and Mining in his reference 5<sup>th</sup> read above 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 company shall obtain the Environment Clearance as per the orders of the Hon'ble Supreme Court of India Order dated 27.2.2012 in I.A. No.12-13/2011 in SLP (C) No.19629/2009 and as per the Office Memorandum No.L11011/47/ 2011-1A II(M), dated: 18.5.2012 of Ministry of Environment and Forest, Government of India. The District Level Environment Impact Assessment Authority in their reference 6<sup>th</sup> read above have accorded Environment Clearance for mining in the above said area subject to certain conditions.

4. In the circumstances detailed above, the Government after careful examination have decided to grant lease to quarry Multi Colour granite to M/s. Sivasakthi Rock Exports 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 M/s. Sivasakthi Rock Exports for quarrying Multi Colour Granite over an extent of 1.62.0 hectares of patta lands in S.F.Nos.480/1 (Part) of Nadanthai Village, Paramathi-Velur Taluk, Namakkal District for a period of twenty years, subject to the conditions specified in the annexure to this order and also the following special conditions along with all the conditions imposed by the District Level Environment Impact Assessment Authority in the reference 6<sup>th</sup> read above:

- 1) The applicant should leave a safety distance of 7.5 meters to the abutting patta lands and should not cause any hindrance to them while quarrying and transportation of Granite.
- 2) The applicant should leave a safety distance of 10 mts to the pathai poramboke in S.F.No. 521 passing in the northern side of the applied area.



3) 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 metres.
- ❖ 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.
- ❖ A soft- copy of the digitalized map with DGPS readings should be submitted in the CD form to the District Mines Department.

- 4) The lessee shall strictly adhere to the statutory and safety requirements.
- 5) The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
- 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 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.
- 8) The District Collector, Namakkal shall obtain a sworn-in-affidavit from the appellant containing the above conditions before execution of lease deed and also ensure that they are complied with. Further, the lessee / firm will furnish a declaration in the lease deed agreement as per the Government Letter No.12789/MMB2/2002-7, Dated 9.1.2003 stating that the lessee / firm will mine only in the lease hold area and will not undertake any quarrying activity in the adjoining poramboke land. Further, the lessee / firm will fence the lease hold area separating it from the adjoining poramboke land. If any illegal mining is undertaken, the lessee / firm will be held responsible for those activities and will be subjected to the action taken by the Government in this regard.

5. The District Collector, Namakkal is requested to take necessary further action for the execution of agreement in the prescribed form and





communicate the date of execution of agreement to the Government and Commissioner of Geology and Mining.

6. The District Collector, Namakkal is also directed to verify and furnish a certificate to the effect that all lease deed conditions and other conditions mentioned in paragraph 4 above have been complied with, duly incorporated in the lease agreement and send it to the Government. The District Collector, Namakkal is also instructed to include all the conditions imposed by District Level Environment Impact Assessment Authority in the reference 6<sup>th</sup> read above.

(BY ORDER OF THE GOVERNOR)

K.GNANADESIKAN,  
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT.

To

M/s. Sivasakthi Rock Exports,  
No.G3, Vairam Vasandam,  
Vairam Gardens,  
Sambakulam, K. Pudur.  
Madurai District - 625 007.

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

The District Collector,  
Namakkal District.

Copy to:

Special Personal Assistant to Hon'ble Minister  
for Law, Courts and Prisons, Chennai-600 009.  
Industries (OP.II) Department, Chennai - 600 009.  
Stock File / Spare Copy.

// Forwarded By order //

S. P. Srinivasan  
12/3/2018  
SECTION OFFICER

12.3.2018

Annexure

G.O (3D) No.11, Industries (MMB.2) Department,

Dated: 12.03.2018



1. The applicant shall execute an agreement within one month from the date of receipt of the Government order.
2. The date of commencement of the period of lease shall be the date on which the agreement is executed.
3. The applicant shall pay seigniorage or dead rent whichever is more in respect of the actual quantity of granite removed at the rate prescribed from time to time in Appendix-II of the Tamil Nadu Minor Mineral Concession Rules, 1959.
4. The applicant should keep correct accounts showing the quantities and other particulars of all minerals obtained from the lands permitted to quarry.
5. The applicant should also allow any officer authorized by the District Collector or any other officer authorized by the State Government in this behalf to inspect the area and verify records and accounts and furnish such information under the terms as may be required by them.
6. The applicant shall carry out the quarrying operations in skilful, scientific systematic manner keeping in view, the proper safety of the labour conservation of minerals and preservation of environment ecology.
7. The applicant shall allow any officer authorized by the District Collector and Director of Geology and Mining to enter upon the area and inspect for the purpose mentioned in conditions 4 and 6 above and also carry out the directions issued to the satisfaction of the above said authorities.
8. No quarrying activities connected there to shall be done before the execution of the agreement and registration is at the cost of the applicant.
9. No hindrance shall be caused to the adjoining pattadars or public.
10. The applicant should restrict his mining operation strictly within the permitted area as defined in the sketch.
11. The terms and conditions are also subject to such further modifications, deletion and additions alternation as may be

ordered by the Government to be included in the agreement to be executed for this purpose.

The applicant should maintain at his cost proper signboards indicating the survey numbers, years of the lease, name of the lease holder and the lease period to the satisfaction of the District Collector, Director of Geology and Mining and maintain it all time at the quarry site.

13. No quarrying shall be done within a distance of 7.5 meters of the boundaries of the permitted area.
14. The applicant should make his own arrangements to form the approach road from the public road to the place of his quarry.
15. The lessee shall strictly adhere to the statutory and safety requirements.
16. The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
17. That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.
18. That the approval of the mining plan does not in any way imply the approval of the Government in terms of any other provision 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 //

*S. Suriyakumar*  
**S. SURIYAKUMAR**  
M.Sc. M.Phil (Geo), F.C.C (Mining)  
Qualified Person

*S.P. Ramprasad*  
12/3/2018  
SECTION OFFICER  
*Smt*  
12.3.2018

File No: 563/2018/Commissioner  
 1000/18



தமிழ்நாடு தமில்நாடு TAMILNADU ரூ 25000/-

D 345943

16688 SIVASAKTHI ROCK EXPORTS  
 12.4.18 MADURAI

A. சேனமொழி  
 த்திரைத்தூள் நிறுவனயான  
 உரியம் எண். 25/2008/NMKL,  
 28/1, உழவன் காம்பள்கள்,  
 சாசக்கரை சந்திர நாமக்கல்



(Rule - 19-A and 33)

Sanctioned in G.O.(3D) No.11 Industries (MMB-2) Department dated 12.03.2018 for a period of twenty years &

LR.NO.DEIAA, TN/F.259 / Mines / 03 / EC.No: 03 / 2018 dated: 23.02.2018.

APPENDIX - V

JOINT AGREEMENT FOR QUARRYING AND CARRYING AWAY MINOR MINERALS FROM RYOTWARI LANDS IN WHICH THE MINERALS BELONG TO GOVERNMENT

This Agreement made this 12<sup>th</sup> day of April 2018 between M/s. Sivasakthi Rock Exports, represented by its Managing Partner Thiru. S.M.Govindaraj, S/o. Munusamy, No. G-3, Vairam Vasandam, Vairam Gardens, Sambakulam, K.Pudur, Madurai District - (1), Thiru. S.Ravichandran, S/o. Siframaniya Gounder, Old No. 12/C, New No. 8/2, Athipadi Village, Uttankarai Taluk, Krishnaigiri District - (2), Thiru. K.Srinivasan, S/o. Kannan, D.No. 283, Nehru Street, Veeraperumannallur, Panrati Taluk, Cuddalore District - (3), and Thiru. D.G.Sudhakar, S/o. Govindappa, No. 1, Byra Sandra Village, Tayalur Post, Mulbagal Taluk, Kolar District - (4), (hereinafter referred to as "the registered holders" which

- 1.
- 2.
- 3.
- 4.

REGISTERED HOLDERS

REGISTERED HOLDER / LESSEE

LESSOR  
 DISTRICT COLLECTOR  
 NAMAKKAL

Document No. 1000 of 2018 of Book  
 1 Contains 30 Sheets 1 Sheet  
  
 Registered Officer





தமிழ்நாடு தமில்நாடு TAMILNADU ரூ 25000/-

16689  
12.4.18

SIVASAKTHI ROCK EXPORTS  
MADURAI

D 345944

A. சேகரன்  
A. Chokkaran

அத்தியலாத்தான் விழிப்பணையாளர்  
2. பி.மம் எண். 25/2008/NMKL.  
28/1, உழவன் காம்பவுண்டு.  
கனகசபை சந்து, நாமக்கல்

-2-

expression shall where the context so admits include also his heirs, executors administrators, legal representatives and assigns) of the First part and Thiru. S.M.Govindaraj, S/o. Munusamy, No. G-3, Vairam Vasaadam, Vairam Gardens, Sambakulam, K.Pudur, Madurai District (hereinafter referred to as "the registered holder / Lessee" which expression shall where the context so admits include also his heirs, executors administrators, legal representatives and assigns) of the Second Part and the Governor of Tamil Nadu (hereinafter called "the Government" which term shall where the context so admits, include also his successors in office and assigns) of the Third part.

WHEREAS the registered holder holds (amongst others) the lands described in the schedule here to and intended to lease out to the lessee of the said lands for the purpose of quarrying Multi-Colour Granite in the said lands and to deposit mining waste in the said lands and has lodged with Collector the lease and accurate map or sketch of the said lands.

*S. Redan*  
S. Redan

REGISTERED  
HOLDERS

*[Signature]*

REGISTERED HOLDER  
/ LESSEE

*[Signature]*  
LESSOR

DISTRICT COLLECTOR  
NAMAKKAL

Document No. 1000 of 2018 of Book  
1 Contains 30 Sheets 2 Sheet  
*[Signature]*  
Registering Officer





தமிழ்நாடு தமில்நாடு TAMILNADU ரூ 25000/-

16690 SIVASAKTHI ROCK EXPORTS  
12.4.18 MADURAI

D 345945

A. சுவாமிநாதன்  
A. Sivasubramanian

அப்துல்காத்தான் விற்பனையாளர்,  
உரிமம் எண். 25/2008/NMKL,  
28/1, உழவன் சாமிநாதன்,  
கனகசபை சரது, நாமக்கல்



131

AND WHEREAS, the lessee to tenant of the registered holder has made application to Government through the Collector of the District of Namakkal (hereinafter referred to as "the Collector") seeking grant of quarrying lease for quarrying Multi-Colour Granite over an extent of 1.62.0 hects in S.F.No. 481/1(Part) of Nadanthai Village, Paramathi-Velur Taluk, Namakkal District in the said lands and to deposit mining waste in the said lands and has lodged with the Collector and accurate map or sketch of the said lands.

AND WHEREAS, the Government, has granted a quarrying lease to M/s.Sivasakthi Rock Exports, No.G3,Vairam Vasandam, Vairam Gardens, Sambakulam, K.Pudur, Madurai -7 vide G.O.(3D)No.11 Industries (MMB.2) Department dated 12.03.2018 and allowed them to commence quarrying operations for Multi-Colour Granite in the said lands and to deposit mining waste thereon by the lessee or tenant of the registered holder.

*[Signature]*  
S. Reddy  
S. Reddy  
S. Reddy

REGISTERED

REGISTERED HOLDER / LESSEE

*[Signature]*  
LESSOR  
DISTRICT COLLECTOR  
NAMAKKAL

Document No. 1000 of Book 1  
Contains 30 sheets 3 Sheet  
Registering Officer





रु.  
**25000**  
पच्चीस हजार रुपये



**Rs.**  
**25000**  
TWENTY FIVE THOUSAND RUPEES

தமிழ்நாடு தமிழ்நாடு TAMILNADU ரூ 25000/-

D 345946



16691  
12.4.18

SIVASAKTHI ROCK EXPORTS  
MADURAI

பி. சீமன்  
A. சேனாமணி

தமிழ்நாடு விநியோக அமைச்சர்  
பி.சி.என்.காம். 25/2008/NMKL,  
28/1, உழவன் காம்பள்கவு,  
நாமக்கல் மாவட்டம்.

141

AND WHEREAS, the collector 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 term of 20 years (Twenty Years) beginning on 12.04.2018 to 11.04.2038 upon the registered holder and lessee entering into the agreement here in contained.

AND WHEREAS, the lessee has deposited with the Collector, the sum of Rs.40,000/- in Challan No.21 dt: 12.04.2018 remitted at SBI, Namakkal 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.

*[Signature]*  
S. Ramesh  
S. Ramesh Kumar

REGISTERED  
HOLDERS

*[Signature]*  
REGISTERED HOLDER  
/ LESSEE

*[Signature]*  
LESSOR  
DISTRICT COLLECTOR  
NAMAKKAL

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Registering Officer





₹. 25000  
पच्चीस हजार रुपये

Rs. 25000  
TWENTY FIVE THOUSAND RUPEES



தமிழ்நாடு தமில்நாடு TAMILNADU ரூ.25000/-

SIVASAKTHI ROCK EXPORTS  
MADURAI

D 345892

A. சேனமொழி  
A. சேனமொழி  
முதுபிணாத்தொழில் விநியோகனயகன  
உரிமம் எண்.25/2008/NMKL,  
28/1, உழவன் காண்பளக்கல்,  
கனகசுனா சந்திர நகரம்



151

AND WHEREAS, the lessee has at the request of the registered holder and in consideration of such approval by the Collector 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.

NOW THESE PRESENTS WITNESS and the registered and the lessee do hereby jointly and severally and each of them doth individually hereby covenant and agree with the Government as follows:-

- 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 here to and to answer and to account at all reasonable times to Government for all acts and defaults committed by any servants or agents or workman employed by the registered holder or lessee in carrying on such operations or in making such deposit.

*[Signature]*  
S. Periya  
Sudhan

REGISTERED  
HOLDERS

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REGISTERED HOLDER  
/ LESSEE

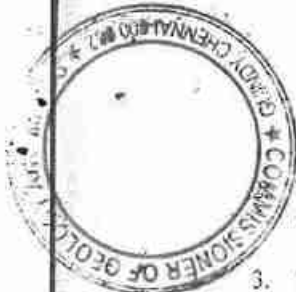
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NAMAKKAL

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The land assessment for the time being payable in respect of the said lands, seigniorage on minerals mined at the rates prescribed by the Government from time to time.



3. To abide by the rules prescribed by the Government from time to time regarding quarrying of minor minerals.
4. To keep correct accounts in such form as the Collector shall from time to time required 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 authorized by the Commissioner / 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.
5. To allow any officer authorized by the Commissioner / 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.
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 for any mineral other than Multi-Coloured Granite.
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 thirty times of the assessment thereon has been deducted under proviso 2 hereunder.

PROVIDED ALWAYS and it is hereby further agreed by and between the parties as follows:-

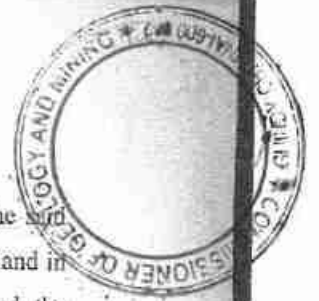
1. That it shall be lawful for the registered holder or lessee as the case may be at any time to cease mining operations under these presents provided the registered holder or lessee shall pay the Government or the collector the land assessment, cess and seigniorage payable by the registered holder or the lessee 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.

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 DISTRICT COLLECTOR  
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 Registering Officer



2. That in case the registered holder shall relinquish the whole or part of the lands in case of the expiry of 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 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 or the lessee shall be required to so fence or fill them and in any such case, it shall be lawful for the collector to show, reserve any such lands, or as the case may be so fence or fill in any pit or excavation at the expense of the registered holder or lessee and to apply the said sum of Rs.10,000/- so deposited in 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.
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.
4. That in the event of any breach by 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 time 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.

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 P. R. R. R.  
 B. B. B. B.  
*[Signature]*  
 REGISTERED  
 HOLDERS

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 REGISTERED HOLDER  
 LESSEE

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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.
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 / Director of Geology and Mining. In case the registered holder/ registered holders, lessee / lessees is / are not satisfied with decision of the Commissioner / Director of Geology and Mining, the matter shall be referred to the State Government.
7. No hindrance should be caused to the surrounding patta fields and poramboke lands.
8. The lessee should strictly adhere to the conditions and rules stipulated by the Government for Minor Minerals form time to time and he should remit seigniorage fee for the minerals removed as per the rated stipulated by Government from time to time.
9. The lessee should pay DMF on the Seigniorage fee remittance for transportation of Mineral from the quarry as per TNDMF Rule-2017 and the lessee should pay the DMF as per the amendment made by the Government as and when.
10. The lessee should maintain a safety zone of 7.5meteres surrounding the boundary of the patta / poramboke lands in the village.
11. The lessee should demarcate the lease hold area at his own cost and should quarry granite only with that area.
12. The lessee should not assign under let or sublet any part of the lease area.
13. The lessee should make his own arrangements for road pathways, channels, and ramp etc.
14. The lessee should obtain the permit the dispatch slips for the transport of dimensional stone from the Assistant Director / Deputy Director (Geology and Mining) Namakkal. The dispatch slip should be kept in the quarry site and be issued to all the vehicle while transporting the dimensional stone form the quarry.

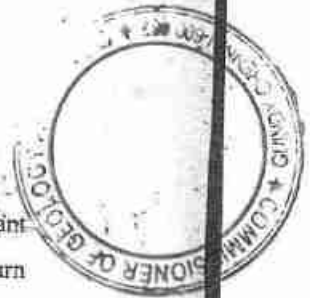
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 S. Ramesh  
 S. Ramesh  
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 LESSEE

*[Signature]* (9/22)  
 LESSOR  
 DISTRICT COLLECTOR  
 NAMAKKAL

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 Registering Officer





15. The lessee should keep correct accounts for quarry and submit to the Assistant Director / Deputy Director (Geology and Mining) Namakkal, monthly return showing the number of workers employed, quantity of minerals quarried and transported before 5<sup>th</sup> day of every succeeding month. The lessee should also furnish a copy of the annual audited accounts relating to the quarry lease to the Assistant Director / Deputy Director (Geology and Mining) Namakkal. The lessee shall allow at any time the officer authorized by the Government from time to time examine the accounts as and when required and furnish to the Government all such information and returns.
16. The lessee should leave a safety distance of 50 meters from the features like highways, low tension and high tension power lines, transformer, temples, historical importance and tanks etc.
17. In the event of any breach of the conditions of leases stated above the lease would become liable for termination of lease as per rules.
18. For the purpose of calculation of stamp duty the following parameters are taken into account. The anticipated seigniorage fee for the total quantity of 61884 CBM of Multi-Colour Granite to be quarried and transported during the entire lease period of twenty years is (2321 X 61884 ) Rs.14,36,32,764/-(Rupees Fourteen Crore Thirty Six lakhs Thirty Two Thousand Seven Hundred and Sixty Four only) Area Assessment for the lease hold area for the entire lease period of 20 years is Rs.9,750/-(Rupees Nine Thousand Seven Hundred and Fifty only) and Security deposit for this lease by the lessee is Rs.40,000/-(Rupees Fourty Thousand only).
19. The registered holder shall abide by the conditions laid down in the payment of Wages Act 1936 (Central Act IV of 1936), the Mines Act 1952(Central Act XXXV of 1952) and the Indian Explosives Act 1884 (Central Act IV of 1884).
20. The lease period starts from the 12<sup>th</sup> day of APRIL-2018 and ends on the 11<sup>th</sup> day of APRIL-2038.

**I. Special conditions stipulated in the lease granting Government Order:-**

1. The applicant should leave a safety distance of 7.5 meters to the abutting patta lands and should not cause any hindrance to them while quarrying and transportation of Granite.

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 S. Ravi  
 S. Ravi

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 DISTRICT COLLECTOR  
 NAMAKKAL

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 Registering Officer





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2. The applicant should leave a safety distance of 10 meters to the pathai poramboke in S.F.No. 521 passing in the northern side of the applied area.
3. The applicant firm should fence the lease granted area with barbed wire before the execution of lease deed as follows:-
  - The pillar post shall be firmly grounded with concrete foundation of height not less than 2 mts and the distance between two pillars shall not be more than 3 mts.
  - The applicant firm shall incorporate the DGPs readings for the entire boundary pillars of the area and the same should be clearly shown in the mining plan.
  - A soft copy of the digitalized map with DGPS readings should be submitted in the CD Form.
4. The lessee shall strictly adhere to the statutory and safety requirements.
5. The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
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 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.
8. The lessee should be followed the instructions issued in Government letter no. 12789 / MMB-2 / 2002-7 Industries department dated: 09.01.2003, Lr.No. DEIAA-TN / F.No. 259 / Mines / 03 // EC.No. 03 / 2018 dated: 23.02.2018

**Conditions:-**

1. The date of commencement of the period of lease shall be the date on which the agreement is executed.
2. The applicant shall pay seigniorage fee or 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.

*[Signature]*  
S. Ravi  
Boundary Officer

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REGISTERED  
HOLDERS

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REGISTERED HOLDER  
/ LESSEE

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LESSOR  
DISTRICT COLLECTOR  
NAMAKKAL

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3. The applicant should keep correct accounts showing the quantities and other particulars of all minerals obtained from the lands permitted to quarry.
4. The applicant should also allow any officer authorized by the District Collector or any officer authorized by him in this behalf or any other officer authorized by the State Government in this behalf to inspect the area and verify records and accounts and furnish such information under the terms as may be required by them.
5. The applicant shall carry out the quarrying operations in skilful, scientific systematic manner keeping in view the proper safety of the labour, conservation of minerals and preservation of environment and ecology.
6. The applicant shall allow any officer authorized by the District Collector and Director of Geology and Mining to enter upon the area and inspect for the purpose mentioned in conditions 4 and 6 above and also carry out the directions issued to the satisfaction of the above said authorities.
7. No quarrying activities connected there shall be done before the execution of the agreement and registration it at the cost of the applicant.
8. No hindrance shall be caused to the adjoining pattadars of public.
9. The applicant should restrict his mining operation strictly within the permitted area as defined in the sketch.
10. The terms and conditions are also subject to such further modifications, deletion and additions alteration as may be ordered by the Government
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 quarrying shall be made within a distance of 7.5 meters of the boundaries of the permitted area.
13. The applicant should make his own arrangements to form the approach road from the public road to the place of his quarry.
14. The lessee shall strictly adhere to the statutory and safety requirements.
15. The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.

*[Signature]*  
 S. Radhakrishnan  
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 REGISTERED HOLDER  
 / LESSEE

*[Signature]* (12/52)  
 LESSOR  
 DISTRICT COLLECTOR  
 NAMAKKAL

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16. That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws or made by the Central Government, State Government or any other authority.
17. That the approval of the mining plan does not in any way imply the approval of the Government in terms of any other provision, Mines and Minerals (Development and Regulation) 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.
19. The lessee firm shall strictly adhere the following conditions stipulated by the DEIAA, Namakkal in the Consent Order No. TN / F.No.259 / Mines / 03 / EC.No: 03 / 2018 dated: 23.02.2018.

EC Conditions to be complied before commencing mining operations:-

1. 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.
2. The proponent shall ensure that First Aid Box is available at site.
3. The excavation activity shall not alter the natural drainage pattern of the area.
4. The excavated pit shall be restored by the project proponent for useful purposes.
5. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
6. The quarrying operation shall be restricted between 7 A.M. and 5 P.M.
7. 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
8. A minimum distance of 15mts. From any civil structure shall be kept from the periphery of any excavation area.
9. 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.

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 S. Radur  
 S. Radur  
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- 10. 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.
- 11. Wet drilling method is to be adopted to control dust emission. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
- 12. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
- 13. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
- 14. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
- 15. 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.
- 16. 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.
- 17. 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
- 18. 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.

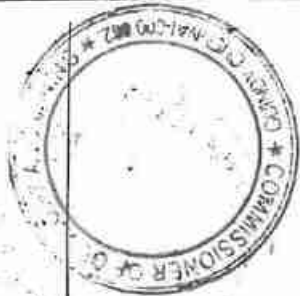
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 DISTRICT COLLECTOR  
 NAMAKKA





19. Measures should be taken to comply with the provision laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dated: 11.01.2010 issued by the MoE & F, GoI to control noise to the prescribed levels.
20. 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.
21. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
22. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
23. 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.
24. 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.
25. 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.
26. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
27. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.

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 S. Radha  
 Sundararaman  
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 / LESSEE

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- 28. The lease holder shall undertake adequate measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector / mining officer shall ensure this.
- 29. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
- 30. 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.
- 31. It shall be ensured that the total extent of nearby quarries located within 500 meter radius from the periphery of this quarry is not exceeding 5 hectares.
- 32. It shall be ensured that there is no habitation is located within 500 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site.
- 33. Ground water quality monitoring should be conducted once in 3 Months.
- 34. Transportation of the quarried materials shall not cause any hindrance to the Village people Existing Village road.
- 35. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining, and Regional Director, MoEF, GOI.
- 36. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
- 37. Bunds to be provided at the boundary of the project site.
- 38. 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.

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39. At least 10 Neem trees should be planted around the boundary of the quarry site.
40. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
41. The project proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity.
42. The project proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
43. Rainwater shall be pumped out Via Settling Tank only
44. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
45. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild life angle including clearance from obtaining committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from Nation Park and Sanctuaries.
46. 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 moniotred by the District Authorities.
47. Safety equipments to be provided to all the employees.
48. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
49. 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.
50. 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.
51. 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.

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S. P. Reddy  
Sundararaman  
Sudha

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DISTRICT COLLECTOR  
NAMAKKAL



- 52. 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.
- 53. 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.
- 54. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
- 55. 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.
- 56. 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.
- 57. 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 Stipulated by DEIAA:-**

- 1. The proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
- 2. No change in mining technology and scope of working should be made without prior approval of the DEIAA, Namakkal.
- 3. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
- 4. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.

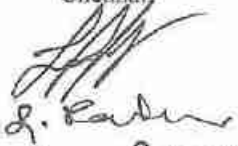
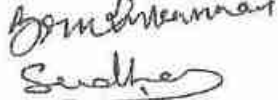

*[Signature]*  
 S. Ravi  
 S. Ravi  
 S. Ravi

REGISTERED REGISTERED HOLDER  
 HOLDERS LESSEE  
 Document No. 100 of 2018  
 1 Contains 30 Sheets. 17 Sheet  
*[Signature]*  
 Registering Officer

*[Signature]*  
 LESSOR  
 DISTRICT COLLECTOR  
 NAMAKKAL  
 (15)



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 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.

  
 G. Radhakrishnan  
  
 S. Sathya  
  
 REGISTERED HOLDER  
 REGISTERED HOLDER  
 1 Contains 30 Sheets 18 Sheet  
 Registering Officer

  
 LESSOR (19/22)  
 DISTRICT COLLECTOR  
 NAMAKKAL  




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, Namakkal may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
18. The DEIAA, Namakkal 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, NKL 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 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.

*[Signature]*  
S. Radha

*[Signature]*  
Sudhakar  
*[Signature]*  
REGISTERED  
HOLDERS

*[Signature]*  
REGISTERED HOLDER  
/ LESSEE

*[Signature]* (26/22)  
LESSOR  
DISTRICT COLLECTOR  
NAMAKKAL

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1 Contains 30 Sheets 19 Sheet  
*[Signature]*  
Registering Officer





- / 20 /
1. Name of the District : Namakkal
  2. Name of the Taluk : Paramathi-Velur
  3. Name of the Village : Nadanthai
  4. Name of the Sub Registration District : Paramathi
  5. Lease Period : 20 years

From 12 .04.2018 to 11 .04.2038.

SCHEDULE

Taluk	Village	S.F.No.	Extent (hect)	Boundaries S.F.Nos.	
Paramathi-Velur	Nadanthai	480/1(Part)	1.62.0	North	521 (Patta Pathai Poramboke)
				South	480(Part) (Patta)
				East	477 (Patta)
				West	516 (Patta)
Total			4.86.0		

IN WITNESS where of M/s. Sivasakthi Rock Exports, represented by its Managing Partner Thiru. S.M.Govindaraj, S/o. Munusamy, No. G-3, Vairam Vasandam, Vairam Gardens, Sambakulam, K.Pudur, Madurai District - (1), Thiru. S.Ravichandran, S/o. Subramaniya Gounder, Old No. 12/C, New No. 8/2, Athipadi Village, Uttankarai Taluk, Krishnagiri District - (2), Thiru. K.Sriivasan, S/o. Kannan, D.No. 283, Nehru Street, Veeraperumanallur, Panruti Taluk, Cuddalore District - (3), and Thiru. D.G.Sudhakar, S/o. Govindappa, No. 1, Byra Sandra Village, Tayalur Post, Mulbagal Taluk, Kolar District - (4) and Tmt.M.Asia Mariam, I.A.S., District Collector of Namakkal District acting for and on behalf of and by the order and direction of the Governor of TamilNadu have here unto set their hands.

*[Signature]*  
**S. Sivasakthi**  
 REGISTERED  
 HOLDER

*[Signature]*  
 REGISTERED HOLDER  
 LESSEE

*[Signature]*  
 LESSOR  
 DISTRICT COLLECTOR  
 NAMAKKAL

Signed by the above named  
 In the presence of  
 1. V.P.SATHIESKUMAR  
 5/267, PUTTULADIMYANARASI  
 BHAVANI

Signed by the above named  
 In the presence of  
 1. M. KRISHNAN  
 S/o M. Sathya  
 Kothavaram  
 Thiruchengode

Signed by the above named  
 In the presence of  
 1. (R. JAYANTH)  
 ASSISTANT DIRECTOR  
 GEOLOGY & MINING  
 NAMAKKAL.

P.R. Kirubhakaran  
 2. P. Kirubhakaran  
 30 Sheets 20 Sheets  
*[Signature]*  
 Registering Officer



2. S. JAMIL SELVI  
 (S. JAMIL SELVI)  
 வகுவாய் ஆய்வாளர்  
 கலெக்டரின் அலுவலகம்  
 நாமக்கல்.

*[Signature]*  
**S. SURIYAKUMAR**  
 M.Sc. M.Phil (Geo), F.C.C (Mining)  
 Qualified Person



தமிழ்நாடு தமில்நாடு TAMILNADU

4925

₹100

AW 741090

T. Manal...





9.8.2014 SIVASAKTHI ROCK EXPORTS  
MADURAI

T. Manal...  
19/3, ...  
RC. No. 1761 / B1 / 07-17

**DEED OF PARTNERSHIP**

THIS PARTNERSHIP DEED IS MADE ON TWENTIETH DAY OF AUGUST TWO THOUSAND AND FOURTEEN BETWEEN:

- 1) SRI S.M.GOVINDARAJ, Son of Sri S.Munusamy, aged about 39 years and residing at Door No G3, Vairam Vasandam, Vairam Gardens, Sambakulam, K.Pudur, Madurai District, Tamil Nadu - 625 007, hereinafter called the party of the First Part;
- 2) SRI R. RAVICHANDRAN Son of Sri P.Subramani Gounder, aged about 45 years and residing at Door No Old No 12/C, New No 8/2, Athipadi Village, Uthangarai Taluk, Krishnagiri District, Tamil Nadu - 635 307, hereinafter called the party of the Second Part;
- 3) SRI K.SRINIVASAN, Son of Sri D.Kannan aged about 42 years and residing at Door No 283, Nehru Street, Veeraperumanallur Village, Paruti Taluk, Cuddalore District, Tamil Nadu - 607 101, hereinafter called the party of the Third Part and;
- 4) SRI D.G.SUDHAKAR, Son of Sri D.R. Govindappa, aged about 34 years and residing at Door No 1, Byra Sandra Village, Tayalur Post, Mulbagal Taluk, Kolar District, Karnataka - 563 136, hereinafter called the party of the Fourth Part.

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 4. 

Contd Page 2





भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

₹. 100



ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு தமில்நாடு TAMILNADU

4920

₹100

19.8.2014

SIVA SAKTHI ROCK EXPORTS PARTNERSHIP DEED  
MADURAI

AW 743085

T. Meenakshi Bai

T. சீவாட்சிபாபா  
முத்தையத்தூர் அப்பாண்டியபாளையம்  
19/3, அரண்மனை வீடு  
கொடகேடு ரோடு, மதுரை-2  
RC. No. 1761 / B1 / 97-17

# 2 #

SIVASAKTHI ROCK EXPORTS PARTNERSHIP DEED

WHEREAS the aforesaid parties herein above have mutually agreed to commence a business of quarrying and selling of rough granite blocks under the firm name and style of Messers "SIVASAKTHI ROCK EXPORTS" at Madurai with effect from 20/08/2014.

AND WHEREAS the parties hereto agree that they have become partners and joined in partnership upon the terms and conditions expressed below,

AND WHEREAS it is considered expedient to reduce the terms and conditions governing the partnership into writing in order to avoid any misunderstandings in future.

NOW THEREFORE THIS DEED OF PARTNERSHIP WITNESSES AS FOLLOWS:

1. The partnership has commenced w.e.f 20/08/2014.

- 1.
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Contd Page 3

भारतीय रिजर्व बँक

एक सौ रुपये

Rs. 100

₹ 100



ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL



தமிழ்நாடு தமில்நாடு TAMILNADU

2014 SIVASAKTHI ROCK EXPORTS MADURAI

AW 741086  
T. Manoj Kumar  
T. Sankar Kumar  
19/3, Anna Salai,  
Chennai - 600 002.  
RC. No. 1761 / B1 / 97-17

# 3 #

SIVASAKTHI ROCK EXPORTS PARTNERSHIP DEED

1. The name of the Partnership shall be Messers "SIVASAKTHI ROCK EXPORTS"
2. That the business of the partnership firm shall be that of quarrying and selling of rough granite blocks etc. The partnership may also undertake any other business or businesses under any other trade name as may be mutually decided upon by them from time to time.
3. The Principal place of business of this Partnership shall be at Door No G3, Vairam Vasandam, Vairam Gardens, Sambakulam, K.Pudur, Madurai District, Tamil Nadu - 625 007. The firm may carry on business at such other place or places as the parties to this deed may decide from time to time. The partners may open any Branch or Branches at such other place or places as they may decide from time to time.

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Contd Page 4

SIVASAKTHI ROCK EXPORTS PARTNERSHIP DEED

4. The Capital of the firm is for the time being fixed at Rs.4,00,000/- (Rupees Four Lakhs Only) which shall be contributed by the parties to this deed as under.

SRI S.M.GOVINDARAJ	- 40%
SRI R. RAVICHANDRAN	- 30%
SRI K.SRINIVASAN	- 20%
SRI D.G.SUDHAKAR	- 10%

Provided always that the partners may by mutual consent increase or decrease the capital and their respective contribution thereto and provided further the partners may instead of raising the capital of the firm, advance such sums of money to the firm and the amount so advanced shall be credited to their respective Partners' Current Account.

5. The firm shall pay interest at 12% per cent per annum to the partners on the amount of Capital contributed and on the amounts advanced by each of them respectively
6. That all the parties to this deed shall be the Working Partners and each shall be entitled to monthly remuneration of Rs.50,000/- They shall perform all such duties, as they mutually agree from time to time, that may be required for the smooth running of the business of the firm.
7. The Partners may by mutual consent borrow funds for the purpose of this Partnership from others including Banks, Financial Institutions, etc., on such terms and conditions as they may decide from time to time. The Partners may offer any property or properties of this Partnership as security for such borrowals as they may decide from time to time.
8. Proper Books of Account shall be kept for the purposes of this Partnership business and the Partners shall have access to the books and the right to verify their correctness.
9. The firm shall maintain one or more than One Banking Account with one or more than One Bank of repute, as may be decided upon by the Partners for the time being of the firm, and such account or accounts shall be operated upon including the power to overdraw any such account jointly by Party of the First and Third part to this deed.
10. The accounts of this Partnership shall be closed annually on 31st March every year. Profit or Loss shall be ascertained after charging all chargeable expenses, depreciation on assets, if any, interest on Partners' Capital contribution as specified in Para 6 hereinabove, Working Partner's Remuneration as specified in Para 7 hereinabove and any amount to be transferred to any reserve account or accounts as the parties to this deed may decide from time to time.

1.



3.

Govindarajan

2. S. Ravichandran

4. Sudhakar

Contd Page 5



11. The resultant amount of Profit or Loss so arrived at as specified in Para 11 hereinabove shall be shared or borne by the Parties to this deed as under.

- 12. SRI S.M.GOVINDARAJ - 40%
- 13. SRI R. RAVICHANDRAN - 30%
- 14. SRI K.SRINIVASAN - 20%
- 15. SRI D.G.SUDHAKAR - 10%

16. No Partner shall without the previous consent in writing of the other Partners assign, sell, charge, mortgage or otherwise deal with his share, rights, and title of interest in this Partnership to any person.

17. The business of this Partnership shall be managed by the Parties hereto either jointly or any one of them severally.

18. That any of the Partners shall have full powers to defend any suit against the Partnership but for the purpose of instituting, withdrawing or compromising any suit or any other legal proceedings, any partner can do so only with concurrence of the other Partners.

19. That the partnership is at Will.

20. That in the case of death of any of the parties, the Partnership shall not be dissolved. Partnership business shall be continued and carried on by the other partners along with the administrator, executor or legal heirs of the deceased or retired partner as the case may be.

21. Any addition or additions to and or alteration or alterations in the terms and conditions set forth hereinabove may be made in writing on a stamp paper applicable to agreement and any such document shall form part and parcel of this deed of Partnership.

22. In the absence of any specific provisions hereinabove the provisions of the Indian Partnership Act, 1932 shall apply to this Partnership.

IN WITNESS WHEREOF, the Parties hereto have set and subscribed their respective hands hereto the day and year first hereinabove written.

WITNESSES:

- 1. *[Signature]* G. KAMATCHI  
Door No. 93. VAIRAMVASATHAM,  
VAIRAM GARDENS SAMBAKULAM  
K. PODUR MADURAI-2
- 2. *[Signature]*  
P. SARAVANAN  
54-S.S.V. Sada Road  
Melur-625106

SIGNED:

- 1. *[Signature]*
- 2. *[Signature]*
- 3. *[Signature]*
- 4. *[Signature]*



GOVERNMENT OF TAMIL NADU  
REGISTRATION DEPARTMENT

FORM 'C'  
(See Rule (9 a))

ACKNOWLEDGEMENT OF REGISTRATION OF FIRM

The Registrar of Firms, MADURAI NORTH

hereby acknowledges the receipts of the statement prescribed by section 58 (1) of the Firm Indian Partnership Act. 1932. The Statement has been filed and the name of the Firm "SIVASAKTHI ROCK EXPORTS" has been entered in register of firms as No 97 of 2014 of Madurai (North) District.

Dated the 20<sup>th</sup> Day of AUGUST 2014



*M. Govindaraj*  
REGISTRAR OF FIRMS  
MADURAI (NORTH)

*[Signature]*



தமிழ்நாடு தமில்நாடு TAMIL NADU 9121 42AB 280923

20/9/17  
 SIVASAKTHI ROCK EXPORTS R. BHARATHI  
 MADURAI STAMP VENDOR  
 Licence No: 03/2000  
 SALEM-5. Tamil Nadu.

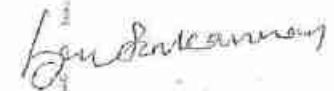
CODICIL


Further to our Partnership Deed dated 27<sup>th</sup> September 2017 in entered between  
 1).S.M. GOVINDARAJ -2) R. RAVICHANDRAN -3) K. SRINIVASAN &  
 4) D.G. SUDHAKAR it is further resolved to authorize Mr. S.M. GOVINDARAJ to  
 open and operate current account in ICICI Bank or any other bank in favour of the  
 firm. The account will be solemnly operated by Mr. S.M. GOVINDARAJ in his  
 capacity as managing partner :

And also authorized Mr. S.M. GOVINDARAJ to sign all Government documents like  
 DIRECTOR OF MINES AND GEOLOGY, SALES TAX, INCOME TAX, CENTRAL  
 EXCISE and etc. in favour of the firm.

1.   
 S.M. GOVINDARAJ

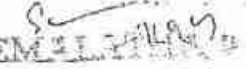
2.   
 R. RAVICHANDRAN

3.   
 K. SRINIVASAN

4.   
 D.G. SUDHAKAR



5.   
 S. SURIYAKUMAR  
 M.Sc. M.Phil (Geo), F.C.C (Mining)  
 Qualified Person  
 1973

6.   
 H. HEMALATHA  
 ADVOCATE AND S.O.  
 33/3, GANESHWAR  
 VINCENT, SALEM  
 HANCOCK STREET

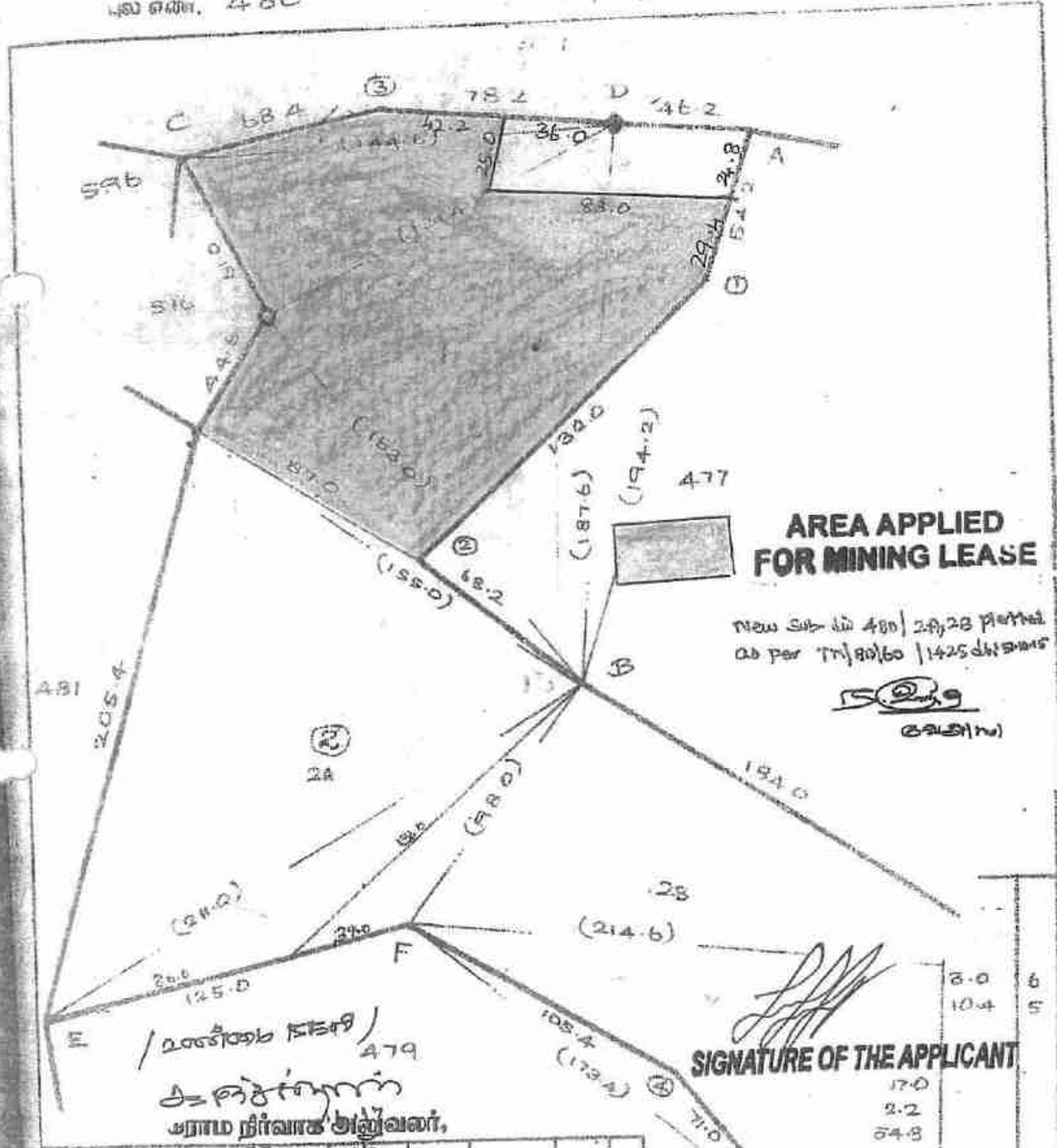
ANNEXURE V - COPY OF FMB



புது சிவகாமி  
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 புது எண், 480

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**AREA APPLIED FOR MINING LEASE**

New Sub No 480/2A, 2B plotted  
 as per TN/80/60/1425 dt/19/6/60

50.9  
 (29.91m)

*S. Suriyakumar*  
**SIGNATURE OF THE APPLICANT**

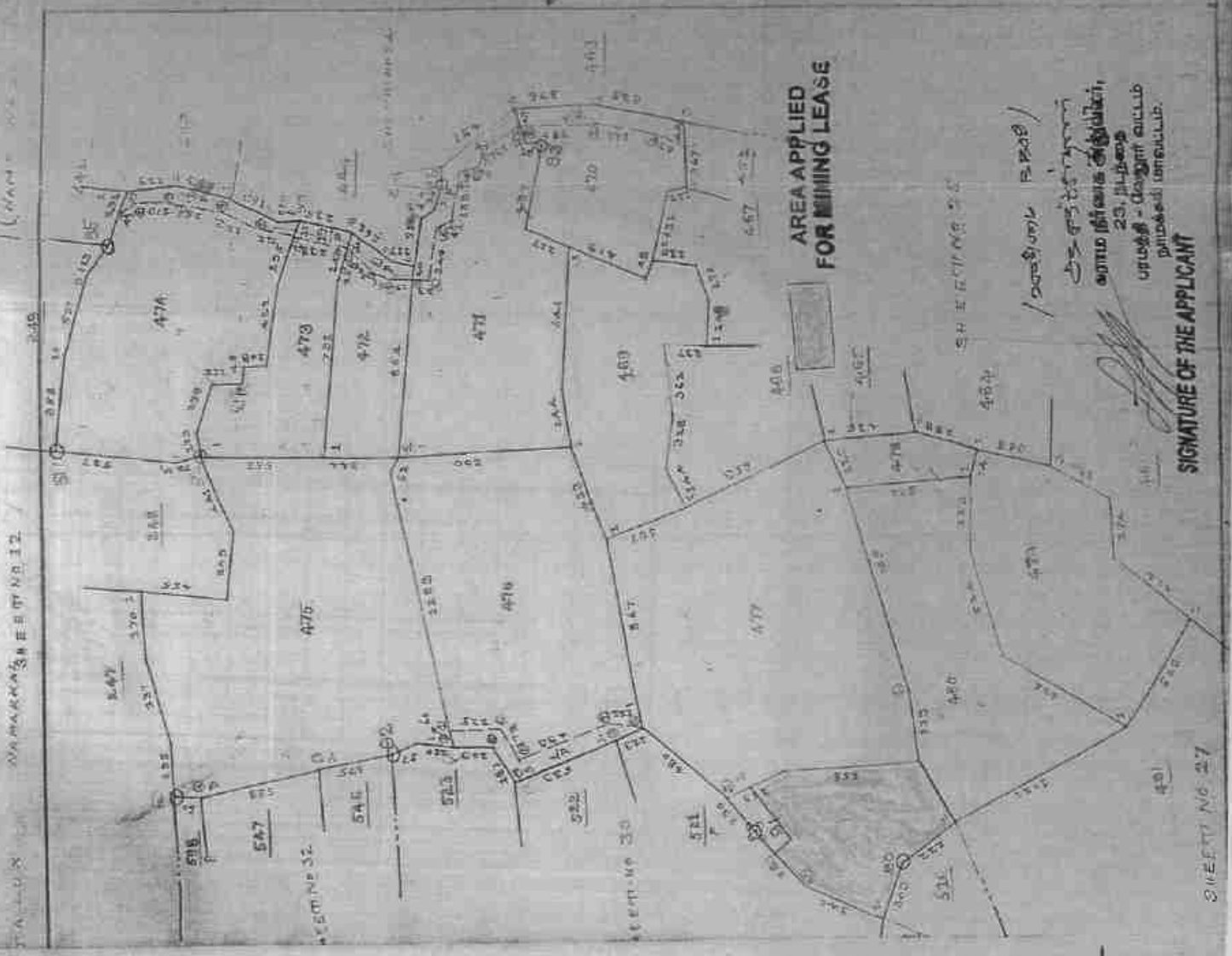
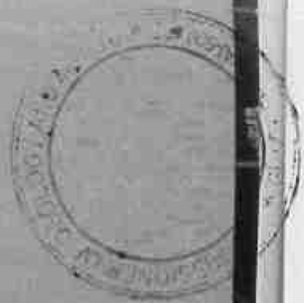
அரசினால் நகராட்சி  
 அராம நிர்வாக அலுவலர்,  
 23, நடந்தை

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*S. Suriyakumar*  
**S. SURIYAKUMAR**  
 M.Sc. M.Phil (Geol), F.C.C (Mining)  
 Qualified Person

3.0	6
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AREA APPLIED FOR MINING LEASE

ಶ್ರೀ ಸುರಿಯಾಕುಮಾರ್  
ಎಸ್. ಸುರಿಯಾಕುಮಾರ್  
23, ಬೀದಿ  
ಉಪಗ್ರಹ - ರಾಜಕೋಟೆ ಜಿಲ್ಲೆ  
ಬೆಂಗಳೂರು ಜಿಲ್ಲೆ

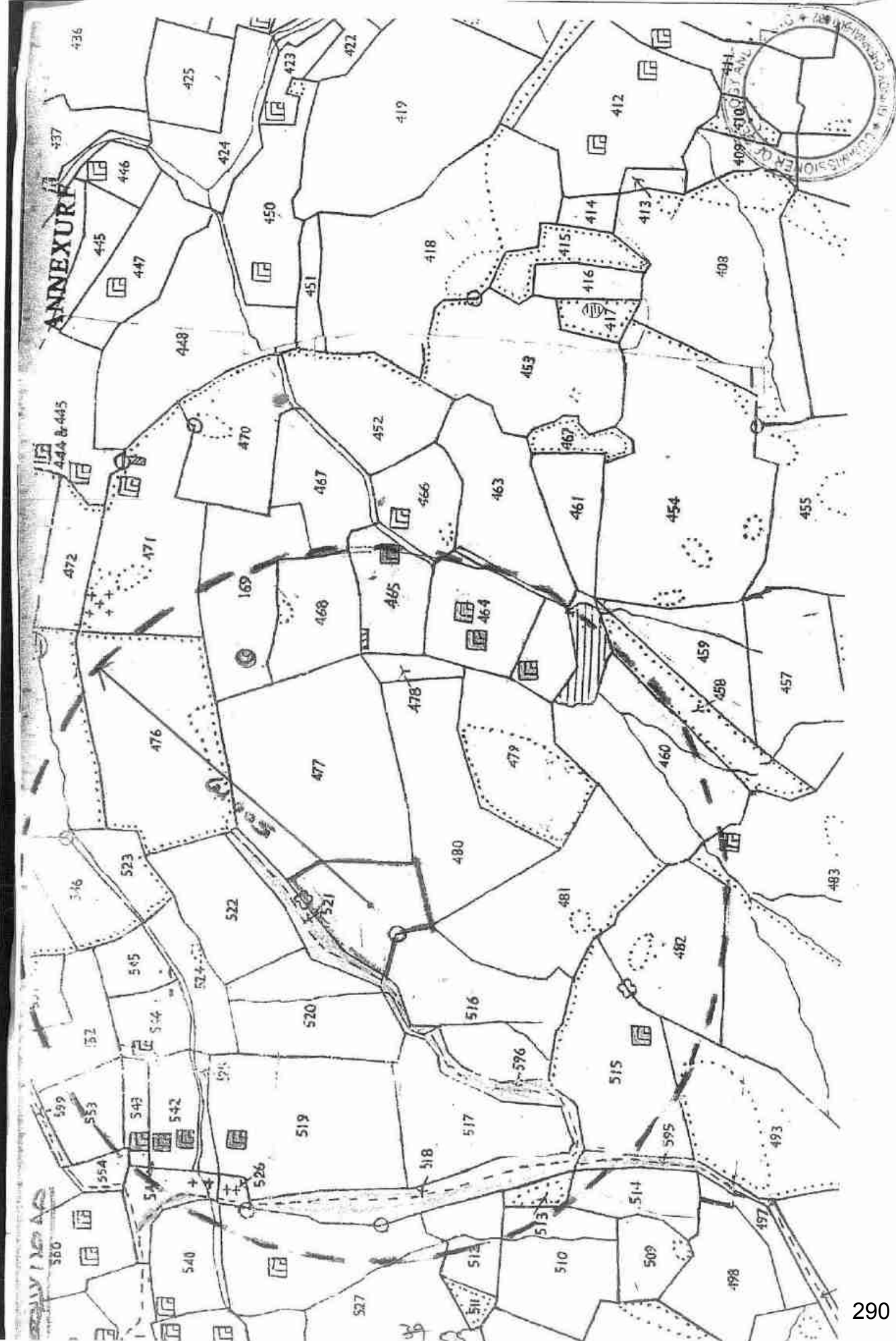
SIGNATURE OF THE APPLICANT

S. SURIYAKUMAR  
M.Sc. M.Phil (Geol), F.C.C (Mining)  
Qualified Person

38  
SH

SHEET NO 27





5/29/2017

வட்டாட்சியர் அலுவலக இணைய சேவை - நில உரிமை விபரங்கள்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : நாமக்கல்

வட்டம் : பரமத்தி வேலூர்

வருவாய் கிராமம் : நடந்தை

பட்டா எண் : 5481

## உரிமையாளர்கள் பெயர்

- |    |                             |                           |
|----|-----------------------------|---------------------------|
| 1. | சிவசக்தி ராக் எக்ஸ்போர்ட்ஸ் | ... sm கோவிந்தராஜ்        |
| 2. | சிவசக்தி ராக் எக்ஸ்போர்ட்ஸ் | ... s ரவிச்சந்திரன்       |
| 3. | சிவசக்தி ராக் எக்ஸ்போர்ட்ஸ் | ... k ஸ்ரீனிவாசன்         |
| 4. | சிவசக்தி ராக் எக்ஸ்போர்ட்ஸ் | ... D G சுதாகரா எ சுதாகர் |

நன்செய்		புன்செய்		மற்றவை			
பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை		
புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
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				1 - 81.50	2.24		

## குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 09/04/023/05481/60358 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 29-05-2017 அன்று 12:05:32 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

*[Handwritten Signature]*  
SIGNATURE OF THE APPLICANT

அ-பதிவேடு விவரங்கள்

ANNEXURE - V



மாவட்டம் : நாமக்கல்  
வட்டம் : பரமத்தி வேலூர்  
கிராமம் : நடந்தை

1. புல எண்	480	9. மண் வயனமும் ரகமும்	8 - 3
2. உட்பிரிவு எண்	1	10. மண் தரம்	10
3. பழைய புல உட்பிரிவு எண்	480-1	11. தீர்வை (ரூ - ஹெ)	1.24
பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	1 - 81.50
அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	2.24
நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	5481
பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	sm கோவிந்தராஜ்மற்றும் 3பேர்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 50358 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

SIGNATURE OF THE APPLICANT



ಬೆಂಗಳೂರು ನಗರ ಪಾಲಿಕೆ, ಸಾರ್ವಜನಿಕ ಕಾರ್ಯದ ಇಲಾಖೆ, ಸಾರ್ವಜನಿಕ ಕಾರ್ಯದ ಇಲಾಖೆ

ಅಭ್ಯರ್ಥಿಯ ವಿವರ		ಶಿಕ್ಷಣ					ಕೆ. ಸಿ. ಕಾರ್ಯ		
ಕ್ರ. ಸಂ.	ವಿಷಯ	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	ಅಭ್ಯರ್ಥಿಯ ಹೆಸರು								
2	ಅಭ್ಯರ್ಥಿಯ ವಯಸ್ಸು								
3	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾಭ್ಯಾಸ								
4	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
5	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
6	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
7	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
8	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
9	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
10	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
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14	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
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16	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
17	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
18	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
19	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
20	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								

ಅಭ್ಯರ್ಥಿಯ ವಿವರ		ಶಿಕ್ಷಣ					ಕೆ. ಸಿ. ಕಾರ್ಯ		
ಕ್ರ. ಸಂ.	ವಿಷಯ	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	ಅಭ್ಯರ್ಥಿಯ ಹೆಸರು								
2	ಅಭ್ಯರ್ಥಿಯ ವಯಸ್ಸು								
3	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾಭ್ಯಾಸ								
4	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
5	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
6	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
7	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
8	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
9	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
10	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
11	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
12	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
13	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
14	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
15	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
16	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
17	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
18	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
19	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								
20	ಅಭ್ಯರ್ಥಿಯ ವಿದ್ಯಾರ್ಹತೆ								

SIGNATURE OF THE APPLICANT

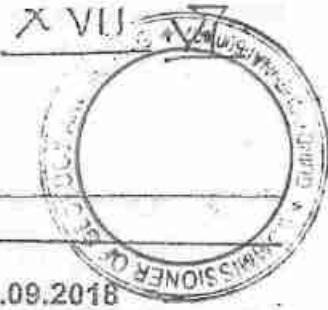
S. Suriyakumar  
 M.Sc. M.Phil (Sec) F.C.C (Marketing)  
 Qualified Person

2015-2016-2017 Cpa-GAP-Red-7-2015



सेल रिफ्रेक्टरी कम्पनी लिमिटेड, सेलम  
 SAIL REFRACTORY COMPANY LTD., SALEM.  
 (A Govt. of India Enterprises)  
 (A Subsidiary of Steel Authority of India Limited)

Annexure - VII



SRCLIP&amp;A/2017/0380 /1935

DATE: 18.09.2018

EMPLOYMENT CERTIFICATEEmployee Details :

Name : S.SURIYAKUMAR  
 Employee No : 100045  
 Grade : E-2  
 Designation : Asst. Manager (Geology)  
 Department : Mines

This is to certify that Sri. S.SURIYAKUMAR F.S.No.100045 was in the employment of this organisation from 20.03.1981 to 31.07.1992 and he has resigned & released with effect from 31.07.1992 AN.

At the time of his resignation on 31.07.1992, he was employed as Assistant Manager in the capacity of II class Mines Manager.

18/09/18  
 S.SRIDHARAN

Asst. General Manager (Prsl & Admn)

Post Box No. 565 Salem - 636 005. Phone : +91427-2341403/4/5/6 Fax : +91427-2341407

पोस्ट बॉक्स नं. : 565, सेलम - 636 005. फोन +91427-2341403/4/5/6 फैक्स +91427-2341407

E-mail : srclsalem@gmail.com CIN No. : U14200TZ2011GO1017357

54  
 59

002646.

ANNEXURE-XVI



# University of Madras

## FACULTY OF SCIENCE

The Senate of the *University of Madras* hereby  
makes known that..... *S. Suriyakumar*..... has been  
admitted to the Degree of Master of Science, he having  
been duly certified to be qualified to receive the same, and awarded  
an Overall Grade..... *0*..... at the Examination held in  
the month of..... *May*..... 1979... in Branch *VII A.- Special Geology*  
Given under the seal of the University, at Madras  
this..... *28th*... day of *September*.... 1979.....

*Registrar*



*A. S. Ramani*  
B. Sc. Engg., C. Engg., F.I.E.E. (Lond.),  
F.I. Rev. E. (Lond.), F.I.E. (Ind.).  
Vice-Chancellor



155

# UNIVERSITY OF MADRAS FACULTY OF SCIENCE

The Senate of the *University of Madras* hereby  
makes known that *S. Srinivakumar*  
has been admitted to the Degree of Master of Philosophy  
in *Geology*....., his having been certified by duly  
appointed Examiners to be qualified to receive the same, and  
having been by them placed in the *First*..... Class  
at the Examination held in *September 1986*.....

*Given under the seal of the University.*

*Louis House*

*September 21, 1988*

*P. Venkayya*

*Registrar*

*Shankar*

*F.N.A., F.N.A.S.O.*

*Vice-Chancellor.*

REGISTERED

Government of India  
Ministry of Labour  
DIRECTORATE-GENERAL OF MINES SAFETY

No. Exam/MNCR-I/Field/Metal/R/ 113/91 /Dated, Dhanbad, the 29<sup>th</sup> 1991

To

Shri S. Suriya Kumar,  
Assistant Manager,  
Mangnesite Mines, Burn Standard Co., Ltd.,  
SALEM-636005, TAMIL NADU.

MEMORANDUM

Ref:-his application dated 16-7-90

By virtue of Govt. Notification  
No.S.O.712(E) dated 13.12.1974 Shri S. Suriyakumar  
son of Shri A. Semban has become  
eligible to work in a capacity requiring the possession  
of First Class Manager's certificate,  
restricted to mines having opencast workings only, under  
the Metalliferous Mines Regulations, 1961 with effect  
from 19th March, 1991 till the above notification  
remain in force.

Encl:-

Secretary,  
Board of Mining Examinations &  
Director of Mines Safety (Exam)





**COMMISSIONERATE OF GEOLOGY AND MINING**

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

To  
M/s Sivasakthi Rock Exports,  
No.G3, Vairam Vasandam,  
Vairam Gardens,  
Sambakulam, K.Pudur,  
Madurai- 625 007.

Rc. No.8442/MM4/2022, dated:10.01.2023

Sir,

Sub: Mines and Minerals - Minor Mineral - Multi Colour Granite - Namakkal district - Paramathi Velur taluk - Nadanthai village - S.F.No.480/1 (P) - over an extent 1.62.0 ha of Patta land - Quarry lease granted to M/s Sivasakthi Rock Exports - First Scheme of Mining Plan submitted for the period 2023-24 to 2027-28 - recommended and forwarded by the Assistant Director (G&M), Namakkal -Approval accorded for the period 2023-24 and 2027-28 - Regarding.

- Ref :
1. Mining plan approved by the Commissioner of Geology and Mining letter in Rc.No.7781/ MM5/ 2017 dated 05.01.2018.
  2. G.O(3D) No.11 Industries (MMB.2) Department dated 12.03.2018.
  3. First Scheme of Mining plan submitted by the lessee on 04.11.2022.
  4. Assistant Director, (G&M), Namakkal letter Rc.No.1250/Mines/2022, dated 05.12.2022.

-pppp-

Kind attention is invited to the references cited.

2) In the reference 3<sup>rd</sup> cited, M/s. Sivasakthi Exports has submitted first Scheme of Mining for approval for the quarry lease granted in G.O. (3D) No.11, Industries (MMB.2) Department, dated. 12.03.2018 for quarrying Multi Colour Granite over an extent of 1.62.0 ha of Patta land in S.F.No.480/1(P) in Nadanthai village, Paramathi Velur taluk, Namakkal District for a period of 20 years. The lease deed was executed on 12.04.2018 and the lease period is till 11.04.2038.

3) The Assistant Director (G&M), Namakkal district in the reference 4<sup>th</sup> cited has forwarded and recommended the first Scheme of Mining for the

period 2023-24 to 2027-28 submitted by M/s Sivasakthi Rock Exports stating the following that,

- a) The mining plan was approved by the Commissioner of Geology and Mining in Lr.No.7781/MM5/2017 dt 05.01.2018 vide reference 1<sup>st</sup> cited.
- b) During the Mining Plan period 2018-19 to 2022-23 the lessee has transported a quantity of 4937.390 cbm of Multi coloured Granite (upto 14.10.2022) in the above subject area.
- c) The DEIAA in letter No. CEIAA-NMK-TN/F.No.259/Mines/03/EC.No. 03/2018, dated 23.02.2018 has approved an EC quantity of 15471 cbm of Multi Colour Granite for the period of five years valid from the date of execution of the quarry lease.
- d) The lessee M/s. Sivasakthi Exports, has submitted the first Scheme of Mining in the reference 3<sup>rd</sup> cited for approval within the prescribed time of 120 days before the expiry of the five year period as per the GCDR, 1999.
- e) The Assistant Director, G&M, Namakkal had stated that the 1<sup>st</sup> scheme of mining plan for the period from 2023-24 to 2027-28 submitted for approval, it is mentioned that the total mineable reserves about 92,356 cbm for a maximum depth of 33 mts and the proposed recoverable reserves @ 30% during the Scheme period is about 15054 cbm from ROM of 50182 cbm of Multi Colour Granite.
- f) The year wise production for the proposed five years is furnished as below:

Year	ROM in cbm	Recoverable reserves @ 30% in cbm
2023-24	10006	3002
2024-25	10134	3040
2025-26	10068	3020
2026-27	9990	2997
2027-28	9984	2995
<b>Total</b>	<b>50182</b>	<b>15054</b>

- g) With regard to the dumping of waste during the scheme of mining plan period, it has been proposed to dump on the southwestern side of the lease hold area.
- h) During the field inspection, it was verified that the lessee has complied the terms and conditions stipulated in the lease granting GO and lease deed and no violations or litigations has been found and tallied with the present field conditions.
- i) There are no archeological monuments situated within the radial distance of 500 m from the subject area and no reserve forest is situated within the radial distance of 1 km from the subject area.
- j) Finally, the Assistant Director (G&M), Namakkal has recommended and forwarded the first scheme of mining submitted by M/s. Sivasakthi Exports for the period 2023-24 to 2027-28 to the Commissioner of Geology and Mining for approval.

4) The first Scheme of Mining forwarded by the Assistant Director (G&M), Namakkal district along with his recommendation for approval have been scrutinized and found to be correct as per Rules.

5) Therefore, based on the recommendation of the Assistant Director (G&M), Namakkal district and in exercise of the powers conferred under Rule 18(4) of Granite Conservation and Development Rules, 1999 read with G.O. (Ms) No.87, Industries (MMC.1) Department dated 22.02.2001, the first Scheme of Mining submitted by M/s. Sivasakthi Rock Exports is approved for proposed ROM of 50182 cbm during the period 2023-2024 and 2027-2028 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 (including progressive mine closure plan) does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act 1957, or any other law including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1986, Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- iii. This first Scheme of Mining including progressive mine closure plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- iv. Provisions of the Mines Act, 1952 and the Rules and Regulations made there under including submission of notice of opening, appointment of manager and other statutory officials as required under Mines Act, 1952 shall be complied with.
- v. Provisions made under Mines and Minerals (Development & Regulation) Act, 1957, MMDR Amendment Act, 2015 and Granite Conservation and Development Rules, 1999 made there under shall be complied with.
- vi. This approval of first Scheme of Mining is restricted to the mining lease area only. The mining lease area is as shown on the statutory plan under Granite Conservation and Development Rules, 1999. The Commissionerate of Geology and Mining does not take any responsibility regarding correctness of the boundaries of the lease shown on the ground with reference to the lease map and other plans furnished by the lessee.
- vii. If anything is found to be concealed as required by the Granite Conservation and Development Rules, 1999 and Tamil Nadu Minor Mineral Concession Rules, 1959 and proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.

- viii. Relaxation to be obtained under Rule 106(2)(b) of Metalliferous Mines Regulations, 1961 from the Director of Mines Safety, if necessary.
- ix. The lessee should obtain environmental clearance from the appropriate authority in respect of the subject area as per rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the notification of the Ministry of Environment and Forest and any other clearances if any.
- x. This first Scheme of Mining is approved for the proposal contained therein and is applicable from the date of approval of the document for the quarrying activities to be carried out within the leasehold area.
- xi. The earlier instances of irregular / illegal quarrying, if any, shall not be regularized through the approval of this document.
- xii. The lessee shall remit the penalty / cost of mineral / other dues if any as arrived by the District Collector / Assistant Director(G&M), Namakkal district.
- xiii. The quarry labourers shall be registered with the Labour Board and shall be enrolled under the Insurance Scheme.
- xiv. Non adherence to any condition set-out above, the approval shall be deemed to have been withdrawn with immediate effect.
- xv. The lessee should comply with the additional conditions stipulated in the Government of India, Ministry of Mines, Order No. 11/02/2020, dated: 14.01.2020 issued as per the Order of the Hon'ble Supreme Court of India, dated: 08.01.2020 that states, "The Mining lease holders shall after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna, etc.

- xvi. The lessee should remit the Stamp Duty as per the approved first Scheme of mining during the currency of the lease period if any.
- xvii. The applicant firm should carry out DGPS survey and erection of RCC boundary pillars as per the norms stipulated in the EOI notification in Rc.No.2921/MM4/2019 dated.01.02.2018 and subsequent corrigendum dated 13.08.2019 through the empanelled agencies.
- xviii. A green belt should be constructed to prevent sound and air pollution due to the proposed quarrying activity of Multi Colour Granite over an extent of 1.62.0 ha of Patta land in S.F.Nos. 480/1 (P) in Nadanthai village, Paramathi Velur taluk, Namakkal district by planting at least 250 seedlings all along the boundary the area.
- xix. No hindrance shall be caused to the adjacent patta and Government poramboke lands if any while quarrying and transportation of granite.
- xx. The waste materials generated during the course of quarrying should be dumped only within the lease hold area that will be earmarked for the purpose in the mining plan as per rule 31 of GCDR, 1999.
- xxi. The applicant firm shall submit Scheme of Mining, mine closure plan and other statutory requirements within the time stipulated for submission of the above as per rules.
- xxii. The applicant firm should maintain the fencing in the lease granted area with barbed wire 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 firm shall incorporate the DGPS readings for the entire boundary pillars of the area and the same should be clearly shown in the mining plan.
  - A soft copy of the digitized map with DGPS readings should be submitted in the CD to the Assistant Director (G&M), Namakkal.
- xxiii. The boundary stones 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.

- xxiv. As per rule 12 (v) of Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant firm shall at their own expense, erect, maintain and keep in repair all boundary pillars.
- xxv. The applicant firm may use mild explosives during quarrying, and storing of explosives if required, by obtaining valid licence under Explosive Act and Rules.
- xxvi. If any violation is found during quarrying operation, the penal provisions of Tamil Nadu Minor Mineral Concession Rules, 1959 and other rules and act in force will attract.
- xxvii. Child labour should not be engaged in the quarry works and the quarry workers should be enrolled in the insurance scheme through the Labour Department.

Encl: Two copies of Approved 1st Scheme of mining for the period 2023-24 and 2027-28.

  
Commissioner of Geology and Mining  
11/11/2023

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

Copy to:

1. The Director of Mines Safety,  
3<sup>rd</sup> floor, Left wing,  
New Additional Building,  
CGO Complex, Shashri Bhavan,  
Nungambakkam,  
Chennai- 06.
2. The District Collector,  
Namakkal District.

# ANNEXURE XI - COPY OF 500M RADIUS CLUSTER LETTER

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

To,  
The Member Secretary,  
State Level Environmental  
Impact Assessment Authority  
(SEIAA), 3rd Floor, Panagal  
Maligai, No.1, Jeemai Road,  
Sindapet, Chennai - 600 015.

Re: No. 1250 / Mines / 2022 dated: 30.05.2023.

Sir,

Sub: Mines and Minerals – Multi-Coloured Granite quarry –  
Namakkal District – Paramathi-Velur Taluk – Nadanthai  
Village – S.F.No. 480/1(Part) over an extent of 1.62.0  
hectares of patta Land – mining lease applied by M/s.  
Sivasakthi Rock Exports – further details submitted to  
obtain SEIAA Clearance – reg.

- Ref: 1. M/s. Sivasakthi Rock Exports Letter dated:  
30.05.2023.
2. The Commissioner, Dept. of Geology and Mining,  
Chennai letter Re.No. 8442 / MM-4 / 2022 dated:  
15.02.2023 (Scheme of Mining Approval).

\*\*\*\*\*

A proposal has been received from M/s. Sivasakthi Rock Exports, for quarrying Multi  
Colour-G granite quarry lease in S.F.No. 480/1(Part) over an extent of 1.62.0 hectare in  
Nadanthai Village of Paramathi-Velur Taluk of Namakkal District vide ref 1<sup>st</sup> cited:

With regard to obtaining of SEIAA Clearance it is to submit that, to ascertain the  
existing / proposed quarries located within the radial distance of 500 meters from the above  
said proposed area, the subject field was inspected and ascertained that, 3 quarries are there  
within the radial distance of 500 meters from this proposed existing area. The details are  
submitted as follows.

Sl.No.	Name	S.F.Nos.	Extent in Heet	Distance in (M)	Lease Status
1.	J.A.Richard	493/1A(P) & 515/2(P)	1.76.0	250	Lease Expired
2.	M.M.Exports	483/2A	2.75.5	400	Existing
3.	Tmt.V.Puritha	482	2.86.5	250	Existing
4.	Sivasakthi Exports	480/1(P)	1.62.0	-	Existing
<b>Total</b>			<b>9.00.0</b>		

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

*(Signature)*  
Assistant Director,  
Geology and Mining,  
Namakkal.

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## ANNEXURE XII - COPY OF EC LETTER FROM DEIAA

Tmt. M. ASIA MARIAM, I.A.S.,  
CHAIRPERSON



Collector's Office,  
Namakkal - 637 003.  
Tel : 04286 - 281112

Fax : 04286-281106  
Email : [mineideaanmk@gmail.com](mailto:mineideaanmk@gmail.com)

**ENVIRONMENTAL CLEARANCE**

Lr. No. DEIAA - NMK-TN / F.No.259 / Mines / 03 / EC.No. 03 / 2018 dated 23-02-2018

To,  
M/s. Sivasakthi Rock Exports,  
No.G3, Vairam Vasandam,  
Vairam Gardens,  
Sembakulam,  
K.Pudur,  
Madurai District.

**Sub:** DEIAA - Namakkal - Proposed Multi-Colour Granite Quarry at S.F.No. 480/1(P) over an extent of 1.62.0 hecsts., of Patta Land in Nadanthai Village, Paramathi-Velur Taluk, Namakkal District by M/s. Sivasakthi Rock Exports - Environmental Clearance - Issued.

**Ref:** 1. Your Application for Environmental Clearance dt: 12.01.2018.  
2. Minutes of the DEAC held on 14.02.2018  
3. Minutes of the DEIAA meeting held on 22.02.2018.

**Details of Minor Mineral Activity:**

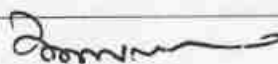
This has reference to your application first cited. The proposal is for obtaining environmental clearance for quarrying of minor minerals based on the particulars furnished in your application as shown below:

<b>1</b>	<b>Name of Project Proponent and address</b>	M/s. Sivasakthi Rock Exports, No.G3, Vairam Vasandam, Vairam Gardens, Sembakulam, K.Pudur, Madurai District.
<b>2</b>	<b>Location of the Proposed Activity</b>	
	Survey Number	480/1(P)
	Latitude and Longitude	Latitude : 11°11'06.75"N to 11°11'12.64"N Longitude: 77°58'09.58"E to 77°58'14.66"E
	Village	Nadanthai
	Taluk	Paramathi-Velur
	District	Namakkal

  
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DEIAA-NAMAKKAL.

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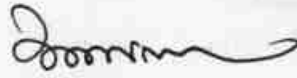
3	<b>Proposed Activity</b>	
	i. Minor mineral	Multi-Colour Granite
	ii. Mining Lease Area	1.62.0 hecets
	iii. Approved quantity	15,471m <sup>3</sup>
	iv. Depth of Mining	33m
	v. Type of mining	Opencast Semi Mechanized Method
	vi. Category(B1/B2)	B2
	vii. Precise Area Communication	Government Letter No. 15473/ MMB-2 / 2017-1 dated: 07.12.2017.
	viii. Mining plan approval	The CGM Chennai. Lr.No. 7781 / MM5 / 2017 dated: 05.01.2018.
	ix. Mining lease period	5 Years
4.	<b>Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:</b>	Not attracted. Affidavit furnished.
5	<b>Man Power requirement per day:</b>	20
6	<b>Utilities</b>	
	i. Source of Water:	Water Vendors
	ii. Quantity of Water Requirement in KLD:	
	a. Domestic	a. 0.7 KLD
	b. Industrial	b. } 2.8 KLD
	c. Green Belt & Dust Suppression	c. }
7	<b>Cost</b>	
	i. Project Cost	i. Rs. 81.00 Lakhs
	ii. EMP Cost	ii. Rs. 7.25 Lakhs
8	<b>Public Consultation:-</b>	Not required as per O.M. dated 24.12.2013 of MoEF, Gol.
9	<b>Date of Appraisal by DEAC:- Agenda No:</b>	14.02.2018 3
10	<b>Date of Review/Discussion by DEIAA and the Remarks:-</b>	
	The proposal was placed before the DEIAA in its III <sup>rd</sup> Meeting held on 22.02.2018 and the Authority after careful consideration, decided to grant environmental clearance to the said project of Multi - Coloured Granite quarrying subject to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.	
11	<b>Validity:</b>	
	<b>The Environmental Clearance is granted to quarrying of Multi-Coloured Granite for the production quantity of 15,471 Cu.m for the period of 5 years from the date of execution of the mining lease period.</b>	

  
 CHAIRPERSON  
 DEIAA-NAMAKKAL.

## DISTRICT LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY - NAMAKKAL

### 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.
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.

  
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## DISTRICT LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY - NAMAKKAL

15. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
16. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
17. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
18. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
19. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
20. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
21. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
22. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
  - i. Roads shall be graded to mitigate the dust emission.
  - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
23. The following measures are to be implemented to reduce Noise Pollution
  - i. Proper and regular maintenance of vehicles and other equipment
  - ii. Limiting time exposure of workers to excessive noise.
  - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
  - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
24. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoE&F, GoI to control noise to the prescribed levels.
25. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
26. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.

  
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## DISTRICT LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY - NAMAKKAL

27. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
28. The following measures are to be adopted to control erosion of dumps:-
  - i. Retention/ toe walls shall be provided at the foot of the dumps.
  - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
29. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
32. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
33. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. 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




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## DISTRICT LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY - NAMAKKAL

39. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
40. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF , GOI.
41. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF , GOI.
42. Bunds to be provided at the boundary of the project site.
43. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
44. At least 10 Neem trees should be planted around the boundary of the quarry site.
45. Floor of excavated pit to be 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.
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.

  
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## DISTRICT LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY - NAMAKKAL


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.

### Special Conditions to be complied while carrying the mining operation as recommended by the Sub Committee :- (DEAC)

1. The applicant should leave a safety distance of 7.5 meters from the inner boundary of the applied field and should not cause any hindrance to them while quarrying and transportation of Granite.
2. The applicant should leave a safety distance of 10 mts to the pathai poramboke passing in the northern side of the applied field.

### General Conditions:

1. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
2. No change in mining technology and scope of working should be made without prior approval of the DEIAA, Namakkal.
3. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
4. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the

  
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## DISTRICT LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY - NAMAKKAL

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 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

  
CHAIRPERSON  
DEIAA-NAMAKKAL.



## DISTRICT LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY - NAMAKKAL

17. The DEIAA, Namakkal may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
18. The DEIAA, Namakkal 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, NKL 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 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.

  
CHAIRPERSON  
DEIAA-NAMAKKAL.

DEIAA-NAMAKKAL  
23/2/18

Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary, Environment and Forests Department, Government of Tamil Nadu, Tamil Nadu, Chennai.
3. The Principal Secretary, Industries Department, Government of Tamil Nadu, Tamil Nadu, Chennai.
4. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-32
5. The Commissioner of Geology and Mines, Guindy, Chennai-32
6. The Conservator of Forest, Namakkal Region, Salem.
7. El division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
8. Spare.

சான்று

நாமக்கல் மாவட்டம், பரமத்தி வேலூர் வட்டம், நடந்தை கிராமம், கிராம நிர்வாக அலுவலர் அளிக்கும் சான்று.

மதுரை மாவட்டம், K.புதூர், செம்பாகுளம், வைரம் கார்டன்ஸ், வைரம் வசந்தம், கதவு எண். G3 என்ற முகவரியில் வசிக்கும் திரு. S. முனுசாமி என்பவர் மகன் திரு. S. M. கோவிந்தராஜ் என்பவர், நாமக்கல் மாவட்டம், பரமத்தி வேலூர் வட்டம், நடந்தை கிராமத்தில் உள்ள சர்வே எண். 480/1(P)-ல் உள்ள 1.62.0 ஹெக்டேர் பரப்பு மட்டா நிலத்தில் பலவண்ணக்கற்கள் வெட்டி எடுக்க அரசாங்கத்திடமிருந்து குத்தகை அனுமதி பெற்றுள்ளார். எனவே, குவாரி குத்தகை உரிமம் எடுத்துள்ள நிலத்தை சுற்றி சுமார் 300 மீட்டருக்கு அருகில் அங்கீகரிக்கப்பட்ட வீட்டு மனைகள், மற்றும் புராதனச்சின்னங்கள் ஏதும் இல்லை எனவும், இதனால் பொதுமக்களுக்கு எவ்வித இடைஞ்சல்களோ அல்லது பாதிப்புகளோ ஏற்படாது எனவும் தெரிவித்துக் கொள்கிறேன். மேலும், அனுமதி கோரிய புலத்திற்கு வண்டிகள் சென்றுவர புலத்திற்கு மேற்கில் வடக்கு தெற்காக வண்டிப்பாதை அமைந்துள்ளது என்று சான்றளிக்கப்படுகிறது.

சான்றளிக்கப்பட்டது  
11.1.2018  
கிராம நிர்வாக அலுவலர்  
23, நடந்தை  
பரமத்தி - வேலூர் வட்டம்,  
நாமக்கல் மாவட்டம்.

TOPOGRAPHICAL VIEW OF MULTI COLOUR GRANITE QUARRY OF  
M/S. SIVASAKTHI ROCK EXPORTS



Name of the lessee  
Address

M/s. SIVASAKTHI ROCK EXPORTS  
No.G3, Vairam Vasandam, Vairam Gardens,  
Sambakulam, K.Pudur,  
Madurai – 625 007, Tamil Nadu  
Contact No: +918778569017,  
Email: [sivasakthirockexports@gmail.com](mailto:sivasakthirockexports@gmail.com)

LOCATION OF THE AREA:

Extent : 1.62.0 Ha  
S.F. No : 480/1 (Part)  
Village : Nadanthai  
Taluk : Paramathi Velur  
District : Namakkal  
State : Tamilnadu

Signature of the lessee

The Managing Partner,  
M/s. SIVASAKTHI ROCK EXPORTS

Signature of Village Administrative Officer (VAO)

23. 11.2023  
புலமணி - வேலூர் வட்டம்,  
நாமக்கல் மாவட்டம்.



தமிழ்நாடு தமில்நாடு TAMILNADU

- 6 JUN 2023

Sivasakthi Rock Exports  
Madurai.

CZ 266486

S. ராஜேந்திரன்

முத்திரைதாள் விற்பனையாளர்

எண்: 2/2013. Ph: 235253

சேலம் - 636 00

**AFFIDAVIT TO SEIAA, TAMIL NADU**

I, **M/s. Sivasakthi Rock Exports**, No.G3, Vairam Vasandam, Vairam Gardens, Sembakulam, K.Pudur, Madurai District, Pincode-625 007, Tamil Nadu state do hereby solemnly declare and sincerely affirm that,

I have applied for getting environmental clearance to SEIAA Tamil Nadu for quarry lease for Multi Colour Granite Quarry in S.F.No.480/1(P), Nadanthai Village, Paramathi Velur Taluk, Namakkal District, Tamil Nadu.

1. I swear to state that within 10kms radius of the mines which I have applied for environmental clearance, none of the followings are situated as per the General Conditions of EIA Notification, 2006

- Protected area notified under the Wildlife (Protection) Act, 1972.
- Critically polluted area as identified by CPCB constituted under Water (Prevention and Control of Pollution) Act, 1974

Eco Sensitive areas identifies by the Forest Dept/State Govt



Cell: 88945-34467  
C. CHANDRASEKARAN, B.A., B.L.,  
Advocate & Notary Public  
(Government of India)  
En Roll: Ms. 284/2001  
270/1-A, K.K.R. Anugraha,  
Sone College Opposite,  
Kanchipuram SALEM - 626066

- Inter-state boundaries and International boundaries within 10Km Radius from the proposed site.

2. I will complete the following Corporate Environment Responsibility (CER) activities before commencement of the quarrying activities in addition to CSR and EMP.

CER Activity	Project Cost (Rs. In Lakh)	CER Cost (Rs in Lakh)
Providing Sanitary Facilities, Library Facilities, Tree Plantation to Government Girls high school in nearest villages and developing hygienic toilet facilities.	85.5	5.0
<b>Total Cost Allocation</b>	<b>85.5</b>	<b>5.0</b>

3. Quarries located within 500m radius from the periphery of our quarry

i) Details of Existing Quarries

S. No.	Name of the Owner	Village & S.F. No.	Extent in Hect.	Lease Period	Remarks
1.	J.A.Richard	493/1A (P) & 515/2 (P)	1.76.0		
2.	M.M.Exports	483/2A	2.75.5		
3.	Tmt. V.Punitha	482	2.86.5		
4.	Sivasakthi Rock Exports	480/1 (P)	1.62.0	12.04.2018 - 11.04.2038	

ii) Details of Expired Quarries

S.No.	Name of the Owner	Village & S.F. No.	Extent in Hect.	Lease Period	Remarks
--NIL--					

iii) Details of Abandoned Quarries

S.No.	Name of the Owner	Village & S.F. No.	Extent in Hect.	Lease Period	Remarks
--NIL--					



Lu 07/06/2023  
 Call: 98945-34467  
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 270/1-A, K.K.R. Anugraha,  
 Sans College Opposite,  
 Anakapalle, SALEM - 636005.

SIGNED BEFORE ME

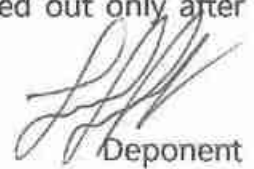
iv) Details of Proposed Quarries

S.No.	Name of the Owner	Village & S.F. No.	Extent in Hect.	Remarks
--NIL--				

v) Future Proposed Quarries

S.No.	Name of the Owner	Village & S.F. No.	Extent in Hect	Lease Period	Remarks
--NIL--					

4. There will not be any hindrance or disturbance to the people living on enroute / nearby my quarry site while transporting the mined out materials and due to quarrying activities.
5. There are no habitations/villages located within 300 meters radius from the periphery of my quarry.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. The required insurance will be taken in the name of the labourers working in my proposed quarry.
8. The existing road from the main road to the quarry is in good condition and same will be maintained and utilized for transportation of Multi Colour Granite.
9. I will not engage any child labour in my mines and I am aware that engaging child labour is punishable under the Law.
10. All types of safety/protective equipments will be provided to all the laborers working in my quarry.
11. No permanent structures, temples etc are located within 500m from the periphery of my quarry.
12. The quarrying activity has not yet commenced and it will be carried out only after obtaining environmental clearance.

  
Deponent



*Ms. Sivasaakthi*  
Cell: 98945-34467  
**C. CHANDRASEKARAN, B.A., B.L.,**  
Advocate & Notary Public  
(Government of India)  
En Roll: Ms. 284/2001  
270/1-A, K.K.R. Anugraha,  
Sona College Opposite,  
Kasakaranoor. SALEM - 636005.

**M/s. SIVASAKTHI ROCK EXPORTS**  
(Project proponent)

**SIGNED BEFORE ME**

Solemnly and sincerely affirmed and  
Signed before the Notary Public on  
the day of 07/06/2023



*lu 07/06/2023*  
Cell: 98945-34467  
C. CHANDRASEKARAN, B.A., B.L.,  
Advocate & Notary Public  
(Government of India)  
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