

**DEAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT OF EXISTING
MULTI COLOUR GRANITE QUARRY**

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

Project Proponent

Tvl. MEENAKSHI GRANITES

No.5, Sri Padmalaya Complex

Madurai Main Road, Melur,

Madurai District,

Tamil Nadu - 625106

meenakshigranites2015@gmail.com

Project Details

Karapadi Multi Colour Granite Quarry

S. F. No : 348/1(P), 348/2(P), 348/5, 348/6,
349/1, 349/3, 349/4, 350/1, 350/2,
350/3, 350/5(P) & 350/6.

Village : Karapadi

Taluk : Sathyamangalam

District : Erode

Proposed Production

Reserves:

Mineable Reserves: 9,82,461m³

Production: 25,364m³@ 30% of granite for
five years and 5,073 m³ per annum.

Ultimate Depth of Mining: 36m bgl

TERMS OF REFERENCE ISSUED BY SEAC/SEIAA

ToR Identification No: TO24B0108TN5529412N/ Date: 12.07.2024

Laboratory

ABM Environmental and Analytical Laboratory

NIPBASS PLAZA, 4/77-L,

Indrani Nagar, Santhai Road,

Narasothipatti, Salem-636004

Baseline Monitoring Period: December 2022 to February 2023

EIA CONSULTANT



AADHI BOOMI MINING & ENVIRO TECH (P) LTD

(QCI/NABET Accredited EIA Organization)

3/216, K.S.V.Nagar, Narasothipatti, Alagapuram (PO),

Salem – 636004.

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Mob: 98427 29655.

Tvl. MEENAKSHI GRANITES
No.5, Sri Padmalaya Complex
Madurai Main Road, Melur,
Madurai District,
Tamil Nadu – 625106

Date:

To

District Environmental Engineer
Tamil Nadu Pollution Control Board
CMP Plot, SIDCO Industrial Estate
Chennimalai Road, Erode- 638 001.

Sub: Submission of **Draft Environmental Impact Assessment (EIA) Report** as per EIA Notification, 2006 dated 14.09.2006 and amendments for the proposed Existing Multicolour Granite Quarry over an extent of 8.96.6 Hectare in S.F. No: 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, Karapadi Village, Sathyamangalam Taluk and Erode District, Tamil Nadu –reg.

Ref:

1. MoEF&CC OM vide F.No.IA3-22/11/2023-IA.III (E-208230)
2. G.O No: G.O. (3D). No: 18 Industries (MME-2) Dept. dated 22.03.2018
3. Approval of Mining Plan Vide. Lr.No.2305/MM4/23, dated 12.05.2023.
4. Online proposal No. SIA/TN/MIN/471668/2024, dt:06/05/2024
6. ToR Identification No. TO24B0108TN5529412N/ File No: 10910 Date: 12.07.2024

Dear Sir/Madam,

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 ToR Identification No. TO24B0108TN5529412N/ File No: 10910 Date: 12.07.2024 with a Demand Draft of Rs. () in favour of DEE, TNPCB, Erode 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,

(Tvl. Meenakshi Granites)
Project Proponent

Encl: 1. DD Number: Date:
2. Draft EIA Report along with the soft copy.
3. Executive Summary (English and Tamil)

Draft Environmental Impact Assessment Report

Proponent: *Tvl.Meenakshi Granites, Multicolour Granite Quarry, Erode District*

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Tvl. MEENAKSHI GRANITES

No.5, Sri Padmalaya Complex
Madurai Main Road, Melur,
Madurai District,
Tamil Nadu - 625106

Undertaking by Project Proponent

I, **Tvl. Meenakshi Granites**, as **Project Proponent**, hereby give this undertaking to the effect that the conditions laid down in Terms of Reference vide ToR Identification No. TO24B0108TN5529412N/ Date: 12.07.2024 for our existing Multicolour Granite Quarry, in SF. No. 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, over an extent of 8.96.6 Ha of Karapadi Village, Sathyamangalam Taluk, Erode District, Tamil Nadu have been compiled with 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 :

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: suriyakumarsemban@gmail.com, admin@abmenvirotec.com,Website: www.abmenvirotec.com**Date:****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 Environmental Impact Assessment Report has been prepared as per the conditions laid down in Terms of Reference vide ToR Identification No. TO24B0108TN5529412N/ Date: 12.07.2024 for conducting Public Hearing and obtaining Environment Clearance from SEIAA/SEAC, Tamil Nadu for existing Multicolour Granite Quarry of **Tvl. Meenakshi Granites** located in Karapadi Village, Sathyamangalam Taluk, Erode District, Tamil Nadu.

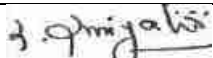
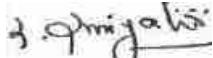
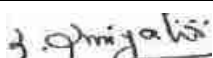
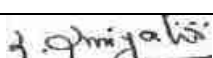
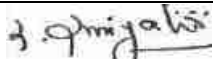

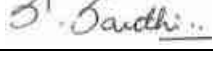




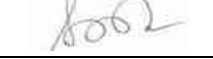
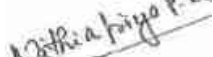
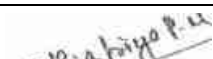
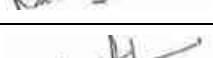
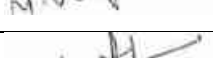
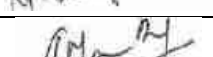
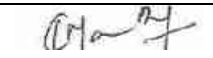
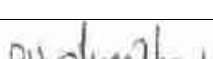
I also confirm that I shall be fully accountable for any mis-leading information mentioned in this statement.

Name : **Mr.S.Suriyakumar**

Signature :


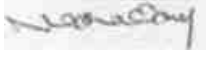








Designation : **Managing Director**Name of the EIA Consultant Organization: **Aadhi Boomi Mining & Enviro Tech Private Limited.**QCI/NABET Accredited Consultant, Certificate No: **NABET/EIA/2124/RA 0228.**

Draft Environmental Impact Assessment Report*Proponent: Tvl.Meenakshi Granites, Multicolour Granite Quarry, Erode District***DECLARATION OF EXPERTS - NABET**

S. No	Name of the Expert	Category	Functional Areas	Signature
In-House Experts				
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	

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Empanelled Experts				
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)	Bidisha Roy
Team Member Involved in Report Preparation				
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	

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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 and 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 Tamil Nadu
GLC	-	Ground Level Concentration
HSE	-	Health, Safety and Environment
HA	-	Hectare
KLD	-	Kilo Liters Per -Day
KM	-	Kilo Meter
MOEF&CC	-	Ministry of Environment Forest and Climate Change
NH	-	National Highway
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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S. No	TERMS OF REFERENCE		
1. SEAC Conditions - Site Specific			
2.1	1	The project proponent shall submit a Certified Compliance Report obtained from the office of the concerned DEE/TNPCB (or) IRO, MoEF & CC, Chennai as per the MoEF&CC O. M dated.08.06.2022 for the previous EC and appropriate mitigating measures for the non-compliance items, if any.	Obtained Certified Compliance Report from IRO, MoEF&CC, Chennai, Annexure - XI in pouch
	2	For the existing quarry, the PP shall obtain a letter from the concerned AD (Mines) which shall stipulate the following information: <ul style="list-style-type: none"> i. Original pit dimension of the existing quarry 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 carried out, if any vi. Quantity of material mined out outside the mine lease area (or) in the adjacent quarry/land. vii. Existing condition of Safety zone/benches viii. Details of any penalties levied on the PP for any violation in the quarry operation 	It is under process. Once the PP obtained letter from AD/DD Geology and Mining Department, Erode District it will be submitted to SEA/SEIAA.
	3	The structures within the radius of (i) 50 m, and (ii) 100 m 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.	The details of nearest habitation are given in table 2.2 in chapter 2. Refer page 17 and 18.
	4	The Proponent shall develop thick greenbelt for not less than two rows and garland drain around the boundary of the proposed quarry and the photographs indicating the same shall be shown during the EIA appraisal.	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 161.
	5	The study on impact of the proposed type of quarrying operation involves controlled blasting or diamond wire saw cutting, etc., on the surrounding environment.	As it is granite quarry, blasting will be carried out to remove blocks from the parent rock by forming crack. Adequate Blast shield or blast mats will be provided wherever necessary for fly rock protection during blasting, thus to prevent the accident on the

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		nearest farms.
6	The Project Proponent shall furnish the revised EMP based on the study carried out on impact of the dust & other environmental impacts due to proposed quarrying operations on the nearby agricultural lands for remaining life of the mine in the format prescribed by the SEAC considering the cluster situation.	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 the EIA report.
7	A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: i. Copy of the agreement forming CMC. ii. The Organization chart of the Committee with defining the role of the members iii. The 'Standard Operating Procedures' (SOP) executing the planned activities.	Under Process.
2. SEAC Standard Conditions		
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	It is under process. Once the PP obtained letter from AD/DD Geology and Mining Department, Erode District it will be submitted to SEA/SEIAA.

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3.1		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.	Yes, The Latest habitations detail VAO certificate enclose in pouch
	3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc., with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.,	The details of nearest habitation in the study area are given chapter 2. Refer table 2.2 in page 17 and 18.
	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 pages 73-78 in chapter 3. The details of water bodies in the study area are given chapter 2. Refer table 2.2 in page 17 and 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 in page 84. The impact on Ecology and Biodiversity are given in chapter 4. Refer clause 4.10 in page 154.
	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.	Not applicable. The mining area does not involve any forest land. Refer table 2.2 in page 17 and 18.
	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	Slope stability study under preparation and incorporated in final EIA Report.

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	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.	This is existing quarry.
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.
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.	As it is rough stone quarry, blasting will be carried out to remove blocks from the parent rock by forming crack. 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.
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 handover to SEIAA Meeting.
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,	Not Applicable. In this Mine working state after 15.01.2016.
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	The mining activity was stopped before date. The period of earlier mining is 2018-2023.
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	Approved depth – 36m bgl Actual depth – 24m bgl Tvl. Meenakshi Granites (No proponent name

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	<p>leases area.</p> <ul style="list-style-type: none"> ❖ 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. 	<p>changed)</p> <p>Yes, Refer Annexure-IX</p> <p>Yes, Mining activity has been carried out as per approved mining plan.</p>
15	<p>All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p>	<p>The Toposheet showing location of the lease area is attached in Chapter 1. Refer fir no1.2 in Page No.6.</p> <p>The geology and geomorphology of the 10km radius of proposed area is given in chapter 2. Refer fig 2.11 in page 27.</p> <p>The land use/land cover image is given chapter 3. Refer page 117.</p>
16	<p>The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,</p>	<p>The drone video, fencing and green belt development along the periphery is under process. The photographs will be attached in final EIA Report.</p>
17	<p>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.</p>	<p>The fencing and green belt development along the periphery is under process. The photographs will be attached in final EIA Report.</p>
18	<p>The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.</p>	<p>The details of reserves, production capacity and methodology are given in chapter – 2. Refer page 37.</p> <p>The impacts on surrounding environment due to mining activity are given in chapter 4.</p>
19	<p>The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.</p>	<p>The employment potential of proposed project is given in chapter 2. Refer page 49.</p>
20	<p>The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of</p>	<p>The hydro geology study has been conducted within the study area of project site. Refer in Chapter 3. The details of water bodies in the study area are given</p>

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	groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess their 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.	chapter 2. Refer page 17 and 18. The depth of water table identified by Geo resistivity survey is 52m bgl whereas the proposed depth of mining is 36m bgl. Therefore, the mining activity will not intersect ground water table.
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.	The baseline data for the environmental and ecological parameters were collected. Refer chapter 3. Refer pages 54 to 83.
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) be submitted.	The studies on rain water harvesting is given in chapter 7. Refer pages 176 to 177.
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 3.24 in page 117.
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 8.96.6 Ha of Tvl. Meenakshi Granites.

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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.	No. There is no boundary of critically polluted area found within 10km radius proposed mining lease area.
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 pages 176 to 177.
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 2.6 in page 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, Pungamin tree, Guava tree, Teak tree are found within 500m radius.
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	The mine closure plan for the proposed project is included in the EIA report. Refer fig 2.18 of chapter 2.
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.
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	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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	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	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 of chapter 7. Refer page 172.
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 172 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 page 163.
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.	Yes, it is given in EIA report in chapter -4.
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 3.13 of chapter 3. Refer pages 102 to 112 of EIA report.
39	Details of litigation pending against the project, if	Not applicable.

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	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.	The benefits of the proposed project are given detail in chapter 8. Refer pages 179-182.
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.	Obtained Certified compliance report from IRO, MoEF&CC, Chennai. Annexure - XI in pouch
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 the 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.

3. SEIAA Standard Conditions:

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.	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,	Certified Blaster will be engaged for blasting having adequate knowledge in Environmental safety aspects. Plan will be included in the EIA report. The usage of

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4.1		the usage of haul roads by the individual quarry in the form of route map and network.	haul roads by the individual quarry is attached in EIA report. Refer fig 2.6 in page 20 of chapter 2.
	5.	The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Risk Management is elaborated in chapter 7 of the EIA report.
	6.	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report.	Agreed. The CMC will form Environmental Policy to practice 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 8.96.6 Ha is attached in the EIA report. Refer fig 2.18 page 47 in chapter 2. After forming CMC, the restoration strategy of individual quarry will be submitted to AD Mines, Erode.
	8.	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.	Occupational safety and Health care of the workers are included in Chapter 4 in the EIA report. Refer pages 163 and 164.
	Agriculture & Agro-Biodiversity		
	9.	Impact on surrounding agricultural fields around the proposed mining Area.	The impact on surrounding agricultural fields is given in chapter 4.
	10.	Impact on soil flora & vegetation around the project site	The impact on ecology and biodiversity including soil flora and vegetation around the project site is mentioned in chapter 4. Refer pages 154 to 160.
11.	Details of type of vegetation including no. of trees & shrubs within the proposed mining area and if so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP.	As it is existing Multi colour 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, <i>Prosopis juliflora</i> are found within 500m radius buffer zone. It will not be disturbed during quarrying activity.	
12.	The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horti-	The impact on ecology and biodiversity including the soil micro flora, fauna and soil seed banks around the	

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	cultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed bank sand suggest measures to maintain the natural Ecosystem.	project site is mentioned in chapter 4. Refer pages 154 to 160.
13.	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. The afforestation plan for five years is given in chapter 4. Refer table 4.29 in page 161.
14.	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 in page 165.
Forests		
15.	The project proponent shall detail study on impact of mining on Reserve forests and free ranging wildlife.	There is No reserve forests located within 10km radius of the project site. There are no wildlife sanctuaries within 10km radius. Refer table 2.2 in page 16 of chapter 2.
16.	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	There is no endangered species found within 10km radius study area.
17.	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	As it is existing rough stone quarry, no trees and shrubs are present in the quarry area.
18.	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	There are no protected areas, National Parks, Corridors and Wildlife pathways within 10km radius of the project site. There is no reserve forest located within 10km radius. The impact on reserve forest is given in Chapter 4.
Water Environment		
19.	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby 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	<p>The hydro geology study has been conducted within the study area of project site. Refer pages 73 to 78 in Chapter 3. The details of water bodies in the study area are given chapter 2. Refer page no 17 and 18.</p> <p>The depth of water table identified by Geo resistivity survey is 52m bgl whereas the proposed depth of mining is 36m bgl. Therefore, the mining activity will not intersect ground water table.</p>

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	mine lease period.	
20.	Erosion Control measures.	To control the erosion, the tree sapling will be planted along the mining lease boundary. Garland drainage will be developed around the dump to control the washout of dump due to hydrostatic pressure.
21.	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	The impact of mining on the nearby villages and water bodies are given detail in chapter 4.
22.	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 in pages 157 to 160.
23.	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.
24.	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	The study and the impact on aquatic plants and animals in water bodies are mentioned in Chapter 4. There are no caves, heritage site, and archaeological site found within 10km radius of project site.
25.	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 153. The soil physical, chemical components and microbial components are given in Chapter 3.
26.	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The impact study on surface water bodies and agricultural land is given in chapter 4.
27.	The EIA shall include the impact of mining activity on the following: a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams.	Yes, we are including in this part in EIA report.

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Energy		
Climate Change		
28	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	The carbon emission due to proposed mining activity and its mitigation measures are given in Chapter 4. Refer in page 139.
29	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.	The carbon emission due to proposed mining activity and its mitigation measures are given in Chapter 4. Refer in page 139.
30	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	Impact on the mining pollution we have studied refer chapter 3, and mitigation measures we have included.
Mine Closure Plan		
EMP		
31	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs.	Detailed Environmental management plan is given in chapter 10. Refer page 185.
32	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 10.1 in chapter 10. Refer page 185. Budget for mine closure plan is given in table 10.3 in page 190 of chapter 10. The disaster management plan is given in chapter 7. Refer page 172.
Risk Assessment		
Disaster Management Plan		
Others		
33.	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, waterbodies 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 - X in pouch

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34.	As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan. The 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 maybe investigated and reported.	The final EIA Report prepared part of the Environment Management Plan. 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 177.
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Standard Terms of Reference for (Mining of minerals)

S. NO	TERMS OF REFERENCE	
1.1	An EIA/EMP Report shall be prepared for peak capacity (MTPA) operation in an ML/project area of ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.	Agreed. The EIA/EMP report have been prepared for peak capacity operation in mining plan under 8.96.6 ha.
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for.....MTPA of mineral production based on approved project/Mining Plan for MTPA. Baseline data collection can be for any season (three months) except monsoon.	The EIA/EMP report have been prepared for peak capacity operation in mining plan under 8.96.6 ha. Monitoring data for a period of three months (December 2022– February 2023) on Air quality, Water quality, Noise level, Soil, Flora and Fauna in the core and buffer zones is collected and compiled data wise in the EIA report in Chapter 3.
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided	The KML file with pin drop and coordinate of mine at 500 to 1000 m interval have been provided in page 7 in chapter 1.
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other	Survey of India Toposheet No. 58E/4 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 figs 1.1, 1.2, 3.26,

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	polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also	3.27, 3.29 and Refer pages 5, 6, 121, 122 and 124 respectively.
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.	Land use 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 page 117 in chapter 3. Land use plan of the mine lease area is given in page 32 of table 2.8.
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.	The details of contour map showing the area drainage of the core zone and 25 km are given in chapter 3, Refer page 122.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ river let system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of leng the, quantity and quality of water to be diverted	The catchment area details mentioned in chapter 3. Refer page 87.
1.8	Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent	The Details of mineral reserves, geological status of the study area and ultimate working depth and progressive stage-wise working scheme until the end of mine life have been provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan in chapter 2. Refer Pages 33 to 48. The Progressive mine development and

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	Authority should be furnished for green field and expansion projects.	Conceptual Final Mine Closure Plan have also been shown in figs 2.18 and 2.19 in chapter 2.																																				
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	The details of mining methods, technology and equipment have been mentioned in chapter 2. Refer pages 28 to 32.																																				
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	There is no modification of natural drainage and existing rivers/water courses flowing through the Mining Lease area.																																				
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.	The details of land use pattern given chapter 2. Refer page 33.																																				
1.12	Original land use (agricultural land/forestland/grazing land /waste land /water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;"></td> <td style="width: 15%; text-align: center;">ML/Project</td> <td style="width: 15%; text-align: center;">Land</td> <td style="width: 15%; text-align: center;">Area</td> <td style="width: 15%; text-align: center;">under Area</td> <td style="width: 20%; text-align: center;">Under</td> </tr> <tr> <td></td> <td style="text-align: center;">S.N_{use}</td> <td></td> <td style="text-align: center;">Surface</td> <td></td> <td style="text-align: center;">Rights(ha)</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td style="text-align: center;">(ha)</td> <td></td> </tr> <tr> <td></td> <td></td> <td>Agricultural land</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>Forest Land</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>Grazing Land</td> <td></td> <td></td> <td></td> </tr> </table>		ML/Project	Land	Area	under Area	Under		S.N _{use}		Surface		Rights(ha)					(ha)				Agricultural land						Forest Land						Grazing Land				Area under Surface Area Under Mining Rights(ha) <ol style="list-style-type: none"> 1. Agricultural land - Nil 2. Forest Land - Nil 3. Grazing Land - Nil 4. Settlements - Nil 5. Others (specify) – 8.96.6 ha (Non-Agricultural land) S.N. Details Area (ha) <ol style="list-style-type: none"> 1 Buildings - 0.01.00 ha 2 Infrastructure - Nil 3 Roads - 0.06.00 ha 4 Others (specify) - 7.00.35 ha
	ML/Project	Land	Area	under Area	Under																																	
	S.N _{use}		Surface		Rights(ha)																																	
				(ha)																																		
		Agricultural land																																				
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		Grazing Land																																				

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	<p>Settlements Others (specify) S.N. Details Buildings Infrastructure Roads 4.others (specify)</p>	
<p>1.13</p>	<p>Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.</p>	<p>Details of Flora and Fauna found in the study area are given in chapter 3 in the EIA Report. Refer page 84-102. No scheduled list of fauna is found in this study area.</p>
<p>1.14</p>	<p>One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.</p>	<p>Monitoring data for a period of three months (December 2022– February 2023) on Air quality, Water quality, Noise level, Soil, Flora and Fauna in the core and buffer zones is collected and compiled data wise in the EIA report in Chapter 3.</p>
<p>1.15</p>	<p>Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations super imposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface</p>	<p>The baseline study area (core and buffer zone) such as Air, Water, Noise and Soil samples were collected and tested as per CPCB guidelines mentation in chapter 3. Refer page 54 to 83.</p>

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	water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/nonpolluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.	
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided	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. Refer clause 4.1 of pages 126-139. Wind Rose Pattern is shown in fig. 3.1. Refer page 53 of Chapter 3.
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.	The details of traffic study there is no any habitation with in 100m distance from the both side of road in the quarry area mentioned in chapter -2. Refer page 20. The proper mitigation measures will take the project proponent refer chapter 4.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.	The study on Socio-economic for the proposed project is mentioned in clause 3.10 of chapter 3. Refer page 102 of EIA report.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to	The impact on ecology and biodiversity including soil flora & vegetation around the project site is mentioned in chapter 4. Refer page 154 to 160.

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	minimize the impact of forest diversion.	
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.	Yes, it is given in EIA report. Refer clause 4.13 in page 163 of EIA report.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted	The hydro geology study has been conducted within the study area of project site. Refer page 73-78 in Chapter 3. The details of water bodies in the study area are given chapter 2. Refer table 2.2 in page 17 and 18.
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.	The hydro geology study has been conducted within the study area of project site. Refer page 73-78 in Chapter 3. The studies on rain water harvesting is given in chapter 7. Refer page 177 to 178.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.	Quarry Safety pertaining to the failure of pit slope in open cast quarrying is described in table 7.1, page 173. Safety for blasting is given under table 10.1 in page 185. General safeguard measures are given in Chapter 4.
1.24	Detailed water balance should be provided. The breakup of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.	The water requirement for the project is 5.0 KLD; the details are given in chapter 2 in page 46. A detailed water balance is shown in fig 4.4 of chapter 4. Refer page 147.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs	The project proponent will be submitting design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan.
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be	Agreed. The project proponent will be proposed LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral.

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	explored	
1.27	PP to evaluate the greenhouse emission gases from the mine operation and corresponding carbon absorption plan.	Agreed. the project proponent evaluates greenhouse gas emissions as a consequence of mining operations mentation in chapter 4 and its mitigation measures are given in chapter 4. Refer clause 4.2 in page 138 to 148.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.	A detailed Risk and Disaster Management Plan has been prepared and detailed in chapter 7. Refer pages 172 to 174.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	The detailed impact studies are given in Chapter 4.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.	The detailed of impact of mineral transportation handling, transfer of mineral and waste on air quality will be mentation chapter 4. Refer pages 133 to 147.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.	Thesis is rough stone quarry could not construct any permanent structures like canteen, rest areas and effluents plant, we can provide temporary construction for parking, rest area and toilet facility.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.	The project proponent own tractor mounted water sprinkler is available.
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre-mining status should be provided. A Plan for the ecological restoration of the mined-out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and	Conceptual mining plan is given in chapter 2. Refer fig 2.18 in page 47.

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	issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.	
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.	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 161.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.	The details of Environmental Management Plan including project cost and progressive mine closure plan mentation in chapter 2. Refer page 47.
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.	The existing rough stone 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 in chapter 7. Refer clause 7.3 of page 175. The Socio-Economic study detailed in included in clause 3.10 of chapter 3. Refer page 102.
1.37	CSR Plan along with details of villages and specific budget any provisions (capital and recurring) for specific activities over the life of the project should be given.	CSR activities 2.5% of the project's profits was allocated to the improvement of the Karapadi village grama panchayat, including the construction of a road, solar lights, water purifiers, and street lights.
1.38	Corporate Environment Responsibility:	
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.	Agreed.
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.	Agreed.
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.	Agreed.
1.42	d) To have proper checks and balances, the company should have a well laid down system of reportingofnon-compliances/violationsofenvironmentalnormstotheBoard	Agreed.

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	of Director of the company and/or shareholders or stakeholders at large.	
1.43	e) Environment Management Cell and its responsibilities to be clearly spelled out in EIA/ EMP report	The Environmental Management Cell have been mentioned in the EIA/EMP report.
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.	Yes, self-monitoring of Environmental compliance regulations will be indicated.
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.	There are no any litigations/ court cases filed/pending in this project.
1.46	PP shall submit clarification from PCCF that mine does not fall under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.	Under Process.
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closure plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.	The copy of the approved SOM plan letter enclosed in Annexure - VI
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report	This is existing quarry; the details of mining plan and approved mine closure plan have been mentioned in EIA/EMP report. Refer page 47 in chapter 2.
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.	The details of Public Hearing information such as newspaper, proceedings/minutes of Public Hearing and photos will be placed in final EIA report.
1.51	PP shall carry out survey through drone highlighting the ground reality for at least 10 minutes	The project proponent will carry out drone survey in final EIA report.
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.	The project proponent earlier obtained EC from SEIAA, Chennai. Lr. No: SEIAA-TN/F.No:6464/2017/1(a)/EC. No: 3970/2018 dated: 12.03.2018. Refer Annexure- VIII

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1.53	The first page of the EIA /EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)	Agreed. The production capacity, area and detail of project proponent mentation in first page of EIA/EMP report. The Baseline Monitoring Report with all analytical reports done by a MoEF&CC/NABL accredited laboratory is enclosed with the EIA Report.
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapters section.	Yes, all documents are properly referenced with index and continuous page numbering.

Standard Terms of Reference

1.	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one-year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	The lease was granted for Tvl. Meenakshi Granites (8.96.6 Ha) vide document no 1512 of 2018 for the period of 20 years. Refer Annexure III
2.	A copy of the document in support of the fact that the Proponent is the right full lessee of the mine should be given.	The lease deed was executed on 23.04.2018 and will expire on 22.04.2023. Refer Annexure III.
3.	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	Contents in all documents are synchronizing with one another in terms of mine lease area, production levels, waste generation, its management and quarrying technology.
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).	The area is bounded by northern latitude of 11°21'44.7411" to 11°21'32.7629" N and eastern longitude of 77°12'20.8758" to 77°12'38.7912" E. Toposheet No. 58E/3. Details are given in Page No. 6 of Chapter 1. Geomorphology & Geology of the area is given in Fig No 2.11. Refer Pg.No.27 of Chapter 2. Land Use details given in Table 3.18 pg. no.118 and also refer Fig No.3.24 pg.no.117. Land use within the lease area is mentioned in Table No 2.8 in Chapter 2. Refer Page No 33.

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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.	Survey of India Toposheet No. 58E/3 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 figs 1.1, 1.2, 3.26, 3.27, 3.29 and Refer pages 5, 6, 121, 122 and 124 respectively.
6.	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	The details of land proposed for mining activities are given in Table No 2.8 of Chapter 2. Refer Page No: 33.
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 in to focus any infringement/deviation/ violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	The proponent Tvl. Meenakshi Granites 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.
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.	Quarry Safety pertaining to the failure of pit slope in open cast quarrying is described in Table 7.1, Page No.173. Safety for blasting is given under Table 10.1: in Page 185. General safeguard measures are given in Chapter 4.
9.	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.	The Study area of the existing mining project comprises of 10km zone around the mining Lease boundary has been prepared. Data like reserves, waste generation up to life of mine have been incorporated in Chapter 2 (Pg. No. 32-49) of the EIA report.
10.	Land use of the study area delineating forest area,	Land use of the study area, parks, migratory routes

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	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.	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 3.11.6 in Page no. 114 in Chapter 3. Land use plan of the mine lease area is given in Page No. 33, Table No.2.8.
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. 45, 46. 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. 175.
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.	Not applicable. The mining area does not involve any forest land. Refer Table 2.2 Pg No.17 and 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.17 and 18.
14.	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable.
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 17 and 18. The details of flora within the study area are given detail in Chapter 3. Refer Clause 3.9 in Page No 85

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		to 102.
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. 154-160.
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 and 18.
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 84 -102) 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	The project site is neither falling under 'Aravalli range' not it is located in proximity to area declared as Critically Polluted Area.

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	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).	Not Applicable. Arabian Sea is located 152.3 km away from the lease area towards the west side (Refer Page No. 17 and 18, Table 2.2). 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 programmers prepared and submitted accordingly, integrating the sectoral programme 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. 175). The Socio-Economic study detailed in included in Clause 3.10 of Chapter 3, Page No 102-112.
22.	One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-	Monitoring data for a period of three months (January 2023– March 2023) on Air quality, Water quality, Noise level, Soil, Flora and Fauna in the core and buffer zones is collected and compiled data wise in the EIA report. Chapter 3, Page No. 84 to 102.

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	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.	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 126-140. Wind Rose Pattern is shown in Fig. 3.1, Pg. No: 55 of Chapter 3.
24.	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	The water requirement for the Project is 3.0 KLD; the details are given in Chapter – 2, Page No.49. A detailed water balance is shown in Fig 4.4 of Chapter 4, Page No.147.
25.	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	The rough stone 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.
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.	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, page No.176.
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.	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. 147-153.
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	The mining operation will not intersect the ground water table. Schematic representation is shown in Page No: 150, Refer Fig.4.6. The depth of mining is 36m bgl whereas the depth of water table is 50-

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	<p>groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.</p>	<p>52m bgl. So, No NOC is required from CGWA for the proposed project. However detailed Hydro geological study has been carried out and incorporated in Chapter 3 of clause 3.7, Pg. No: 73-78.</p>
29.	<p>Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.</p>	<p>There is no stream crossing inside the mining lease area and hence there is no need of modification/diversion.</p>
30.	<p>Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.</p>	<p>Elevation of the quarry area is 316m above MSL. The mining operation will be at a maximum depth of 36m bgl. The ground water table is at 50-52m bgl from the surface in the adjacent tube well, and mine workings are above groundwater table. Refer Fig No 4.7 in Page No.152.</p>
31.	<p>A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.</p>	<p>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.161.</p>
32.	<p>Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure,</p>	<p>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.</p>

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	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.	Details of the onsite shelter and facilities to be provided to the mine workers are discussed in Chapter 2 Clause 2.13. Refer Page No.49.
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 2.18 in Page No.47.
35.	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational Health impacts of the Project are detailed in EIA report. Refer Clause 4.13 of Chapter 4, Page No. 163.
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: 184-190.
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: 179-182.
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. Page No. 195-201.
39.	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to	Public hearing yet to be conducted in this project.

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	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.	No litigation pending against the project.
41.	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost – 97 L EMP cost- 8.25 L Refer Chapter 2, Page No. 50)
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. Page No: 172-174.
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.	Project Benefits have been detailed in Chapter 8. Page No: 179-182.
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.	Yes, Yes, all the document to be proper referenced with indexed and page no also. Yes, Yes, We are prepared in EIA draft English and Tamil No

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Proponent: *Tvl.Meenakshi Granites, Multicolour Granite Quarry, Erode District*

<p>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.</p> <p>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.</p> <p>i) As per the circular no. J-11011/618/2010-IA. II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as maybe applicable.</p> <p>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.</p>	<p>Yes,</p> <p>PH yet to be conducted after any change, we have submitted Form -I and PFR.</p> <p>Yes, we have obtaining Certified compliance report from IRO, MoEF&CC, Chennai.</p> <p>We have included in the surface plan of the area indicating contours of main topographic features, drainage and mining area, geological maps and sections and sections of the mine pit and external dumps.</p>
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CHAPTER 1: INTRODUCTION

1.1. PURPOSE OF THE REPORT

The applicant, **Tvl. Meenakshi Granites** having registered office at No: 5, Sri Padmalaya Complex, Madurai Main Road, Melur, Madurai District - 625106, have been granted mining lease from the State Government over an extent of 8.96.6 Hectares in S.F. No's: 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, Karapadi village, Sathyamangalam Taluk, Erode District to quarry Multi colour granite under G.O. (3D). No: 18 Industries (MME-2) Dept. dated 22.03.2018.

The mining plan was approved by Commissioner of Geology and Mining vide letter No: 5359/MM5/2017, Dated 27.10.2017. Then, PP had obtained Environmental Clearance from State Environment Impact Assessment Authority (SEIAA), Tamil Nadu vide Letter No. SEIAA-TN/F.No.6464/2017/1(a)/EC.No.3971/2018, dated: 12.03.2018. The lease was granted for a period of 20 years. The lease was executed on 23.04.2018 and has validity till 22.04.2038.

Scheme of mining is 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. Now, the first scheme of mining has been prepared for the period 2023-2024 to 2027-2028 with due consideration of environmental parameters so as to obtain Environmental clearance (EC) from State Environment Impact Assessment Authority (SEIAA) vide MoEF&CC Notification S.O 141(E) dated 15th January, 2016 and it has been first scheme of mining plan was approved by Commissioner of Geology and Mining, Guindy, Chennai vide Lr.No.2305/MM4/23, dated 12.05.2023.

The extent of existing Multi colour granite area is 8.96.6 Ha, hence the proposed project comes under Category B1 as per EIA Notification 2006 and its amendments. Now the application has been made for Terms of Reference for carrying out EIA studies. The project cost is about Rs.97 Lakhs and EMP cost is Rs. 8.25 lakhs.

Based on cluster letter Rc No: 024/Mines/2023 dated: 02.08.2023 issued by Assistant Director, Department of Geology and Mining, Erode District, there is no other quarries with in 500m radius in the lessee area. Further 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	TOR Identification No
1	Tvl. Meenakshi Granites	SIA/TN/MIN/471668/2024, dt:06/05/2024	SEIAA Meeting dated 10.07.2024	TO24B0108TN55294 12N Dated: 12.07.2024

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

Years	Proposed Production				
	Topsoil (m ³)	Weathered (m ³)	ROM (m ³)	Production Multi Colour Granite @ 30% (m ³)	Rejection @ 70% (m ³)
2018-2019	6336	29140	16800	5040	11760
2019-2020	3264	15980	17136	5141	11995
2020-2021	3472	16800	16800	5040	11760
2021-2022	--	--	17280	5184	12096
2022-2023	--	--	17280	5184	12096
Total	13072	61920	85296	25589	59707

From the above table, it is shown that the applicant excavates 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 SEIAA is same.

1.2. IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

1.2.1. IDENTIFICATION OF PROJECT

Table 1.3 Details on Project and Project Proponent

M/s. Sivasakthi Rock Exports	
Particulars	Details
Address of the Project Proponent	TVL.MEENAKSHI GRANITES, No: 5, Sri Padmalaya Complex, Madurai Main Road, Melur, Madurai District - 625 106. Tamil Nadu Mob: +919600634444. Email ID: meenakshigranites2015@gmail.com

Lease Area	8.96.6 Hectares
Site Location	Karapadi village, Sathyamangalam Taluk, Erode District, Tamil Nadu
Geographical Co-ordinates	Latitude: 11°21'44.7411" to 11°21'32.7629" N Longitude: 77°12'20.8758" to 77°12'38.7912" E
Toposheet No.	Toposheet No: 58E/3
Mining plan approval	Scheme of mining approved by Commissioner of Department of Geology and Mining, Guindy, Chennai vide Lr.No.2305/MM4/23, dated 12.05.2023.
Precise Area Communication	G.O. (3D) No. 18, Industries (MME-2) Dept. dt: 22.03.2018
Mining Plan Approval Details	5359/MM5/2017 dated 27.10.2017
EC letter from SEIAA	SEIAA-TN/F.No.6464/2017/03/1(a)/EC.No.3971/2018, Dated 12.03.2018
Period of Lease	20 years (23.04.2018 to 22.04.2038)
Approval of Scheme of mining	Rc.No.2305/MM4/2023 dated 12.05.2023
AD Cluster letter	Rc.No.024/Mines/2023 dated 02.08.2023

Table 1.4 Land Particulars

State & District	Taluk	Village	S.F. No.	Total Extent of area (Ha)	Ownership Occupancy
Tamil Nadu & Erode	Sathyamangalam	Karapadi	348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6	8.96.6	Own patta land

1.3 BRIEF DESCRIPTION OF THE PROJECT

1.3.1. Nature and Size of the Project

Open cast, mechanized mining will be adopted to extract Granite of required size from the quarry area. Hydraulic excavators and diamond wire saw will be used for cutting the rocks. Close spaced cutting of 1m is adapted along a straight line. The Wire saw cutting is adopted below second bench to recover more granite blocks to increase the rate of recovery.

Geological resources of Granite are estimated as **1432908m³** and mineable reserves is estimated at **982461m³** up to depth 36m (Ultimate depth) leaving necessary safety distance from the lease boundary. Production Schedule is proposed as **25364m³** @ 30% of Multi colour granite recovery for five years and average production is **5073m³** per annum.

1.3.2. Location of the Project

The project site is easily accessible from Sathyamangalam. By travelling from Sathyamangalam via NH 948, reach Puliampatti. From Puliampatti, by travelling via MDR (Puliampatti- Sathyamangalam) road for 102km north chinna Kuttai village road is reached in west. This village chinna Kuttai road leads to the project site.

The area is represented by Survey of India Topo sheet No. 58 E/3, the location map is given in Fig. No 1.1. The area lies in the northern latitude of 11°21'44.7411" to 11°21'32.7629" N and eastern longitude of 77°12'20.8758" to 77°12'38.7912" E.

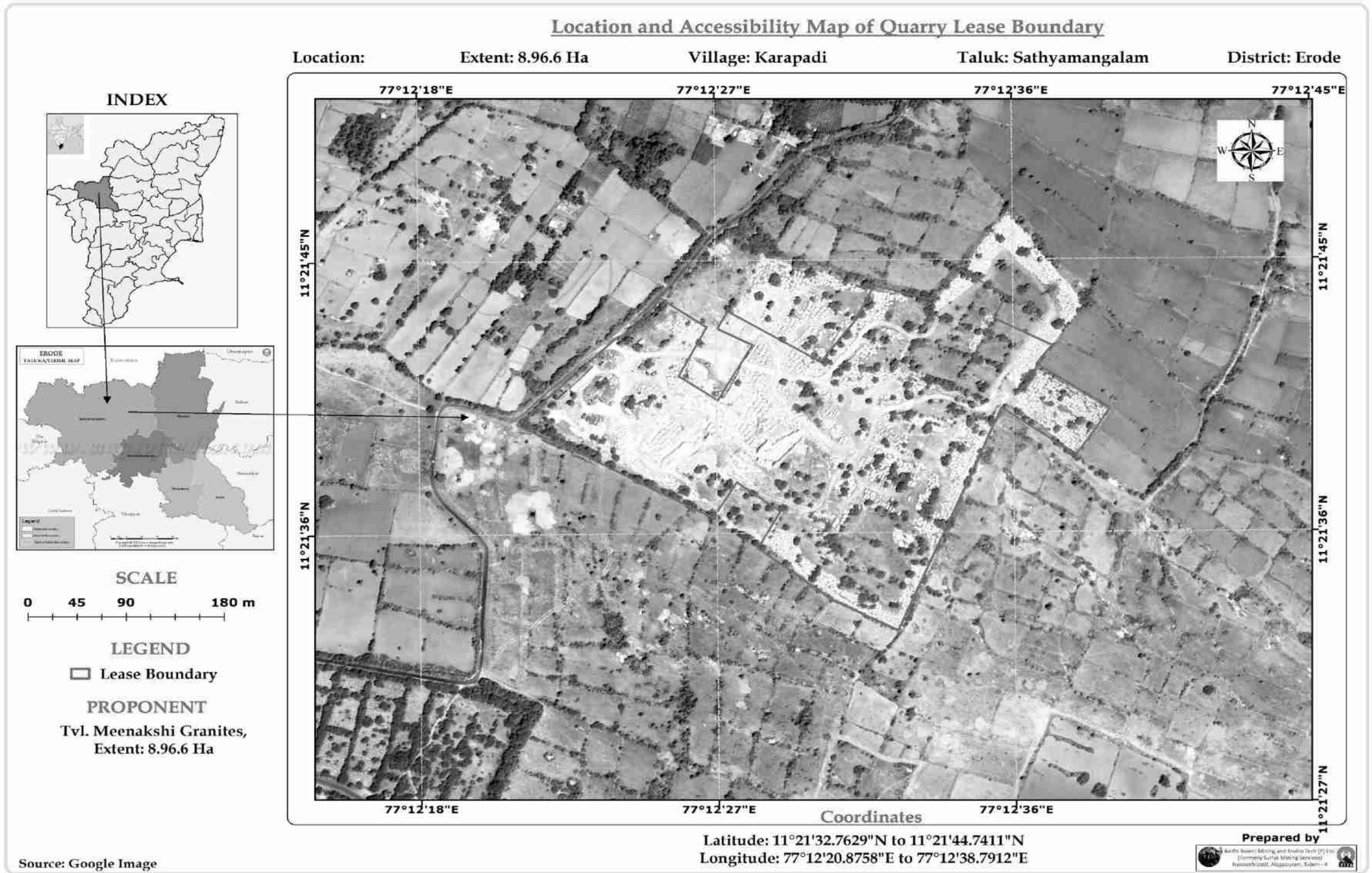
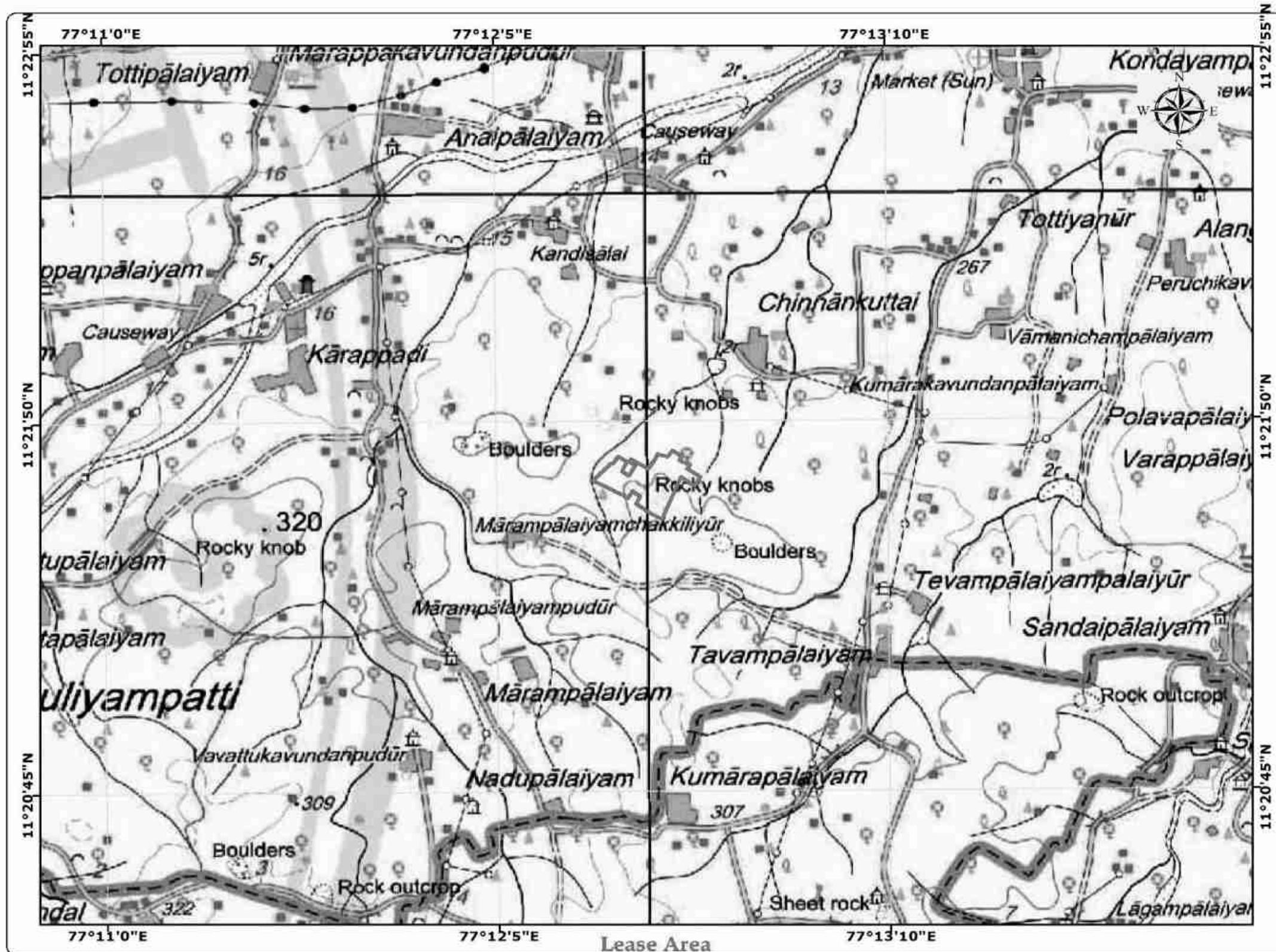


Fig No 1.1 Google earth image showing location and route for existing multi color granite quarry

Toposheet showing Location of Quarry Lease Boundary



Source: Survey of India

INDEX
 Toposheet No: 58E/3

CONVENTIONAL SYMBOLS

LOCATION
 Extent: 8.96.6 Ha
 S.F.No: 348/1(P),2(P),5,etc.,
 Village: Karapadi
 Taluk: Sathyamangalam
 District: Erode

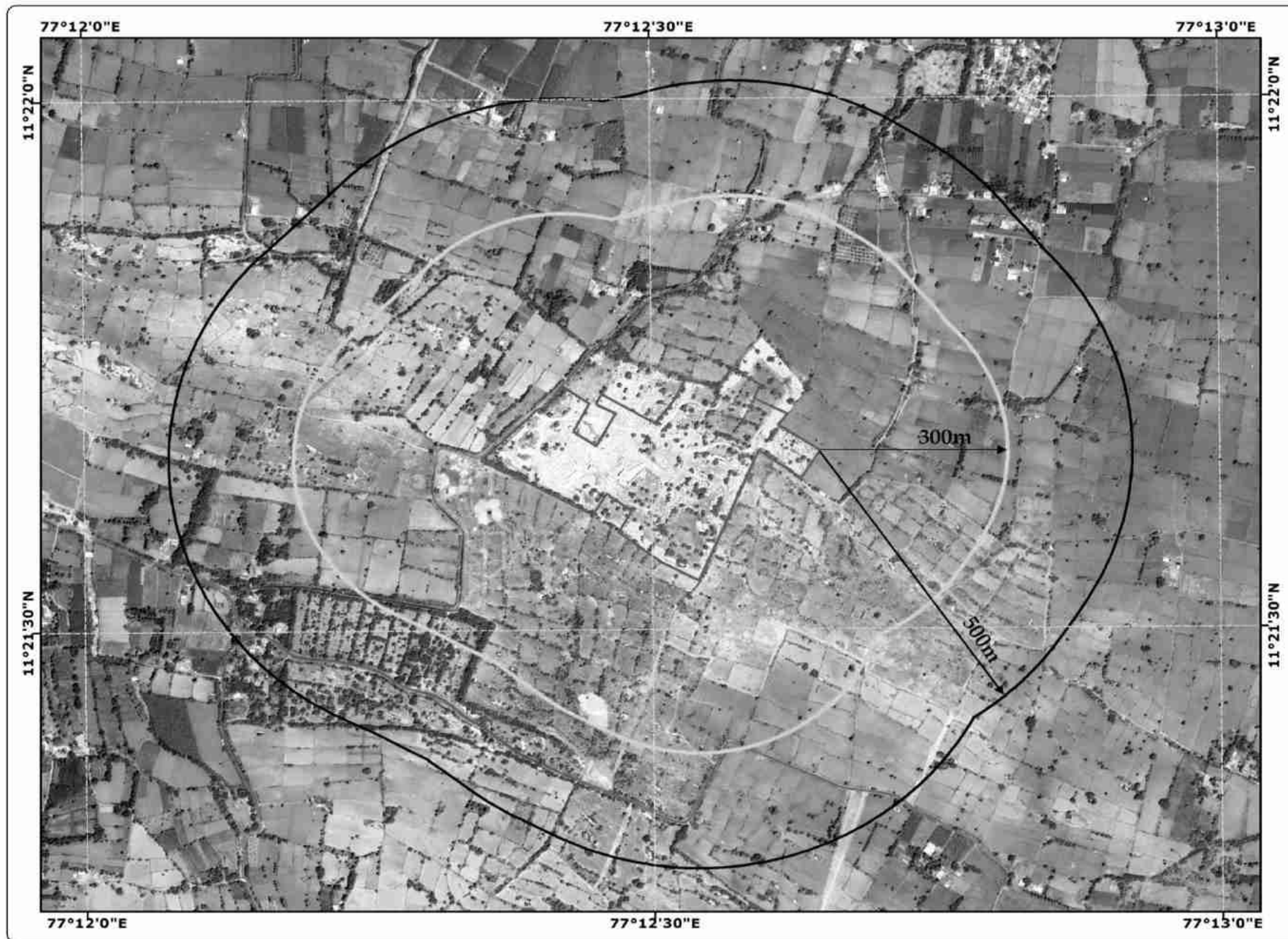
APPLICANT
 Tvl. Meenakshi Granites,
 No.5, Sri Padmalaya Complex,
 Madurai Main Rod, Melur,
 Madurai-625 106.

LEGEND
 □ Lease Boundary

SCALE
 0 0.25 0.5 1 km

Fig No. 1.2: Toposheet showing Location of the proposed existing multi color granite quarry

GIS based buffer of 300/500m radius over the Google Image



INDEX




LOCATION

Extent: 8.96.6 Ha
 S.F.No: 348/1(P),2(P),5,etc.,
 Village: Karapadi
 Taluk: Sathyamangalam
 District: Erode

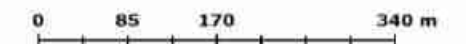
APPLICANT

Tvl. Meenakshi Granites,
 No.5, Sri Padmalaya Complex,
 Madurai Main Rod, Melur,
 Madurai-625 106.

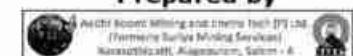
LEGEND

-  Lease Boundary
-  Buffer Zone 500m Radius
-  Buffer Zone 300m Radius

SCALE



Prepared by



Source: Google Image

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 **Tvl. Meenakshi Granites** 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. TO24B0108TN5529412N Dated: 12.07.2024 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

- ❖ 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 (December 2022 to February 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

Attributes	Parameters	Source and Frequency
Meteorology	Temperature, Wind Speed, Wind Direction, Rain fall, Relative Humidity.	Secondary sources of IMD station, Erode, Hourly recorded data for the period of 3 months.
Ambient Air Quality	PM ₁₀ , PM _{2.5} , SO _x , NO _x	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 categories	Based on Survey of India Toposheet 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.

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: Tvl. Meenakshi Granites, Multi Colour Granite Quarry, Erode District

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.
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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.

CHAPTER – 2: PROJECT DESCRIPTION

2.1. NEED FOR THE PROJECT

The Proponent, **Tvl. Meenakshi Granites** having registered office at No: 5, Sri Padmalaya Complex, Madurai Main Road, Melur, Madurai District – 625106, have been granted mining lease from the State Government over an extent of 8.96.6 Hectares in S. F. No's: 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, Karapadi village, Sathyamangalam Taluk, Erode District to quarry Multi colour granite blocks under G.O. (3D).No: 18 Industries (MME-2) Dept. dated 22.03.2018.

An Environment clearance for Tvl.Meenakshi Granites was obtained from State Environment Impact Assessment Authority vide letter no. SEIAA-TN/F.No.6464/2017/1(a)/EC.No.3970/2018 Dated 12.03.2018 for operating multi color granite quarry for the period of five years.

Based on cluster letter Rc No: 024/Mines/2023 dated: 02.08.2023 issued by Assistant Director, Department of Geology and Mining, Erode District, there is no other quarries with in 500m radius in the lessee area. Further TOR application through PARIVESH website to carry out EIA Studies for obtaining Environmental clearance.

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

As granite rough blocks play a significant role as raw material in the construction sector, the demand exists in the market throughout the year. Thus, quarrying of the mineral finds consumer easily in the local market.

2.3 LOCATION

The area is represented by Survey of India Topo sheet No. 58 E/3. The area lies in the northern latitude of 11°21'44.7411" to 11°21'32.7629" N and eastern longitude of 77°12'20.8758" to 77°12'38.7912" E. Latitude and Longitude of all boundary Pillars of are given in below Table 2.1.

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Proponent: Tvl. Meenakshi Granites, Multi Colour Granite Quarry, Erode District

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

P. No	Latitude (N)	Longitude (E)
1	11°21'39.6034"	77°12'20.8758"
2	11°21'42.4745"	77°12'23.9238"
3	11°21'42.6095"	77°12'24.3521"
4	11°21'43.7640"	77°12'25.2263"
5	11°21'42.8136"	77°12'26.6357"
6	11°21'41.3542"	77°12'25.8956"
7	11°21'41.1942"	77°12'25.7956"
8	11°21'40.4030"	77°12'26.9803"
9	11°21'42.1870"	77°12'28.0471"
10	11°21'42.7468"	77°12'26.9644"
11	11°21'43.3303"	77°12'27.2697"
12	11°21'41.6137"	77°12'30.0885"
13	11°21'43.0447"	77°12'31.1883"
14	11°21'44.1488"	77°12'31.7108"
15	11°21'43.6861"	77°12'33.4276"
16	11°21'44.7411"	77°12'34.2003"
17	11°21'43.7944"	77°12'35.7306"
18	11°21'43.0297"	77°12'35.2964"
19	11°21'42.1971"	77°12'37.0812"
20	11°21'41.4368"	77°12'36.5267"
21	11°21'40.0181"	77°12'38.7912"
22	11°21'39.3651"	77°12'38.3502"
23	11°21'38.4676"	77°12'37.7294"
24	11°21'40.1482"	77°12'35.5695"
25	11°21'32.7629"	77°12'32.3850"
26	11°21'33.8136"	77°12'30.3774"
27	11°21'34.3366"	77°12'29.6613"
28	11°21'35.5328"	77°12'28.1823"
29	11°21'36.6791"	77°12'28.8194"
30	11°21'37.6426"	77°12'27.4853"
31	11°21'36.5187"	77°12'26.7931"
32	11°21'36.9031"	77°12'26.2090"
33	11°21'37.6705"	77°12'24.7801"
34	11°21'38.5671"	77°12'23.0107"

Google Image showing Lease Boundary with Coordinates

Scale: 1:2000



Coordinates of Pillars

P.No	Latitude(N)	Longitude(E)
1	11°21'39.6034"	77°12'20.8758"
2	11°21'42.4745"	77°12'23.9238"
3	11°21'42.6095"	77°12'24.3521"
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33	11°21'37.6705"	77°12'24.7801"
34	11°21'38.5671"	77°12'23.0107"

Source: Google Image

Prepared by
 Aadh Boomi Mining and Enviro Tech (P) Ltd.
 Paramorey Durai Mining Services
 Rajamohali, Nagapattinam, Salem - K

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

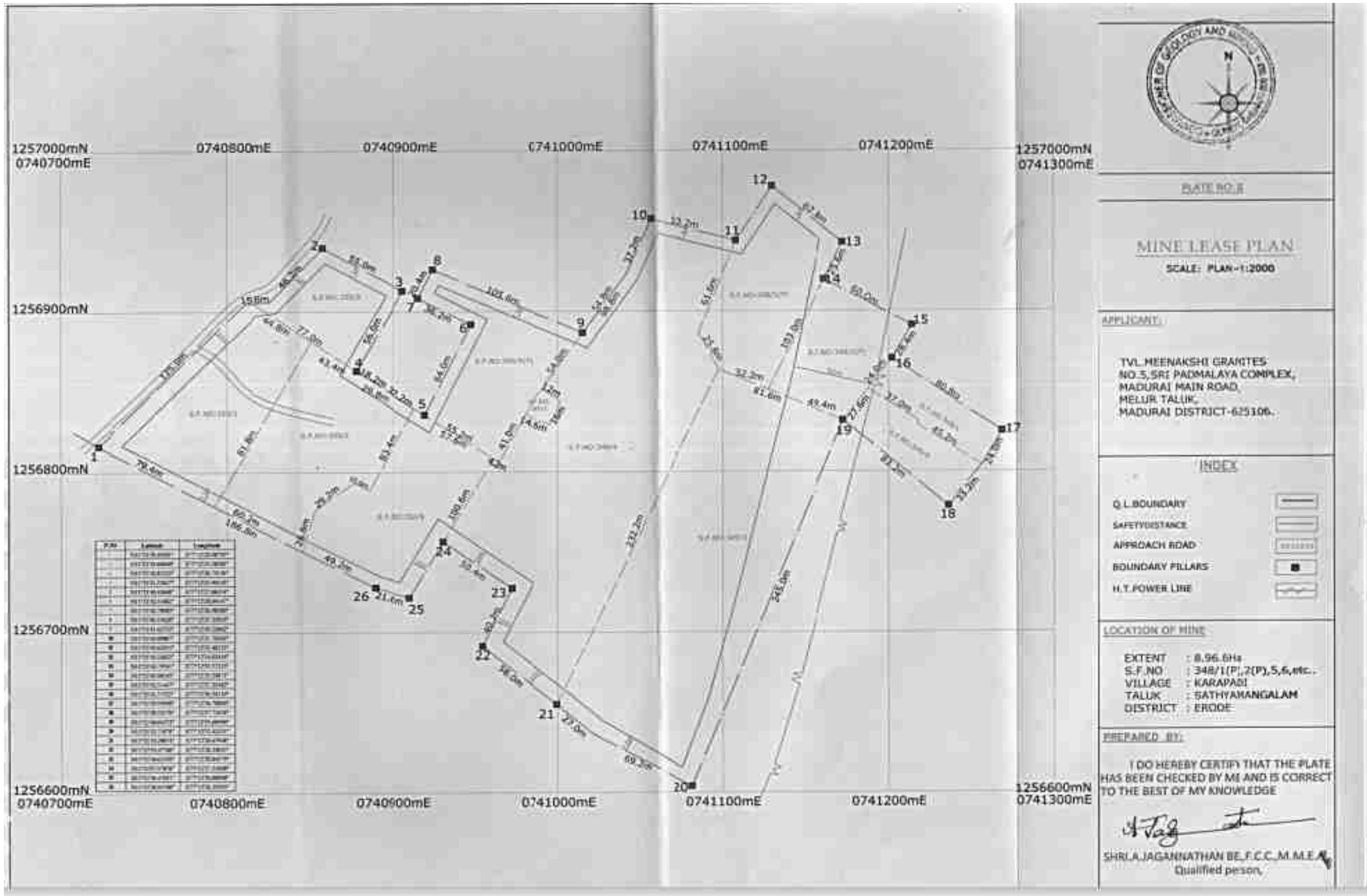


Fig No.2.2 Lease Plan

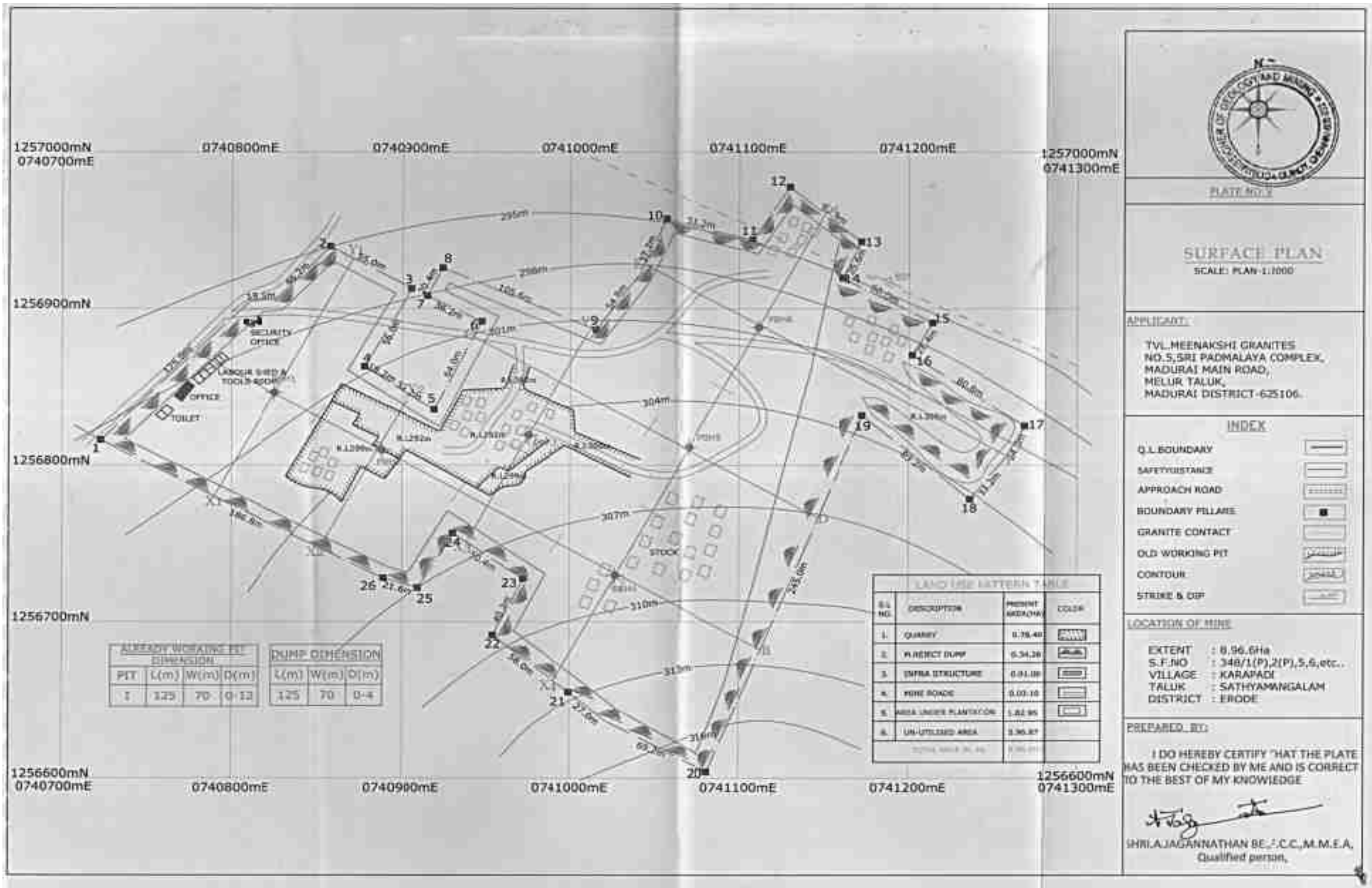


Fig No.2.3 Surface Plan



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

Table 2.2 Environmental Settings

Project Details				
Proponent	TVL.MEENAKSHI GRANITES,			
Total Mine Lease Area	8.96.6 Hectares – Multi color granite quarry			
Survey No.	348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6			
Site Location	Karapadi village, Sathyamangalam Taluk, Erode District, Tamil Nadu			
Geographical Co-ordinates	Latitude: 11°21'44.7411" to 11°21'32.7629" N Longitude: 77°12'20.8758" to 77°12'38.7912" E			
Toposheet No.	58E/3			
Elevation	Elevation of the area is 316-295m above MSL			
Accessibility				
Nearest Habitation	153m – NW			
Nearest village	Karapadi – 0.61m – NE			
PMHC	Vinnappalli Government Primary Hospital – 5.8 km - N			
Nearest Settlement	Name of Village	Direction	Distance from Mines (km approx.)	Population
	Chinnankuttai	N	1.5 km	3912
	Marampalaiyamchakkiliyur	SE	1 km	4346
	Karapadi	W	2 km	3352
	Varappalaiyam	E	2 km	4479
Nearest Town	Puliampatti – 4.0km - SW			
Nearest Roadway	NH - 948 (Coimbatore –Sathyamangalam) – 3.7km - W SH-166 (Puliampatti –Avinashi) – 5.3km – SW MDR (Puliampatti – Sathyamangalam) –1.2km –N Chinna Kuttai Village Road - W			
Nearest Railway station	Tiruppur Railway station – 31.3km - SE			
Nearest Airport	Coimbatore International Airport – 40.5km - SW			
Environmental Sensitiveness				
Interstate Boundary	Karnataka-Tamil Nadu interstate boundary is located at a distance of 41.0 km in NW direction.			

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT*Proponent: Tvl. Meenakshi Granites, Multi Colour Granite Quarry, Erode District*

Coastal Zone	Arabian Sea – 152.3 km - W
Reserve Forest	No forest is located within 5km radius of the project site. The nearest R.F is Velamundi R.F – 7.7 km – N. The proposed project site is not a forest land. Hence it does not attract Forest Conservation Act, 1980
National Park/Wildlife Sanctuary	Sathyamangalam Tiger Reserve Wildlife Sanctuary – 19.5km – NW. 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	Water bodies within 5km radius, Kavilipalyam Kulam – 2.6km – NE Sungai lake – 4.7km – NW Nallur lake – 4.4km- NW Lower Bavani Main Canal – 4.3km – N Odai – 3.0km - SE
Defense Installations	Nil within 10km radius
Critically Polluted area	Nil within 10km radius
Quarries around 500m radius	Based on cluster letter Rc No: 024/Mines/2023 dated: 02.08.2023 issued by Assistant Director, Department of Geology and Mining, Erode District, there is no other quarries with in 500m radius in the lessee area.
Seismic zone	Zone-II, Low damage risk zone as per BMTPC, Vulnerability atlas Seismic zone of India IS: 1893-2002

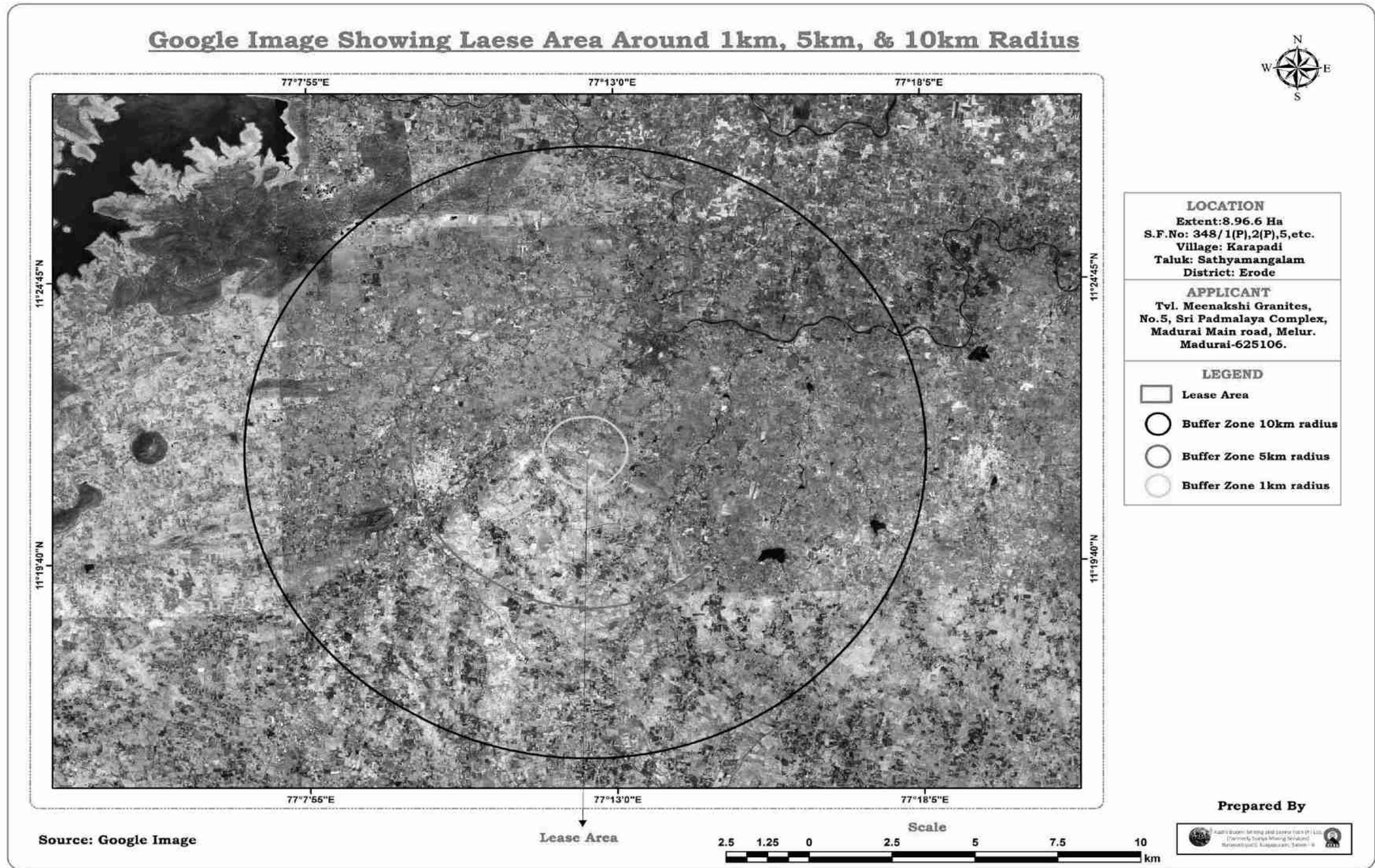


Fig No. 2.5 Google Earth Image showing 1km, 5km and 10 km radius around exiting multi color granite quarry

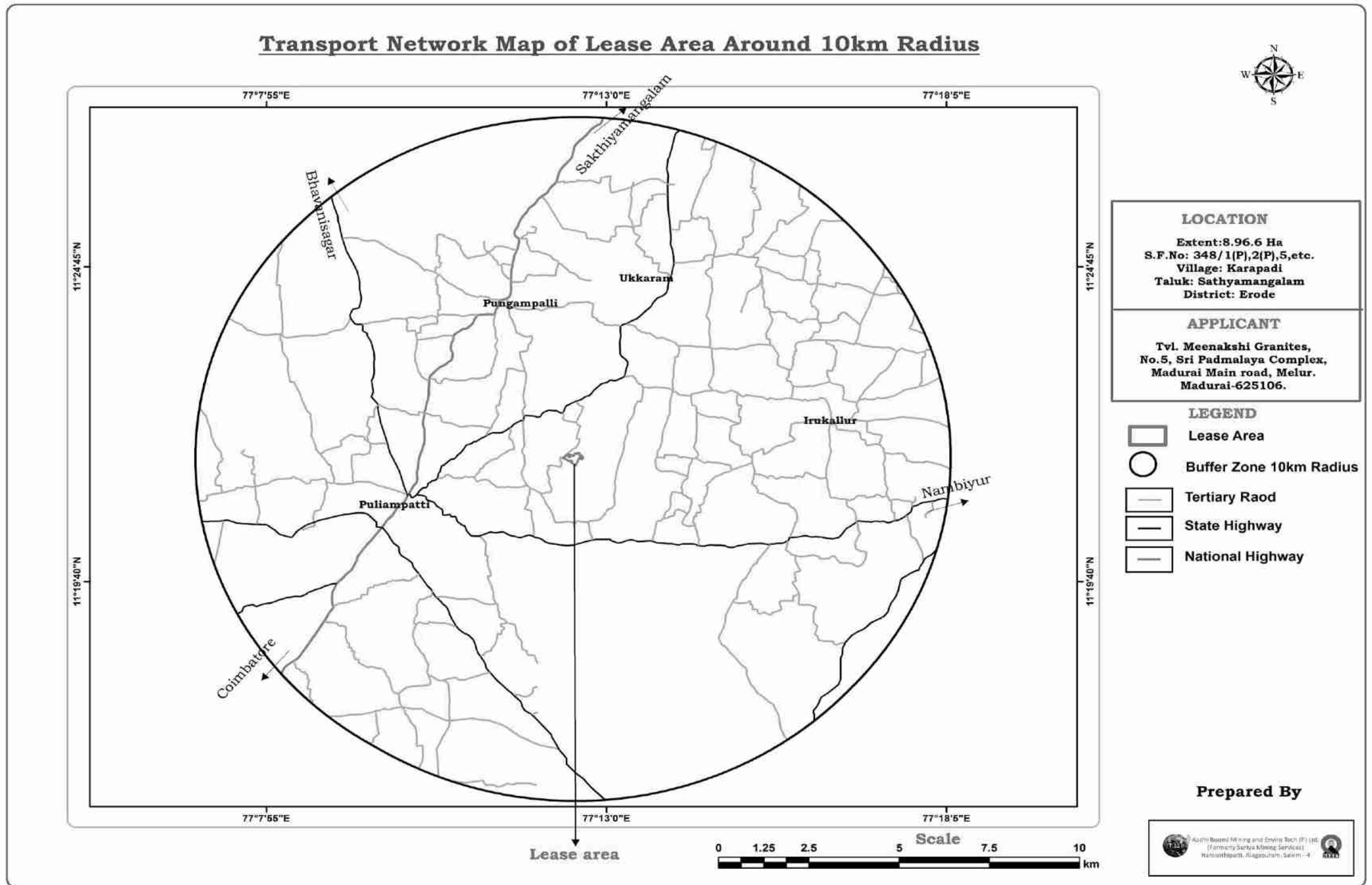


Fig No 2.6 Transport Network of 10 km radius around exiting multi color granite quarry

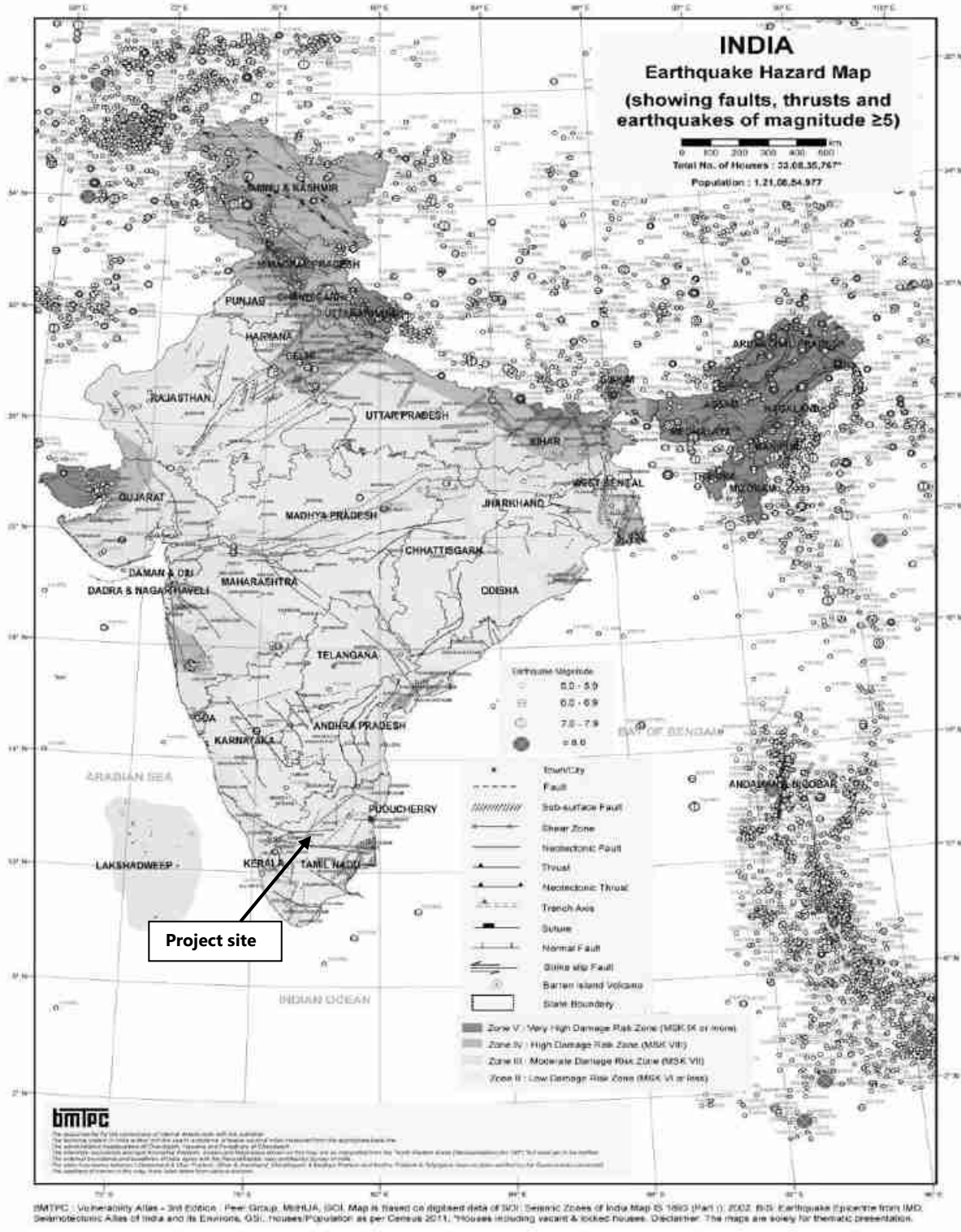


Fig No 2.7 Earthquake Hazard Map

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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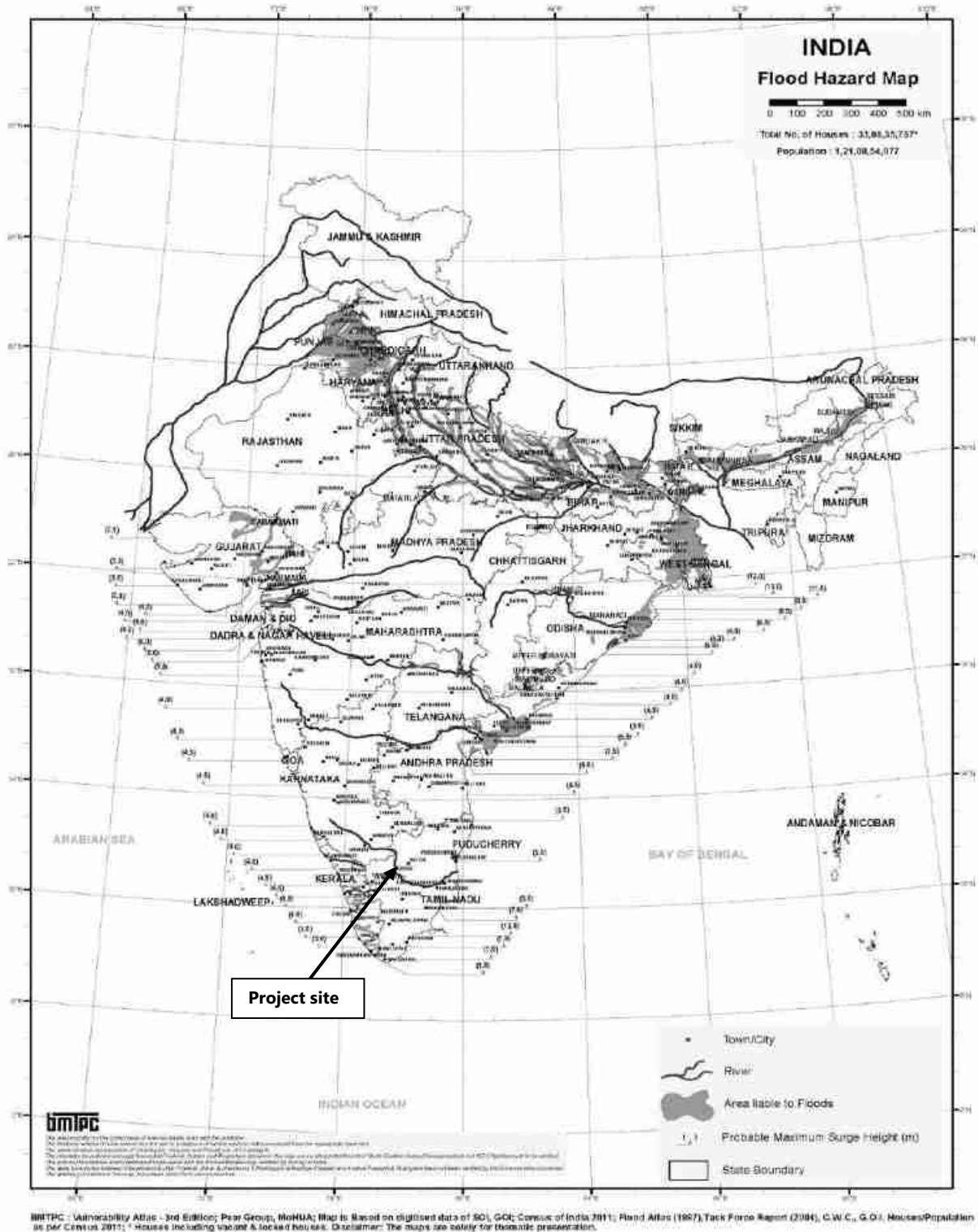


Fig No 2.8 Flood Hazard Map

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

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BMTPC, "Administrative Atlas" 3rd Edition, Pearl Group, Mumbai. Map is based on digital data of GOI, GOI-Basic Wind Speed Map National Building Code, 2016, Cyclone Data, 1991-2016, IMD, GOI, House/Population in per Census 2011. Houses including semi & locked houses. Disclaimer: The maps are solely for illustrative presentation.

Fig No 2.9 Winds and Cyclone Hazard Map

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

2.4 Size or Magnitude of Operation

Table 2.3 Mining Details

Particulars	Details									
Method of Mining	Open cast – mechanized mining									
Geological resources	14,32,908m³									
Mineable reserves	9,82,461m³									
Production	25,364m³@ 30% of granite for five years and 5,073m³ per annum.									
Reject	59183 m ³ @ 70% for five years (2023-24 to 2027-28)									
Top soil	Top soil– 15192m ³ for plan period									
Weathered rock	77930m ³									
Ore: Waste ratio	1: 5.4									
Depth of Mining	24m bgl (Ultimate – 36m bgl)									
Water Table	50mbgl									
Road design	1: 10 inside the pit and ramp 1:16 for transport									
Overall Pit Slope	45°									
Period of Lease	20 years (23.04.2018 to 22.04.2038)									
Existing pit dimension	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 15%;">Pit</th> <th style="width: 15%;">L(m)</th> <th style="width: 15%;">W(m)</th> <th style="width: 15%;">D(m) RL</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">I</td> <td style="text-align: center;">125m</td> <td style="text-align: center;">70m</td> <td style="text-align: center;">0-12m</td> </tr> </tbody> </table>		Pit	L(m)	W(m)	D(m) RL	I	125m	70m	0-12m
		Pit	L(m)	W(m)	D(m) RL					
I	125m	70m	0-12m							

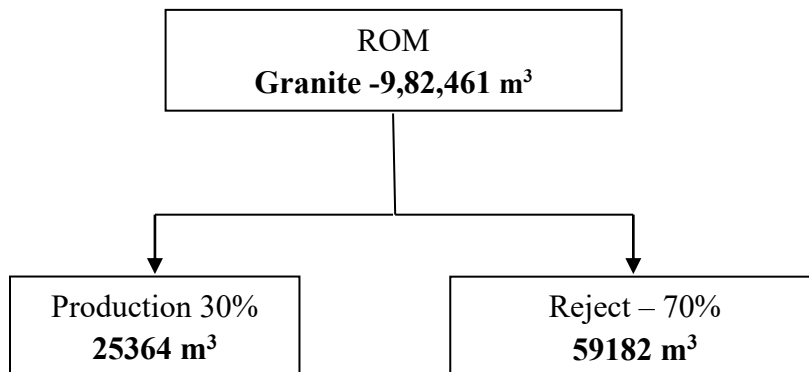


Fig No 2.10 Material Balance

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

The rock types exposed in the district can be broadly grouped as 1) Granulite group of rocks 2) Migmatite Complex 3) Sathyamangalam Schist Complex 4) Peninsular Gneissic Complex 5) Alkali Complex 6) Acid Intrusives and 7) Quaternary Alluvium. The Granulite group of rocks comprise of Calc Granulite, Quartzite of Khondalite group, Charnockite, Pyroxene Granulite, Pyroxenite of Charnockite group, Migmatite gneiss and Metagabbro. Charnockite occurs as a major rock type in the northern part and as thinbands and enclaves in the southern part of the district. Quartzite and Calc Granulite, Pyroxene Granulite, Migmatite Gneiss occurs as thin bands and enclaves. Hornblende gneiss, Garnetiferous - Quartzo Feldspathic gneiss and granite are the important rock types of Migmatite Complex, of which, hornblende gneiss occupies the majorpart of the district, particularly in southern part and northwestern part. Garnetiferous quartz of eldspathic gneiss is located near Bhavani Sagar reservoir and north of Anthiyur. The Sathyamangalam Group includes fuchsite Quartzite, schistose-quartzite, sillimanite-quartzite, ferruginous Quartzite, talc-tremolite / Actinolite schist / hornblendeschist, Amphibolite and Gabbroanortho site and Pyroxenite. Schistose rocks occur asenclaves near Sathyamangalam, west of Chennimalai. Quartzite occurs as thin beds near Kavilanattam, west of Chennimalai, Amphibolite occur as enclaves near Sathyamangalam, Gobi and around Perudnurai. A north site, Pyroxenite occurs as WSW-ENE trending bands in fissile hornblende gneiss of PGC (Bhavani Group) which occupies the ventral part of the district.

The area comprised of migmatite rock namely Paradiso in which granite intruded at a strike direction of ENE-WSW. The mineral constituents of the migmatite rock are Quartz, Orthoclase feldspar, less plagioclase feldspar and Biotite which is country rock in this area. The biotite is fine grained and other minerals are medium grained. The pegmatoidal granite white/leuco granites consist of plagioclase and orthoclase feldspars and quartz. The pegmatoidal granite found as massive sheets running ENE-WSW direction. The granite found in the applied area is intrusive white granite with yellow shades while polishing. The pegmatoidal white granite

or multi colour granite covered by red soil at the top and followed by weathered and massive granite.

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 was 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.

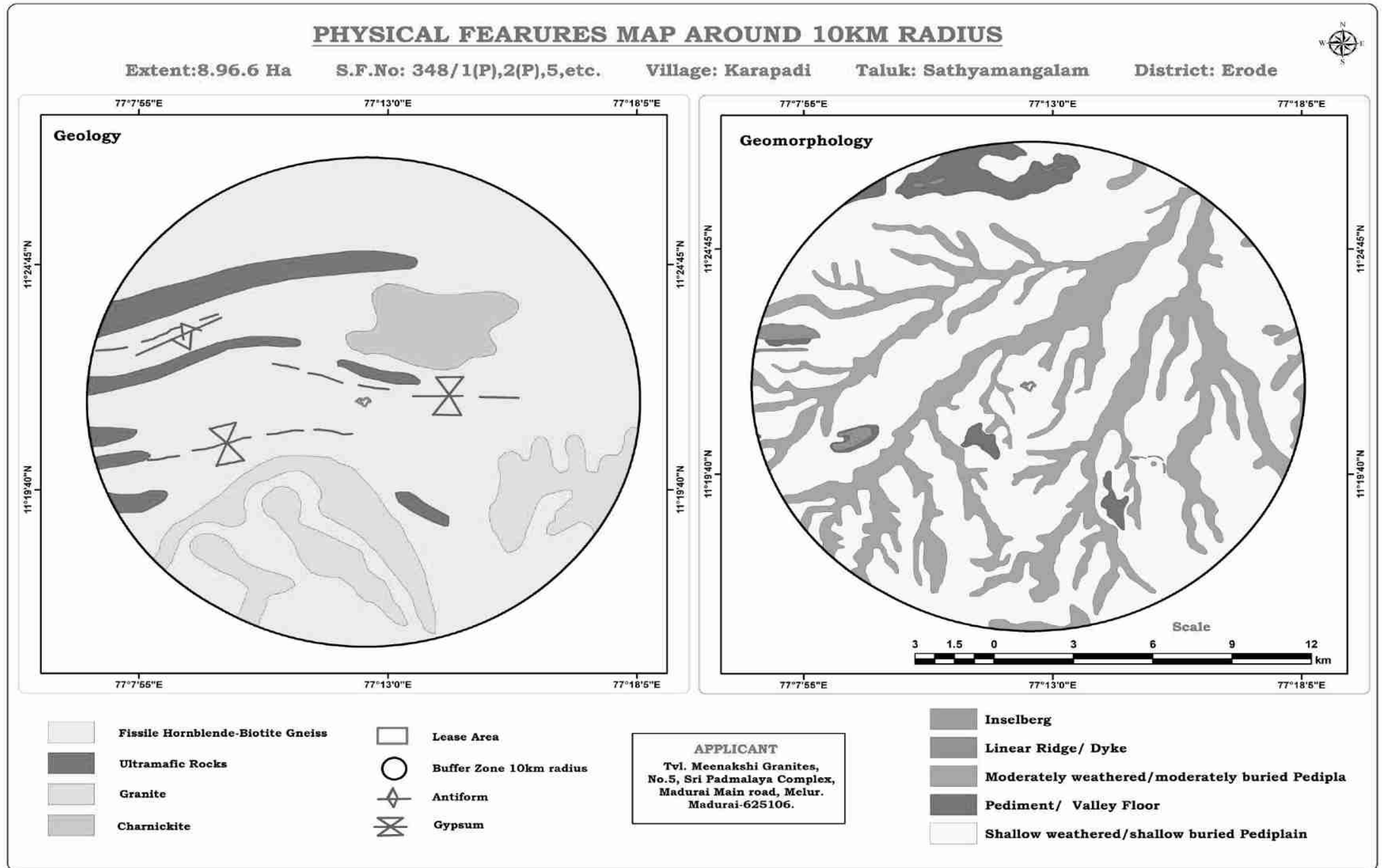


Fig No 2.11 Regional Geology & Geomorphology Map

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 - 0.3m, 0.4m, 0.5mm, 0.6m, 0.75m, 1.65m, 2.25m, 3m & 3.6m, Etc.,
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 6 and 12 utilize for splitting the block from the mother rock. This is an important tool in the operation of a Quarry.
5. Crow bars of 1500 - 1800mm lengths.
6. Spades, Sludge hammers, Iron Pans and chisels.
7. Consumables, such as diesel, Hydraulic oil, grease, abrasive wheels, welding Machines etc.,
8. Stock of essential spare parts of machinery

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 equipment's are tabulated below,

Table 2.4: Details of drilling equipment

Type	No	Dia.of hole	Bucket/ Capacity (MT)	Make	Motive Power
Jack Hammer	2	32mm	1.2m to 6m	Atlas copco	Diesel
Compressor	1	---	XAT 266	Atlas Copco P 600 (IR)	Diesel Drive
Diamond Wire Saw	2	---	---	Optima	Generator
Gen set	1	---	---	Powerica	--

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 1.7m³ bucket capacity are engaged for clearing of wastes in the lease area of Tvl.Meenakshi Granites.

Table 2.5: Details of loading equipment

Type	No	Size/ Capacity	Make	Motive Power
Excavator	1	1.7 m ³	Tata Hitachi	Diesel Drive

iii) Haulage and Transport Equipment:

Transport of Rejects and waste will be done by Tippers of 15 Tonnes capacity

Table No-2.6: Details of transportation vehicles

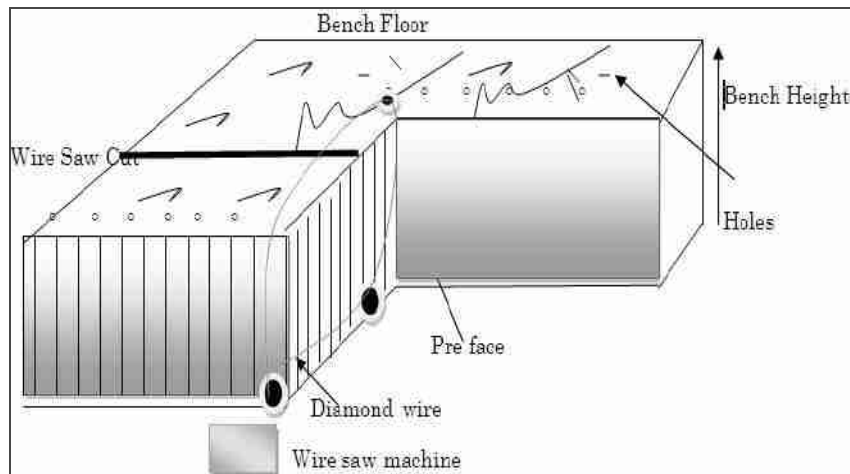
Type	No	Size/ Capacity	Make	Motive Power	H.P
Tipper	2	15M.T	Tata & Aahok Leyland	Diesel	110



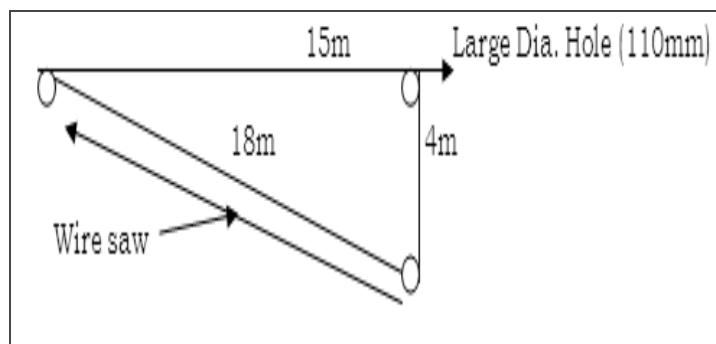
Tipping Truck

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.



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 ³)	Make	Motive Power	H.P.
Wire saw Machine	2	Industrial Diamond wire	Stone Tech	Electric Power	-

v) Blasting pattern

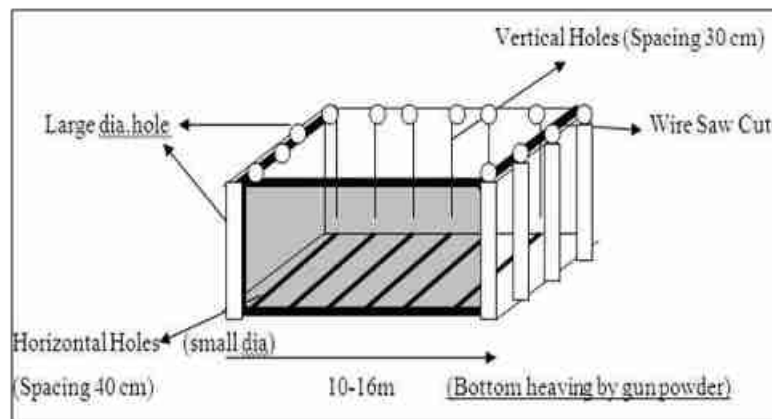
Blasting: A controlled blasting technique is adopted to open a pre-determined crack of the block from the parent body. Shot-hole with 32-40mm dia. which are drilled by line drilling and Jack hammers at a close spaced interval of 30cms will be initiated suitably with any one or more of the following methods

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

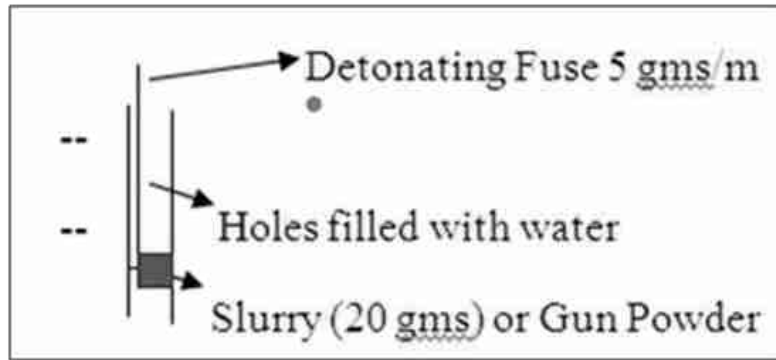
a) Broad Blasting Parameter:

- 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

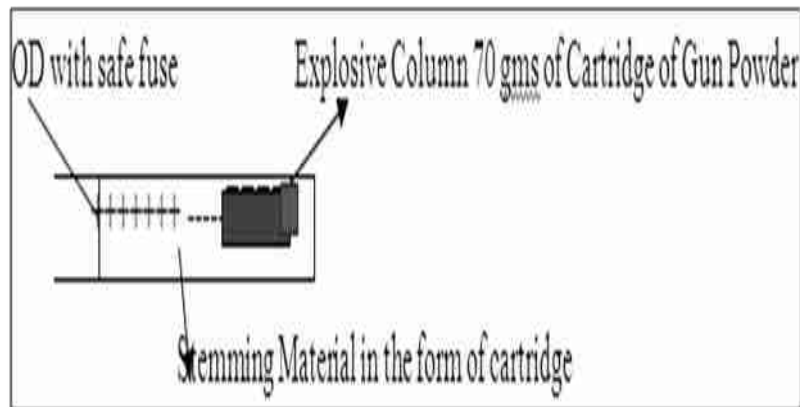
Wire Saw Cut and Drilling Pattern



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.

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 2m³ 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 36m 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	0.78.40	8.8%	7.00.35	78.1%
iii)	Reject Dump	0.34.28	3.8%	-	-
iv)	Road	0.03.10	0.3%	0.06.00	0.7%
v)	Green belt & Safety area	1.82.95	20.4%	1.82.95	20.4%
vi)	Labour shed and office	0.01.00	0.1%	0.01.00	0.1%
vii)	Virgin area	5.96.87	66.6%	0.06.30	0.7%
Total		8.96.6	100	8.96.6	100

2.8 Mineral Reserves and Resources

2.8.1 Geological Resources and Reserves

The geological resources estimated by cross sectional method is as **1432908m³** of granite up to a depth of 36m 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 ³)	Recovery @30% (m ³)	Reject @70% (m ³)
AB-X1Y1	80	158	18	227520	68256	159264
AB-X2Y2	90	65	8	46800	14040	32760
	90	96	15	129600	38880	90720
AB-X3Y3	68	41	9	25092	7528	17564
	68	57	15	58140	17442	40698
AB-X4Y4	128	112	30	430080	129024	301056
CD-X3Y3	110	46	6	30360	9108	21252
	110	81	15	133650	40095	93555
CD-X4Y4	91	90	23	188370	56511	131859
EF-X4Y4	108	84	18	163296	48989	114307
TOTAL				1432908	429872	1003036

Note:

Total Volume of Geological resources up to a depth of 36m = 1432908m³
 Recoverable Geological reserves @ 30% = 429872m³
 Total Granite Reject @ 70% = 1003036m³
 Granite waste ratio = 1003036 m³/429872m³
 = 1:2:33

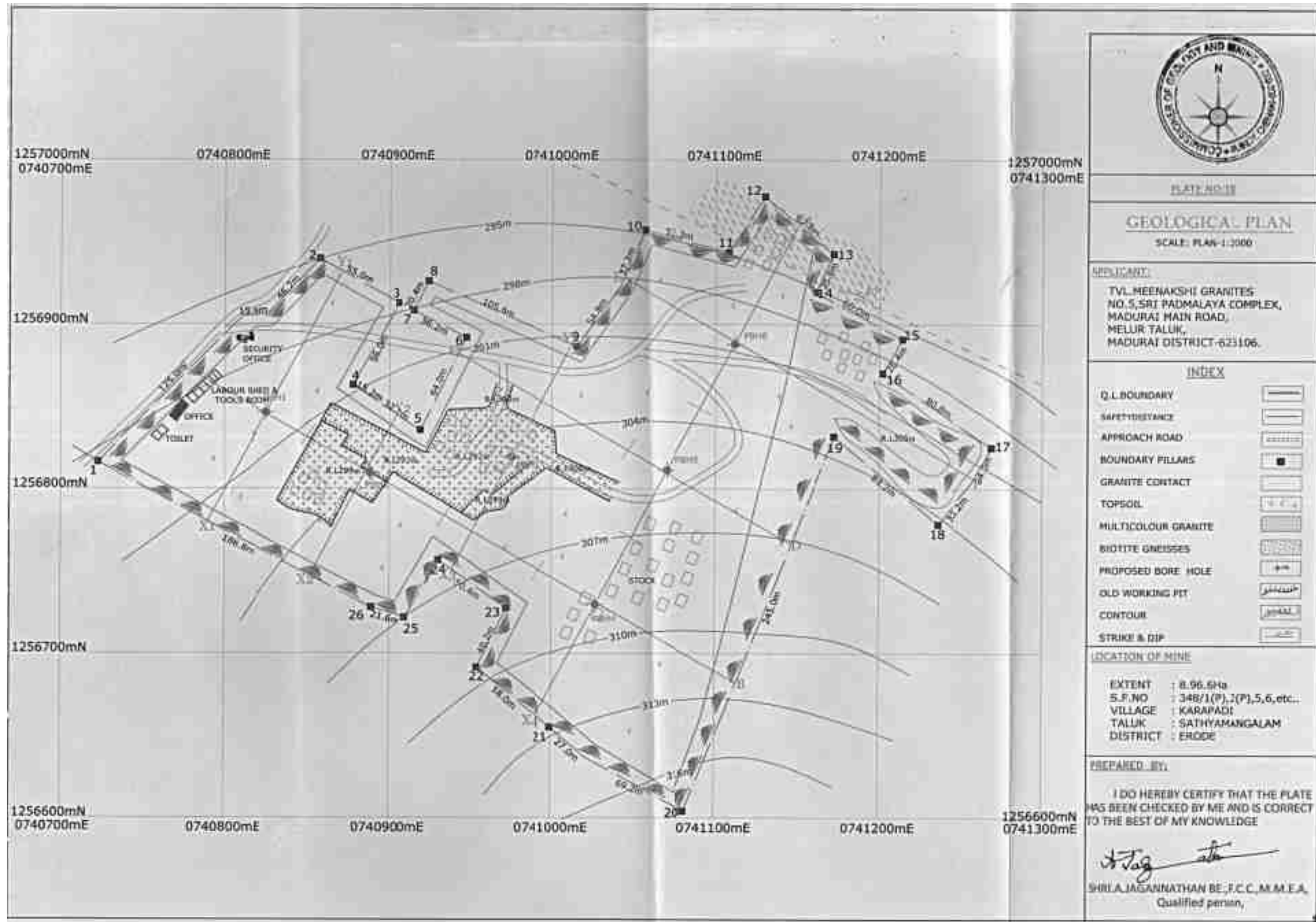


Fig No 2.12 Geological plan

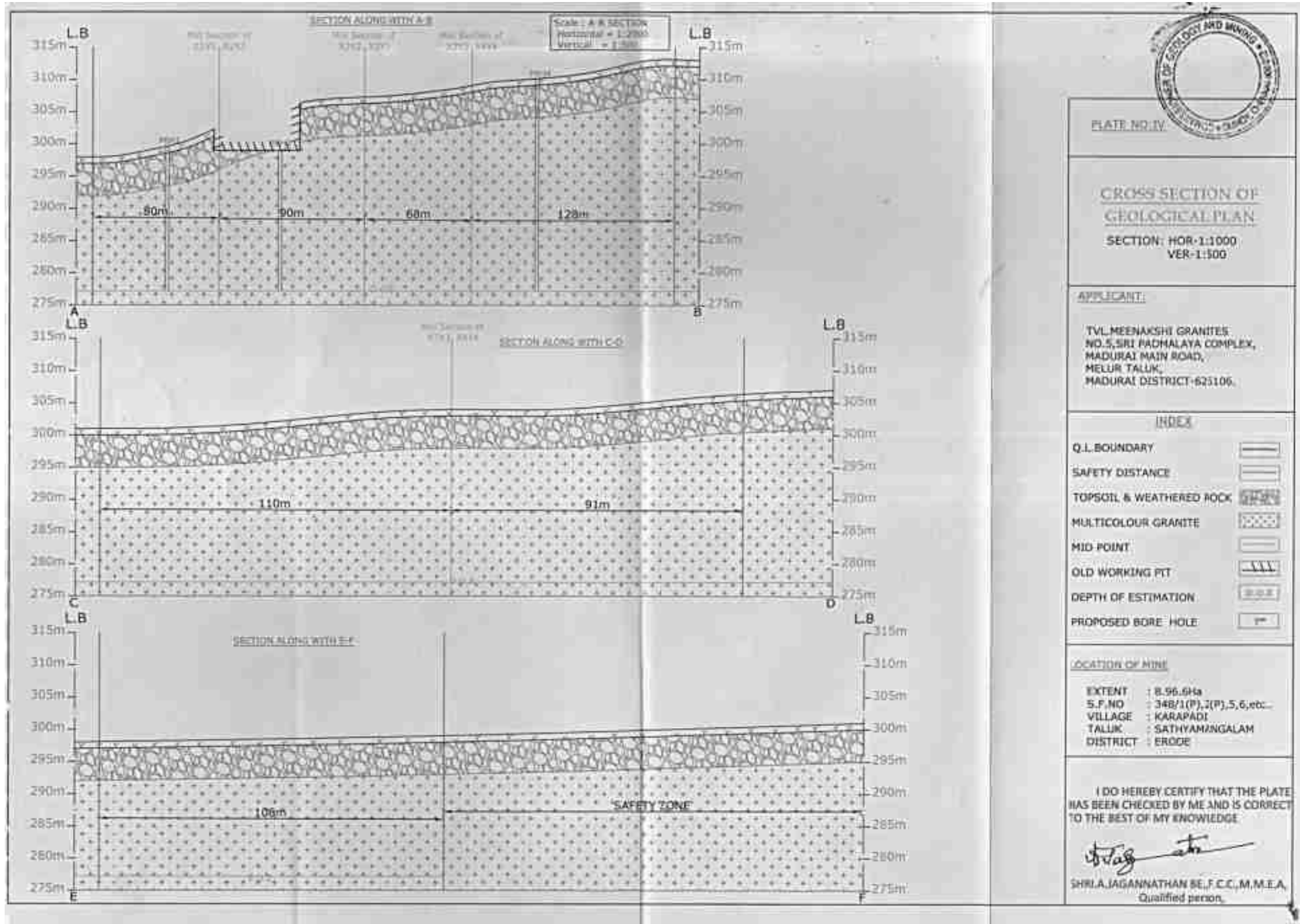


Fig No 2.13 Geological Cross Section

2.8.2 Mineable /Recoverable Reserves:

The mineable\ recoverable reserves are estimated by cross-sectional method excluding the mineral under benches, safety barriers etc., The mineable reserves is estimated as **982461m³**of granite to a depth of mining 36m 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 ³)	Reserve (m ³) 30%	Reject @ 70%	Weathered rock (m ³)	Topsoil (m ³)
AB-X1Y1	I	80	158	1					12640
	II	78	156	5				60840	
	V	72	145	6	62640	18792	43848		
	VI	66	139	6	55044	16513	38531		
	VII	60	127	6	45720	13716	32004		
AB-X2Y2	I	40	50	1					2000
	II	40	54	5				10800	
	IV	84	59	5	24780	7334	17346		
	V	90	53	6	28620	8586	20034		
	VI	90	60	6	32400	9720	22680		
	VII	90	48	6	25920	7776	18144		
AB-X3Y3	I	68	26	1					1768
	II	68	25	5				8500	
	IV	68	35	6	14280	4284	9996		
	V	68	29	6	11832	3550	8282		
	VI	68	39	6	15912	4774	11138		
	VII	68	33	6	13464	4039	9425		
AB-X4Y4	I	128	114	1					14592
	II	126	112	5				70560	
	III	120	86	6	61920	18576	43344		
	IV	114	100	6	68400	20520	47880		
	V				59616	17885	41731		
	VI				51408	15422	35986		
	VII				47232	14170	33062		
CD- X3Y3	I	110	46	1					5060
	II	109	80	5				43600	
	IV	59	39	3	6903	2071	4832		
	V	104	39	6	24336	7301	17035		
	VI	98	69	6	40572	12172	28400		
	VII	92	63	6	34776	10433	24343		8372
CD- X4Y4	I	91	92	1					
	II	90	45	5				20250	

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	IV	85	90	5	38250	11475	26775		
	V	79	90	6	42660	12798	29862		
	VI	73	90	6	39420	11826	27594		
	VII	67	90	6	36180	10854	25326		
EF- X4Y4	I	108	84	1					9072
	II	106	84	5				44520	
	V	95	70	6	39900	11970	27930		
	V	83	68	6	38864	10159	23705		
	VII	71	62	6	26412	7924	18488		
TOTAL					982461	294738	687723	259070	53504

Total volume of ROM up to a depth of 36m = 982461m³

Total Mineable reserves @30% = 294738m³

Reject of granite @70% = 687723m³

Total Weathered =259070m³

Total Topsoil =53504 m³

Total Waste Ratio =687723m³+259070 m³/294738 m³

= 946793 m³/ 294738 m³

= 1:3:21

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT*Proponent: Tvl. Meenakshi Granites, Multi Colour Granite Quarry, Erode District***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 – VIA.

Table 2.11 Computation of Year wise development Plan

Year	Section	Bench	L (m)	W (m)	D (m)	Volume (m ³)	Recovery (m ³) 30%	Reject @ 70%	Weathered rock (m ³)	Topsoil (m ³)
2023-24	AB-X3Y3	I	82	26	1					2132
		II	80	25	5				10000	
		IV	80	35	6	16800	5040	11760		
2024-25	AB-X2Y2	I	40	50	1					
		II	62	49	5					
		IV	57	59	5	16815	5045	11771		
2025-26	AB-X1Y1	I	80	98	1					7840
		II	78	96	5				37440	
		V	33	86	6	17028	5108	11920		
2026-27	AB-X2Y2	V	53	53	6	16854	5056	11798		
2027-28	CD-X3Y3	I	70	46	1					3220
		II	68	45	5				15300	
	CD-X3Y3	IV	44	39	3	5148	5115	3604		
		AB-X2Y2	V	37	19	3	2109		1476	
	AB-X33	V	68	16	3	3264		2285		
		V	68	32	3	6528		4570		
TOTAL						84546	25364	59182	77930	15192

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Proponent: Tvl. Meenakshi Granites, Multi Colour Granite Quarry, Erode District

Total Topsoil	= 15192 m ³
Total Weathered Granite	=77930 m ³
Total Rom	= 84546 m ³
Total Granite reserves @30%	= 25364m ³
Reject of granite @70%	= 59182m ³
Average Production per annum	=5073 m ³

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.

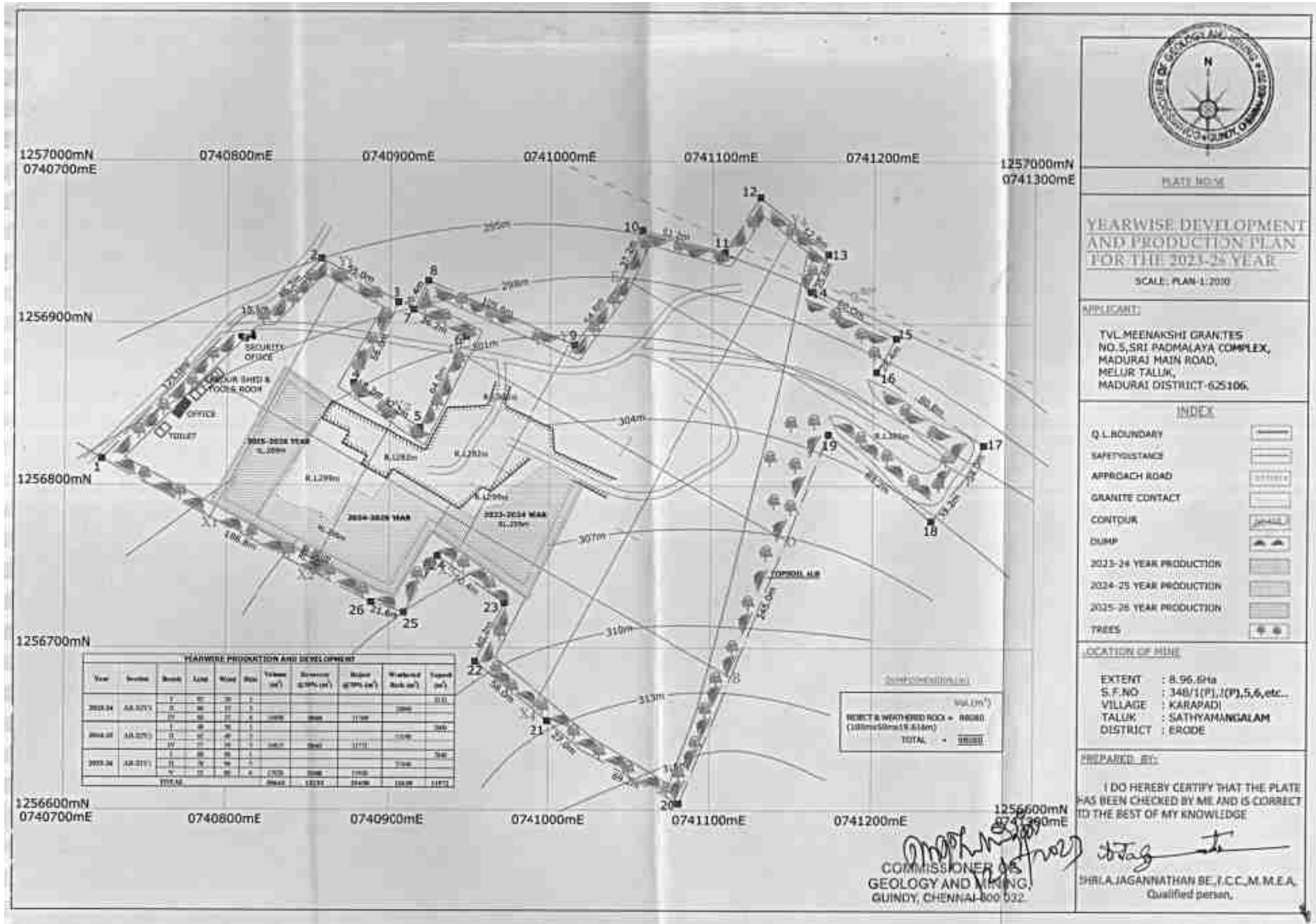


Fig No 2.14 Year Wise Development and Production Plan for 2023-2026

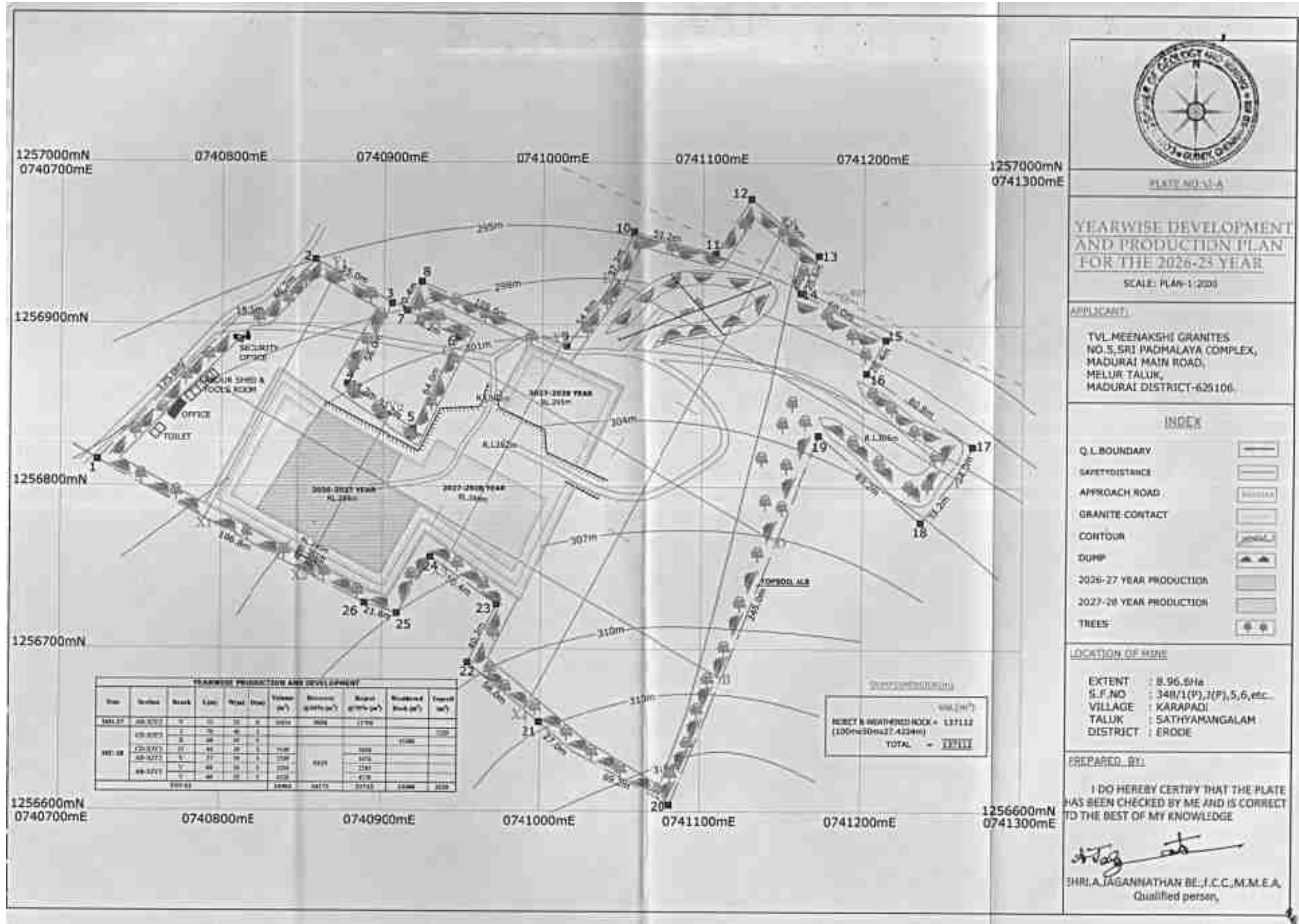


Fig No 2.15 Year Wise Development and Production Plan for 2026-2028

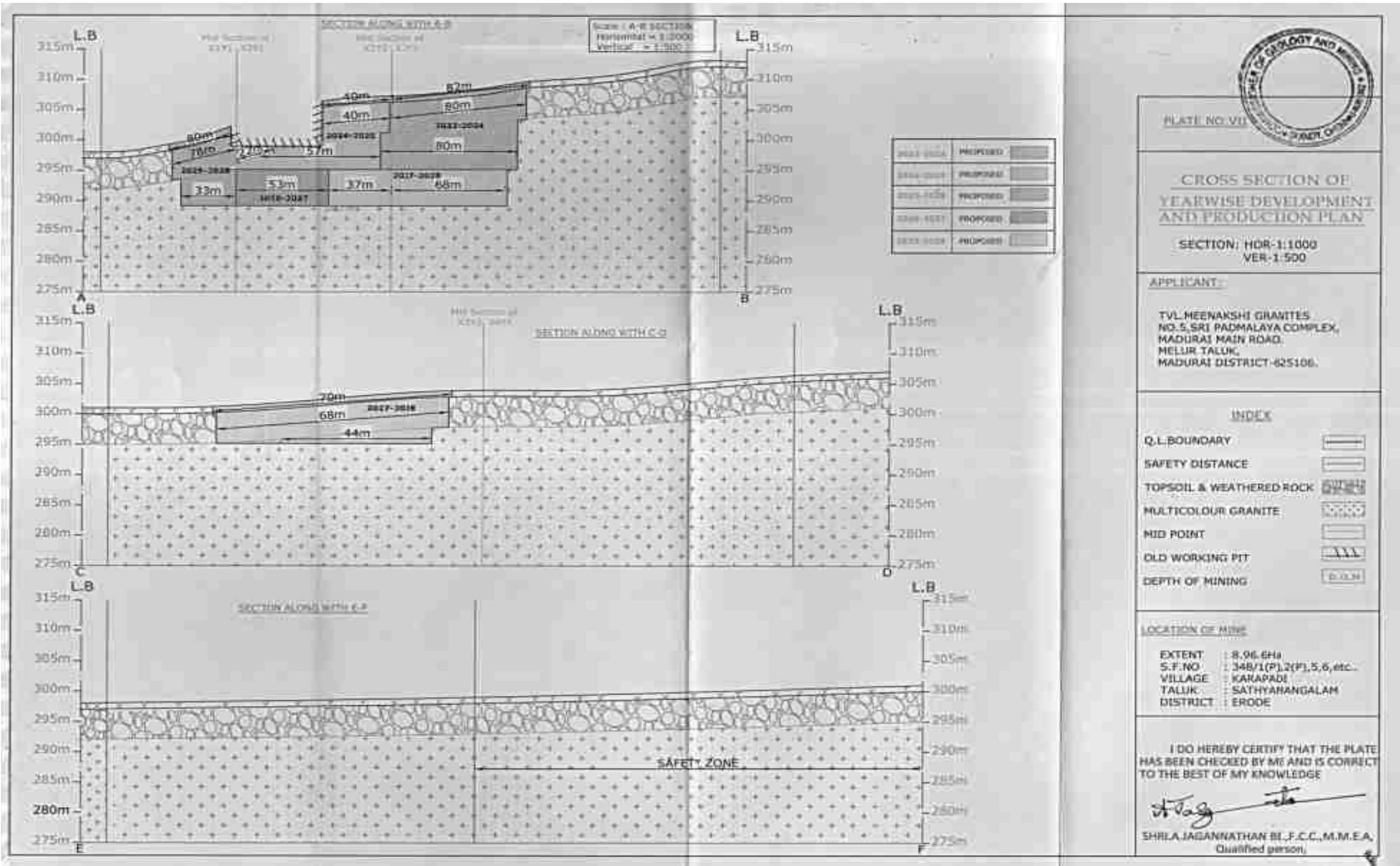


Fig No 2.17 Cross section of year wise Development and Production Plan

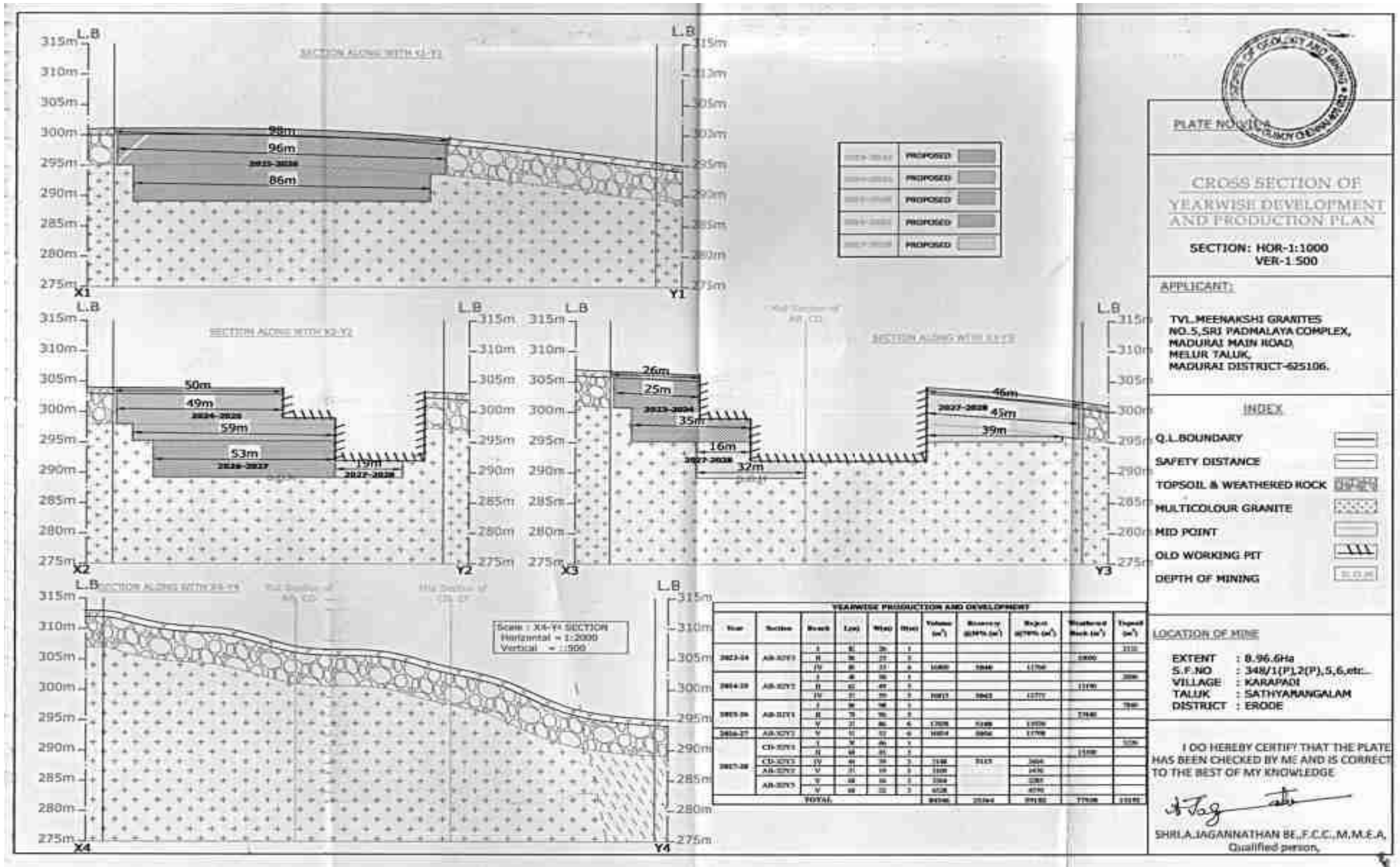


Fig No 2.17 Cross section of yearwise Development and Production Plan

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 **59182m³**, weathered rock will be **77930m³** and Topsoil will be **15192m³**.

Table 2.12 Computation of waste and rejects materials

Year	Topsoil (m ³)	Weathered rock/ Boulders (m ³)	Granite Rejects @ 70% (m ³)	Total
2023-24	2132	10000	11760	23892
2024-25	2000	15190	11771	28961
2025-26	7840	37440	11920	57200
2026-27	3220	15300	11798	30318
2027-28	---	---	11934	11934
Total	15192	77930	59183	152305

For the next five years, all the rejects and weathered rock will be dumped in the northern 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 th Year
Topsoil	15192 m ³
Reject & weathered	137112 m ³
Total	152304m³

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.

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	1m
	II	Weathered rock	124m	89m	5m
	III	Granite	120m	84m	6m
	IV	Granite	108m	71m	6m
	V	Granite	97m	60m	6m
	VI	Granite	85m	48m	6m
	VII	Granite	73m	36m	6m
TOTAL =					36m

Details of ultimate pit and dump dimensions are given in plate No-VIII. 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 **6,87,723m³**, and weathered will be **2,59,070m³** and Topsoil will be **53,504m³**.

Table 2.15 Ultimate Dump Dimensions (M)

Description		Volume (m ³)
Top Soil	=	53504m ³
Reject & weathered	=	946793m ³
Total		1000297m³

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.

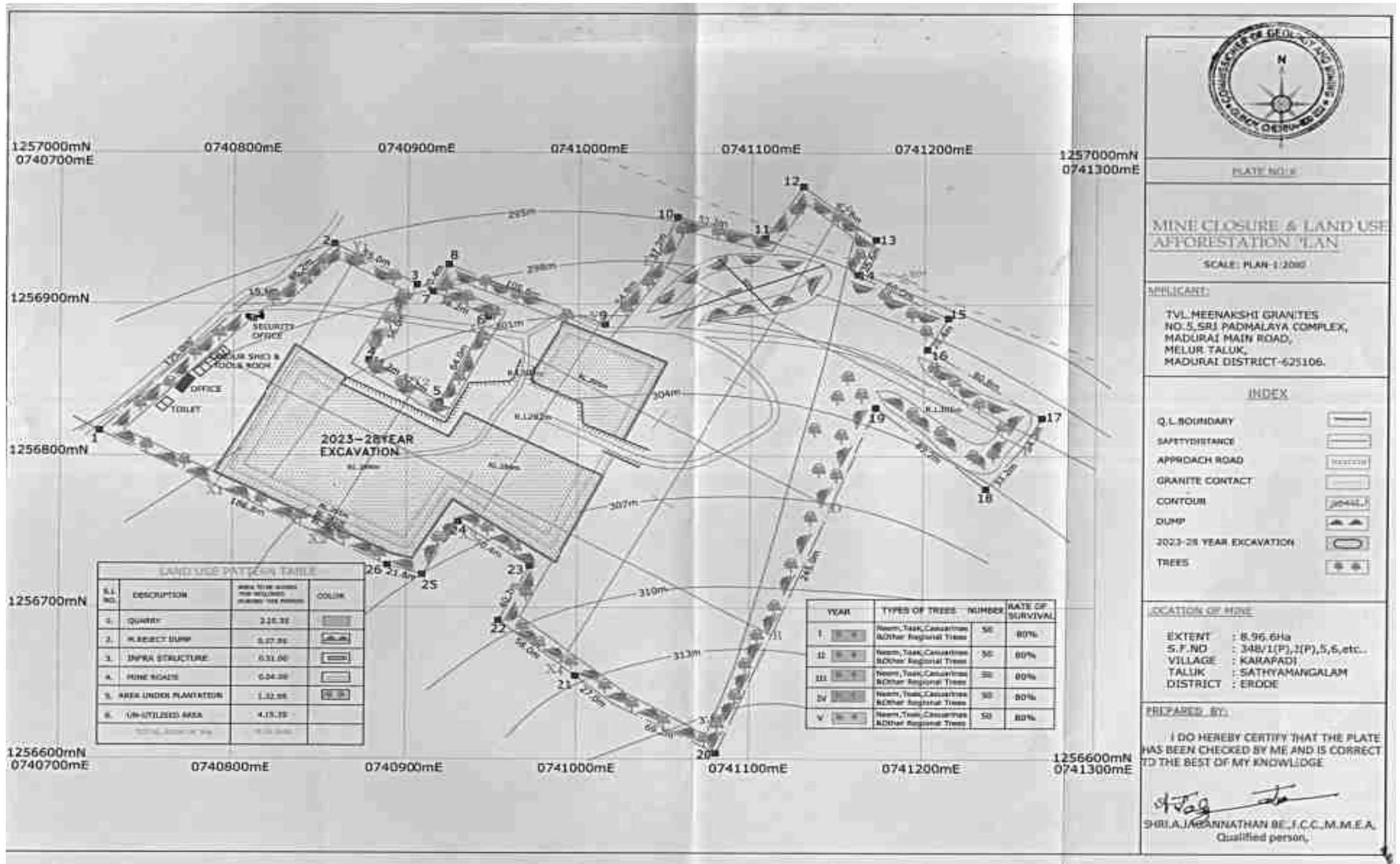


Fig No 2.18 Progressive Mine Closure Plan

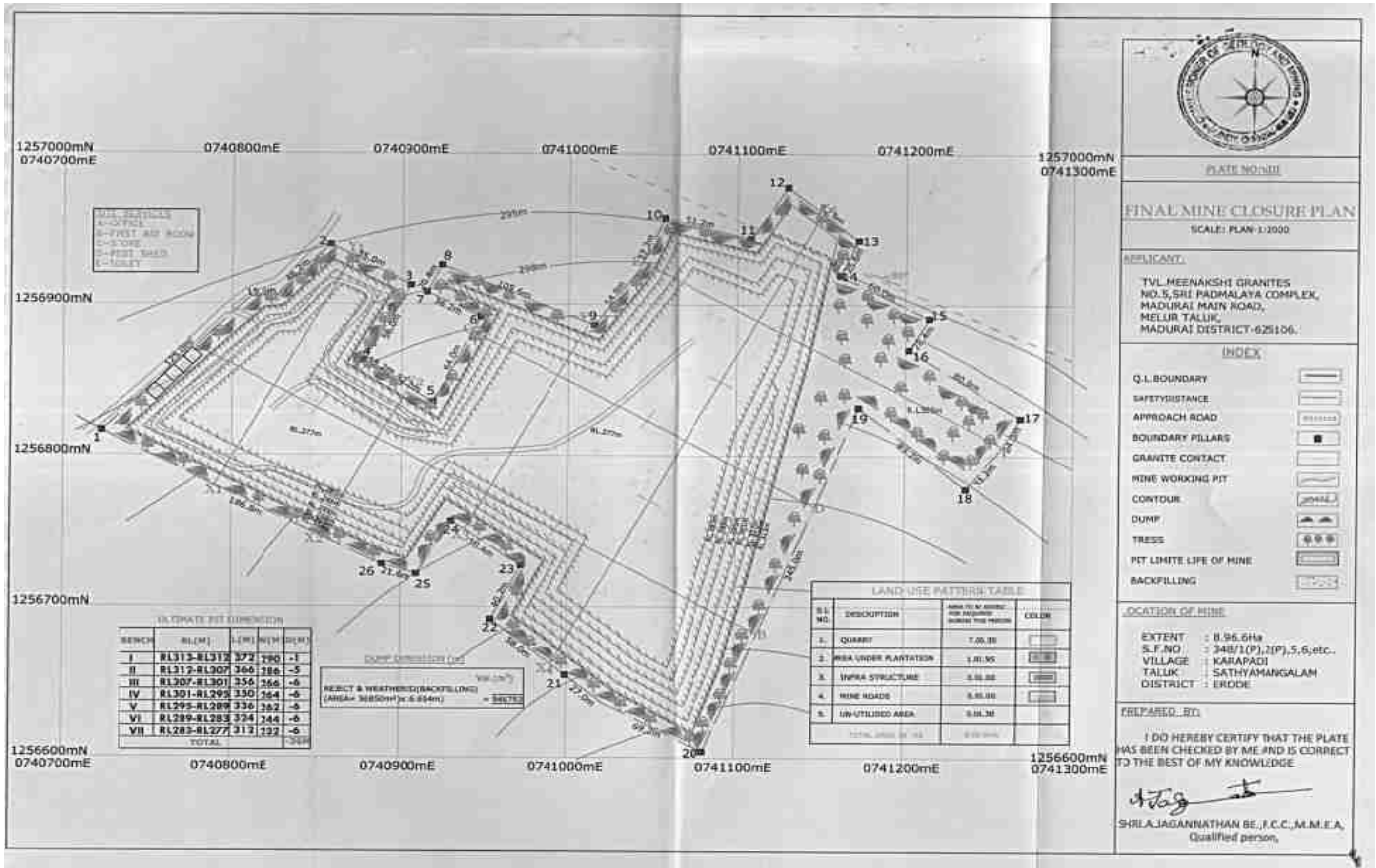


Fig No 2.19 Conceptual mining plan/ Mine Closure Plan

2.12 Employment Potential (Management & Supervisory personal)

Table 2.16 Employment Potential of Tvl. Meenakshi Granites, Multi Colour Granite Quarry

Management and supervisory staffs	Mines manager (II class)	1 No
	Part time mining engineer or geologist	1 No
	Mines Foreman	1 No
	Mines Clerk	1 No
Skilled	Supervisor	1No
	Operators	1No
	Drillers	4 No's
	Drivers	2 No's
	Chisel men	3 No's
Semi-skilled	Labours	3 No's
	Office boy	1 No's
	Watchman	2 No's
Unskilled	Cleaner	2 No's
Total		23 No's

Table No 2.17 Water Requirements (3.0 KLD)

Drinking & Domestic purposes	1.0 KLD
Water sprinkling on haul roads	1.0 KLD
Green Belt	1.0 KLD
Total	3.0 KLD
Source	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.

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.

2.13.7 Project Cost

S. No	Description	Amount (Rs)
1	Land Cost	40,00,000
2	Machinery to be used	50,00,000
3	Fencing	2,00,000
4	Labourers Shed	5,00,000
Total		97,00,000

S. No	Description	Amount (Rs)
1	Environmental Monitoring	2,25,000
2	Occupation Health	1,00,000
3	Water Sprinkling	3,00,000
4	Afforestation	1,00,000
5	Safety kids	1,00,000
Total		8,25,000

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.

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 December 2022 – February 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.
- 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 Meteorological Department (IMD), Perundurai observatory, Erode 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 STATION, PERUNDURAI OBSERVATORY, ERODE 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 December 2022 – February 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.

Table No. 3.1: Summary of the Meteorological data for the study period

S. No	Parameters	Months	December 2022	January 2023	February 2023
1	Temperature (°C)	Max	36	39	37
		Min	21	22	25
		Average	27	29	29
2	Rainfall (mm)	Total Average Rainfall	8.6	27.2	43.6
		No. of rainy days	3	6	17
3	Humidity (%)	Average	19	45	76
4	Wind speed (mps)	Average	2.4	2.5	2.2

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 December 2022 – February 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. 3.1.

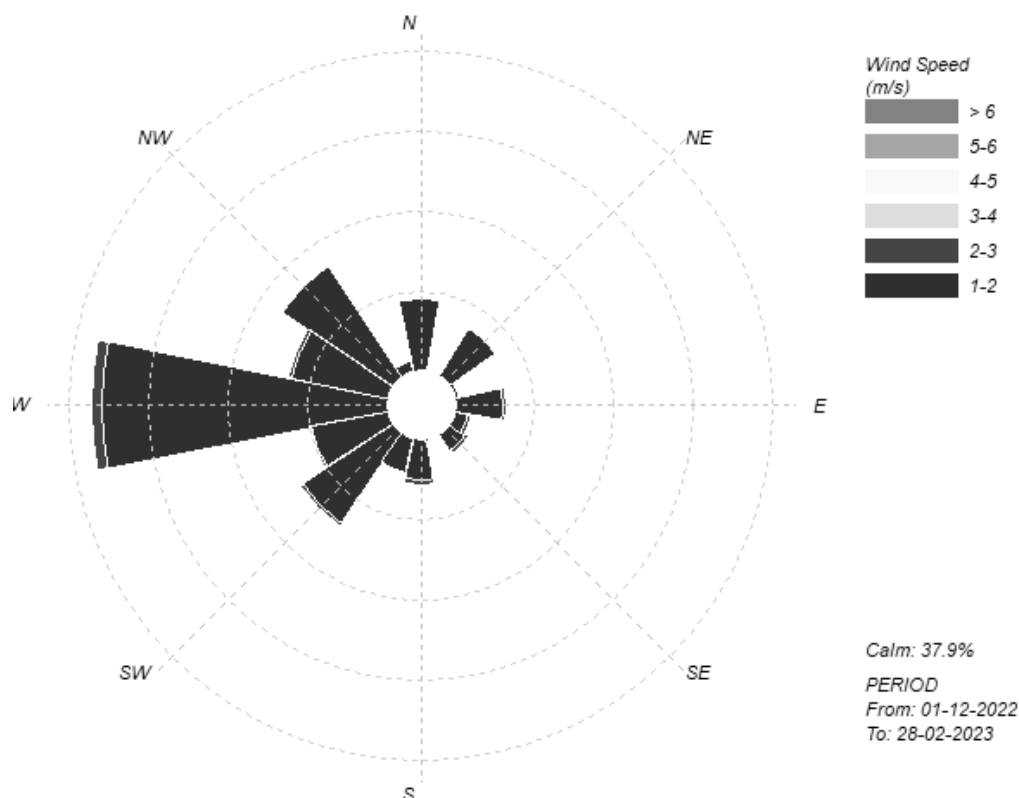


Fig No 3.1 Wind Rose Pattern for the Study period

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 directions prevailing during study period, sensitive receptors, human settlements and mining activities around. The details about sampling locations are mentioned below in fig. 3.2, 3.3 and presented in table 3.2.

The existing Ambient Air Quality status (AAQ) has been monitored for parameters PM₁₀, PM_{2.5}, SO₂ and NO_x. Ambient air quality monitoring was carried out at a frequency of two days per week at each location for three months at 8 hours continuously. Respirable dust samplers have been used for monitoring the existing PM₁₀ status and fine dust samplers are used for monitoring PM_{2.5} 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 No. 3.2: 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 ⁰ 21'40.88"N	77 ⁰ 12'24.30"E
2	Kerapadi	AAQ-3	0.7 km (SW)	Buffer	11 ⁰ 21'28.02"N	77 ⁰ 12'9.54" E
3	Devampalayam	AAQ-4	1.7 km (SE)	Buffer	11 ⁰ 21'3.98"N	77 ⁰ 13'12.04"E
4	Kandisaalai	AAQ-5	1.5 km (NW)	Buffer	11 ⁰ 22'23.24"N	77 ⁰ 12'12.51"E
5	Chinakuttai	AAQ-6	1 km (NE)	Buffer	11 ⁰ 22'2.95"N	77 ⁰ 12'50.39"E

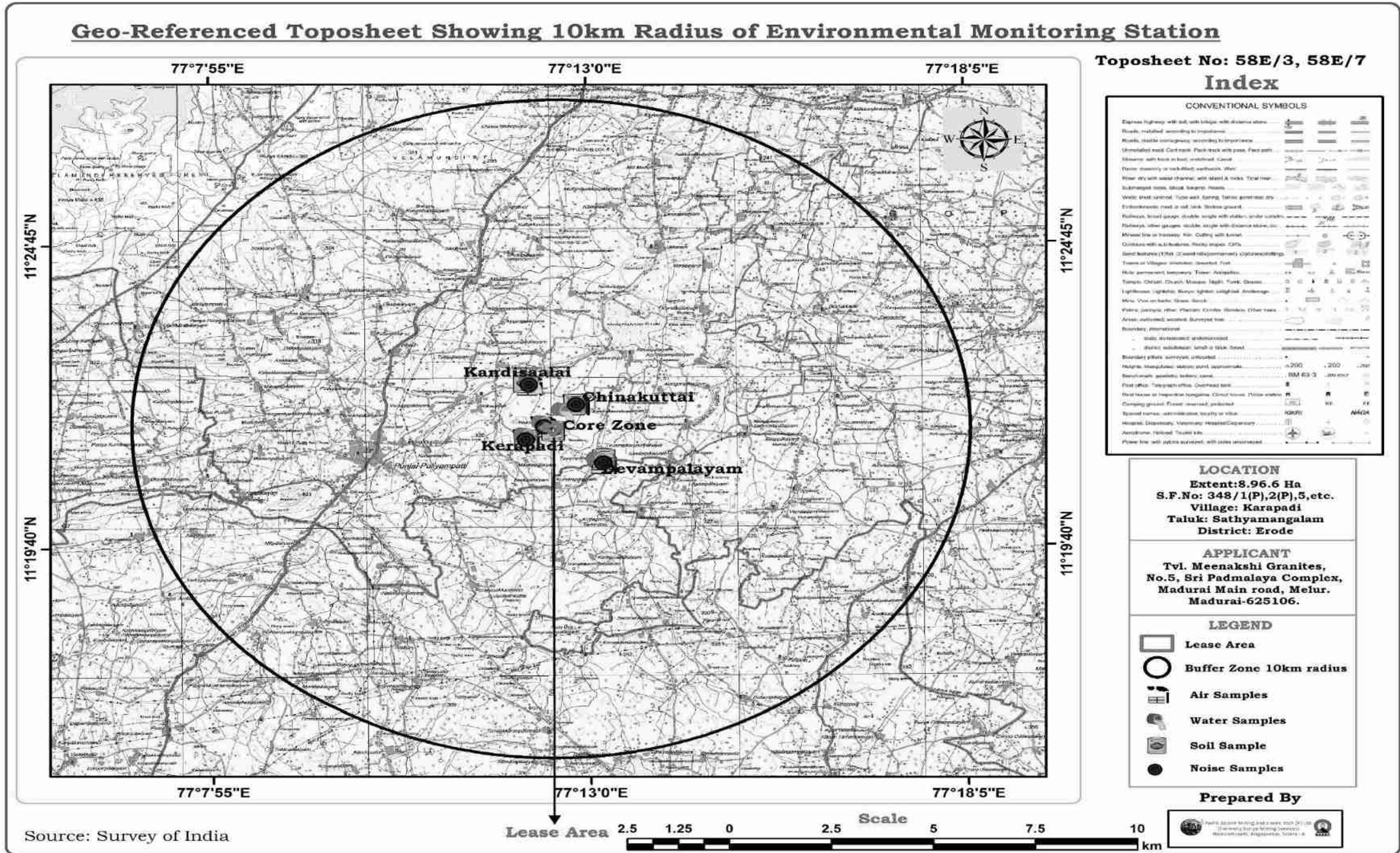


Fig No 3.2 Geo Referenced Toposheet showing Environmental Monitoring station around 10km radius

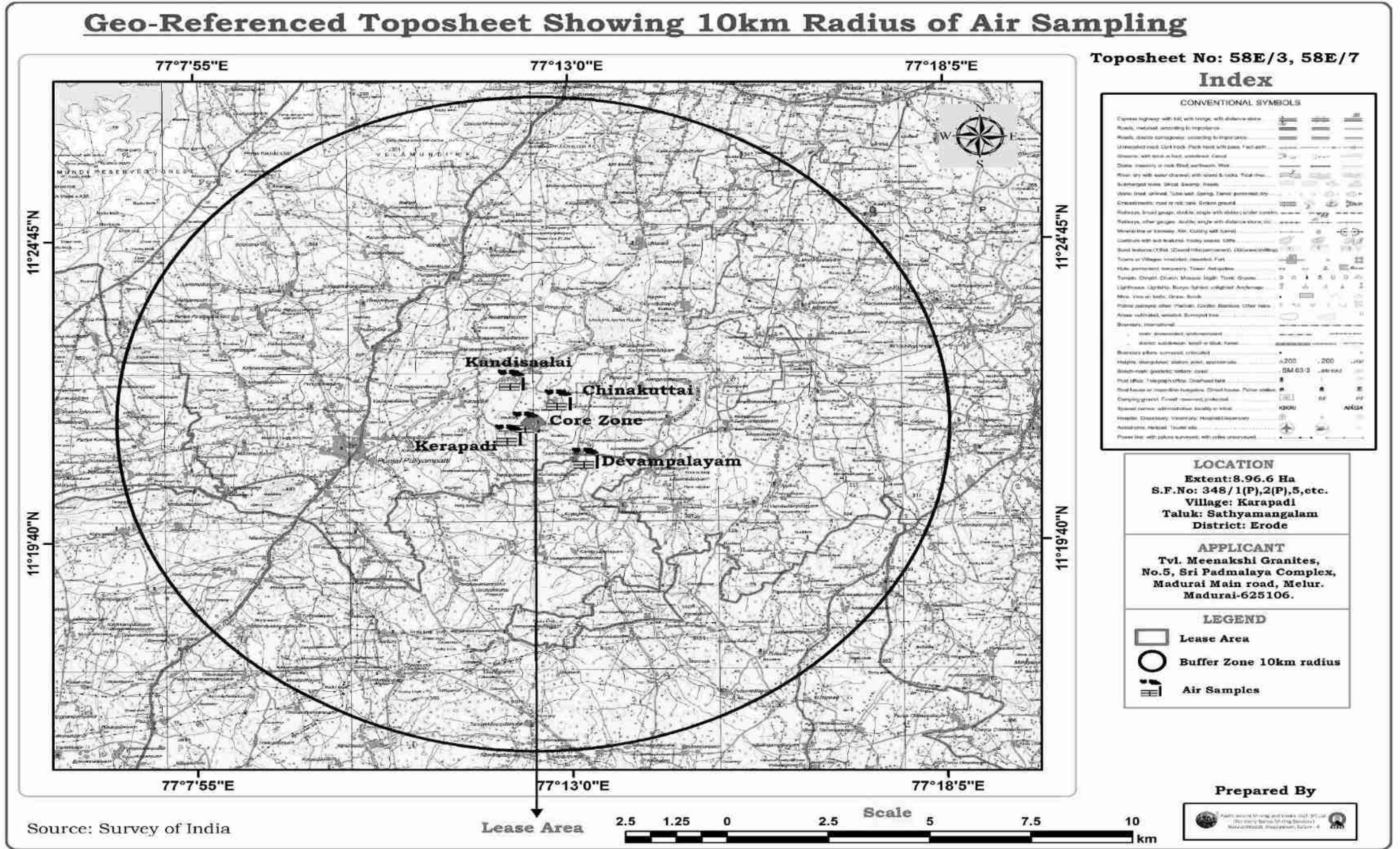


Fig No 3.2a: Geo Referenced Toposheet showing Air Sampling station around 10km radius



Fig No 3.3 Air Monitoring locations at Core and Buffer Zone

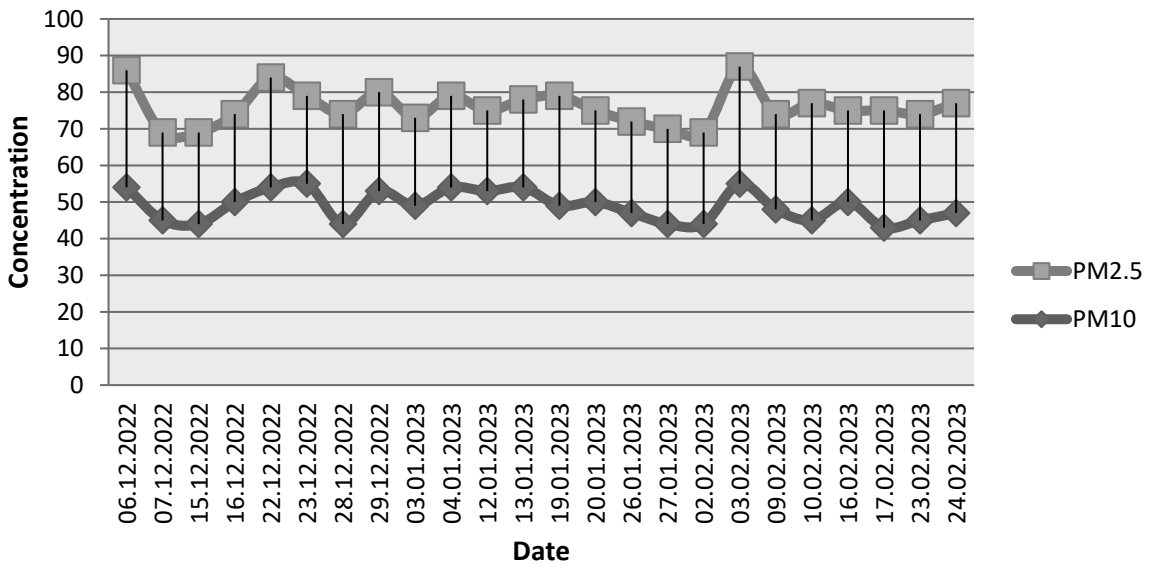
3.4.2 Monitoring Result

Monitoring station-wise minimum and statistical analysis (minimum, maximum, arithmetic mean) for measured levels of PM₁₀, PM_{2.5}, SO₂, NO_x in study area for the monitoring period are shown parameter wise in table 3.3 and graphical representation of concentration pollutants are showing in fig 3.4.

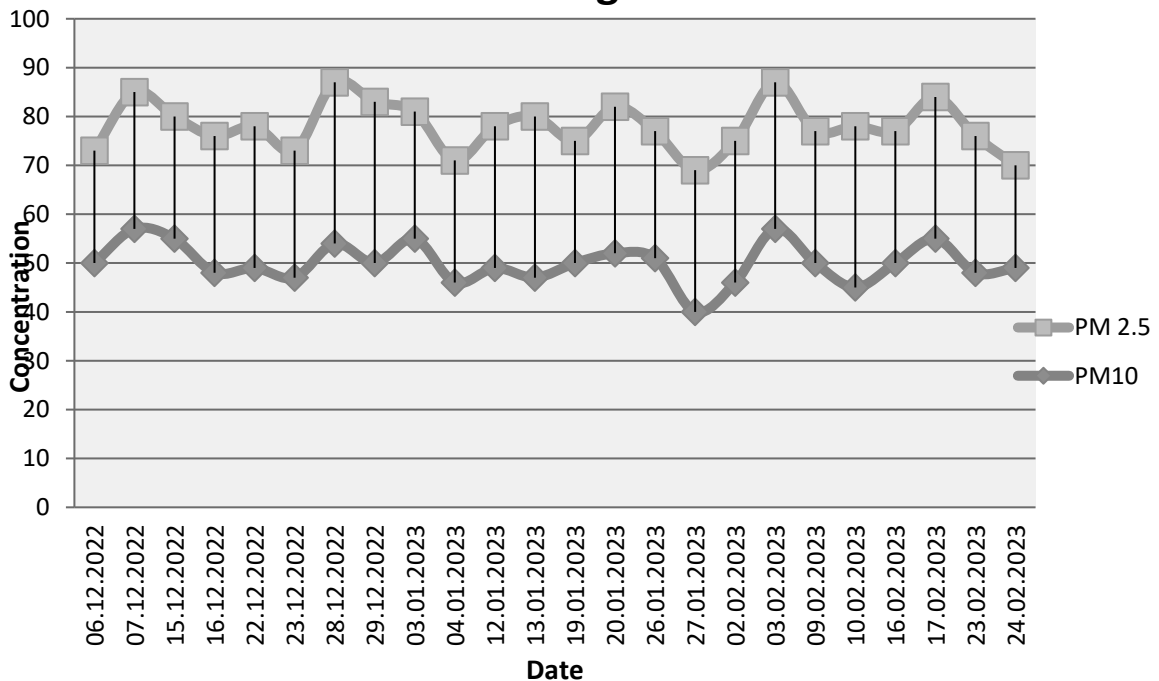
Table No. 3.3: Summaries of Ambient Air Quality Results

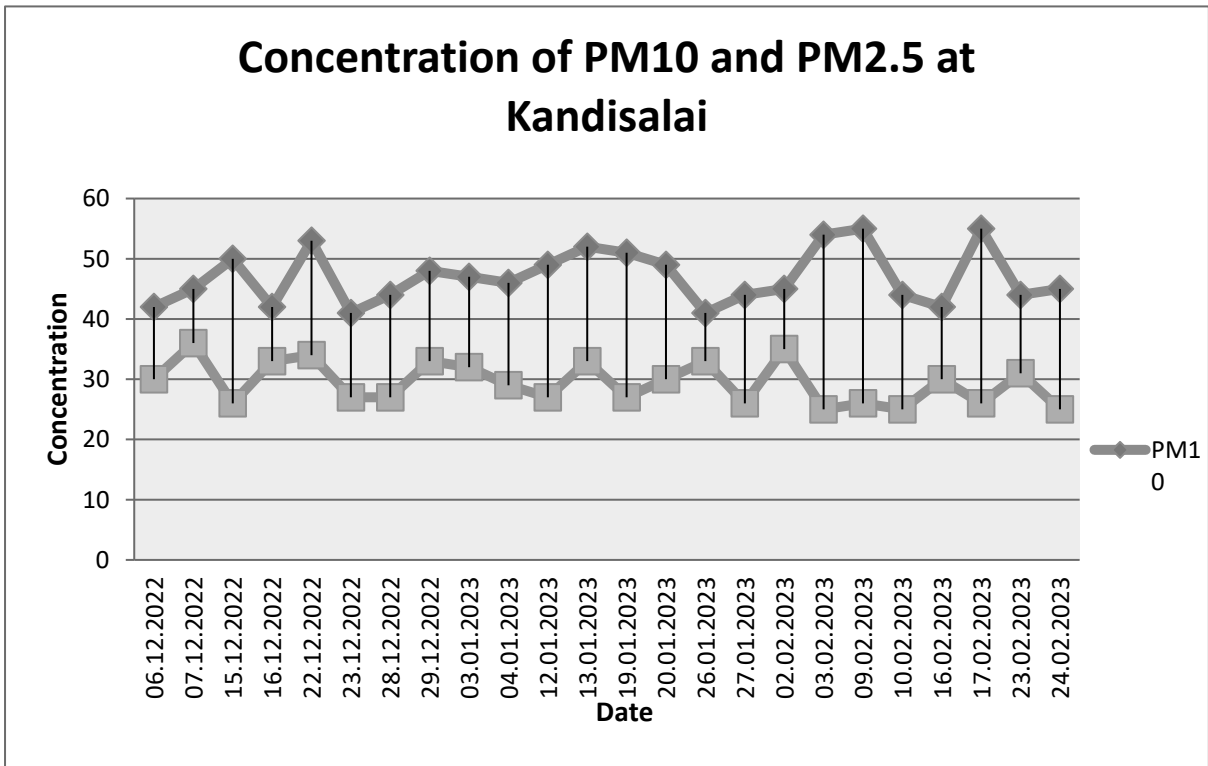
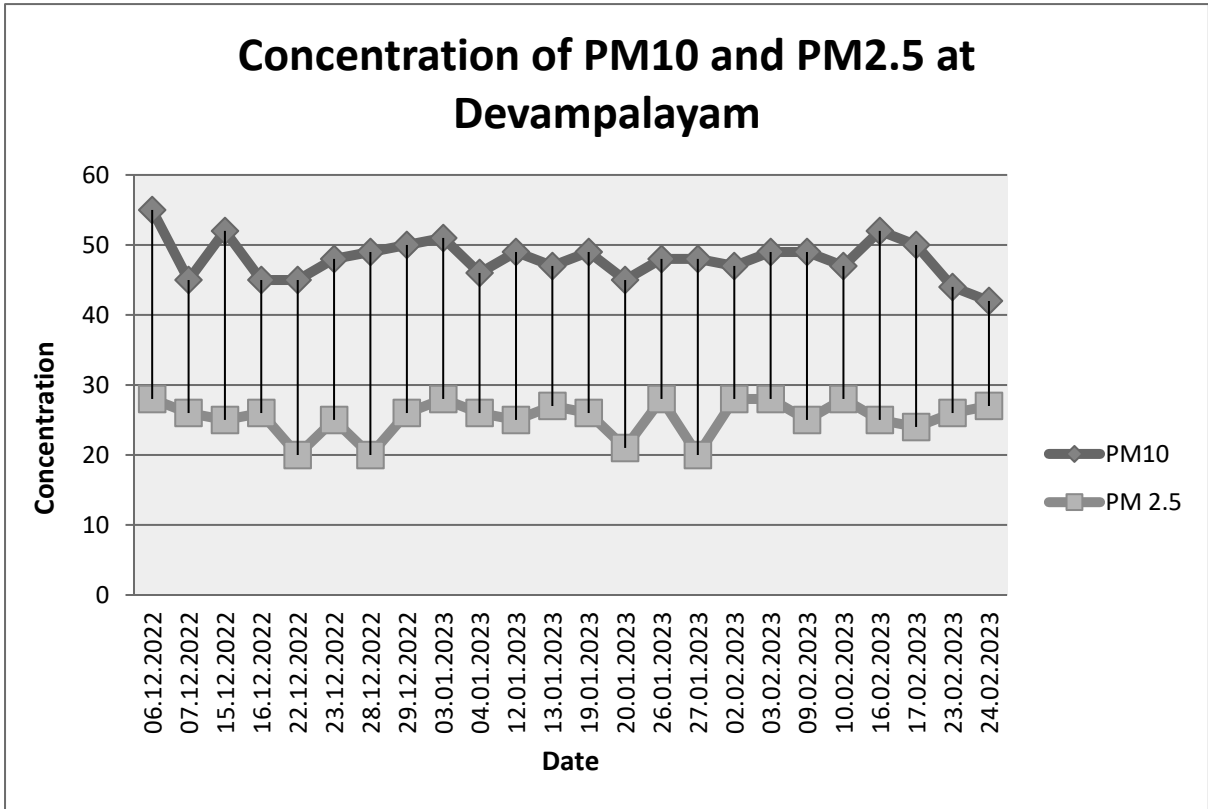
Location	Code	PM ₁₀ (µg/m ³)				PM _{2.5} (µg/m ³)				SO ₂ (µg/m ³)				NO _x (µg/m ³)			
		Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%	Max	Min	Avg	98%
Core Zone	AAQ-1	55	43	49	55	35	18	27	32	20	7	12	17	27	11	22	26
Buffer zone	Kerapadi	57	42	50	57	33	19	28	33	20	6	14	19	30	9	23	30
	Devampalayam	55	39	48	54	28	18	25	28	27	5	11	14	34	7	21	32
	Kandisaalai	57	41	47	55	36	20	29	35	20	3	13	19	34	10	24	30
	Chinakuttai	55	38	46	54	29	17	26	28	20	5	15	19	30	7	25	30
NAAQS		100				60				80				80			

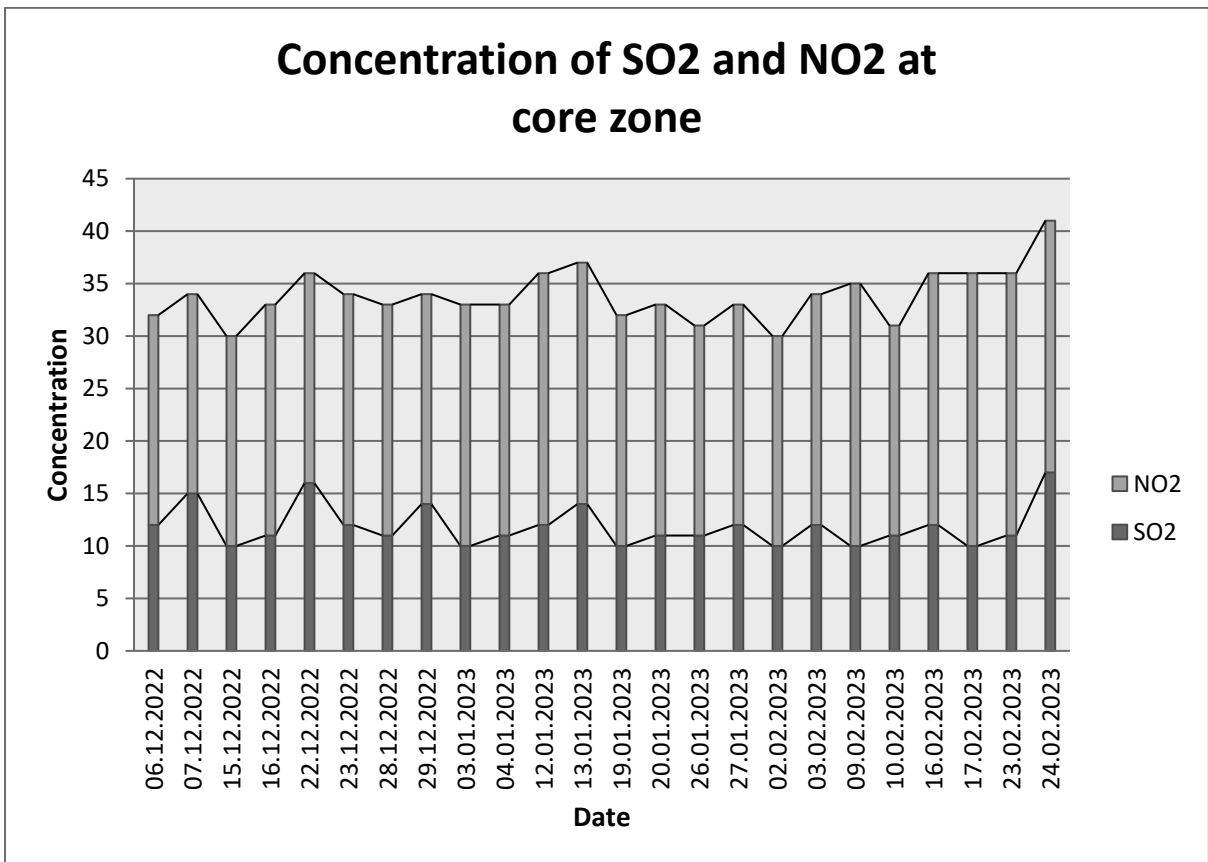
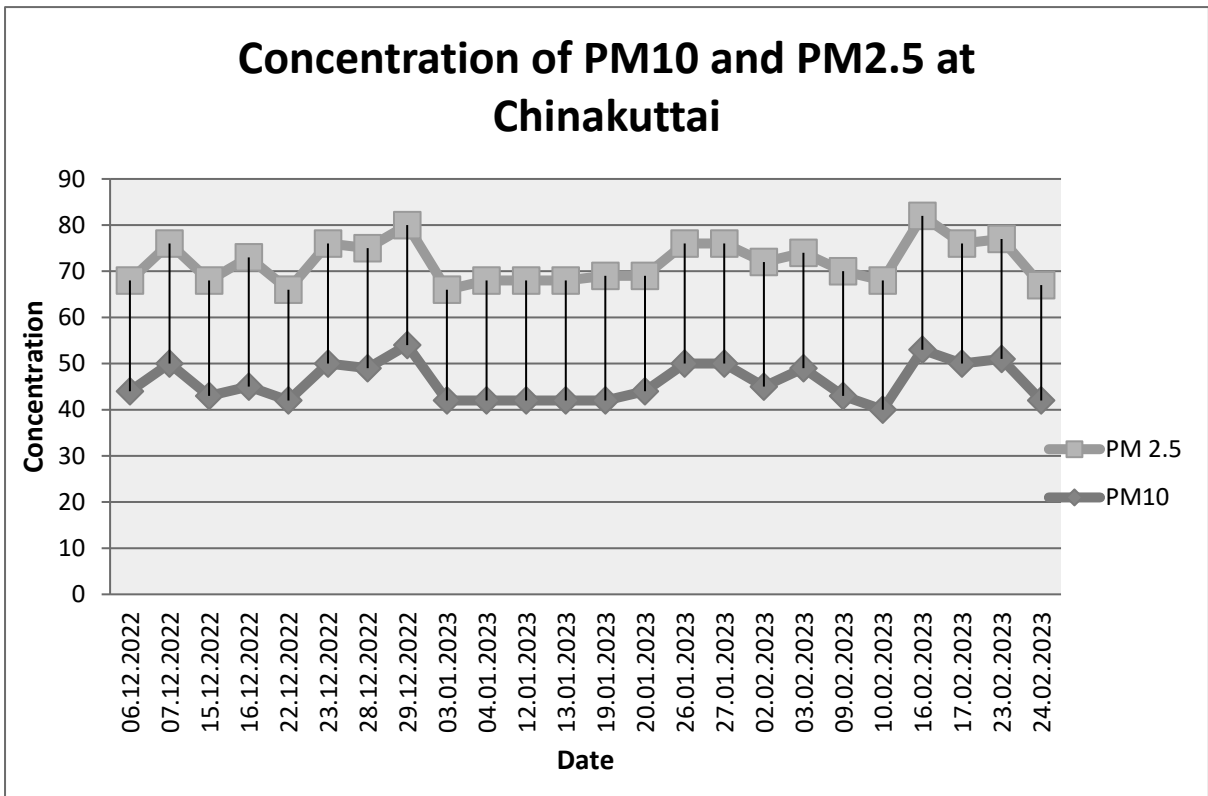
Concentration of PM10 and PM2.5 at Core Zone

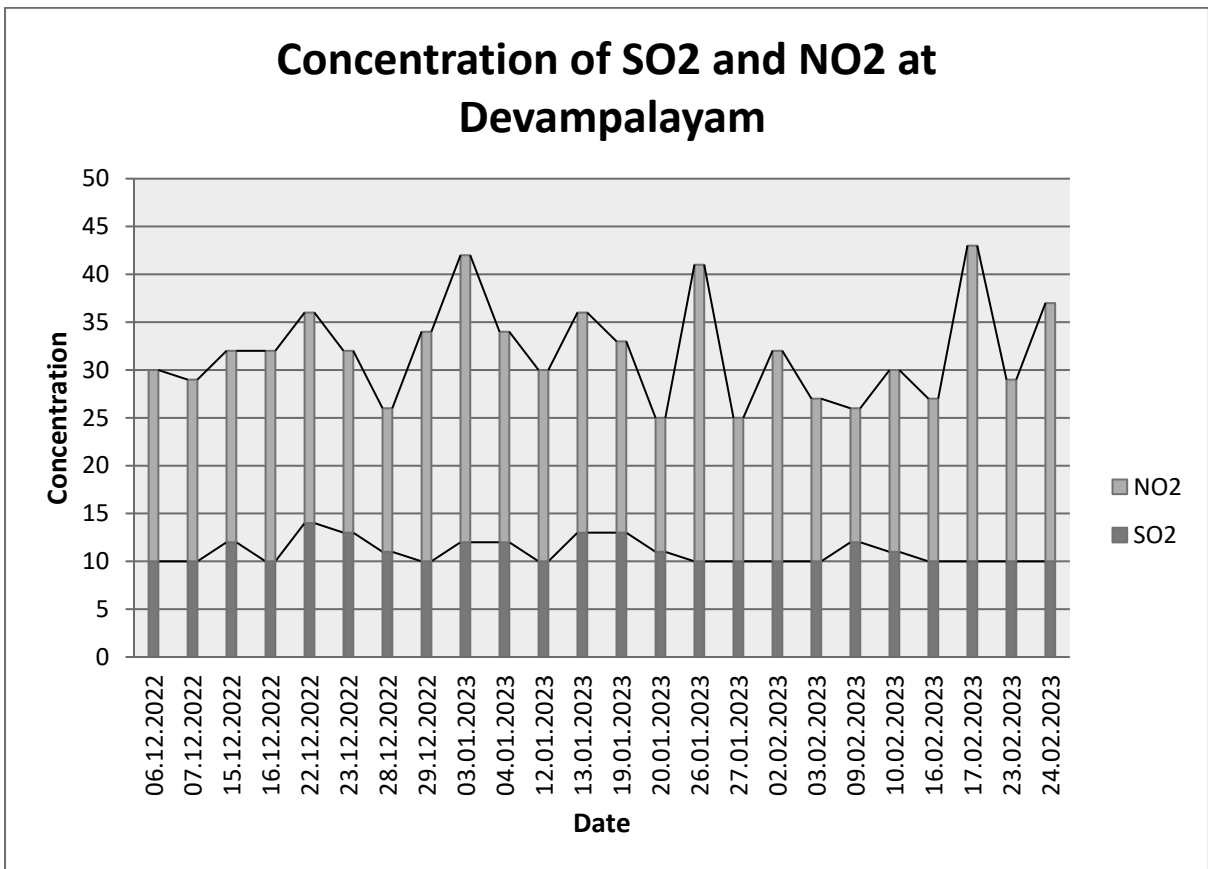
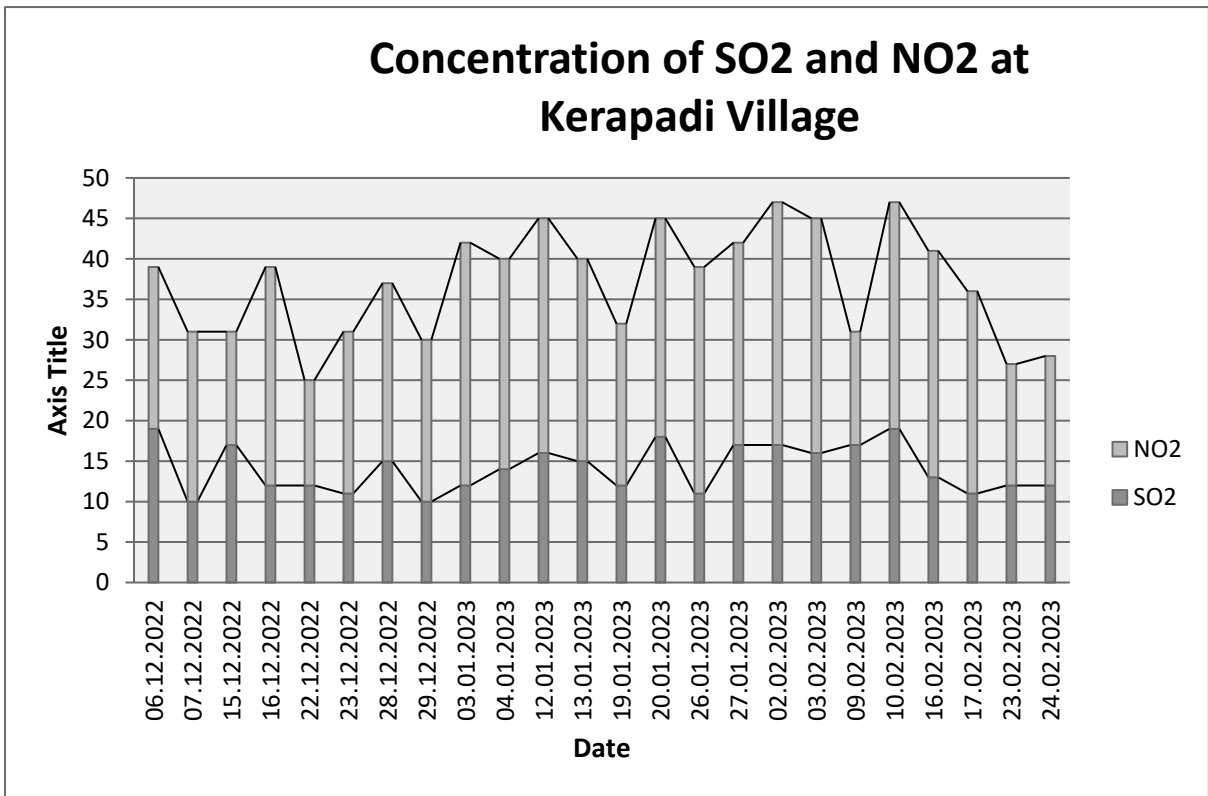


Concentration of PM10 and PM2.5 at Kerapadi Village









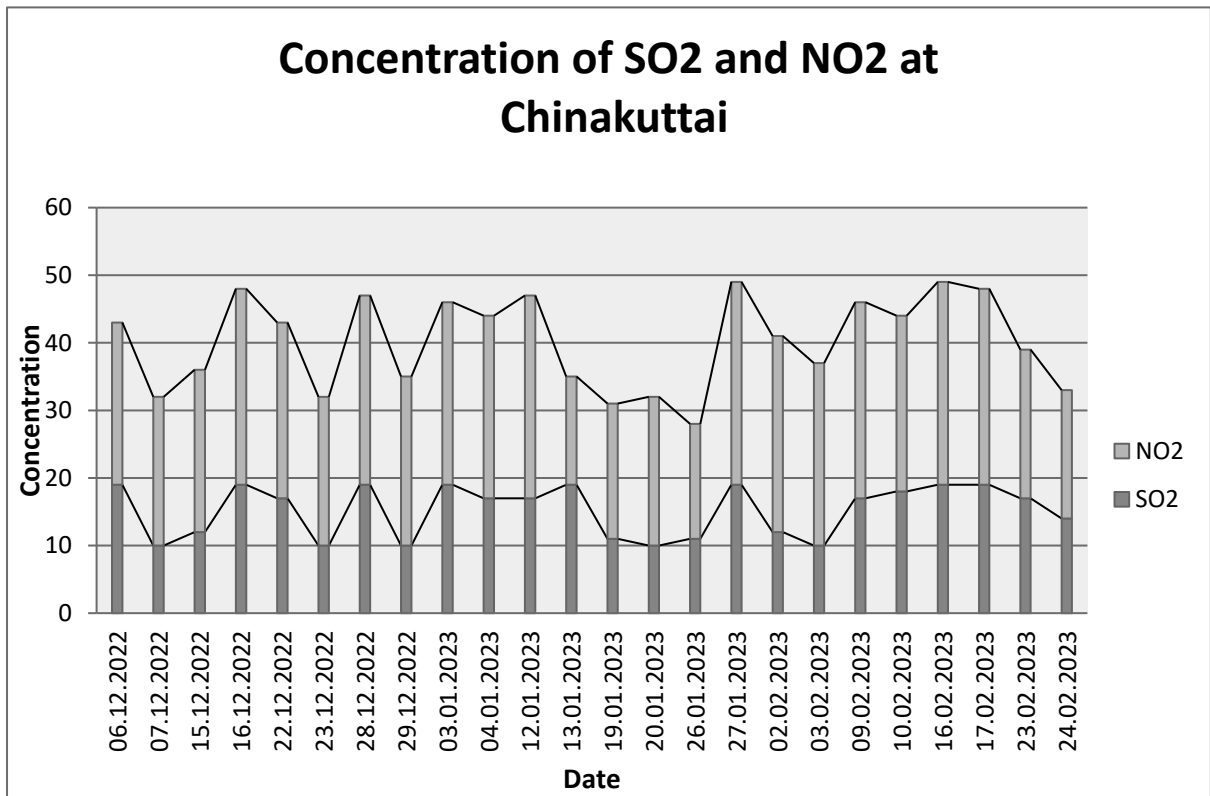
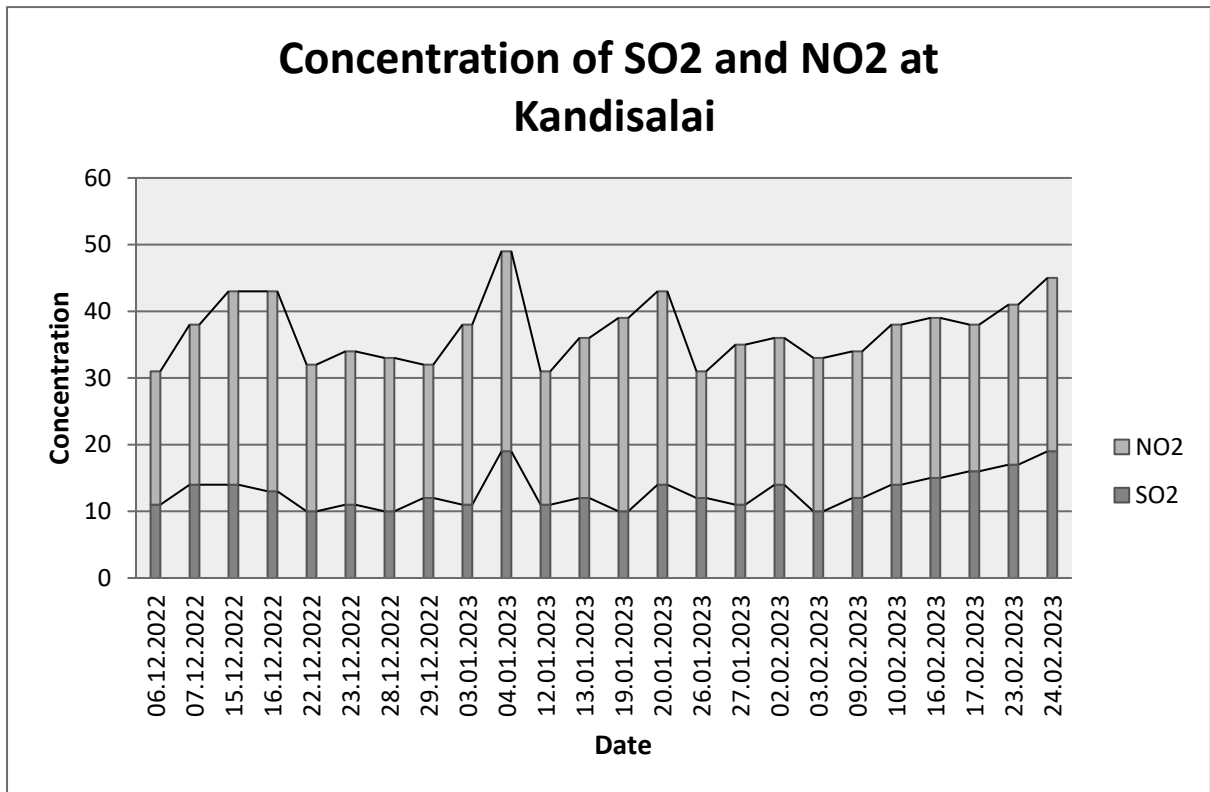


Fig No 3.4 Variation in Concentration of air pollutants

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 PM₁₀ for all the 5 stations was found to be 55µg/m³ at Core zone and other two station. The maximum concentration was observed in Kerapadi and Kandisaalai as 57µg/m³. The average PM₁₀ level at all stations varies from 46µg/m³ to 50µg/m³.
- ✚ The average PM_{2.5} level at all stations varies from 25µg/m³ to 29µg/m³. The minimum concentrations of PM_{2.5} for all the 5 stations were found to be 17µg/m³ and 20 µg/m³ at Kandisaalai village. The maximum concentration was found to be 36µg/m³ at Kandisaalai village.
- ✚ The maximum concentrations of SO₂ were found to be 27µg/m³ at Devampalayam villages. The minimum concentration was found to be 3µg/m³ at Kandisaalai village. The average SO₂ level at all stations varies from 11µg/m³ to 15µg/m³
- ✚ The minimum NO_x concentrations were recorded as 7µg/m³ at two villages such as Chinakuttai and Devampalayam village. The maximum concentration was found to be 34µg/m³ at Kandisaalai and Devampalayam village. The average NO_x level at all stations varies from 21µg/m³ to 25µg/m³. 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 3.5 & 3.6. The sampling locations are shown in table 3.4.

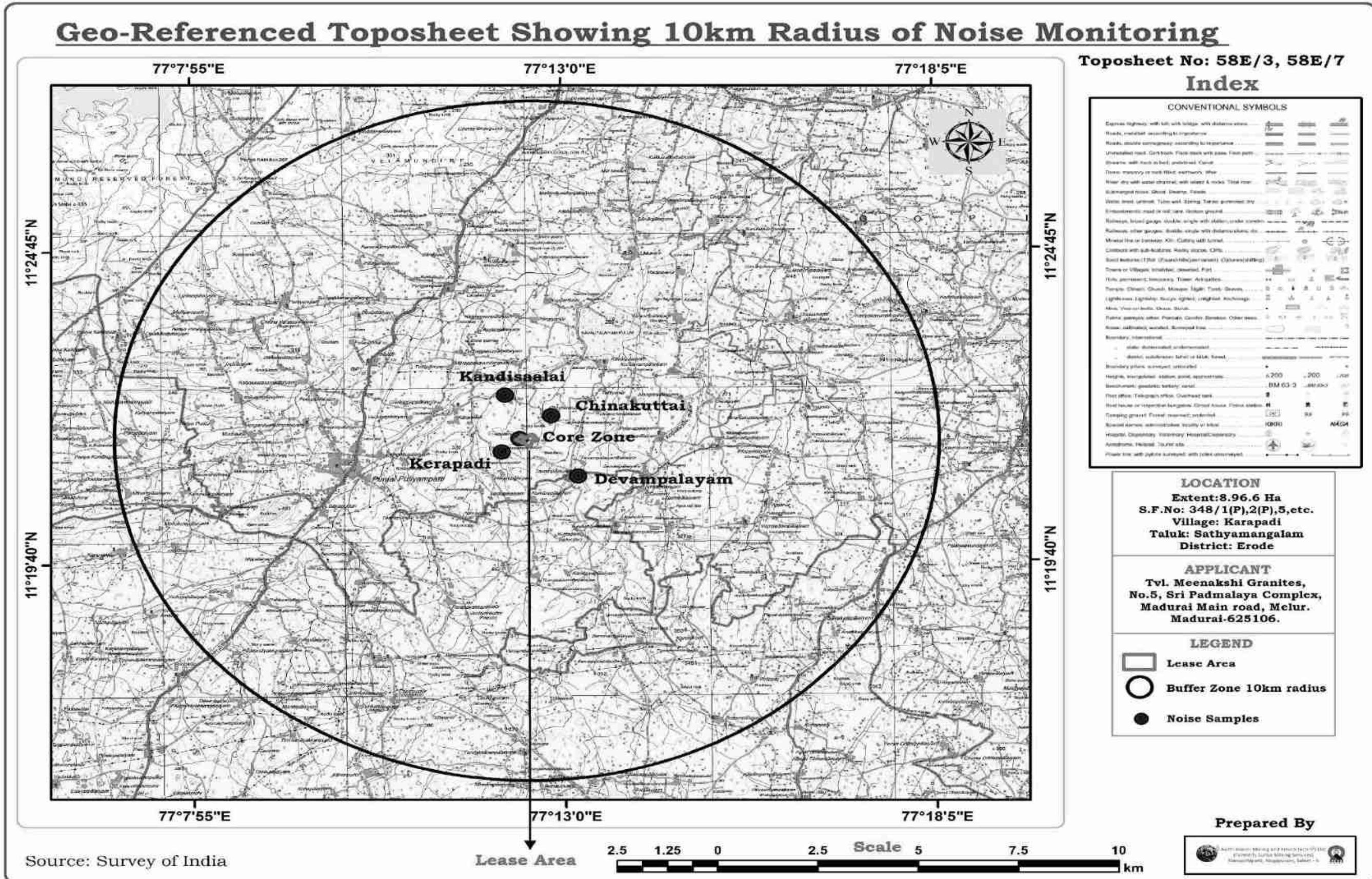


Fig No 3.5 Geo Referenced Toposheet showing Noise sampling stations around 10km radius

Table 3.4 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	Kerapadi	NQ11	0.7	SW
3	Devampalayam	NQ12	1.7	SE
4	Kandisaalai	NQ13	1.5	NW
5	Chinakuttai	NQ14	1	NN

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(a)).

Table 3.4(a) Noise Monitoring Results in Core and Buffer Zone

Sample code	Location	Decibel dB (A)		TNPCB Standards
		Day Time	Night Time	
NQ1	Core area	44.2	42.8	<u>Industrial</u> Day Time- 75 dB(A) Night Time – 70 dB(A)
NQ2	Lease boundary pillar (North)	47.6	44.6	
NQ3	Lease boundary pillar (South)	45.0	43.2	
NQ4	Lease boundary pillar (East)	47.8	46.1	
NQ5	Lease boundary pillar (West)	49.2	47.3	
NQ6	Kerapadi	42.3	40.2	<u>Residential</u> Day Time - 55 dB(A) Night Time - 45 dB(A)
NQ7	Devampalayam	45.8	42.2	
NQ8	Kandisaalai	42.7	39.7	
NQ9	Chinakuttai	44.5	41.6	
Remarks	Day Time	Leq (6.00 AM to 10.00 PM)		
	Night Time	Leq (10.00 PM to 6.00 AM)		



Fig No 3.6 Noise Monitoring at Lease and Buffer

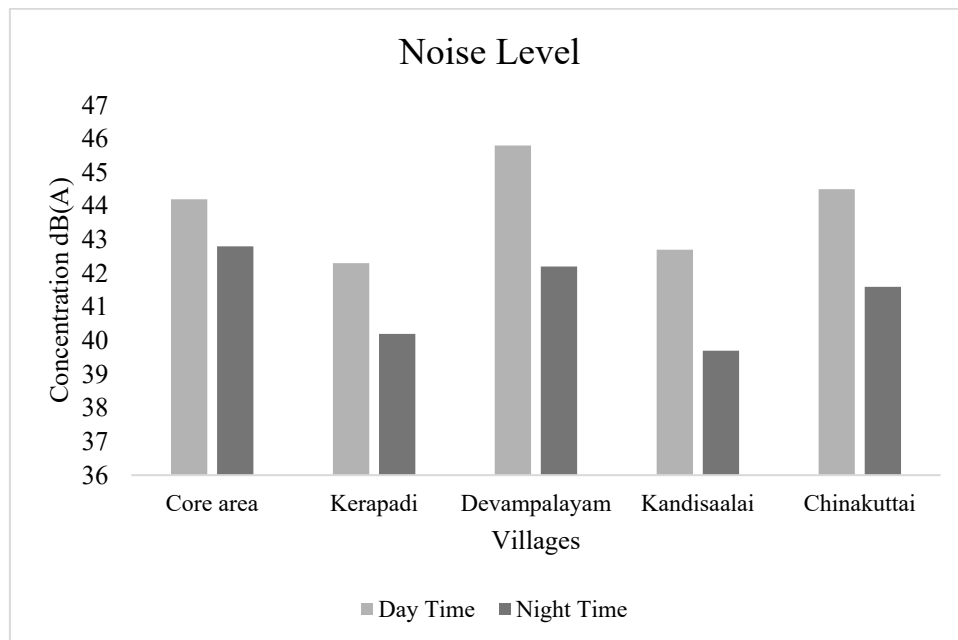


Fig No 3.7 Noise Level of the Study Area

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 45.8 dB (A) at Devampalyam village & 42.3 dB (A) at Kerapadi village respectively in buffer zone. The minimum and maximum noise level at core area - **Tvl. Meenakshi Granites** is 44.2 dB (A) and 49.2 dB (A). 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 42.2 dB (A) at Devampalayam village & 40.2 dB (A) at Kerapadi village respectively in buffer zone. The minimum and maximum noise level at core area - **Tvl. Meenakshi Granites** is 42.8 dB (A) and 47.3 dB (A). The Noise level measured is found within the permissible limits during night time as specified by CPCB Standard.

3.6 Water Environment

Assessment of baseline data on Water environment includes:

- a) Identification of surface and ground water sources
- b) Collection of water samples
- c) 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. Locations of Core and Buffer Zone water samples are given in the fig 3.8. The following image of Geo referenced Topomap showing locations of water samples are given in the fig 3.9.

Table 3.5 Water Sampling Locations

Sampling Code	Location	Surface/ Ground water	Latitude	Longitude	Distance (km)	Direction
WQ1	Core Zone	GW	11°21'41.71"N	77° 12'23.56"E	—	—
WQ2	Kerapadi	GW	11°21'29.50"N	77° 12'8.86" E	0.7	SW
WQ3	Devampalayam	GW	11°21'4.69"N	77° 13'7.14"E	1.7	SE
WQ4	Kandisaalai	GW	11°22'23.80"N	77° 12'13.65"E	1.5	NW
WQ5	Chinakuttai	GW	11°21'54.50"N	77° 12'39.70"E	1	NN



Fig No 3.8 Water Sample Collection at Core and Buffer Zone

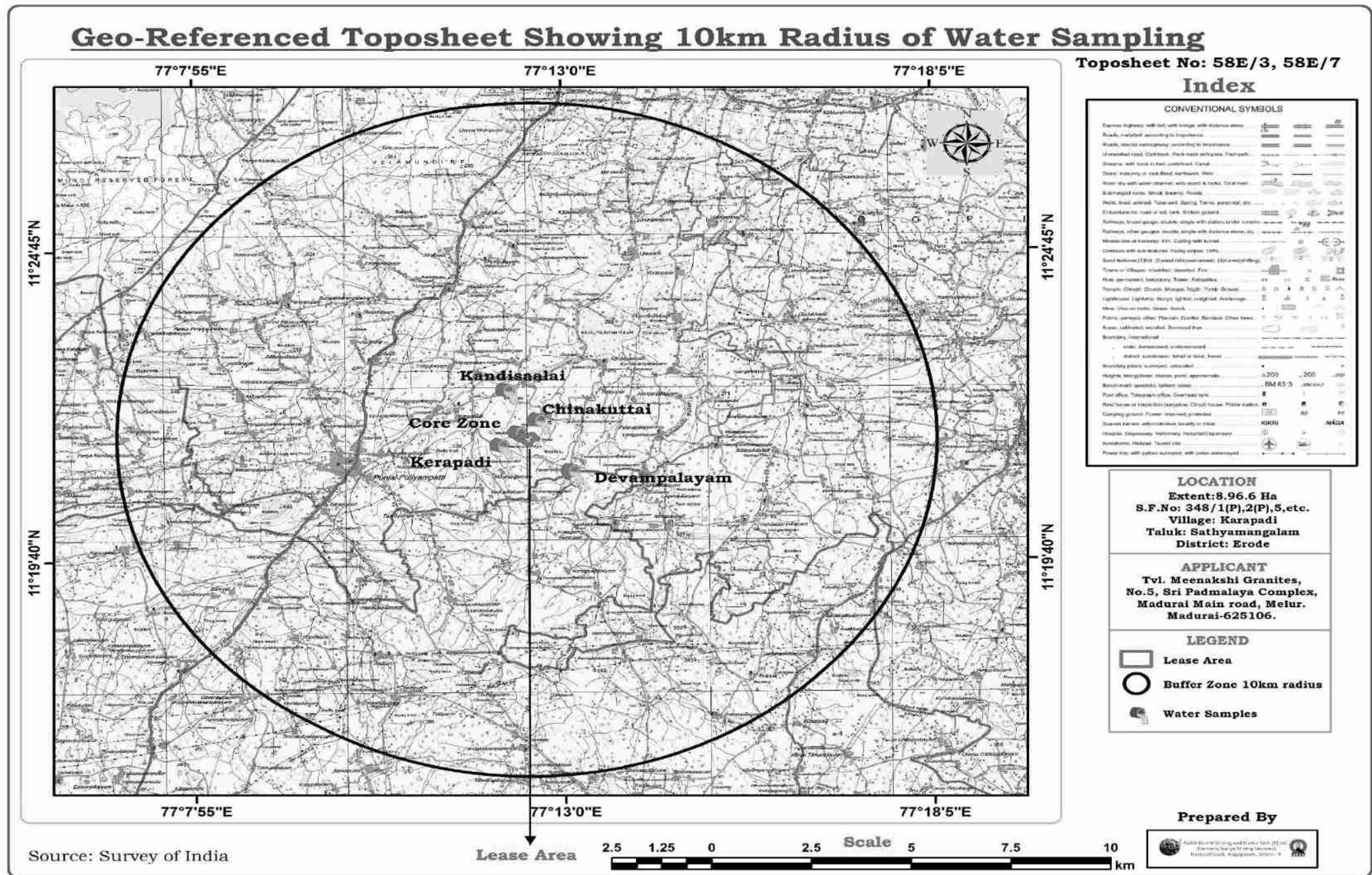


Fig No 3.9 Geo Referenced Toposheet showing water sampling station around 10km radius

Table 3.6 Result of Water Quality Analysis

Sampling Site		Parameters												
		pH	EC µs/cm	Tur (NTU)	TSS (mg/l)	TDS (mg/l)	TH (mg/l)	Ca (mg/l)	Mg (mg/l)	Cl (mg/l)	TA (mg/l)	Phe (mg/l)	SO ₄ ²⁻ (mg/l)	Fe (mg/l)
Core Zone		6.88	740	BDL	2	436	80	18	9	78	66	<2	24	0.024
Buffer Zone	Kerapadi	7.38	1066	BDL	4	640	170	37	19	197	110	<2	32	0.042
	Devampalayam	8.15	1586	BDL	8	984	348	79	36	470	220	20	49	0.06
	Kandisaalai	7.65	1570	BDL	8	976	320	76	32	472	190	10	52	0.036
	Chinakuttai	7.86	1440	BDL	4	892	380	88	39	430	110	20	49	0.03
IS 3025/Ref lab report	AL	6.5-8.5	-	1	-	500	200	75	30	250	200	-	200	0.3
	PL	6.5-8.5	-	5	-	2000	600	200	100	1000	600	-	400	0.3

*Protocol followed by: APHA 23rd Edition 2017

Tur- Turbidity, **TSS**- Total Suspended Solids, **TDS**-Total Dissolved Solids, **TH**- Total Hardness, **Ca²⁺**- Calcium, **Mg²⁺**-Magnesium, **Cl**-Chloride, **TA**-Total Alkalinity, **Phe**- Phenolphthalein, **SO₄²⁻**- Sulfate and **Fe**-Iron.

AL- Acceptable Limit.

PL-Permissible limit.

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.

- pH of the water samples ranged from 6.88-8.15. pH in water samples collected from the locations are within the permissible limit between 6.5-8.5.
- EC of the water samples ranged from 740 to 1586 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 2-8 mg/l in all the water samples collected from both core and buffer area.
- Total Dissolved Solids found in the range of 436-984 mg/l. In all the samples TDS was found beyond the acceptable limit of 500mg/l and maximum value of 98 mg/l was recorded at Devampalayam Village.
- Total Hardness of water sample of all the locations including core and buffer zone was found with in the permissible limit of 500 mg/l. The maximum value of 380 mg/l was found in Chinakuttai village and minimum value of 80 mg/l was observed in core zone.
- Calcium value observed in entire buffer locations were in the range of 37-88 mg/l, exceeds the acceptable limit of 75 mg/l as per Drinking water standards. Whereas in core zone the value was observed to be 18 which is well within the limit of 75 mg/l.
- Magnesium value recorded in all the locations including the core zone was within the range of 9-39 mg/l.
- Chlorides in all the water samples were recorded and highest chloride concentration found in Kandisaalai Village. In other villages the values observed were within permissible limits. The observed value was within the range of 78-472 mg/l.
- Iron & Sulfates in water samples collected from both core and buffer location were observed to be well within the limits.

3.7 Hydro Geology

3.7.1 Hydrogeological details of Sathyamangalam Taluk

Hydrogeology of the Sathyamangalam Taluk consists weathered and fractured Archaean crystalline rocks 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.

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

3.7.3 Geophysical Investigation Method

Geophysical Electrical Resistivity survey conducted in Schlumberger Configuration (VES) method using IPI2win Software. The Schlumberger array is an array where four electrodes are placed in line around a common midpoint. The two outer electrodes, A and B, are current electrodes, and the two inner electrodes, M and N, are potential electrodes placed close together. With the Schlumberger array, for each measurement the current electrodes A and B are moved outward to a greater separation throughout the survey, while the potential electrodes M and N stay in the same position until the observed voltage becomes too small to measure (source). At this point, the potential electrodes M and N are moved outward to a new spacing. As a rule of the thumb, the reasonable distance between M and N should be equal or less than one-fifth of the distance between A and B at the beginning. This ratio goes about up to one-tenth or one-fifteenth depending on the signal strength. The Schlumberger array is commonly used for vertical electrical sounding (VES) for groundwater and aggregate minerals. Vertical electrical sounding (VES) using the Schlumberger array provides better resolution.

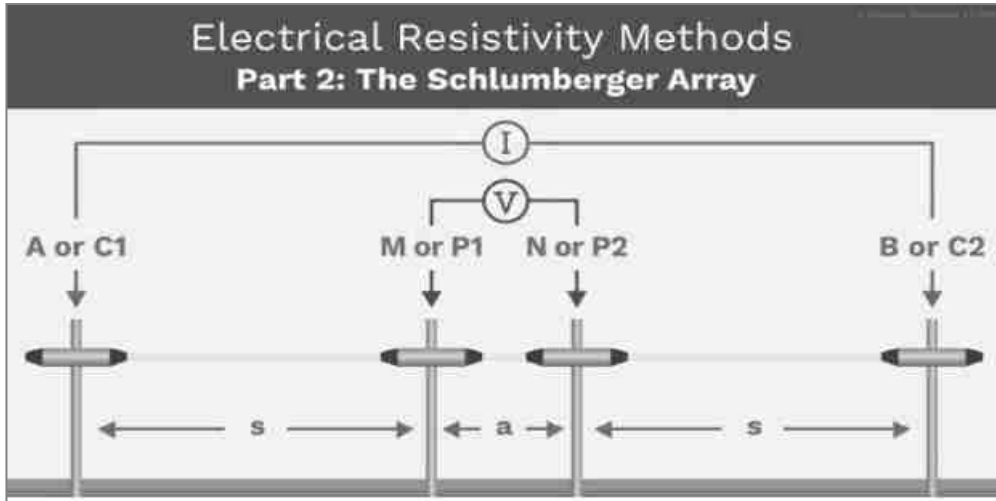


Fig No 3.10 Schlumberger Array

The resistivity surveys were carried by the consultants in the site at selected one point at Tested in the proposed Project site. The vertical electrical sounding (VES) using digital resistivity meter is carried out and the apparent resistivity curves are obtained. Ipi2win software is used and the data are interpreted. The computer output of geo-electric layers is given in fig 3.10 and 3.11 which gives the apparent resistivity curve, depth wise resistance and interpreted layers with corresponding resistivity.

The study area of lies in the Northern latitude of 11°21'42.06"N, Eastern longitude 77°12'26.50"E which is represented by Toposheet No. 58 E/3. The applied area is mostly plain, elevation of 313m above mean sea level.

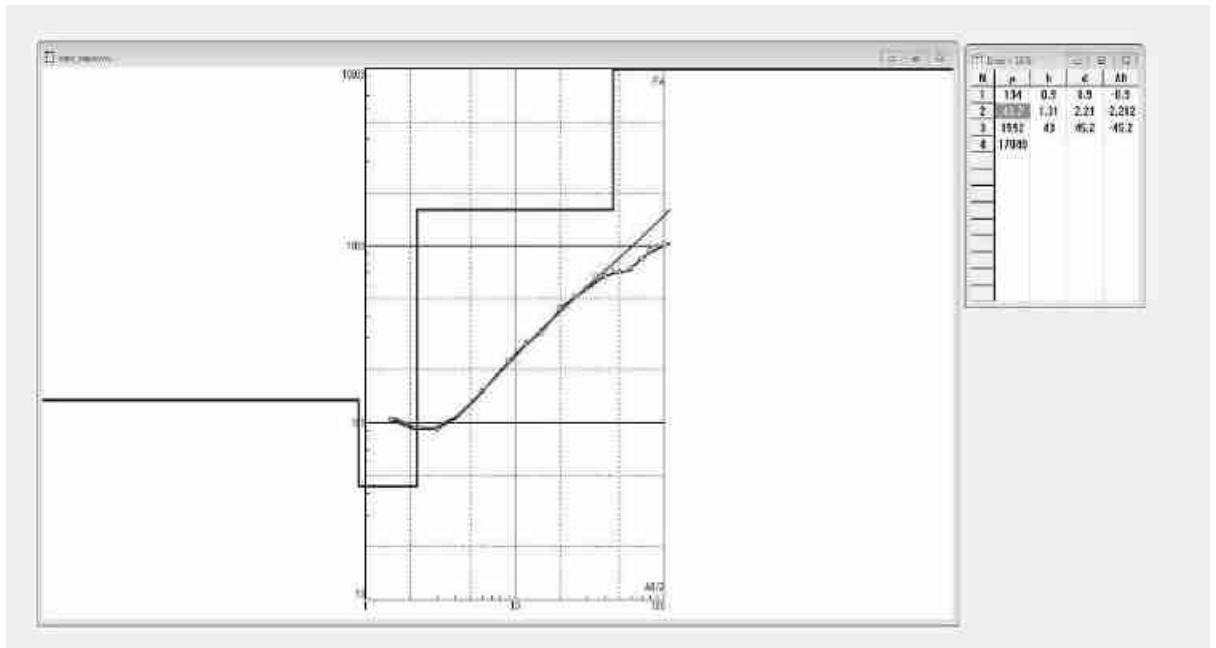


Fig No. 3.11: Image showing Resistivity curve, depth data

VES- INFERRED STRATA

0-6m: Top soil & Weathered Rock

6-50m Massive Granite formation with moderate Resistivity Value

50-52m: Water level fluctuations

Above 52m: Massive hard formation

The presence of topsoil indicating low resistivity up to 0-1m is indicative of the poor water bearing aquifer. The shallow water table is having curve breaks around 52m depth with possible water level. The hard rock shall not permit the groundwater to flow freely and also depth of quarrying is proposed above the water table. Therefore, no much impact of the proposed quarry to the surrounding wells, water bodies and Ground water table etc.,

3.7.4 Aquifer Performance Test

Note on the pumping test conducted at Thiru. TVL. Meenakshi Granites Multicolor Granite Quarry, over an Extent of 8.96.6 Hectares in 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6 Patta land of Karapadi Village, Sathyamangalam Taluk, Erode District, Tamil Nadu.

The pumping test has been conducted at TVL. Meenakshi Granites Multicolor Granite Quarry, 8.96.6 Hectares in S.F. No: 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, Karapadi Village, Sathyamangalam Taluk, Erode District, Tamil Nadu to identified the ground water potential in the area. The site is little elevated terrain with few small outcrops ranging 0-5m height and open pit reaching 12m depth. There are few bore wells in the 10 km radius buffer zone. One of the bore well is located in the Karapadi village which is reported to be 800 feet in depth and gives moderate yield. The bore well is fitted with 5HP submergible pumps and water is pumped at intervals for using agricultural Purposes.

The bore well recorded static water level of 52m and pumping level goes up to 80m in 3 hours pumping. In order to avoid dry run of bore and ensure sustainability of yield, the bore well is pumped at intervals. The discharge of the well is measured by volumetric method from the time taken to fill the ground level sump and the estimated discharge is 24 litres per minute (Lpm). The pumping test is conducted in the bore well on 20.02.2023 and the drawdown and recovery data are given

$$\text{Discharge Volume} = \frac{200 \text{ (barrel)} \times 60}{500 \text{ (seconds)}} = 24 \text{ Lpm}$$

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The pumping head is more than 200m and the water level sounder with cable length of 105m were used for recording the fluctuation in water level during pumping and recovery period. The observed recovery data is used to get aquifer characteristics by applying the recovery formula. The semi-log plot is given in fig 3.10 and the estimated Transmissivity value of 0.21m²/day.

$$\text{Transmissivity} = \frac{2.303 \times Q}{4\pi\Delta S} = \frac{2.303 \times 24 \times 60 \times 8 / 1000 \text{m}^3}{4 \times 3.14 \times 10} = \frac{26.53}{125.6} = 0.21 \text{m}^2/\text{day}$$

Table No. 3.7: Aquifer Performance Test

Site name with coordinates	Karapadi Village Multicolor Granite Quarry; 11°21'41.86"N and 77°12'23.63"E			
Location details	TVL. Meenakshi Granites - Multicolor Granite Quarry, over an Extent of 8.96.6 Hectares in 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6 Patta land of Karapadi Village, Sathyamangalam Taluk, Erode District.			
Block	Sathyamangalam			
District & State	Erode District & Tamil Nadu			
Type of well	Bore well: 800 feet depth (244m)			
Date of test & start time	20.02.2023; 10.00 hours			
Diameter of well(mm)	150			
Distance from the observation well(mm)	No observation well			
Capacity of the pump	5 HP			
Discharge (lpm)	24 LPM			
Measuring point (m)	Ground level			
SWL in m below measuring point	52 m			
Clock Time (HH/MM)	Time since pumping started (Mints)	Pumping Water Level (m bmp)	Draw down (m)	Remarks
10.00	0	52.00	0	Pump started
10.01	1	52.5	0.5	
10.02	2	54.0	2.0	
10.03	3	55.24	3.24	
10.04	4	56.42	4.42	
10.05	5	57.11	5.11	
10.06	6	58.87	6.87	
10.07	7	59.45	7.45	
10.08	8	60.36	8.36	
10.09	9	61.65	9.65	
10.10	10	62.09	10.09	

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10.12	12	62.97	10.97	
10.14	14	63.54	11.54	
10.16	16	64.32	12.32	
10.18	18	65.87	13.87	
10.20	20	66.56	14.56	
10.25	25	67.74	15.74	
10.30	30	68.48	16.48	
10.35	35	69.85	17.85	
10.40	40	71.35	19.35	
10.45	45	72.89	20.89	
10.50	50	73.46	21.46	
10.55	55	75.05	23.05	
11.00	60	76.74	24.74	
11.10	70	77.69	25.69	
11.20	80	78.47	26.47	
11.30	90	79.23	27.23	
11.40	100	80	28	Pump stopped

Time in Hours	Time since pump stopped (min) (t')	Time since starting of pumping (min) (t)	Water Level (m bmp)	Residual Drawdown RDD (m)	t/t'
11.40	0	100	80	0	0
11.41	1	101	79.60	0.40	101.00
11.42	2	102	77.56	2.44	51.00
11.43	3	103	76.78	3.22	34.33
11.44	4	104	76.23	3.77	26.00
11.45	5	105	75.86	4.14	21.00
11.46	6	106	75.31	4.69	17.67
11.47	7	107	74.45	5.55	15.29
11.48	8	108	73.78	6.22	13.50
11.49	9	109	72.86	7.14	12.11
11.50	10	110	72.16	7.84	11.00
11.52	12	112	71.78	8.22	9.33
11.54	14	114	70.87	9.13	8.14
11.56	16	116	70.10	9.90	7.25
11.58	18	118	69.74	10.26	6.56
12.00	20	120	68.35	11.65	6.00
12.05	25	125	67.68	12.32	5.00
12.10	30	130	66.45	13.55	4.33

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12.15	35	135	65.79	14.21	3.86
12.20	40	140	65.05	14.95	3.50
12.25	45	145	64.76	15.24	3.22
12.30	50	150	63.75	16.25	3.00
12.40	60	160	63.03	16.97	2.67
12.50	70	170	62.48	17.52	2.43
13.00	80	180	61.81	18.19	2.25
13.10	90	190	61.31	18.69	2.11
13.20	100	200	60.68	19.32	2.00
13.40	120	220	60.03	19.97	1.83
13.00	140	240	59.89	20.11	1.71
14.20	160	260	59.21	20.79	1.63
14.40	180	280	58	22	1.56

3.7.5 Conclusion

An integrated approach of pumping test and Vertical electrical resistivity survey (VES) 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 first aquifers Zone identified 52m bgl and the hydrological condition 10 km radius of buffer zone depth to the static water levels of the aquifer ranges from 50 to 52 m bgl. The approved mining plan pit limit depth is 36m bgl which will have no impact on direct or indirect effect of mining Activity on groundwater resource.

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 3 selected locations.

The frequency and methodology of soil quality sampling process is given in table 3.8. Moreover, Georeferenced soil Map of around 10 km radius is given in fig 3.12. Table 3.9 presents the soil quality monitoring locations of the study area. The sampling was carried out once in the study period.

Table 3.8 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 3.9 Soil Sampling Locations

CODE	Place	Latitude (N)	Longitude (E)	Distance (km)	Direction
SQ1	Core Zone	11 ⁰ 21'36.52"N	77 ⁰ 12'31.68"E		
SQ2	Kerapadi	11 ⁰ 21'27.33"N	77 ⁰ 12'9.93" E	0.7	SW
SQ3	Devampalayam	11 ⁰ 21'7.98"N	77 ⁰ 13'12.48"E	1.7	SE
SQ4	Kandisaalai	11 ⁰ 22'25.65"N	77 ⁰ 12'9.11"E	1.5	NW
SQ5	Chinakuttai	11 ⁰ 223.35"N	77 ⁰ 12'49.78"E	1	NN

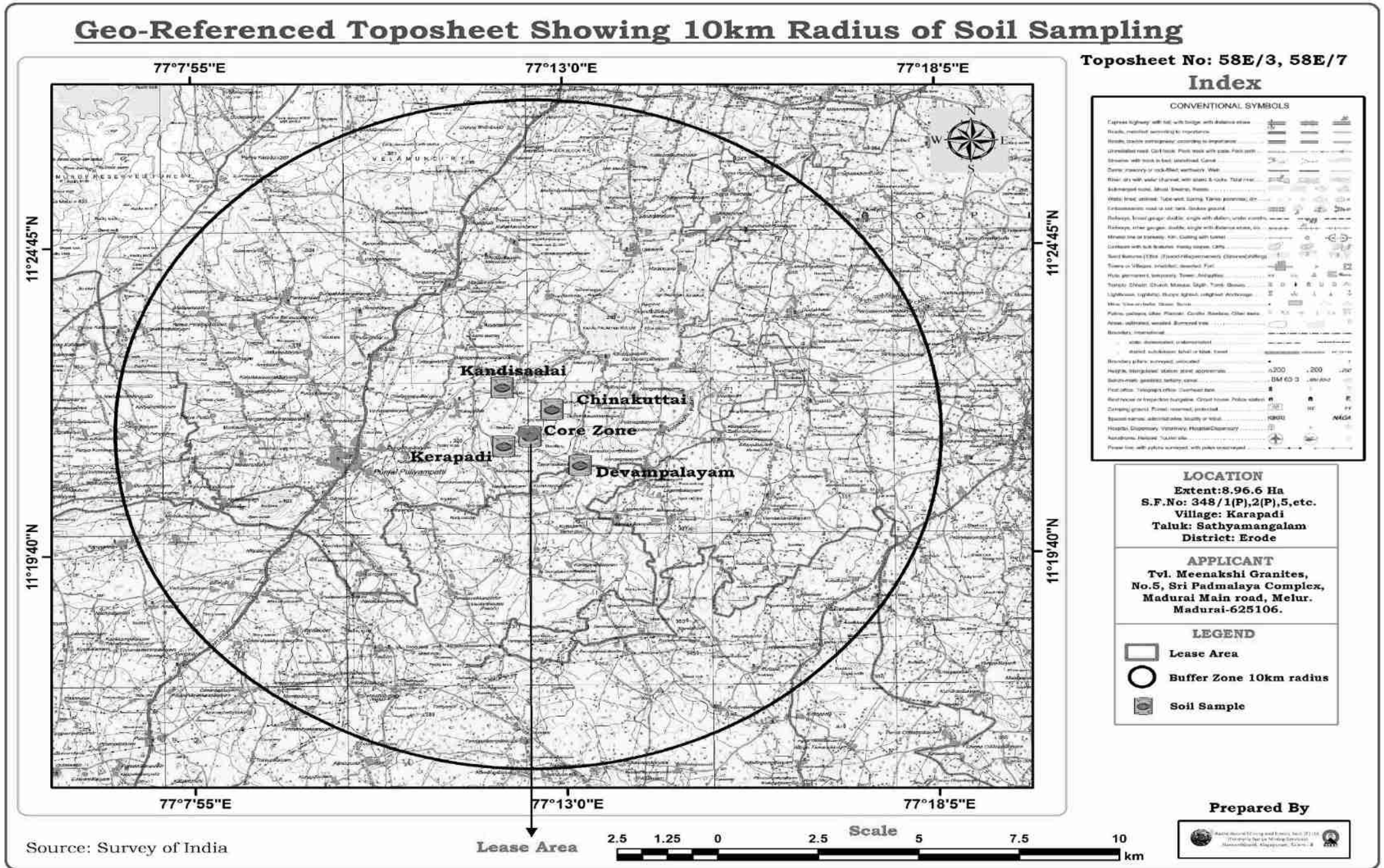


Fig No 3.12 Geo referenced Toposheet showing Soil sampling Locations around 10km radius

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Fig No 3.13 Soil Sampling at Core and Buffer Zone

Table 3.9 Result of Soil Sample Analysis

Sample Site		Soil Parameters											
		pH (10%Sol)	EC (10% Sol) µs/cm	M (%)	BD (g/cc)	WHC (%)	Texture (%)			OM (%)	Ca (%)	Mg (%)	Cl (%)
							Sand	Silt	Clay				
Core Zone		7.10	84	2.38	1.05	54	54	26	20	1.47	0.004	BDL	0.006
Buffer Zone	Kerapadi	7.41	75	2.05	1.15	48	48	48	4	1.56	0.003	BDL	0.005
							Sandy Clay Loam						
	Devampalayam	7.30	93	2.65	1.09	44	48	32	20	1.35	0.005	BDL	0.007
							Sandy Loam						
	Kandisaalai	8.46	407	2.98	1.22	56	48	28	24	1.78	0.007	BDL	0.009
							Sandy Loam						
	Chinakuttai	8.04	276	2.52	1.35	54	48	32	20	1.65	0.006	BDL	0.008
							Sandy Loam						
<p>EC-Electrical Conductivity, M- Moisture, BD- Bulk Density, WHC- Water Holding Capacity, OM- Organic Matter, Ca- Calcium, Mg-Magnesium and Cl-Chloride.</p> <p>BDL = Below the Detectable Limit.</p> <p>DL = Detection Limit.</p>													

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 7.10 to 8.46 in the soil samples. In Core area of Tvl. Meenakshi Granites the pH 7.10 value of soil was neutral.

Electrical conductivity (EC), a measure of soluble salts in the soil was in the range of 75 $\mu\text{S/cm}$ to 407 $\mu\text{S/cm}$.

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 is in the range of 1.05g/cc to 1.35g/cc respectively, which indicate favorable physical condition for plant growth.

Water holding capacity was found to be in the range of 44% to 56% 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 1.35- 1.78%. This shows that soil was deficient in organic matter content.

Available Chlorides content range of between 0.005 to 0.009 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 0.0003–0.007 mg/kg thereby indicating that the soils are with low levels of available Calcium content.

3.9 ECOLOGY AND BIOLOGICAL ENVIRONMENT

3.9.1 Description of Erode District Environment

Erode District lies on the extreme north of Tamil Nadu. It is bounded mostly by Karnataka State and also River Palar covers pretty long distance. To the East lies Namakkal and Karur Districts. Dindigal District is its immediate neighbour to the South and on the West, it has Coimbatore and Nilgiri Districts, as its boundaries. Thus, Erode District is essentially a land-locked area having no sea-cost of its own. Erode District situated at between 10 36” and 11 58” North Latitude and between 76 49” and 77 58” East Longitude.

The region comprised in the district can be portrayed as a long undulating plain gently sloping towards the river Cauvery in the south-east. The two major tributaries of river Cauvery viz. Bhavani and Noyyal drain the long stretch of mountains in the north. A part of the eastern boundary of the district is formed by river Cauvery, entering the district from Salem and flowing in a southern direction.

The soils of the district are mostly red sand and gravel with moderate amounts of red-loam and occasional black loam tracts. Vast stretches of the upland regions are mostly and gravelly. Red-loam occurs mostly in land under Kalingarayan channel and in beds of tanks in Erode Taluk and to some lesser extent in the valleys in Perundurai taluk. It also occurs in the hilly tracts of Bhavani taluk.

Soils of Bhavani, Erode and Perundurai taluks are chiefly gravelly, stony and sandy of the red variety. Soils of Gobichettipalayam and Sathyamangalam taluks are mostly of the red sandy variety. Red loam is prevalent mostly in Gobichettipalayam and Perundurai taluks.

The district in general is characterised with a scanty rainfall and a dry climate. Maximum rainfall is recorded in Gobichettipalayam and Bhavani taluks. The Palghat gap in the Western Ghats, which has a soothing effect in the climate of Coimbatore District, does not render much help in bringing down the dry climate in this area. The cool-wind that gushes out of the west coast through Palghat gap loses its coolness and becomes dry by the time it crosses Coimbatore district and reaches Erode region.

3.9.2 Agriculture activities in Erode District

Though noted for trade and industry, the district is by no means backward in the field of agriculture. Close association and link with Coimbatore district which has the advantage of two premier agricultural Institutions viz., the Agricultural College and the Research Institute have helped the districts to keep abreast of developments in agricultural methods and practices and also improved strains of seeds. The publicity and developmental activities launched by

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the agricultural institutions in Coimbatore penetrated far and wide in Erode District. Added to this was the propaganda and demonstration organised by the Agricultural Department. Availability of irrigation facilities coupled with the awareness of improved methods of farming helped the agriculturists to forge ahead. Though the soil is not the best, utilisation of improved methods of cultivation and improved strains of seeds together have helped the agriculturists in the district to maximise their output. Paddy accounts for 86,939 hectares. Next to Paddy is Cholan which is raised in more than 11240 hectares.

Pulses are not much in cultivation in the district. Only 31498 hectares are used for raising pulses. Among condiments and spices, turmeric and chillies are significant. Cultivation of turmeric extends over 14533 hectares.

Among the non-food crops, oil seeds constitute the major item. 55.23 % of the total area under nonfood crops is accounted for by oil seeds. A total of 95018 hectares is under oil-seeds cultivation and of these ground-nuts account for 55696 hectares while gingelly accounts for 24084 hectares. Ground-nut is the most popular oil-seed raised here.

Among other non-food crops raised here, the most important items are cotton, sugarcane and tobacco, sugarcane is raised in 30903 hectares. Cotton is grown in few hectares while tobacco is raised in 4923 hectares in the district. In respect of all commercial crops also improved varieties have been adopted by the farmers and this has helped them to maintain high yields.

Table 3.10 Details of Important cash crops/ Horticulture crops in Erode District

Sl. No	Common name	Scientific name	Family
1.	Paddy	<i>Oryza sativa</i>	Poaceae
2.	Kuthiraivali	<i>Echinochloa frumentacea</i>	Poaceae
3.	Horsegram	<i>Macrotyloma uniflorum</i>	Fabaceae
4.	Cholan	<i>Sorghum bicolor</i>	Poaceae
5.	Kambu	<i>Pennisetum glaucum</i>	Poaceae
6.	Ragi	<i>Eleusine coracana</i>	Poaceae
7.	Groundnut	<i>Arachis hypogaea</i>	Fabaceae
8.	Sugarcane	<i>Saccharum officinarum</i>	Poaceae
9.	Maize	<i>Zea mays</i>	Poaceae
10.	Green gram	<i>Vigna radiata</i>	Fabaceae
11.	Red gram	<i>Cajanus cajan</i>	Fabaceae

12.	Castor	<i>Ricinus communis</i>	Euphorbiaceae
13.	Black gram	<i>Vigna mungo</i>	Fabaceae
14.	Cotton	<i>Gossypium herbaceum</i>	Malvaceae
15.	Vargu	<i>Paspalums crobiculatum</i>	Poaceae
16.	Marigold plant	<i>Tagetes erecta</i>	Asteraceae
17.	Firecracker flower	<i>Crossandra infundibuliformis</i>	Acanthaceae

3.9.3 Forest resources

With more than 228,750 hectares of land under dense forest, Erode is one of the few fortunate districts in the State which can boast of extensive forest area. 27.7% of the total district area is under forests. These forests are rich in commercially significant items such as teak, sandalwood, rosewood, vogai, pillaimaruthu etc. Sandalwood is abundant in moyar valley and in strips facing Dodda Combai in Talamalai ranges. Tamarind trees are plenty in Bhavani ranges. In high land forest of elevation 2,000 feet to 5,000 feet, diversified flora are prevalent. Here we find semi evergreen type, teak type, sandal type, bamboo type and shola type of vegetation.

Teak is available mostly in ranges of 3,200 feet to 3,600 feet. Important places where bamboo is available are in the outer slopes of north Coimbatore plateau between 1,500 feet to 3,000 feet elevation. Main centres of availability are Vadaparai and Hussanur basin in Sathyamangalam ranges. Dodda Combai in Bhavani ranges is also significant for the availability of bamboo.

The Southern Forest Rangers' College at Coimbatore has given a fillip to the forest conservation in this district also.

The district is rich in fauna. It is varied and all the common species normally found in ranges and plains in the south are found to occur in this district. Significant is the presence of wild elephants and tigers especially on the hills in the northern or north-eastern parts of the district. Cheetahs are not altogether absent. They are sparsely distributed. Panthers are found in the scrub jungles and rocky hills of the district. Spotted deer, barking deers, jungle sheep etc. are normally present in the northern ranges. The Barugur cattle found in Bhavani ranges are though small in size, well built and sturdy.

3.9.4 Water resources

Bhavani, Cauvery and Noyyal are the main rivers of the district. Other significant river is Palar in the North. Palar constitutes the boundary between Erode district and

Karnataka State in the North. The Bhavanisagar main canal along with the above mentioned rivers provide proper drainage and facilities for assured irrigation in the district. Bhavani rises in the silent valley in Palghat ranges in the neighbouring State of Kerala after receiving Siruvani, a perennial stream of Coimbatore District and gets reinforced by the Kundah river before entering Erode District in Gobichettipalayam.

As noted earlier, the main sources of irrigation are the canals and wells. Canals under various irrigation projects together help to irrigate about 98,805 hectares of land while the wells irrigated 68,570 hectares. Area irrigated by tanks and springs and channels are negligible. The net area irrigated under various sources together constitute 58.9% area irrigated to total area sown in the district. The net area irrigated in the district totals to 209,432 hectares.

Bhavani is more or less a perennial river fed mostly by the South-West monsoon. North-East monsoon also supplements its water resources. This river runs for over hundred miles through Erode District traversing through Bhavani and Gobichettipalayam taluks. It feeds the Bhavanisagar reservoir which takes an easterly course flowing through Gobichettipalayam, Sathyamangalam and Bhavani taluks before it ultimately joins river Cauvery on the Salem borders.

Cauvery rising in the Coorg, is joined by many small tributaries. It turns through Karnataka and at Hogenakal fall takes a sharp turn, east to south. Before reaching this point, its main tributary, viz., river Kabini joins it. From here it takes a south-easterly direction forming the boundary between Bhavani taluk of Erode District and Tiruchengode taluk of the neighbouring Namakkal District. After river Bhavani flows into it, the south-easterly course is continued forming the boundary between Erode taluk of Erode District and Tiruchengode taluk of Namakkal taluk.

Noyyal river is noted for its capricious nature. This is fed mostly by the South-West monsoon but the North-East monsoon brings freshes and this very often results in floods. In spite of its unpredictable character, the river helps to irrigate considerable areas in Palladam taluk of Coimbatore District and Dharapuram taluk of Tiruppur District.

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 wild 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 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.

- Status of floral species was assessed in the representative habitat types (Forest, Agriculture and Wetland habitats) existing in the study area.
- Quantitative data were collected using standard Quadrature methods using circular plots followed by Mueller-Dombois and Ellenberg (1967) and Kershaw (1973).
- Status of tree, shrub and annuals (grass and herb) were quantified using circular plots of different sizes, 15m, 8m radius and 1 x 1m two plots respectively. Other habits like climbers and creepers found within the 8m radius plots were also identified and enumerated.

3.9.7.1. Flora in Core Zone

Taxonomically a total of 47 species distributed in 34 families have been recorded from the core mining lease area. Based on habitat classification of the enumerated plants the

majority of species were tree 24 (51%) followed by shrubs 8 (17%), herbs 12 (25%) and creeper 3 (6 %) Details of flora with the scientific name were mentioned in Table No. 3.11 and Fig No: 3.16. No ecologically sensitive plant species has been reported from this area.

3.9.7.2. Flora in Buffer Zone

Taxonomically a total of 70 species distributed among 41 families have been recorded from the buffer area. Based on habitat classification of the enumerated plants the majority of species were tree 32 (45%) followed by shrubs 15 (26%), herbs 18 (26%) and rest 5 (7%) is a climber. Details of flora with the scientific name were mentioned in table No. 3.11 and fig 3.14.

Table No. 3.11: Floral Diversity in Core and Buffer area (Tvl. Meenakshi Multi Colour Granites Erode District)

Sl. No.	Common Name	Local Name	Family	Scientific Name	Core	Buffer
TREES						
1.	Pomegranate Tree	Mathulai Maram	Punicaceae	<i>Punica granatum</i>	+	+
2.	Coconut Tree	Tennai Maram	Arecaceae	<i>Coccus nucifera</i>	+	+
3.	Banana Tree	Vaazhai Maram	Musaceae	<i>Musa paradisiaca</i>	-	+
4.	Manila tamarind	Kodukkapuli Maram	Fabaceae	<i>Pithecellobium dulce</i>	+	+
5.	Palmyra palm Tree	Panai Maram	Arecaceae	<i>Borassus flabellifer</i>	+	+
6.	Bamboo Tree	Munkil Maram	Poaceae	<i>Bambusa vulgaris</i>	+	+
7.	Teak Tree	Tekku Maram	Lamiaceae	<i>Tectona grandis</i>	+	+
8.	Southwest Thorn	Seemai karuvellam Maram	Fabaceae	<i>Prosopis juliflora</i>	+	+
9.	Otaheite gooseberry Tree	Siru neli Maram	Phyllanthaceae	<i>Phyllanthus acidus</i>	+	+
10.	Drumstick Tree	Murungai Maram	Moringaceae	<i>Moringa oleifera</i>	+	+
11.	Guava Tree	Koiya Maram	Myrtaceae	<i>Psidium guajava</i>	+	+
12.	Neem Tree	Vempa Maram	Meliaceae	<i>Azadirachta indica</i>	+	+
13.	Papaya Tree	Papali Maram	Caricaceae	Carica Papaya	+	+
14.	Indian date Tree	Elandhai Maram	Rhamnaceae	<i>Ziziphus mauritiana</i>	+	+
15.	Mango Tree	Maa Maram	Anacardiaceae	<i>Mangifera indica</i>	+	+

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16.	Iron wood Tree	Savukku Maram	Casuarinaceae	<i>Casuarina equisetifolia</i>	+	+
17.	Lemon Tree	Ealumichai Maram	Rutaceae	<i>Citrus limon</i>	-	+
18.	Black plum Tree	Naval Maram	Myrtaceae	<i>Syzygium cumini</i>	+	+
19.	Sapodilla Tree	Sappota Maram	Sapotaceae	<i>Manilkara zapota</i>	-	+
20.	Lemon-Scented Gum	Thaila Maram	Myrtaceae	<i>Eucalyptus citriodora</i>	+	+
21.	Chebulicmyrobalan	Kadukkai Maram	Combretaceae	<i>Terminalia chebula</i>	-	+
22.	Pungamin Tree	Pungai Maram	Fabaceae	<i>Pongamia pinnata</i>	+	+
23.	Custard apple	Seethe pazham Maram	Annonaceae	<i>Annona squamosa</i>	+	+
24.	Thorn mimosa	Karuvelam Maram	Mimosaceae	<i>Acacia nilotica</i>	+	+
25.	Tamarind	Puliya Maram	Fabaceae	<i>Tamarindus indica</i>	+	+
26.	Sweet acacia Tree	Kastuurivel Maram	Fabaceae	<i>Vachellia farnesiana</i>	-	+
27.	Bodhi Tree	Arasa Maram	Moraceae	<i>Ficus Religiosa</i>	-	+
28.	Cannonbal tree	Nagalinga Maram	Lecythidaceae	<i>Couroupita guianensis</i>	-	+
29.	Scarlet Wistaria Tree	Aagathikerai Maram	Fabaceae	<i>Sesbania grandiflora</i>	-	+
30.	Banyan Tree	Ala Maram	Moraceae	<i>Ficus benghalensis</i>	-	+
31.	Cluster fig	Aathi Maram	Moraceae	<i>Ficus racemosa</i>	+	+
32.	Portia Tree	Poovarasa Maram	Malvaceae	<i>Thespesia populnea</i>	+	+
SHRUBS						
1.	Sourbush	Vellai karpooravalli	Asteraceae	<i>Pluchea carolinensis</i>	+	+
2.	Spiny broom	Thumbanail	Fabaceae	<i>Calicotome spinosa</i>	+	+
3.	Japanese pittosporum	Kattu sammanki	Pittosporaceae	<i>Pittosporum oreillyanum</i>	+	+

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4.	Prickly pear	Sappathi kalli	Cactaceae	<i>Opuntia ficus indica</i>	+	+
5.	Madagascar Periwinkle	Nithiya kalyani	Apocynaceae	<i>Vinca rosea</i>	+	+
6.	Scarlet jungle flame	Ittili poo/ Sinduram	Rubiaceae	<i>Ixora coccinea</i>	-	+
7.	Henna plant	Maruthani chedi	Lythraceae	<i>Lawsonia inermis</i>	+	+
8.	Gwar patha	Katrazai	Liliaceae	<i>Aloe barbadensis miller</i>	+	+
9.	Peacock flower	Mayil kontai	Fabaceae	<i>Caesalpinia pulcherrima</i>	-	+
10.	Marigold	Samanthi cheedi	Asteraceae	<i>Tagetes erecta</i>	-	+
11.	Firecracker flower	Kanakambaram	Acanthaceae	<i>Crossandra infundibuliformis</i>	-	+
12.	Hibiscus	Cembarutti	Malvaceae	<i>Hibiscus rosanaceae</i>	-	+
13.	Jimson weed	Ummathai cheedi	Solanaceae	<i>Datura stramonium</i>	+	+
14.	Coat buttons	Kenathuppondu	Asteraceae	<i>Tridax porcumbens</i>	-	+
15.	Rose	Rosa	Rosaceae	<i>Rosa rubiginosa</i>	-	+
HERBS & GRASS						
1.	Giant milkweed	Earukkam poo chedi	Apocynaceae	<i>Calotropis gigantea</i>	+	+
2.	Castor bean	Aamanakku	Euphorbiaceae	<i>Ricinus communis</i>	+	+
3.	Comb bushmint	Selvantha chedi	Lamiaceae	<i>Hyptis pectinata</i>	+	+
4.	Bellyache Bush	Aathalai	Euphorbiaceae	<i>Jatropha glandulifera</i>	+	+
5.	Tanner's cassia	Avaram poo Maram	Fabaceae	<i>Senna auriculata</i>	+	+
6.	Majestic Agave.	Aanai katalalai	Agavaceae	<i>Agave beauleriana</i>	+	+
7.	Indian Copper leaf	Kuppaimeni chedi	Euphorbiaceae	<i>Acalypha indica</i>	-	+

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8.	Chinese chaste	Nocchi Chedi	Lamiaceae	<i>Vitex negundo</i>	+	+
9.	Bladder cherry	Sodakku thakkali chedi	Solanaceae	<i>Physalis minima</i>	-	+
10.	Black nightshade	Mana thakkali chedi	Solanaceae	<i>Solanum nigum</i>	-	+
11.	Holy basil	Thulasi chedi	Lamiaceae	<i>Ocimum tenuiflorum</i>	-	+
12.	Turkey berry	Sundakkai chedi	Solanaceae	<i>Solanum torvum</i>	-	+
13.	Balloon vine	Mudakattan chedi	Sapindaceae	<i>Cardiospermum halicacabum</i>	+	+
14.	Bitter cassava	Maravali kilanku chedi	Euphorbiaceae	<i>Manihot esculenta C.R</i>	+	+
15.	Palisade grass	Pala pul	Poaceae	<i>Brachiaria ramosa</i>	-	+
16.	Nut grasses	Korai pul	Cyperaceae	<i>Cyperus rotundus</i>	+	+
17.	Indian doab	Arugampul	Poaceae	<i>Cynodon dactylon</i>	+	+
18.	Carrot grass	Mookkuthi poo	Asteraceae	<i>Parthenium hysterophorus</i>	+	+
CREEPERS/CLIMBERS						
1.	Madras Pea Pumpkin	Musumusukkai	Cucurbitaceae	<i>Mukia maderaspatana</i>	+	+
2.	Melothria scabra	Paluvakkai	Cucurbitaceae	<i>Melothria scabra</i>	+	+
3.	Bitter melon	Pavakkai	Cucurbitaceae	<i>Momordica charantia</i>	-	+
4.	Veldt grape	Perandai	Vitaceae	<i>Cissusqua dranqularis</i>	+	+
5.	Ivy gourd	Kovakkai	Cucurbitaceae	<i>Coccinia grandis</i>	-	+

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Fig a. *Pluchea carolinensis*



Fig b. *Calicotome spinosa*



Fig c. *Punica granatum*



Fig d. *Psidium guajava*



Fig e. *Mukia maderaspatana*

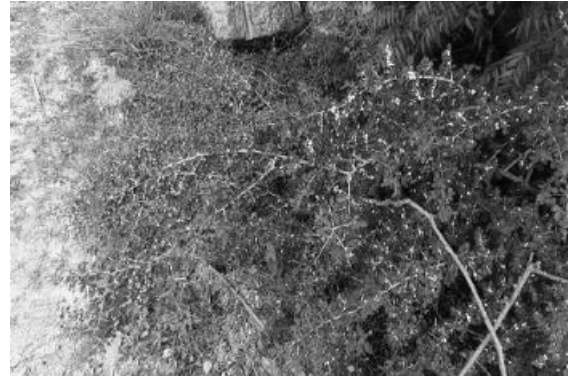


Fig f. *Pittosporum oreillyanum*



Fig g. *Calotropis gigantea*



Fig h. *Borassus flabellifer*

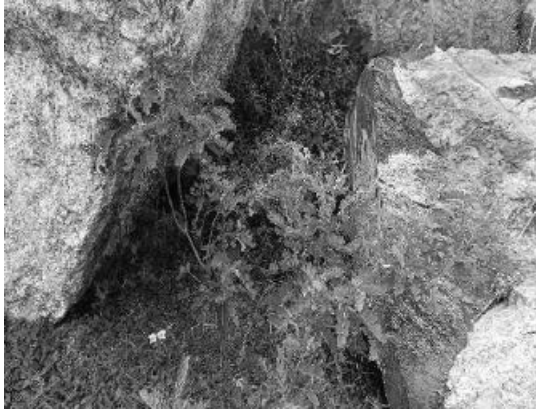


Fig i. *Senna auriculata*



Fig j. *Psidium guajava*



Fig k. *Hyptis pectinata*



Fig l. *Agave beauleriana*

Fig No 3.14 Photos of Flora in Core and Buffer Area

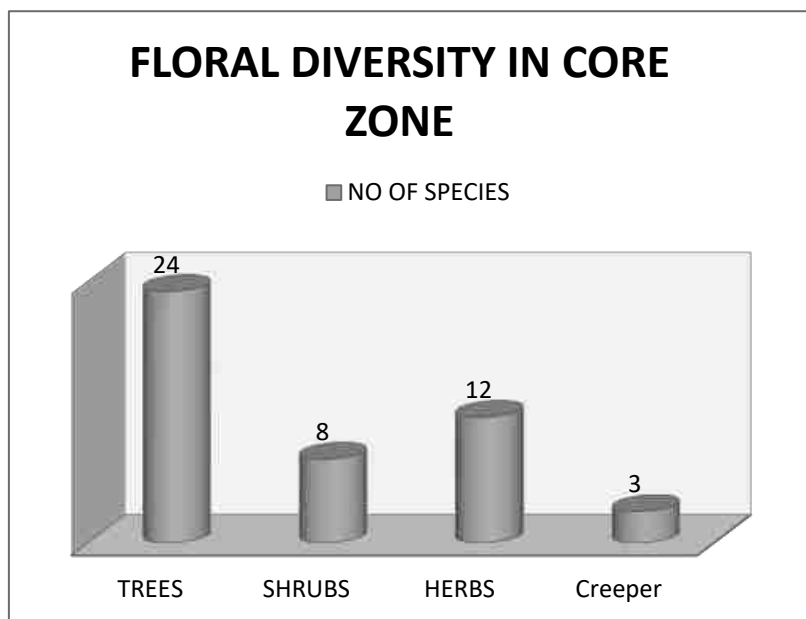


Fig No 3.15 Flora diversity in Core Zone

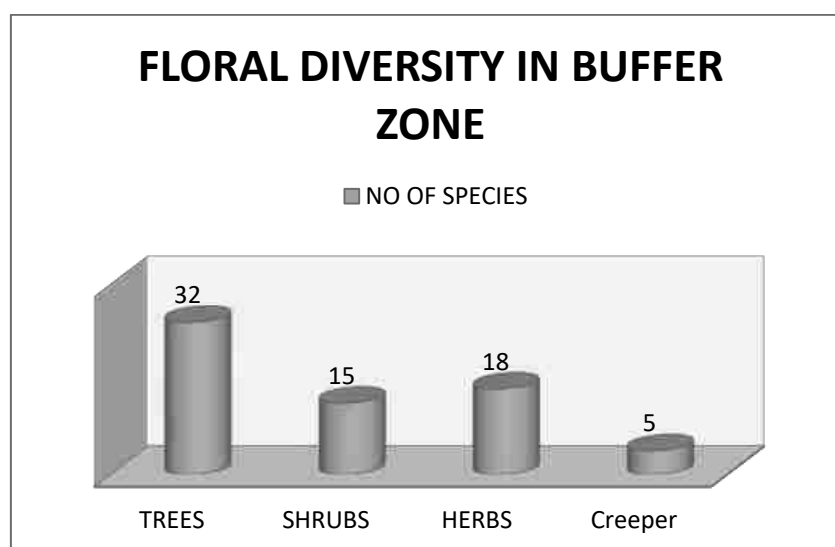


Fig No 3.16 Floral diversity in Buffer Zone

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 (wienvvis.nic.in/Database/Schedule Species Database) and Zoological Survey of India (ZSI).

Table No. 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
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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 17 families have been recorded from the core mining lease area. Based on habitat classification the majority of species were birds 10 (45%) followed by insects 7 (32%), reptiles 2 (14%) 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 39 species belonging to 28 families have been recorded from the buffer mining lease area. Based on habitat classification the majority of species were birds 16 (41%) followed by insects 14 (36%), reptiles 3 (8%) and mammals 6 (15%). 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.

Table No. 3.13 Faunal in Core and Buffer area (Tvl. Meenakshi Multi Colour Granites Erode District)

Sl. No	Common Name	Family Name	Scientific Name	Core Area	Buffer Area	Schedule list wildlife protection act 1972	IUCN Red list data
MAMMALS							
1.	Common mongoose	Herpestidae	<i>Herestes edwardsii</i>	-	+	NL	NL
2.	Palm squirrel	Sciuridae	<i>Funambulus pennantii</i>	+	+	NL	NL
3.	Bat	Pteropodidae	<i>Pteropus medius</i>	+	+	NL	NL
4.	Indian mole rat	Muridae	<i>Bandicota bengalensis</i>	-	+	NL	NL
5.	Indian rat	Muridae	<i>Mus rattus</i>	+	+	NL	NL
6.	Cat	Felidae	<i>Felis catus</i>	+	+	NL	NL
INSECTS							
1.	Blister beetle	Meloidae	<i>Mylabris phalerata</i>	+	+	Schedule IV	LC
2.	Peacock pansy	Nymphalidae	<i>Junonia almana</i>	+	+	NL	
3.	Mottled emigrant	Pieridae	<i>Catopsilia pyranthe</i>	+	+	Schedule IV	LC
4.	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	-	+	Schedule IV	LC
5.	Common grass yellow	Pieridae	<i>Eurema brigitta</i>	-	+	Schedule IV	LC
6.	Marbled white	Nymphalidae	<i>Melanargia galathea</i>	-	+	Schedule IV	LC
7.	Banded hairstreak	Lycaenidae	<i>Satyrium calanus</i>	-	+	Schedule IV	NE
8.	Blue basher	Libellulidae	<i>Pachydiplax longipennis</i>	+	+	NL	LC
9.	White butterfly	Pieridae	<i>Pieris rapae</i>	-	+	Schedule IV	LC

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10.	Milkweed butterfly	Nymphalidae	<i>Danaus plexippus</i>	+	+	NL	LC
11.	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	+	+	NL	LC
12.	Common Tiger	Nymphalidae	<i>Dananus genutia</i>	+	+	NL	NE
13.	Yellow pansy	Nymphalidae	<i>Junonia hierta</i>	+	+	NL	NE
14.	Lime butterfly	Papilionidae	<i>Papilio demoleus</i>	+	+		
REPTILES							
1.	Green Lizard	<u>Chamaeleonidae</u>	<i>Chamaeleon zeylanicus</i>	+	+	NL	NL
2.	Garden Lizard	Agamidae	<i>Calotes verticolor</i>	-	+	NL	NL
3.	Wall Lizard	Gekkonidae	<i>Hemidactylus sps.</i>	+	+	NL	LC
BIRDS							
1.	Common myna	Sturnidae	<i>Acridotheres tristis</i>	+	+	NL	LC
2.	Red vented bulbul	Pycnonotidae	<i>Pycnonotus cafer</i>	-	+	NL	LC
3.	Paddybird	Ardeidae	<i>Ardeola grayii</i>	+	+		
4.	Rock pigeon	Columbidae	<i>Columba livia</i>	-	+	NL	LC
5.	Purple heron	Ardeidae	<i>Ardea purpurea</i>	-	+		
6.	Thick billed warbler	Acrocephalidae	<i>Iduna aedon</i>	+	+	NL	LC
7.	Small mini vert	Campephagidae	<i>Pericrocotus cinnamomeus</i>	-	+	NL	LC
8.	Black kite	Accipitridae	<i>Milvus migrans</i>	+	+	NL	LC
9.	Common cuckoo	Cuculidae	<i>Cuculus canorus</i>	+	+	NL	LC
10.	Streak throated swallow	Hirundinidae	<i>Petrochelidon fluvicola</i>	-	+	NL	LC
11.	House Crow	Corvidae	<i>Corvus splendens</i>	+	+	NL	LC

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12.	koel	Cuculidae	<i>Eudynamys scolopaceus</i>	+	+	NL	LC
13.	Common hen	Phasianidae	<i>Gallus Gallus domesticus</i>	+	+	NL	LC
14.	Indian robin	Muscicapidae	<i>Saxicoloides fulicatus</i>	+	+	NL	LC
15.	Parrot	Psittacidae	<i>Psittacula eupatria</i>	-	+	NL	LC
16.	House sparrow	Passeridae	<i>Passer domesticus</i>	+	+	NL	LC

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



Fig. a. *Pteropus medius*



Fig. b *Funambulus pennantii*



Fig. c. *Pachydiplax longipennis*



Fig. d. *Ardeola grayii*



Fig.e. *Junonia almana*



Fig.f. *Chamaeleon zeylanicus*



Fig.g. *Ardea purpurea*



Fig.h. *Junonia hierta*

Fig No 3.17 Photos of Fauna in Core Area

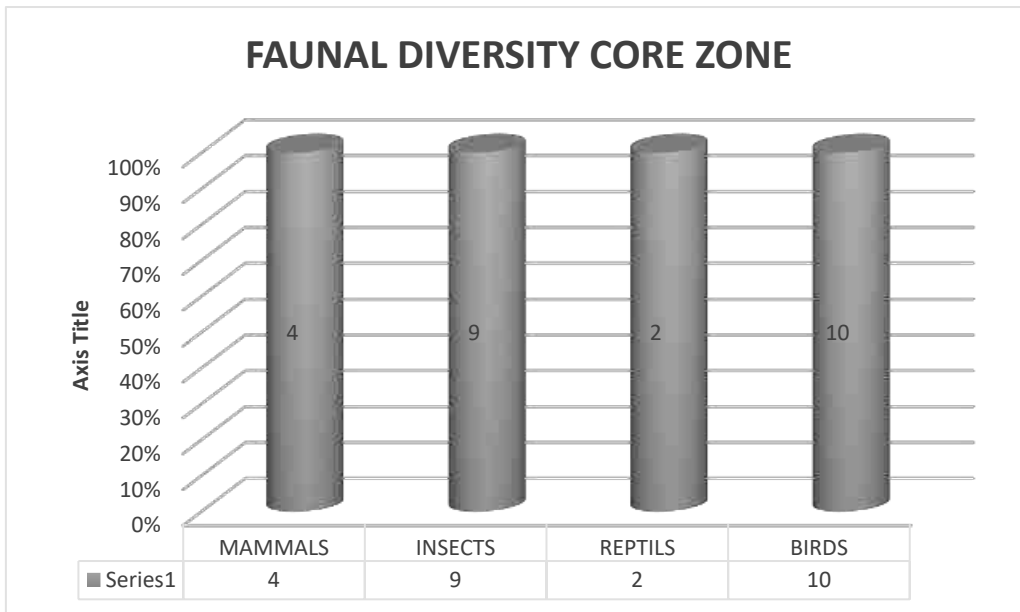


Fig No 3.18 Fauna diversity in Core Zone

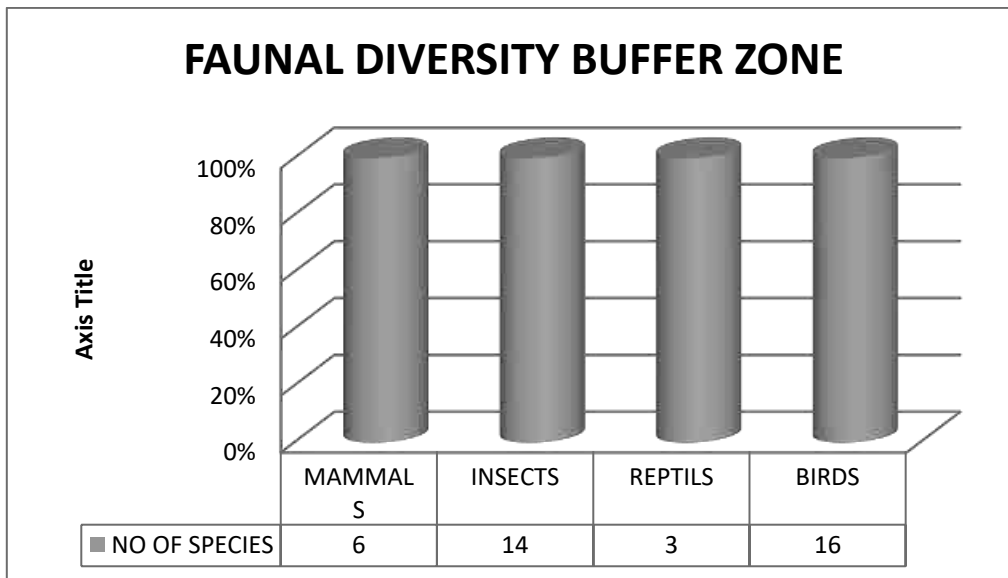


Fig No 3.19 Faunal diversity in Buffer Zone

3.10 SOCIO-ECONOMIC ENVIRONMENT

3.10.1 Introduction

Socio-economic study in Mining activity in an area has long term irreversible impact on local, sociological, cultural and economic situation. In order to evaluate socio-economic impact of the project, an extensive study on the existing socio-economic status is required. The project may also bring benefits to local people. Most of the mineral deposits are found in areas with tribal population. Socioeconomic feature, therefore, becomes very important. The displacement of people and loss of livelihood is the major impact of the mining projects 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 State that the purpose of the socio-economic impact assessment because of this proposed project. As the proposed project will provide direct impacts, indirect impacts and cumulative impacts analyze the combined effects of the quarry and other existing or planned projects in the area.

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 of extent of 8.96.6 Hectares in 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, Karapadi village, Sathyamangalam Taluk, Erode District to quarry Multi colour granite blocks under G.O. (3D). No: 18 Industries (MME-2) Dept. dated 22.03.2018.

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 Identify Baseline Socio-Economic Conditions to establish a comprehensive understanding of the current socio-economic status of the communities in the vicinity of the proposed quarry site.
- Assess Potential Impacts on employment, income levels, and local economic activities

3.10.3 Scope of Work

- To study the Socio-economic Environment of the area from the secondary sources Village wise demographical profile of the study area can be obtained from census record as Baseline Data Collection Demographic Profile: Population size, age distribution, gender ratio, and household composition. Economic Activities: Existing employment rates, income levels, main sources of livelihood, and key economic sectors. Social Infrastructure: Current status of healthcare facilities, educational institutions, transportation networks, housing, and utilities. (Table-3.18) (separately for core & buffer zone).
- Data Collection & Analysis: Data Collection Methods as Primary Data Collection: Surveys, structured and semi-structured interviews, focus group discussions, and

participatory rural appraisals (PRA). Secondary Data Collection: Review of existing literature, government reports, previous impact assessments, and statistical data from relevant agencies. Sampling Methods: Define the sampling frame, determine sample size, and use stratified random sampling to ensure representation. Data Collection Tools: Design questionnaires, interview guides, and observation checklists.

- Prediction of project impact Identification and Analysis as Economic Impacts: Assess potential changes in employment opportunities, income levels, local businesses, and markets. Social Impacts: Evaluate impacts on health, education, social cohesion, and quality of life. Infrastructure Impacts: Analyse potential effects on healthcare, education, transportation, and housing infrastructure. Environmental and Health Impacts: Examine potential health risks and environmental changes affecting socio-economic conditions.
- Mitigation and Enhancement Measures Mitigation Strategies: Propose measures to minimize negative impacts, such as environmental management plans, health and safety protocols, and community support programs. Enhancement Strategies: Recommend actions to maximize positive impacts, such as local hiring, skills training programs, and infrastructure improvements.

3.10.4 Study Area – Karapadi village

Gram Panchayat name of the Karapadi village, Sathyamangalam Taluk, Erode District Selection of one village from the list of census villages based on the following criteria: • The population size of the village should be between 200 to 350 • The distance of the village from the main road should be more than 1.07 Kms • Existence of Government schools (Primary, Lower/ Middle/ Higher Secondary Schools) • Existence of Local level Institutions • Diversity of land use and ownership of land. Karapadi village is in Sathya Mangalam Taluk of Erode district in Tamil Nadu, India. It is situated 4.50 km away from sub-district headquarter Sathya Mangalam (Tahsildar office) and 17.05 km away from district headquarter Erode district. As per 2009 states, Karapadi village is also a gram panchayat.

Table No. 3.14: Karapadi Village Census 2011 Data

S. No	Description	Census 2011 Data
1	Village Name	Karapadi
2	Tehsil Name	Sathyamangalam
3	District Name	Erode
4	State Name	Tamil Nadu
5	Total Population	4456
6	Total Area	8.96.6 Ha

3.10.5 Population Characteristics – Karapadi Village, sathyamangalam Taluk, Erode District (2001-2011)

Karapadi village had a total household 417 in 2001, which is increased to 1961 in according to census 2011. Karapadi Village had a total person of 1452 in 2011 census previous census 6987 persons in 2001. There were about 717 men (49.38%) according to 2001 census and 3494 men (50.01%) in 2011 census marking increase of about 199 men over the previous census. During 2001 there were about 735 women (50.62%), which is an increase to 3493 (49.99%) in 2011 census.

In Karapadi village had a literate accounted for 791 persons (54.48%) in 2001 and increased to 4614 persons (66.04%) in 2011. There were about 466 males (32.09%) percent in 2001 and 2568 males (36.75%) percent in 2011. There were about 325 females (22.38) percent increased to 2046 females (29.28) percent classes as literates in 2011. There are different methods that can be employed to study the rural realities and functioning of different institutions such as observation, interviews with village residents, conducting meetings and Focus group discussions (FGDs) with village residents, participating in the events taking place in the village, etc. Sex composition is the most important demographic characteristics that affect the incidence of birth and death. The average sex ratio in sathyamangalam Taluk, Karapadi village was 973.36 during 2001 and increased to 992.149 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 high. The population characteristics of Karapadi Village (2001-2011) are shown in table 3.15 and fig 3.20. This is mainly used for generating qualitative data as well as for checking/ verifying and confirming information (time taken for an activity, behavioural pattern of a person i.e. how a person responds to the situation, how a person interacts with others, etc.) from the field. It helps in creating systematic information on events and behaviour of the respondents or the persons/groups under the study as well as to verify certain facts/matters under study. It documents non-verbal expressions, such as, feelings/emotions. Prior to establishing rapport with persons in the field, the observation as a method helps in identifying informants as collaborators. The ‘descriptive observation’ takes place when it follows pattern of ‘what is to be observed, at what time and from which place’. Similarly, ‘focused observation’ took place when a particular detail needs to be confirmed. When we’re participates in some of the activities to observe, it is called as ‘participant observation’. All the information—primary and secondary data—are inter-connected.

Table No. 3.15: Population Characteristics-karapadi Village, Sathyamangalam Taluk, Erode District (2001-2011)

Sno	Characteristics	2001	%	2011	%
1	Total Household	1040		1019	
2	Total Population	4456		3352	
3	Male Population	2556	57.36	1699	50.68
4	Female Population	1900	42.63	737	49.68
5	Total Literacy	2516	17.48	886	26.43
6	Male Literacy	1773	71.59	528	31.08
7	Female Literacy	743	39.11	368	50
8	Sex Ratio	1000			943

Source: <https://www.census2011.co.in.html>



Fig No 3.20 Population Characteristics of karapadi Village, Sathyamangalam Taluk, Erode District

3.10.6 Literacy Rate Karapadi Village

Karapadi village had a literate accounted for 2516 persons (17%) in 2001 and decrease to 886 persons (26%) in 2011. There were about 61 percent male literacy in 2001 census. Decrease to 31 percent male literacy in 2011 census. But female literacy has an increase to 50% compare previous census had decreased about 43%. It is shows that male literacy well educated in this village. Female literacy rate is low because most of female's working in secondary of Household industries had involved. Like matchbox, Crackers, etc. It depends on make money. In addition to that female to improve the knowledge to educate go for employment opportunity.

3.10.7 Occupational Characteristics- karapadi 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 karapadi village had 2993 workers accounting for 55 percent of the total population of the Village. During 2011 there were about 1834 (52%) according to the census. There were about 2018 men (58%) during 2001 which has an increase to 424 persons (57%) according to census 2011. There were about 1900 female according to 2001 and 2011 census has marking of Decrease to 737 women as per census.

This group includes the employment of workers in manufacturing activities. Agro based industries, located in the study area engages a sizeable number of workers. The distribution of secondary workers in the study area is calculated as percent to the total workers. The proportion of secondary workers to total workers has experienced decreasing trend in the Karapadi village area between 2001 and 2011. Secondary workers during 2001 and 2011 it could be stated that this may be due to the opening of a number of industries and household manufacturing units in the study area.

The study area has experienced a change in the occupational structure in the form of a decline in the proportion of cultivators, agricultural laborers are increase in the proportion of secondary workers and tertiary workers.

In village Karapadi the non-workers population accounted for 1300 (47% of the total population) according to census 2011, which had about previous census 2001 with a population of 4456 (50%). There were about male non workers of 1403 (42% of the male population) during the census 2001, which had decrease to 103 (43% of the male population) according to census 2011. As a greater number of people are educated, most of the people living in the villages have own household industries and mostly small shoppers, and business and mining industries earn money in daily life.

The study area has experienced a change in the occupational structure in the form of a decline in the proportion of cultivators, agricultural laborers are increase in the proportion of secondary workers and tertiary workers. According to 2011 census, 24.3% of India's population is engaged in secondary work.

Table No.3.16: Occupational Characteristics of Population – Karapadi Village, Sathyamnagalam Taluk, Erode District (2001-2011)

S. No	Characteristics	2001	%	2011	%
1	Total Population	4456		3352	
2	Male Population	2556	57.36	1699	50.68
3	Female Population	1900	57.36	737	49.68
4	Total Workers	2993	49.89	1834	52.50
5	Male Workers	2018	57.73	1105	57.22
6	Female Workers	974	42.46	729	47.76
7	Total Main workers	2954	45.92	1616	47.90
8	Male Main workers	2009	54.96	-	55.33
9	Female Main Workers	945	37.34	-	40.43
10	Total Cultivators	8	37.41	25	30.54
11	Male Cultivators	-	36.87	8	27.12
12	Female Cultivators	8	38.11	17	34.66
13	Total Main Agricultural Labourers	16	35.56	72	36.60
14	Male Agri. Labourers	5	32.07	12	34.20
15	Female Agri. Labourers	11	40.07	60	39.49
16	Total Main HHI	1	0.57	55	0.39
17	Male HHI	0	1.01	31	0.24
18	Female HHI	1	0.00	24	0.57
19	Total Main Other Tertiary workers	-	-	-	-
20	Male OT	-	-	-	-
21	Female OT	-	-	-	-
22	Total Nonworkers	1463	50.11	1518	47.50
23	Male Nonworkers	538	42.27	594	42.78
24	Female Non workers	925	57.54	924	52.24

Source: <https://www.census2011.co.in>

*Occupational Characteristics of Population –Karapadi Village,
sathyamanagalam
Taluk, Erode District (2001-2011)*

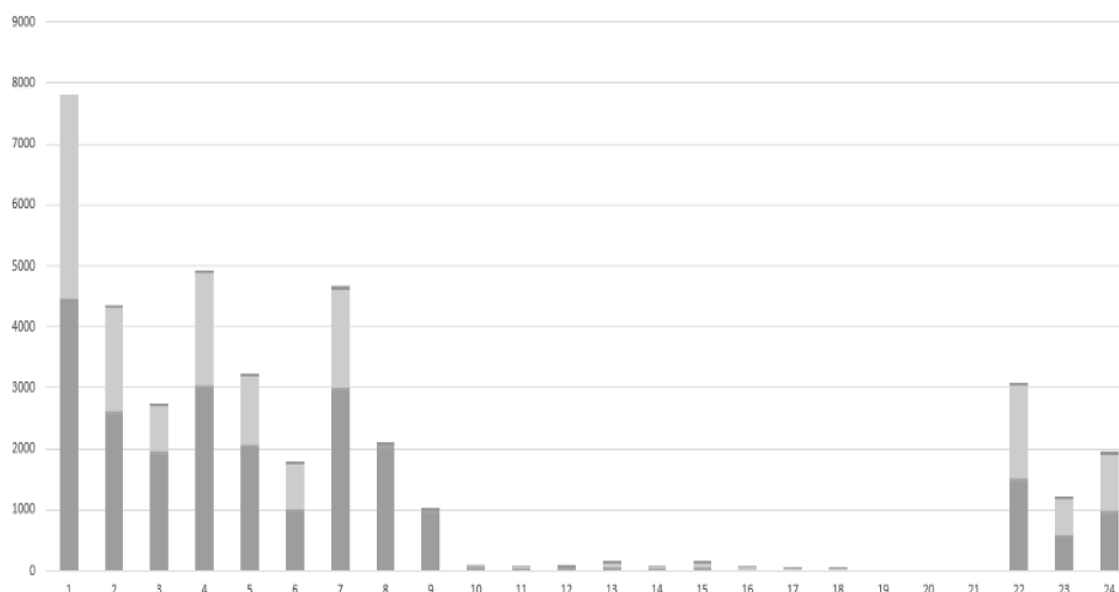


Fig No 3.21 Occupational Characteristics – Karapadi Village, Sathyamnagalam Taluk, Erode District (2001-2011)

3.10.8 Impacts on Socio Economy and Mitigation Measures

Mostly positive impacts result from the long-term quarry unit. In this case, provision of job opportunities, business, transport, communication, laborers etc. are the major outcome due to this project. Thus, this unit highly favors the poor and landless people. Employment generation due to the project has generated direct and indirect employment for 0 persons, out of which no people are on company role and no one contract employees. Preference will be to the local population for employment in all categories including semi-skilled and unskilled.

The skilled employees are recruited through open recruitment process to meet competency required to operate the quarry. The villages and their inhabitants in the buffer zone will not be disturbed in their settlements due to the quarry operations.

3.10.9 Economic Impacts

Agricultural yield is positively benefitted due to the halt on quarrying. To ascertain the extent of the financial crisis and improvement in agriculture, horticulture, dairy, fishery, handicraft and tourism if any; the following parameters emerged:

There are some people who are engaged in trading of sand, stone and Bajri. Therefore, due to quarrying, the per capita income of local people has been improved. The

local people have been provided with either direct employment or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. The job/ business opportunities have improved the economic conditions of the persons. They are in a position to utilize this money for purchase of tractors, trucks, jeeps, etc. which may be invested into use for business purposes. Part of money has been utilized in starting of some business as per personal skills.

To conclude, implementing the following measures can significantly reduce the negative impacts of quarry operations on the socio-economic environment:

- ❖ **Employment Opportunities:** Creating jobs and providing training for local residents to enhance their skills and improve their economic status.
- ❖ **Community Engagement:** Establishing open lines of communication with the community to address concerns, ensure transparency, and build trust.
- ❖ **Health and Safety Measures:** Enforcing strict health and safety regulations to protect workers and local residents from quarry-related hazards.
- ❖ **Local Business Support:** Sourcing materials and services from local suppliers to boost the local economy.
- ❖ **Infrastructure Development:** Investing in local infrastructure improvements, such as roads and public facilities, to benefit the community.
- ❖ **Environmental Conservation:** Implementing environmental protection measures to maintain a balance between economic activities and the preservation of natural resources.
- ❖ **By adopting these practices,** quarry operations can become more socially responsible and economically beneficial for the local community, fostering a sustainable and mutually advantageous relationship.

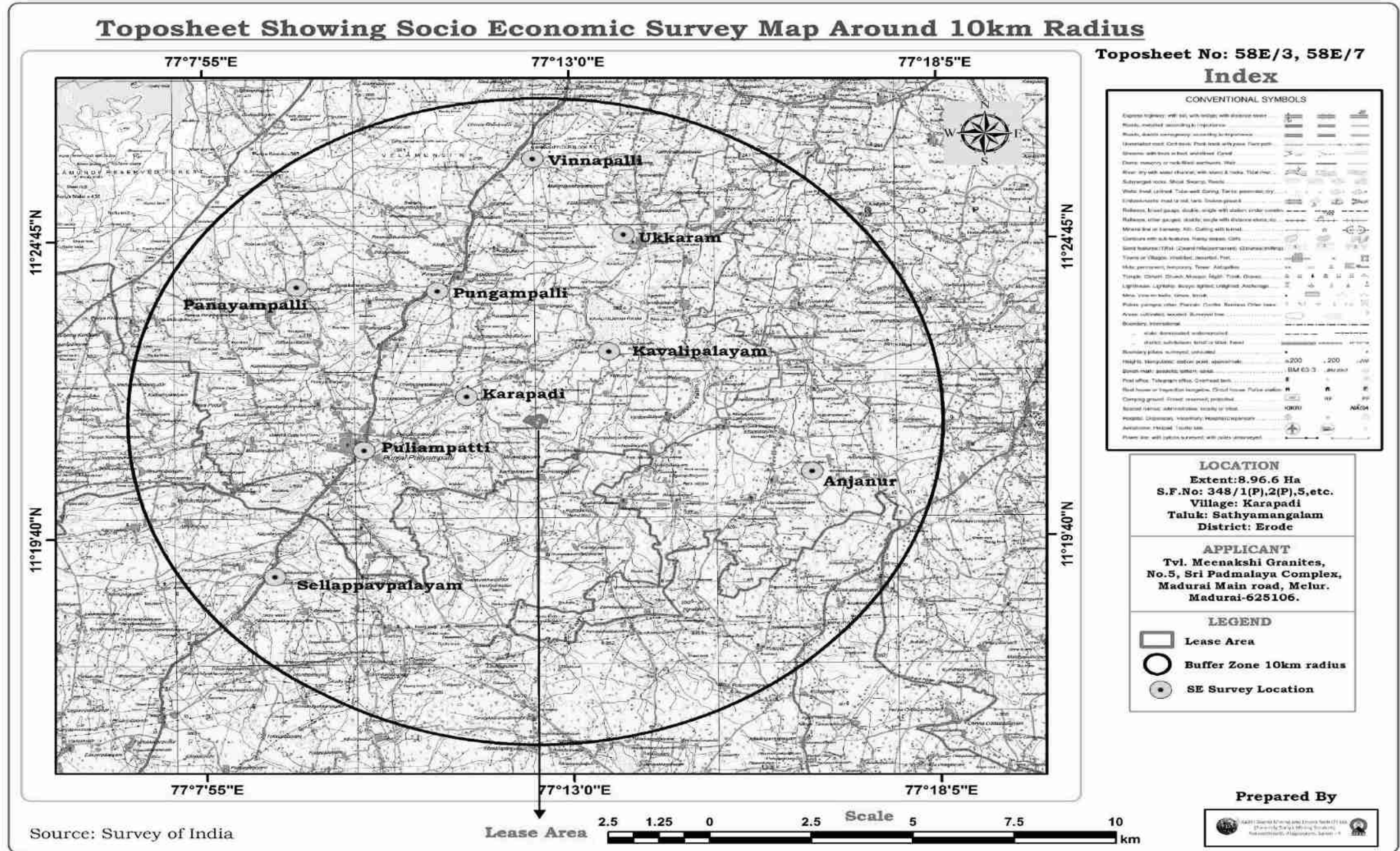


Fig No 3.22 Socioeconomic Survey Location

3.10.10 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 Land use of Study Area

The land-use & land cover map of the 10 km radial study area from the periphery of project site has been prepared using Landsat8 having 30 m spatial resolution and date of pass 22nd Sep 2022 satellite image with reference to Google Earth data. In order to strengthen the baseline information on existing land use pattern, the following data covering approx. 11°21'44.7411” to 11°21'32.7629” N latitude and 77°12'20.8758" to 77°12'38.7912” E longitude and elevation 317 meter are used as per the project site confined within that area.

Land use pattern of the study area as well as the catchment area was carried out by standard methods of analysis of remotely sensed data and followed by ground truth collection and interpretation of satellite data. The outcome of land use study is presented below in subsequent tables and figures.

Table No. 3.17: Data Specification Used for Present Study

Satellite Image	Sensor	Spatial Resolution	Date of Acquisition
Landsat8	*OLI & TIRS	30m	22 nd Sep 2022

* Operational Land Imager (OLI) and the Thermal Infrared Sensor (TIRS)

	Bands	Wavelength (Micrometers)	Resolution
Landsat8			
Operational Land Imager (OLI) and Thermal	Band 1 - Coastal aerosol	0.43 - 0.45	30
	Band 2 - Blue	0.45 - 0.51	30

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Infrared Sensor (TIRS) Launched February 11, 2013	Band 3 - Green	0.53 - 0.59	30
	Band 4 - Red	0.64 - 0.67	30
	Band 5 - Near Infrared (NIR)	0.85 - 0.88	30
	Band 6 - SWIR1	1.57 - 1.65	30
	Band 7 - SWIR2	2.11 - 2.29	30
	Band 8 - Panchromatic	0.50 - 0.68	15
	Band 9 - Cirrus	1.36 - 1.38	30
	Band 10 - Thermal Infrared (TIRS)1	10.60 – 11.19	100
	Band 11 - Thermal Infrared (TIRS)2	11.50 – 12.51	100

3.11.2. Objective

The objectives of Land use studies are:

- To determine the present land use pattern as per EIA/EMP norms by MoEF.
- To determine the drainage pattern present in the study area.

3.11.3 Data Used

A. Remote sensing data

- Landsat8-30m Resolution, OLI &TIRS (Sensor)

B. Collateral Data

Survey of India Toposheet bearing Toposheet No. 57 P/12 (1:50,000 Scale) and the Toposheet map representing the project site is given in Chapter 1.

3.11.4 Methodology

The land use pattern of the study area was studied by analyzing the available secondary data published in the District Primary Census abstract of the year 2001 & 2011. Salient features of the adopted methodology are given below:

- Acquisition of satellite data
- Preparation of base map from Survey of India Toposheet.
- Data analysis using visual interpretation techniques
- Ground truth studies or field checks using GPS & Digitization using head up vectorization method
- Topology construction in GIS Topography and location of surface water bodies like ponds, canals and rivers;

- Location of villages/towns/sensitive areas;
- Identified pollution pockets, if any within the study area;
- Accessibility, power availability and security of monitoring equipment;
- Areas which represent baseline conditions; and
- Collection, collation and analysis of baseline data for various environmental attributes.
- Area calculation for statistics generation.

The spatial resolution and the spectral bands in which the sensor collects the remotely sensed data are two important parameters for any land use survey. Landsat8 data offers spatial resolution of 30 m and 185 kilometer (115 mile) wide swath of the Earth in 15–30-meter resolution covering wide areas the data is collected in 11 visible bands namely **Band**

Number μm Resolution

1	0.433–0.453	30 m
2	0.450–0.515	30 m
3	0.525–0.600	30 m
4	0.630–0.680	30 m
5	0.845–0.885	30 m
6	1.560–1.660	30 m
7	2.100–2.300	30 m
8	0.500–0.680	15 m
9	1.360–1.390	30 m
10	10.6–11.2	100 m
11	11.5–12.5	100 m

3.11.5 Topography

Data covering approximately northern latitude of 11°21'44.7411" to 11°21'32.7629" N latitude and 77°12'20.8758" to 77°12'38.7912" E longitude and elevation 316 m are used as per the project site confined within that area.

3.11.6 Land Use/Land Cover Classification

3.11.6.1 Land use/Land cover within the lease area:

The base maps of the study area were prepared, with the help of Survey of India Toposheet on 1:50,000 scale (fig 3.25). Preliminary interpreted land use and the land cover features boundaries from Landsat8 sensor OLI & TIRS having 30m spatial resolution, False Colour Composite were modified in light of field information and the final thematic details

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were transferred onto the base maps. The final interpreted and classified thematic map was cartograph. The cartographic map was categorically differentiated with standard colour coding and described features with standard symbols. All the classes were identified and marked by the standard legend on the map. The following Land Cover classes were derived and classified as under.

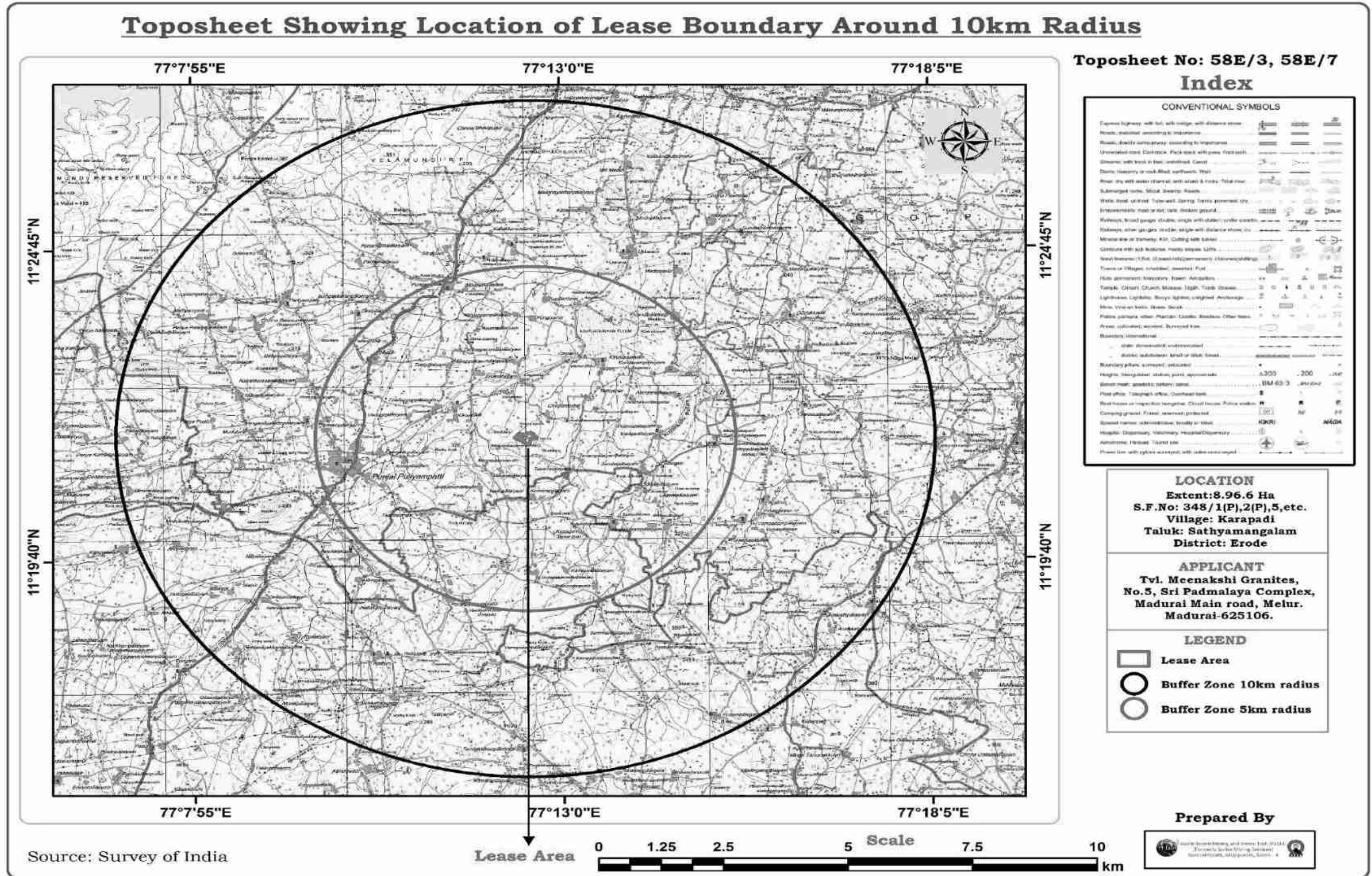


Fig No: 3.23 Toposheet Showing Location Lease Boundary around 10km radius

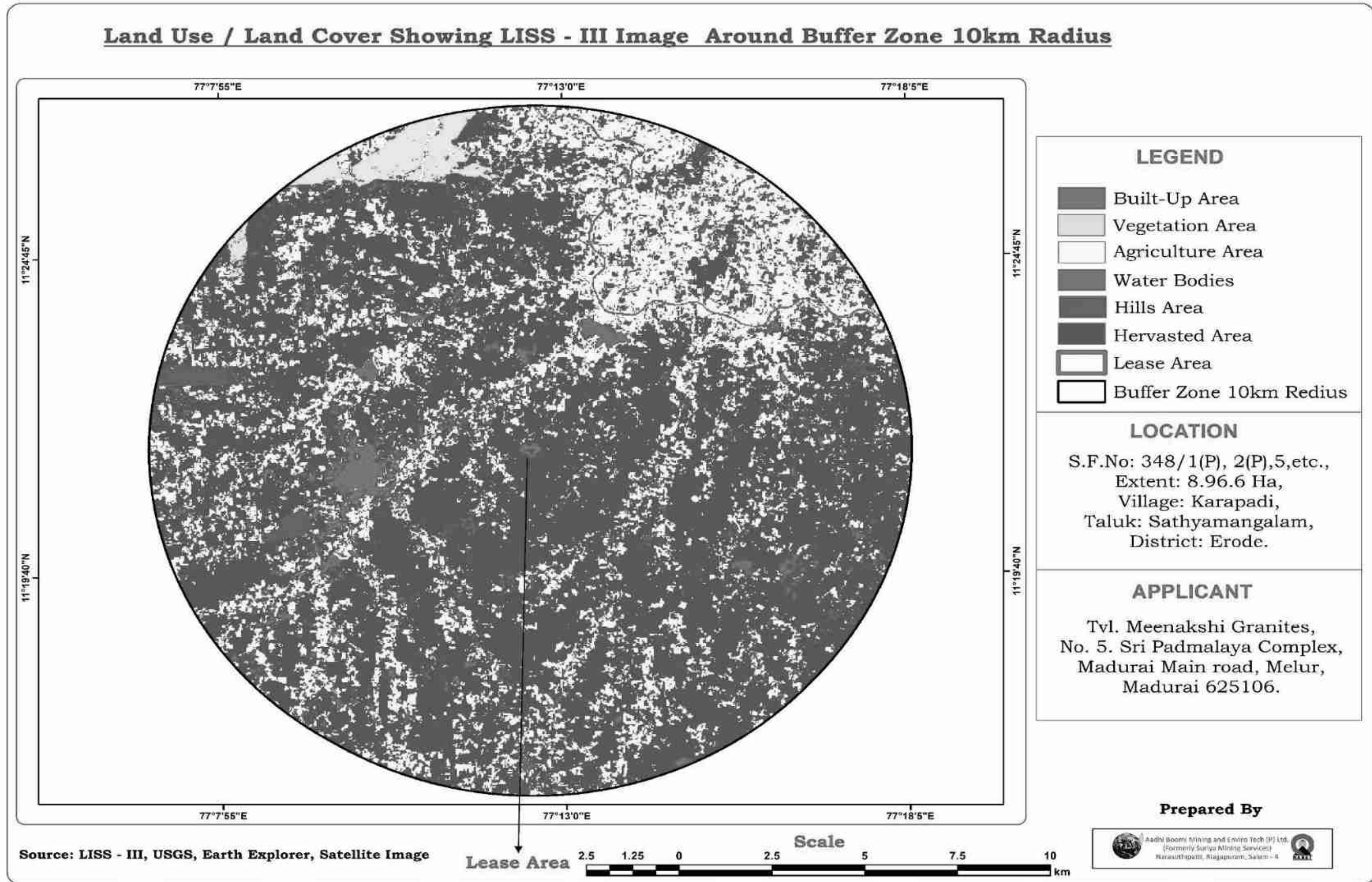


Fig No: 3.24 LANDSAT Image showing Location of Lease area around 10km radius

Table 3.18 Computation of existing and proposed land use pattern

S. No	Names	Area (Ha)	%
1	Built-up Area	1756	5.35
3	R.F /Hills	411	1.25
4	Water Bodies	2744	8.36
5	Agriculture	7834	23.88
6	Harvested Area	19479	59.37
7	vegetation	583	1.78
	Total	33035.13	100.00

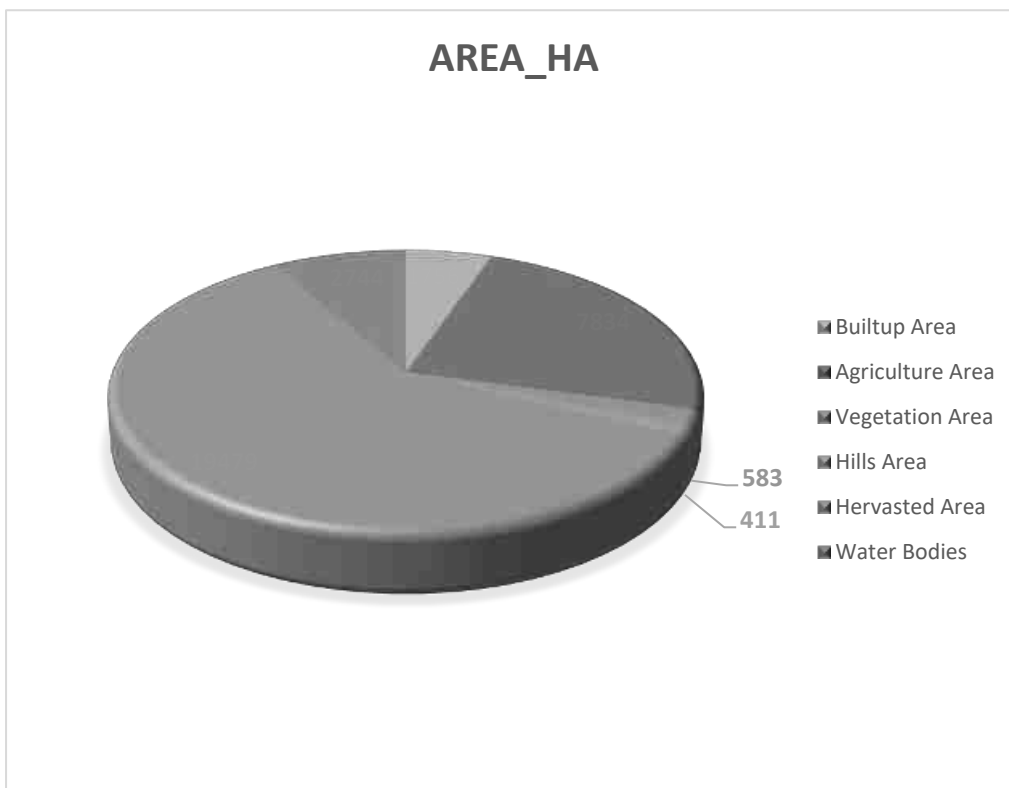


Fig No: 3.25 Land use/Land Cover around 10 km radius

3.11.7 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. Dendritic patterns, 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. The project site itself is the river body. The drainage pattern of the area is dendritic – sub dendritic.

3.11.8 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 20m, minimum 400m has very hilly with plain landforms and general terrain is quite elevated at maximum 900m 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.

3.11.9 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. Especially landslides that is flat. Slope zone 10-20° gentler, the same as above, but with a higher magnitude of the area, 20-30°, slightly steep, a lot of ground movement and erosion, 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.

3.11.10 Soils

The 10km study area is covered with Alfisols, Entisols, Inceptisols and Hill type soil. The type of soil found in the lease area is Hill soil.

3.11.11 Geology

Fissile Hornblende biotite gneiss, Charnockite, Tiruppur anorthosite, epidote-hornblende Gneiss is found largely found in Erode area. Sedimentary rocks namely Charnockite, Granitoid gneiss, (sand stone mixed clay), and quartz vein. Granitoid gneiss is a composition of primary lateritic capping, basement crystalline complex, and conglomerate, which are found along the middle part of the river valley. The younger alluvium formations are seen predominantly in the northern part of the area and are considered as highly permeable. The storage capacity of the rock formations depends on the porosity of the rock. In the rock formation the water moves from areas of recharge to areas of discharge under the influence of hydraulic gradients depending on the hydraulic conductivity or permeability. The study area contains Gneisses, Granites, Charnockite, and Granitoid gneiss as major geological structure. The entire firka is underlain by the crystalline metamorphic gneiss complex

consisting gneisses and granites. Ground water is occurring in phreatic conditions in weathered and fractured gneiss rock formation.

3.11.12 Geomorphology

The prominent geomorphic units identified in the district through interpretation of satellite imagery are structural hills in the southwestern part of the area, denudational land forms like buried pediments in the plains and inselbergs and plateaus represented by conical hills aligned with major lineaments. Erode district forms part of the upland plateau region with many hill ranges and undulating plains. The western part of the district has hill ranges of Mysore plateau with a chain of undulating hills and deep valleys extending in NNE-SSW direction.

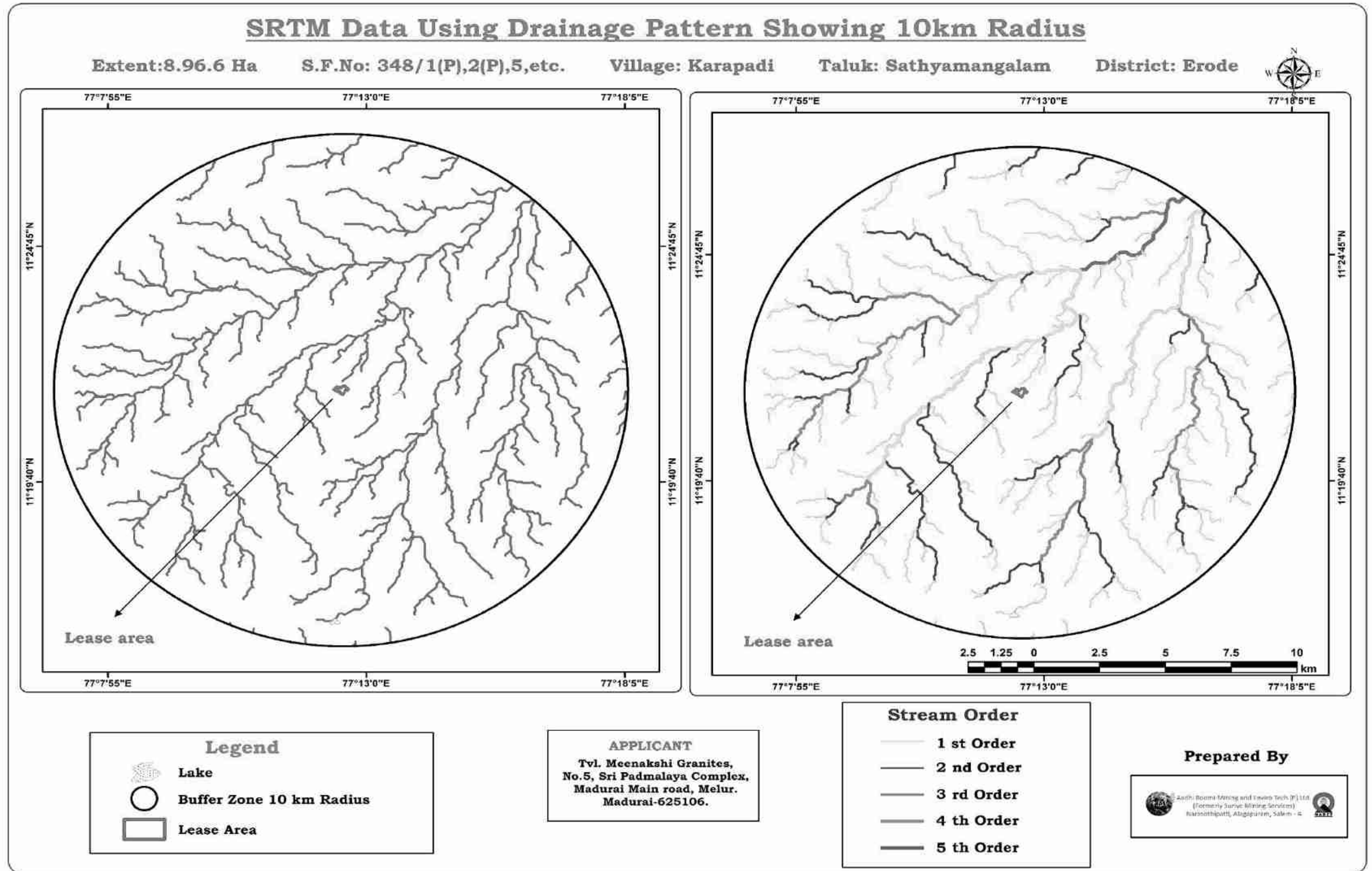


Fig No 3.26 Image Representing the River/Streams (Drainage) of the study area within 10km radius from the project site

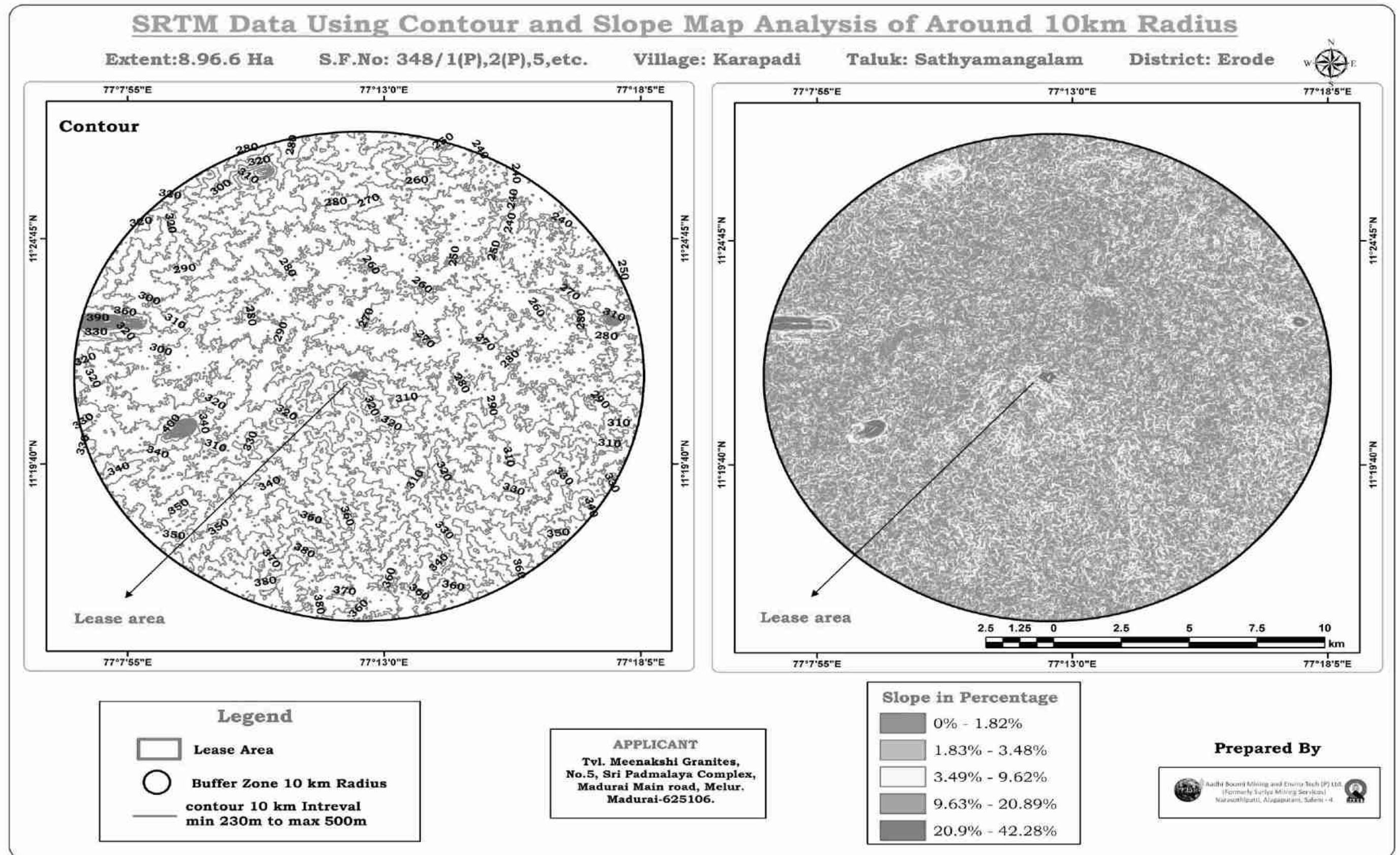


Fig No 3.27 Image Representing Contour and Slope analysis around 10km radius

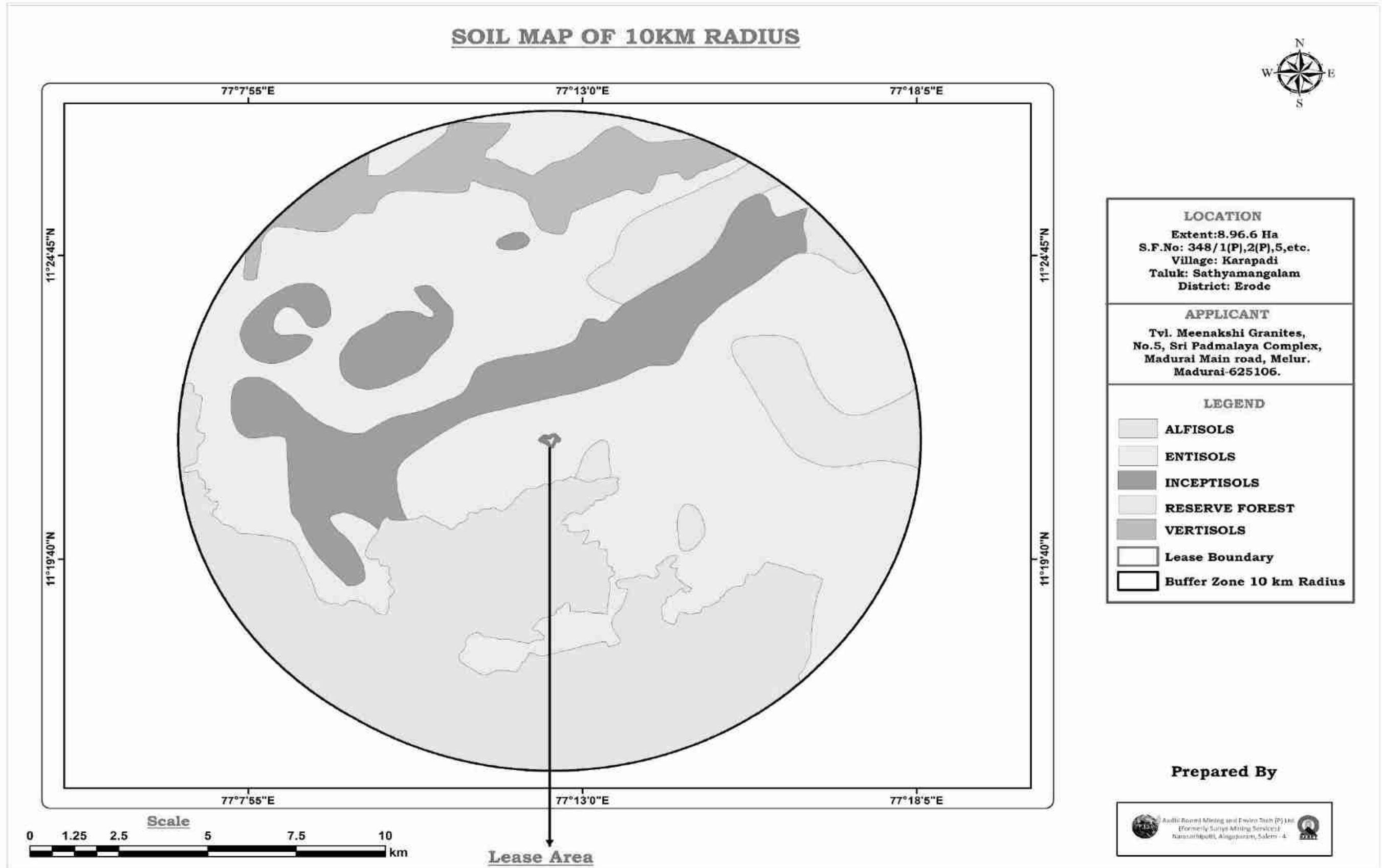


Fig No 3.28 Image Representing the Soil Characteristics around 10km of the Lease area

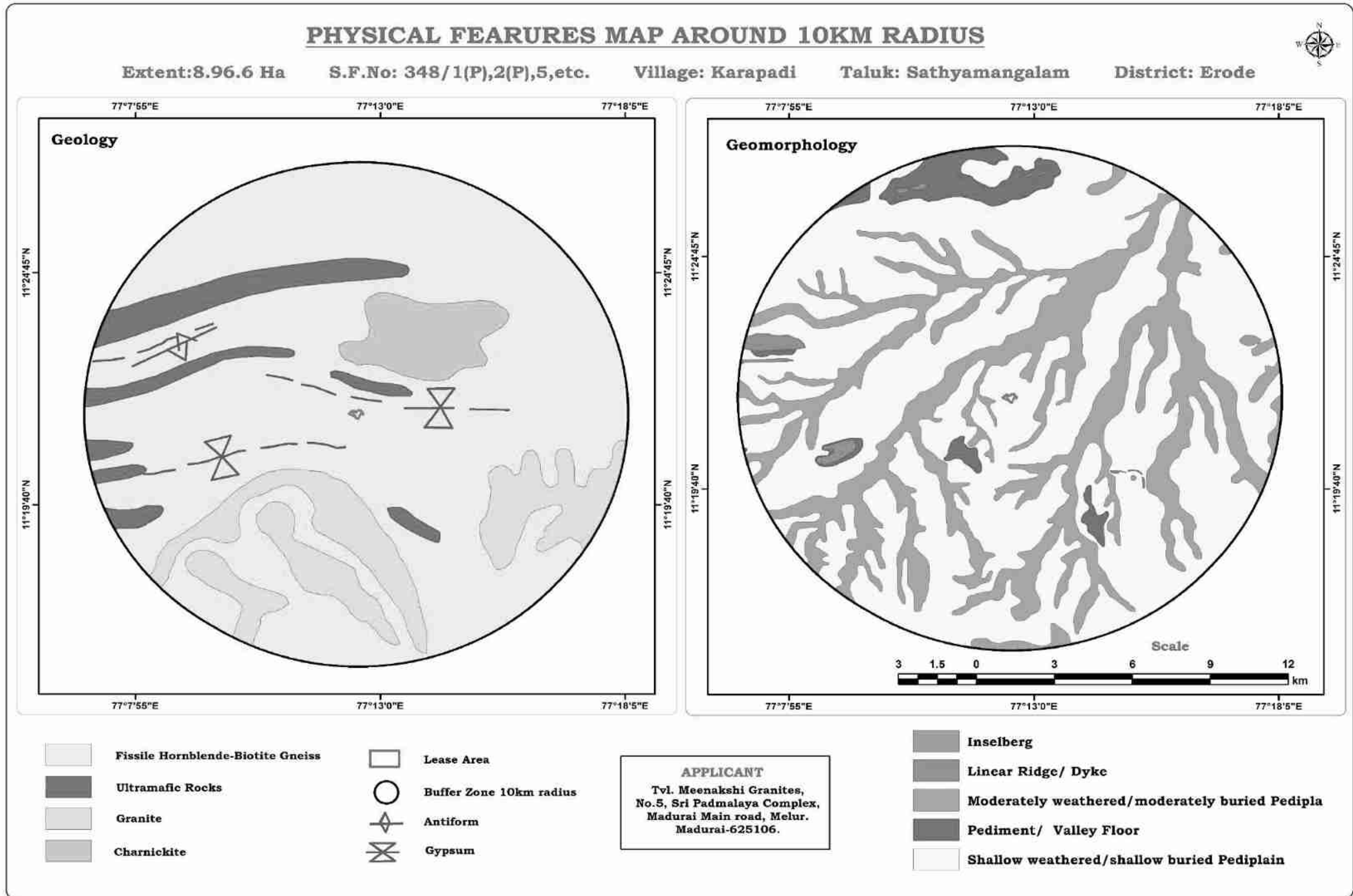


Fig No 3.29 Image Showing Geology and Geomorphology of the lease area

3.11.13 Seismic Sensitivity

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

3.11.14 Environmental Features in the Study Area

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

Table No. 3.19: Environmental Sensitiveness	
Interstate Boundary	Karnataka-Tamil Nadu interstate boundary is located at a distance of 41.0 km in NW direction
Coastal Zone	Arabian Sea – 152.3 km - W
Reserve Forest	No forest is located within 5km radius of the project site. The nearest R.F is Velamundi R.F – 7.7 km – N. The proposed project site is not a forest land. Hence it does not attract Forest Conservation Act, 1980.
Wildlife sanctuary	Sathyamangalam Tiger Reserve Wildlife Sanctuary – 19.5km – NW. 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	Water bodies within 5km radius, <ol style="list-style-type: none"> 1. Kavilipalyam Kulam – 2.6km – NE 2. Sungai lake – 4.7km – NW 3. Nallur lake – 4.4km- NW 4. Lower Bavani Main Canal – 4.3km – N 5. Odai – 3.0km - SE
Defense Installations	Nil within 10km radius
Critically Polluted area	Nil within 10km radius

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CHAPTER – 4: ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Open cast semi mechanized mining of bench height of 6m and a width not less than the height will be carried out by using excavators and dumpers combination. Scientific mining with 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 colour 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 handling, operations and transportation of multi colour granite are the main air pollutant. The emissions of Sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) 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.

4.1.2 Emissions Details

Drilling, Blasting, Loading, unloading and transportation of multi colour 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 (PM₁₀ & PM_{2.5}) affecting Ambient Air of the area. Emission during Blasting, Loading and 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

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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 colour 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 colour 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.

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

Table 4.1: Source Parameters (Loading of multi colour granite rejects)

S. No	Description	Symbol	Quantity
1	Moisture content (%)	m	1 (approx)
2	Silt content (%)	s	3 (approx)
3	Wind speed (m s ⁻¹)	u	2.2
4	Drop height (m)	h	1m above the tipper body
5	Size of loader (m ³)	l	2.20
6	Frequency of loading (no.h ⁻¹)	x	6 times
7	Area of Source (m ²)	a	47600 (31950 + 15650)
8	Uncontrolled emission rate (g s ⁻¹)	UE	0.483
9	Control efficiency (%)	c	90
10	Controlled emission rate (g s ⁻¹)	CE	0.0483

Totally 2 tippers and 2 hydraulic excavators will be proposed for existing granite quarry.

Rejects – 59183m³ for 5 years or 3m³/hr

The generation of rejects per hour for the quarry are calculated as 12m³. The loading capacity of excavator is 2.2m³.

x = frequency of loading (no. h-1) = 12/2.2 = 5 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.

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

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Table 4.2 Source Parameters (unloading of Rejects)

S. No	Description	Symbol	Quantity
1	Moisture content (%)	m	1 (approx)
2	Silt content (%)	s	3 (approx)
3	Wind speed ($m s^{-1}$)	u	2.2
4	Drop height (m)	h	1.5 from ground surface
5	Capacity of tipper (t)	c	20
6	Frequency of unloading ($no.h^{-1}$)	y	2 times (maximum)
7	Area of Source (m^2)	a	47600 (31950 + 15650)
8	Uncontrolled emission rate ($g s^{-1}$)	UE	0.89
9	Control efficiency (%)	c	90
10	Controlled emission rate ($g s^{-1}$)	CE	0.089

Rejects per hour for multi colour granite quarry = $12 \times 2.5 = 30MT$;

Capacity of tipper (t) = 15MT

$y = \text{frequency of unloading (no.h}^{-1}\text{)} = 30/20 = 2 \text{ times/hr}$

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	1.56 (Lab report)
2	Silt content (%)	s	24
3	Wind speed ($m s^{-1}$)	u	2.2
4	Drop height (m)	h	1m above the tipper body
5	Size of loader (m^3)	l	2.20
6	Frequency of loading($no.h^{-1}$)	x	1 time (maximum)
7	Area of Source (m^2)	a	47600 (31950 + 15650)
8	Uncontrolled emission rate ($g s^{-1}$)	UE	1.38
9	Control efficiency (%)	c	90
10	Controlled emission rate ($g s^{-1}$)	CE	0.138

Topsoil – $15192m^3$ for 3 years or $1m^3/hr$

The generations of top soil per hour for the quarry are calculated as $2m^3$. The loading capacity of excavator is $2.20 m^3$.

$x = \text{frequency of loading (no. h}^{-1}\text{)} = 2/2.20 = 1 \text{ time}$

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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	1.56 (Lab report)
2	Silt content (%)	s	24
3	Wind speed (m s ⁻¹)	u	2.2
4	Drop height (m)	h	1.5 from the ground surface
5	Capacity of dumpers (t)	c	20
6	Frequency of unloading(no.h ⁻¹)	y	2
7	Area of Source (m ²)	a	47600 (31950 + 15650)
8	Uncontrolled emission rate (g s ⁻¹)	UE	0.91
9	Control efficiency (%)	c	90
10	Controlled emission rate (g s ⁻¹)	CE	0.091

Generation of top soil per hour for multi colour granite quarry = 2 x 1.5 = 3MT;

Capacity of tipper (t) = 20MT

y = frequency of unloading (no.h⁻¹) = 3/20 = 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.

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

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

S. No	Description	Symbol	Quantity
1	Moisture content (%)	m	1.56 (Lab report)
2	Silt content (%)	s	24
3	Wind speed (ms ⁻¹)	u	2.2
4	Frequency of transporting (no. h ⁻¹)	f	6 times (maximum)
5	Average vehicle speed(ms ⁻¹)	v	4.1
6	Area of Source (m ²)	a	47600 (31950 + 15650)
7	Uncontrolled emission rate (g s ⁻¹)	UE	0.003
8	Control efficiency (%)	c	80
9	Controlled emission rate (g s ⁻¹)	CE	0.0006

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Frequency of unloading for rejects (no.h⁻¹) = 2 times/hr

Frequency of unloading for top soil (no.h⁻¹) = 1time/hr

Frequency of transporting (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 PM₁₀ 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	61
2	Emission factor in unit of pounds of particulate per ton shifted by blasting	E _f	TSP E _f = 0.0001 pounds/ton PM ₁₀ E _f = 0.0008 pounds/ton 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	76089
4	Control efficiency (%)	c	30
5	Controlled Particulate matter emissions rate in pounds per year	CE	50

(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 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 PM₁₀

Source type	Controlled Emission Rate (g/s/m ²)
Loading of Granite reject	1.01x 10 ⁻⁶
Unloading of Granite reject	1.87 x 10 ⁻⁶
Over burden loading	2.8 x 10 ⁻⁶
Over burden unloading	1.9 x 10 ⁻⁶
Haul road	1.3 x 10 ⁻⁸
Blasting	6.7 x 10 ⁻⁸

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Table 4.8: Emissions Rates of SO₂

Source type	Average Emission rate for HDDV as per EPA	Emission rate (Proposed Project)
Tippers	0.012 g/mile	4.3×10^{-8} g/s/m ²
Excavators	0.012 g/mile	2.6×10^{-7} g/s/m ²
Total Emission Rate		3.03×10^{-7} g/s/m ²

Table 4.9: Emissions Rates of NO₂

Source type	Average Emission rate for HDDV as per EPA	Emission rate (Proposed Project)
Tippers	0.725 g/mile	3.3×10^{-7} g/s/m ²
Excavators	0.725 g/mile	1.7×10^{-6} g/s/m ²
Total Emission Rate		2.03×10^{-6} g/s/m ²

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 PM₁₀, SO_x and NO_x 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 (December, 2022 to February, 2023) at project site for executing modeling studies.
- 2) The emission rates of PM₁₀, SO_x and NO_x from the various sources was taken.
- 3) Location of the project.

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 PM₁₀, SO_x and NO_x are identified due to

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1. Scenario 1 – PM₁₀

- (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 - PM₁₀

- (i) Due to blasting

3. Scenario 3 – SO_x and NO_x

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

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Scenario1:

Table 4.10: Total predicted GLC of PM₁₀ 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 $\mu\text{g}/\text{m}^3$	Incremental GLC in $\mu\text{g}/\text{m}^3$	Total Predicted GLC in $\mu\text{g}/\text{m}^3$
Mine site	AQ1 - Centre	48	25.98	73.98
Receptor 01	AQ2 - 700m- W	48	2.82	50.82
Receptor 02	AQ3 - 950m- NE	48	3.71	51.71
National Ambient Air Quality Standards (NAAQS)				100

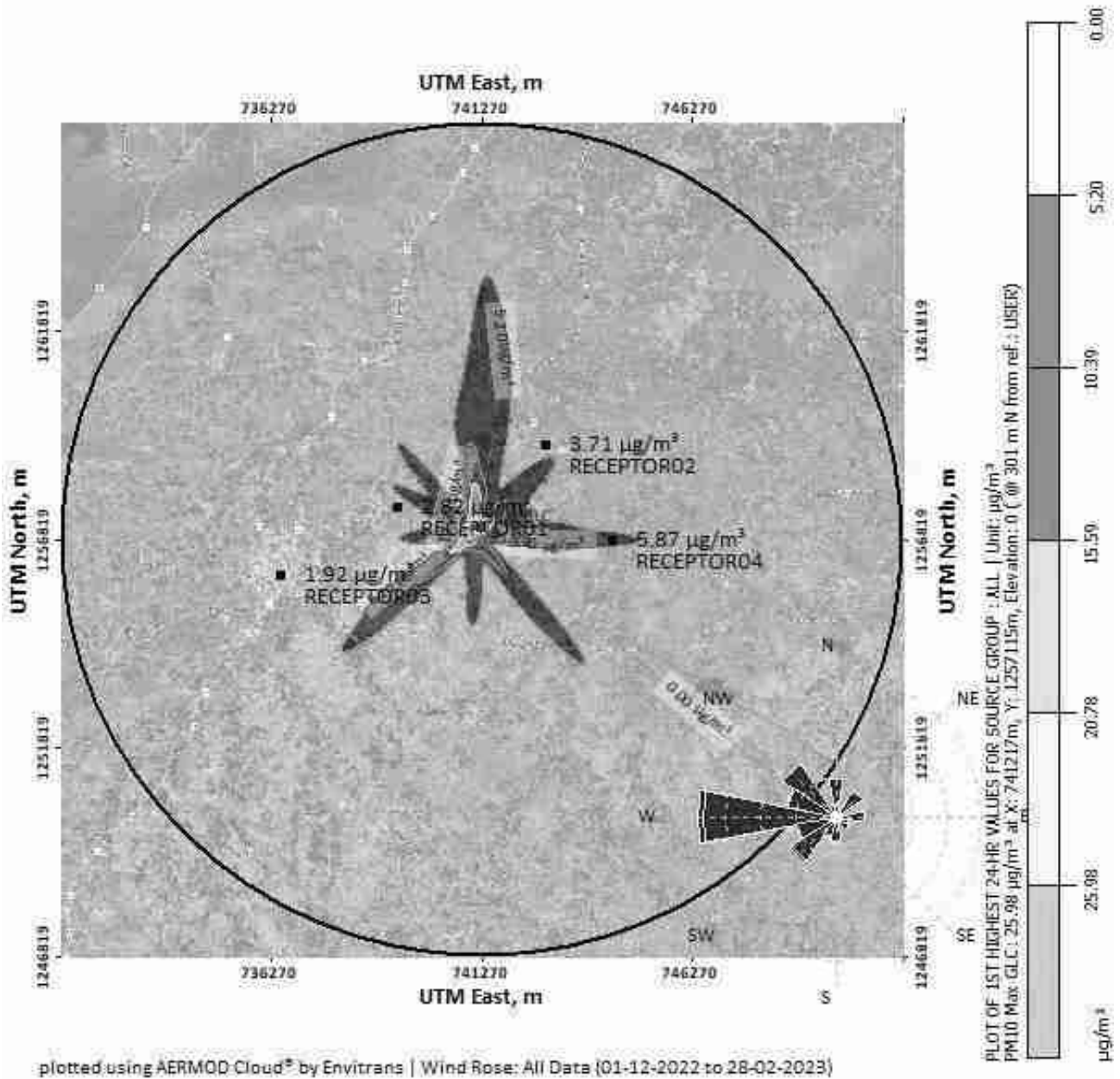


Fig No.4.1 Isopleth indicating Incremental value of PM₁₀ due to combined action of loading, unloading, transportation of granite on haul road

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Scenario 2:

Table 4.11: Total predicted GLC of PM₁₀ in core and buffer zone due to blasting activity 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	48	4.13	52.13
Receptor 01	AQ2 - 700m- W	48	0.68	48.68
Receptor 02	AQ3 - 950m- NE	48	0.40	48.40
National Ambient Air Quality Standards (NAAQS)				100

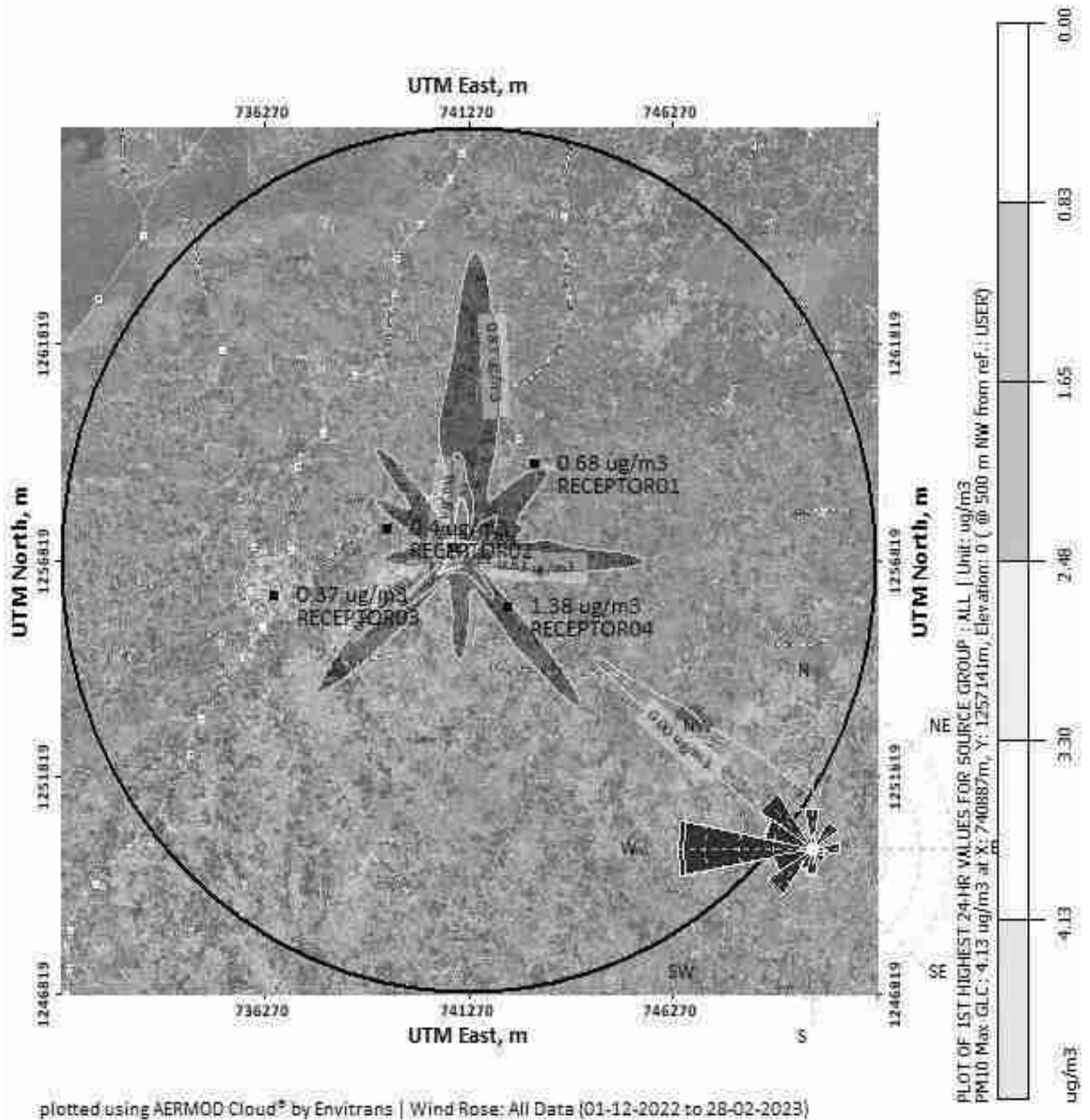


Fig No 4.2 Chart indicating Incremental value of PM₁₀ due to blasting action.

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Scenario 3:

Table 4.12: Impact of SO_x 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	7	BDL	7
National Ambient Air Quality Standards (NAAQS)				80

Table 4.13: Impact of NO_x 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	14	BDL	14
National Ambient Air Quality Standards (NAAQS)				80

AERMOD was used for prediction of impact of PM₁₀ 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 PM₁₀ at project site for scenario 1 i.e loading-unloading and transportation and scenario 2 i.e. Blasting was 73.98 $\mu\text{g}/\text{m}^3$ and 52.13 $\mu\text{g}/\text{m}^3$ occurred at the project site after superposition of base-line value 48 $\mu\text{g}/\text{m}^3$ over the incremental value of 25.98 $\mu\text{g}/\text{m}^3$ and 4.13 $\mu\text{g}/\text{m}^3$ 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

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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.

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 ₁₀ 24-hr	PM _{2.5} 24-hr	NO ₂ 24-hr	O ₃ 8-hr	CO 8-hr (mg/m ³)	SO ₂ 24-hr	NH ₃ 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)

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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 ₁₀	73.98	Satisfactory (51-100)	May cause minor breathing discomfort to sensitive people
SO _x	7	Good (0-50)	Minimal Impact
NO ₂	14	Good (0-50)	Minimal Impact

The above table shows the AQI quality due to total predicted GLC of quarry in core area. PM₁₀ value is between 51-100 of AQI which is satisfactory and may cause minor breathing discomfort to sensitive people. SO₂ and NO₂ are between 0-40 of AQI which is good and may cause Minimal Impact.

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. Mitigate 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 PM₁₀, 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 the quarry.
- ❖ 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

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- ❖ Use of appropriate explosives for blasting and avoiding overcharging of blast holes
- ❖ 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 7.4 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	0.0171 kg/day
Excavators	2.311 g/mile	0.718kg day
Total Emission Rate		0.7351 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 - 7.4 mile/day

Emission rate by tipper per day – $7.4 \times 2.33 = 17.1014$ g/day or 0.0171kg/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.

4.3 Soil Carbon stock

Soil carbon sequestration is a process in which CO₂ 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

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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.

The reserve forest within 10km radius of the project site is given below

1. Velamundi R.F – 7.7 km – N.

As it is mining project which is carried out within lease area it will not affect any soil carbon stock in the nearest reserve forest.

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 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.

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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.

Table 4.20: Expected Noise Levels

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

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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	44.2	42.8	100	100	42.8
Lease boundary Pillar (North)	--	100	47.6	44.6	70	70	44.6
Lease boundary Pillar (West)	--	100	49.2	47.3	70	70	47.3
Lease boundary Pillar (East)	--	100	47.8	46.1	70	70	46.1
Lease boundary Pillar (South)	--	100	45.0	43.2	70	70	43.2
Kerapadi	0.7	100	42.3	40.2	39.5	45.1	40.2
Devampalayam	1.7	100	45.8	42.2	40.9	47.1	42.2
Kandisaalai	1.5	100	42.7	39.7	42.0	45.3	39.7
Chinakuttai	1	100	44.5	41.6	45.5	43.7	41.6

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.

The anticipated noise level in buffer villages due to mining activity is calculated by considering operation of one quarry only. To overcome the noise pollution due to operation of quarry area the following mitigation measure should be followed.

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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 equipment's.
- ❖ The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipment's.
- ❖ 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.

Image showing Anticipated Noise Levels dB(A) of around 5km Radius

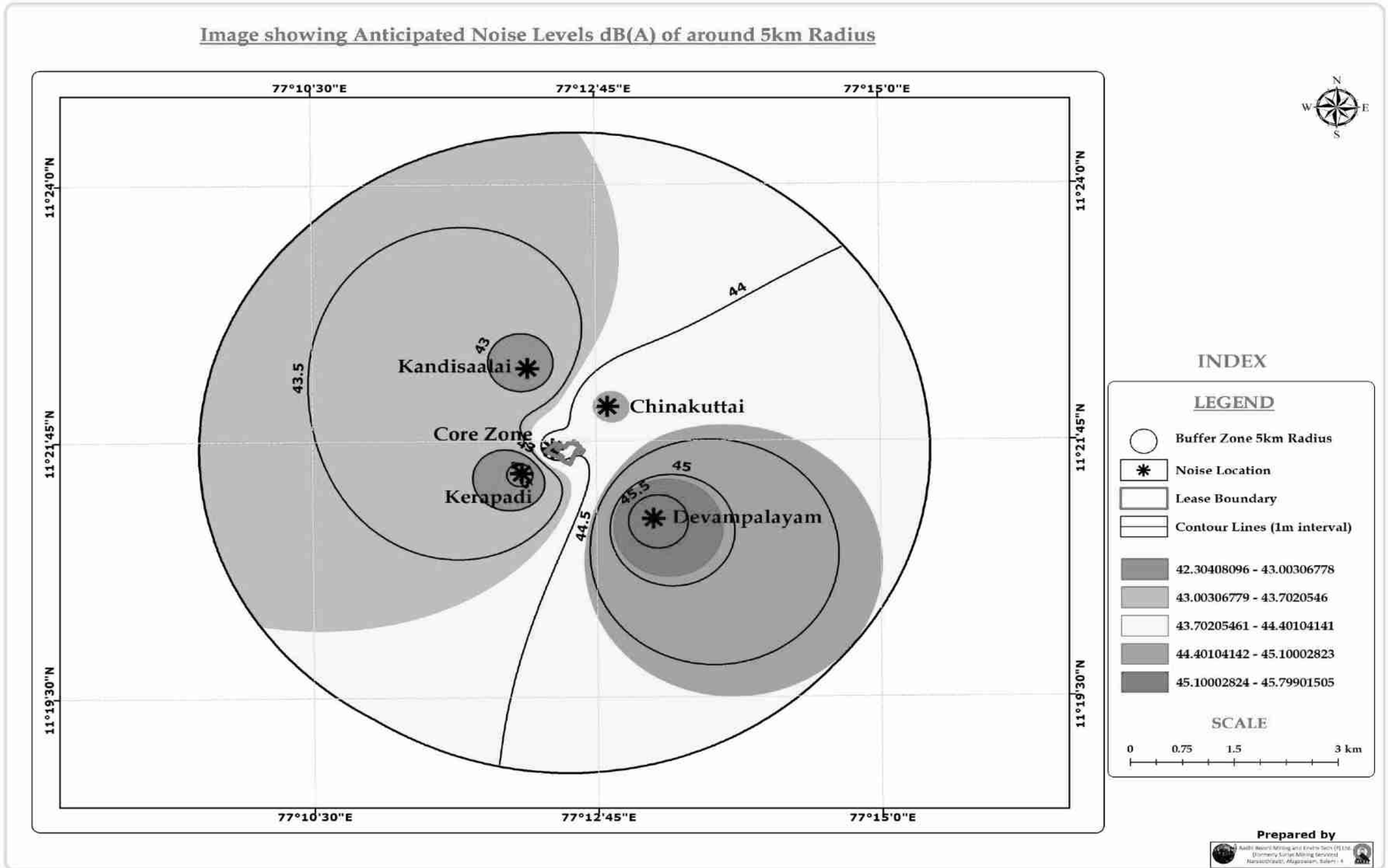


Fig 4.3: Noise dispersion in Buffer zone due to proposed mining activity

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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, Karapadi village is located in northeast 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
153m – NW	20	4.7
153m – NW	17	4.3
153m – NW	13	3.6
153m – NW	9	2.8
153m – NW	5	1.9
610m – NE	20	1.0
610m – NE	30	1.24
610m – NE	50	1.7

Production for five years = 84547 m³

Production for a year = 84547/5 = 16909m³

= 16909x 2.5 = 42273MT.

Per day ROM = 42273/300 days

Explosives requirement= 140/7 = 20 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
A)	Buildings/structures not belonging to the owner			
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)	Buildings belonging to the owner with limited life span			
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 20kg is within the Peak Particle Velocity of 5mm/s for the habitation located at the distance of 153m. So, the project proponent if any changes for the production (Tvl. Meenakshi Granites) is recommended to adopt delay detonators to keep PPV of ground vibration below 5mm/s.

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.

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- ❖ Heavy machineries with high ground pressure shall not be used in the mines.
- ❖ 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 two proposed project is presented in fig 4.4.

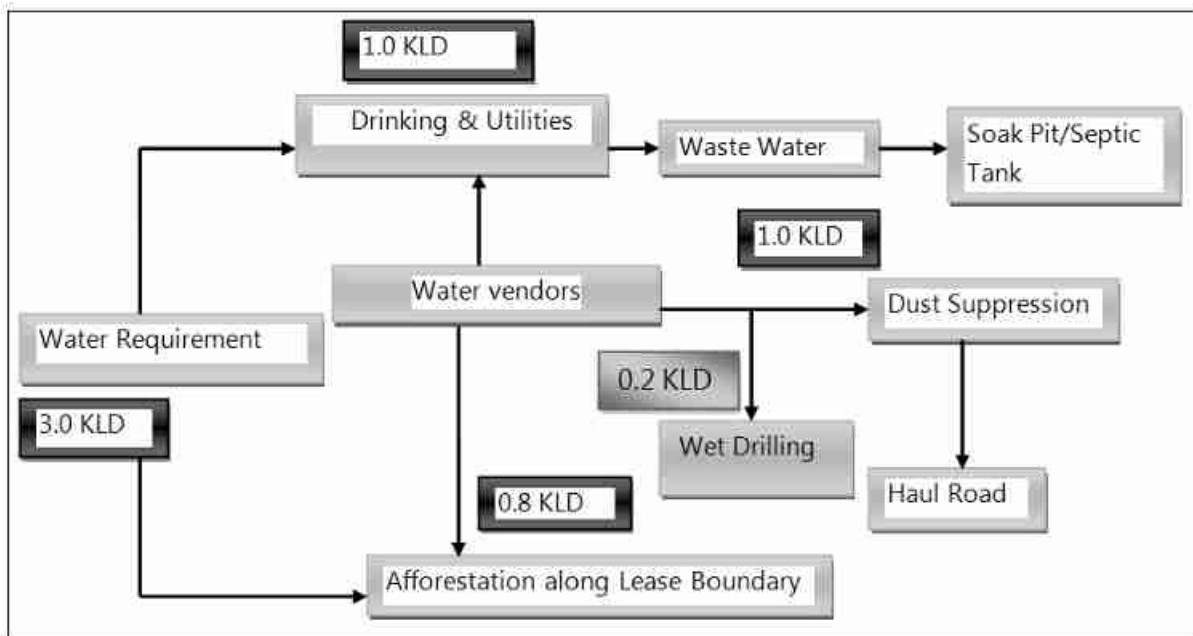


Fig. 4.4 Water Balance chart

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 water body located within 1 km radius of mining lease area. The details of river body are given below.

1. Kavilipalyam Kulam – 2.6km – NE
2. Sungai lake – 4.7km – NW
3. Nallur lake – 4.4km- NW
4. Lower Bavani Main Canal – 4.3km – N
5. Odai – 3.0km - SE

From the Drainage Pattern Map, it is found that the 3rd order stream connects the lease area of Tvl. Meenakshi Granites in located in west side. So, the probability of siltation in that stream due to dumping of rejects within the lease area is high. So, the following mitigation shall be followed to overcome the pollution of surface water bodies due to mining activity.

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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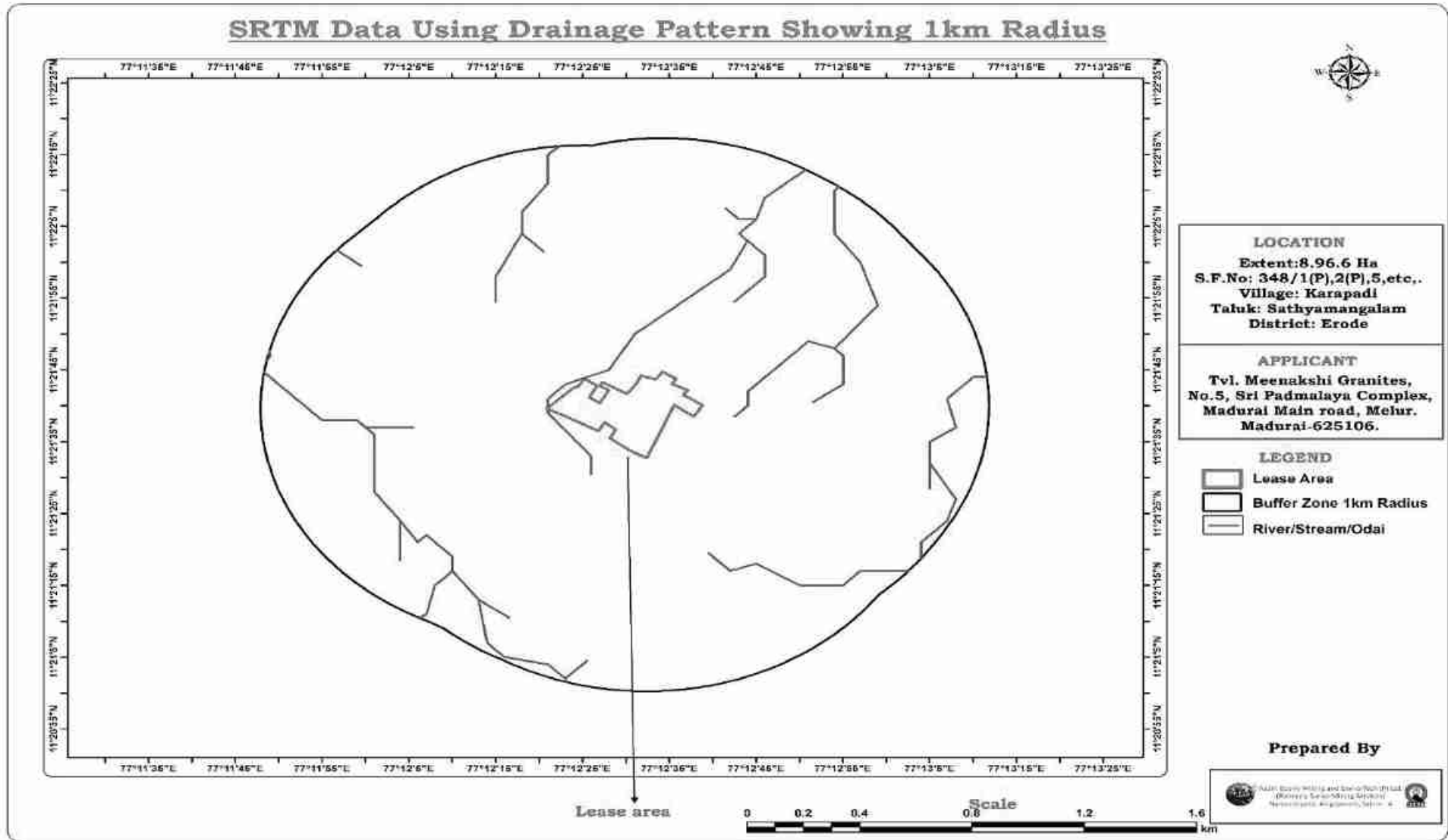


Fig No 4.5 Map Showing drainage pattern within 1km radius of the project site

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4.6.2 Anticipated Impact on Ground water due to proposed project

The water table in this region is about 50m bgl. The proposed depth of mining is 24. 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.

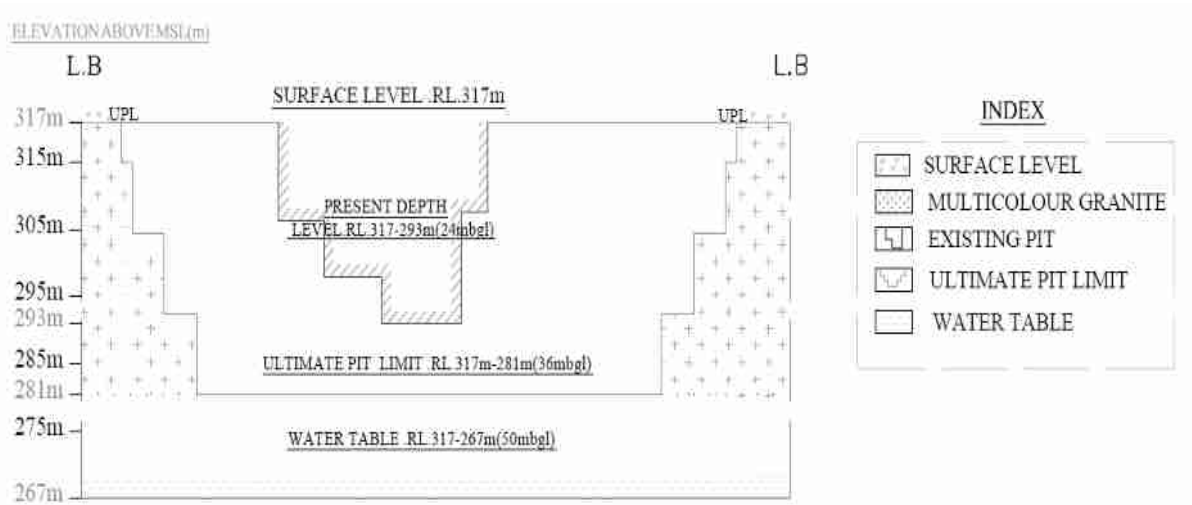


Fig.4.6 Schematic representation of depth of mining and water level

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 constructed outside the lease area 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.

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

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

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$qn = 100 * [Vn - Vio] / [Sn - Vio]$ 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. Unit weight of the water quality parameters

Parameters	Water quality standard (WHO/BIS)	Assigned weight (AW)	Unit weight (UW)
pH	6.5-8.5 (8)	3.66	0.1628
EC (μ S/cm)	250	2.50	0.1112
TDS (mg/l)	500	3.33	0.1481
TH (mg/l)	200	3.33	0.1481
Ca ²⁺ (mg/l)	75	3.0	0.1334
Mg ²⁺ (mg/l)	30	2.66	0.1183
Cl ⁻ (mg/l)	250	4.0	0.1779
Total	-	22.48	1.0

Table 4.25: Water quality index of water samples

Sampling Site Name	Water Quality Index Value	Water Quality Index Status
Core Zone	41.23 mg/l	Good
Kerapadi	47.32 mg/l	Good
Devampalayam	77.69 mg/l	Poor
Kandisaalai	51.43 mg/l	Good
Chinakuttai	61.52 mg/l	

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

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Table 4.26: Water quality scale

Water quality	WQI Yadav et al 2016	WQI Ramakrishnaiah 2004	WQI Mohanty 2001
Excellent	0–25	<50	<50
Good	26–50	50–100	50–100
Poor	51–75	100–200	100–200
Very Poor	76–100	100–200	200–300
Unsuitable	Above 100	<300	<300

The value of TH, TDS of water sample from all the above said locations are beyond the acceptable limits except core zone. Water sample from Devampalayam and Kandisaalai village has high Chlorides. Based on the Water Quality Index calculated, water qualities from all core zone, Kerapadi, Kandisaalai and Chinakuttai village are found good. In Devampalayam village the water quality is found to be poor. 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 making the water aseptically fit for drinking purposes.

4.6.5 Impact on Hydrogeology

i. RESISTIVITY SURVEY ANALYSIS

Electrical Resistivity survey by Schlumberger configuration was conducted to interpret various geological formation and possibility of water spring touch at various depths by Inverse slope method. At a depth of 52m bgl there is an indication of fractures where the seepage of ground water may occur.

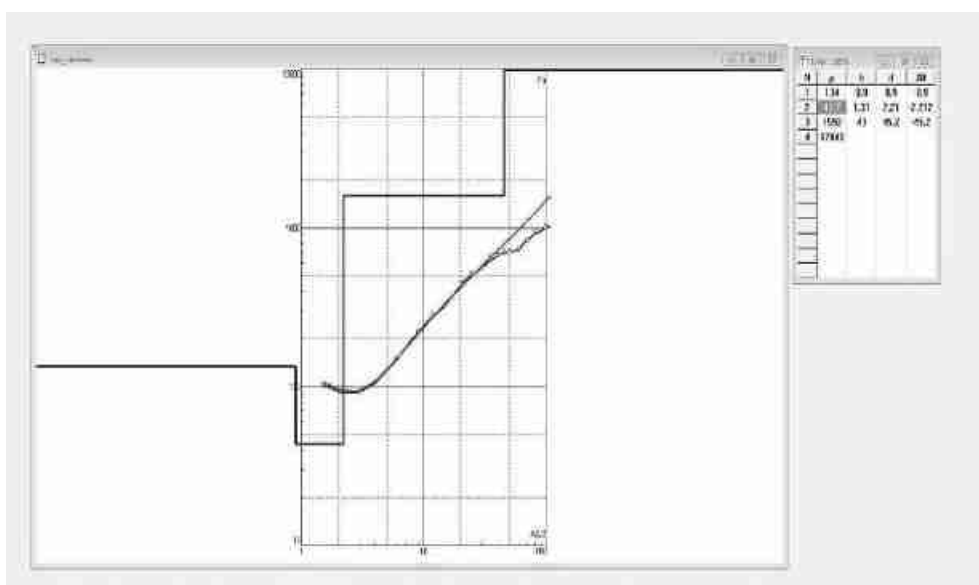


Fig No. 4.7 Interpreted resistivity curve of the study area

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The various geological formations and water touch as interpreted is given below,

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0-6m: Top soil & Weathered Rock

6-50m Massive Granite formation with moderate Resistivity Value

50-52m: Water level fluctuations

Above 52m: Massive hard formation

The presence of topsoil indicating low resistivity up to 0-1m is indicative of the poor water bearing aquifer. The shallow water table is having curve breaks around 52m depth with possible water level. The hard rock shall not permit the groundwater to flow freely and also depth of quarrying is proposed above the water table. Therefore, no much impact of the proposed quarry to the surrounding wells, water bodies and Ground water table etc.,

4.7 Soil Environment

4.7.1 Impact on Soil Environment

For the plan period 2023-2028, the generation of top soil is estimated as 15192 m³. 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 colour granite for five years is about 25364m³ at the rate of 30% recovery up to permissible depth. The 70% reject of 59182m³ shall be dumped over existing dump in South west side and on virgin barren land in east 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,

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- ❖ 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 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 collection of particular location in Erode 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 and 4.28.

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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: Velamundi R.F – 7.7 km – N The proposed project is not a forest land. So, the proposed project does not attract Forest Conservation Act, 1980. There are no wild life sanctuaries found around 10km radius. Sathyamangalam Tiger Reserve Wildlife Sanctuary – 19.5km – NW Quarry area is 152.3km (W) away from the Arabian Sea Hence the project does not attract Wildlife Protection Act, 1972 and C.R.Z. Notification, 1991.	-
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

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			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 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.	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	No, the proposed project will not disturb forest located around the project site.	-
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
Zone of Influence	Project site Habitat due to Site Clearance.	The existing granite quarry is located in Karapadi 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 and around existing dump. During quarrying activity, PP will not cut any trees in and around the lease area.	Low Impact	-	Irreversible in quarry area	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.	No Cumulative Impact
Zone of Influence	Ecological Impact Surrounding habitat due to fugitive emission	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.	Temporary Impact	During the mining period	Reversible	The sprinkling of water over the haul road will be done. The transportation vehicles will be maintained and serviced Properly.	No Cumulative Impact
Accessibility	Ecological Impact due to road construction	No Road construction is required to assess the project site. As it is existing quarry, the approach road is already available which connect the	No Impact		-	-	No Impact

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		lease area to nearest Karapadi village Tar Road.					
Zone of Influence	Ecological Impact on Surrounding/ Eco sensitive habitat due to waste water generated from the project activity.	Since the proposed project is a mining activity no waste water generation is expected. Human waste and municipal solid waste will be generated due to the workers.	No Impact	-	-	Human waste will be properly treated by septic tank and soak pit in the lease area and dispose periodically. The municipal solid waste generated by workers will be properly segregated into biodegradable and non-biodegradable and disposed through garbage collection of Erode Municipality.	No Impact
Zone of Influence	Ecological Impact on Surrounding / Eco sensitive habitat due to Noise generated from the project activity.	During drilling or blasting, transportation of granite, noise will be generated and it may slightly affect the movement of fauna around the lease area.	Temporary impact	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	No Impact

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						control the noise generations.	
Zone of Influence	Ecological Impact on Surrounding/ Eco sensitive habitat due to Transportation	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.	Temporary impact	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.	No Impact
Zone of Influence	Ecological Impact on Natural ecosystem, the soil micro flora and fauna and soil seed banks.	The construction of barrage, bridges, baffle walls, head sluice has been carried out in the water bodies. The excavation of soil for foundation work affects the soil micro flora and fauna.	High impact	Temporary during construction phase only	--	During construction phase it is unavoidable. It will be restored automatically once the construction work is completed	Temporary impact
Zone of Influence	Fish habitats and the Food web/food chain in the water body and Reservoir	As said above, the construction work has been carried out in water bodies. As the flow of water in river was diverted, the construction activity does not affect the river fauna directly.	No Impact	Nil	--	--	No Impact

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		However, it disturbs the habitation of fishes. During operation phase, the water stored in the barrage provides habitation for fishes and other aquatic organisms. The fish culture in the barrage provides both a food source and an extra source of income to supplement those who live in these regions.					
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Table 4.29: Afforestation Plan

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 100 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.

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

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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 my 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

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

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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 be used for developing mango, coconut, banana plantation around the mining lease area. It will improve the livelihood of village people. The evaporation rate of the water in the pit is given detail in the report.

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 equipment's 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 checkup 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 is mango and coconut plantation adjacent to the mining lease area based on Google earth map and field visit. Other than mango and coconut plantation, there are no any other crops seen within 1km radius of lease boundary.

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 agricultural farm 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 4-10m above ground water table. So, the proposed mining activity does affect the ground water resource.

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.

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- 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. The rock types exposed in the district can be broadly grouped as 1) Granulite group of rocks 2) Migmatite Complex 3) Sathyamangalam Schist Complex 4) Peninsular Gneissic Complex 5) Alkali Complex 6) Acid Intrusives and 7) Quaternary Alluvium. The Granulite group of rocks comprise of Calc Granulite, Quartzite of Khondalite group, Charnockite, Pyroxene Granulite, Pyroxenite of Charnockite group, Migmatite gneiss and Metagabbro. Charnockite occurs as a major rock type in the northern part and as thin bands and enclaves in the southern part of the district. Quartzite and Calc Granulite, Pyroxene Granulite, Migmatite Gneiss occurs as thin bands and enclaves. Hornblende gneiss, Garnetiferous - Quartzofeldspathic gneiss and granite are the important rock types of Migmatite Complex, of which, hornblende gneiss occupies the major part of the District, particularly in southern part and northwestern part. Garnetiferous quartzofeldspathic gneiss is located near Bhavani Sagar reservoir and north of Anthiyur. The Sathyamangalam Group includes fuchsite Quartzite, schistose-quartzite, sillimanite-quartzite, ferruginous Quartzite, talc-tremolite / Actinolite schist / hornblendeschist, Amphibolite and Gabbroanorthosite and Pyroxenite. Schistose rocks occur as enclaves near Sathyamangalam, west of Chennimalai. Quartzite occurs as thin beds near Kavilanattam, west of Chennimalai, Amphibolite occur as enclaves near Sathyamangalam, Gobi and around Perudnurai. A north site, Pyroxenite occurs as WSW-ENE trending bands in fissile hornblende gneiss of PGC (Bhavani Group) which

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occupies the ventral part of the district. Granite bodies are located in the central part of the district around Punjai Puliampatti and west of Erode. Quaternary fluvial deposits are restricted to the river beds of Cauveri, Noyyil, Amaravathi and Bhavani rivers.

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

S. No	Instruments	Purpose of Monitoring
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.

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 _{2.5} , PM ₁₀ , SO ₂ and NO _x	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 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)	–	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 manufacturer's 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
	Total			Rs 46, 000

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:

Name and Address of the Proponent	TVL.MEENAKSHI GRANITES, No: 5, Sri Padmalaya Complex, Madurai Main Road, Melur, Madurai District, Tamil Nadu Pin code-625 106. Mob: +919600634444. Email ID: meenakshigranites2015@gmail.com
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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.

Table 7.1 Risk Assessment and Disaster Management Plan

S. No	Hazards	Mitigation measures
1	Surface Fire	<ul style="list-style-type: none"> ➤ Fire Extinguishers ➤ Sand Buckets
2	Explosives/Blasting	<ul style="list-style-type: none"> ➤ 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. ➤ Shot holes blasting using compressor and Jack Hammers combination are adopted to release the mineral.
3	Flooding of Rain water	<ul style="list-style-type: none"> ➤ Escape Routes will be provided to prevent inundation of storm water ➤ Garland drains will be provided at the toe of dump
4	Radioactive hazard	➤ Not Anticipated
5	Failure of Mine Benches and Pit Slope	<ul style="list-style-type: none"> ➤ 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. ➤ During working normally 3-6m will be maintained as per the plan.
6	Failure of Waste Dumps	<ul style="list-style-type: none"> ➤ Stabilization of dump with top soil and tree plantation shall make the dump 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.
7	Dust	<ul style="list-style-type: none"> ➤ Periodical wetting of land by spraying solutions. ➤ Regular water sprinkling on haulage roads ➤ Provision of Dust mask to workers ➤ 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
8	Noise	<ul style="list-style-type: none"> ➤ Rotation of workers to minimize exposure time of noise ➤ The equipments and machineries shall be maintained properly

		➤ Provision of earmuffs to workers
9	Transportation	<ul style="list-style-type: none"> ➤ Convex mirrors should be kept at all corners ➤ All vehicles should be fitted with reverse horn with one spotter at every tipping point ➤ Loading according to the vehicle capacity ➤ Regular checking of brakes to avoid failures ➤ Periodical maintenance of vehicles
10	General measures	<ul style="list-style-type: none"> ➤ No entry for any unauthorized persons ➤ S1 type fencing as per DGMS circulars ➤ Quarrying as per Approved Plans only ➤ Provision of Personal Protective Equipments ➤ In case of any closure of mine the compensation under Industrial Dispute Act will be paid as per law

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,

Activities	Days for schedule
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 **Tvl. Meenakshi Granites** 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 | = 70035m ² |
| II. Annual rainfall of the area | = 0.543 m |
| III. Total rainwater available to store in pit area | = 38029m ³ |
| IV. Total volume of quarried pit | = 25201260m ³ |

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 36m 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,

$e_w = 30.43$ mm of Hg (considered average temperature in Erode district during summer season)

$e_a = 0.61 \times 30.43 = 18.5$ 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,

$E_L = 0.36 (30.43 - 18.5) (1 + 13.7/16)$

$E_L = 13.4$ mm/day or 0.013 m/day

Evaporated Volume per day = $70035 \times 0.013 = 910\text{m}^3/\text{day}$ or 910 KLD

The total quantity of rain water to be stored in quarried pit is 38029m^3 . The evaporation rate of water per day is 910m^3 based on the average temperature in Erode District. It takes nearly 4 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 Multi Colour Granite Quarry, of Meenakshi Granites.

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.

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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 Karapadi Village of Erode 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, Erode 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 15 are skilled, 6 semi-skilled, 2 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;
- 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 (o) 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.

Under this programme, the project proponents will take-up following activities for social and economic 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)

CER Activity	Project Cost (Rs. In Lakhs)	Cost allocated for CER activity (Rs. In Lakhs)
Developing Sanitary facilities and Library Facilities, RO Water supply system, tree plantation and environmental awareness sign Boards to Government High School, Karapadi Village.	97	5
Total Cost Allocation	97	5

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 Granite Quarry of Tvl. Meenakshi Granites over an area of 8.96.6 Ha falling in Karapadi village in Erode district is Rs. 97,00,000/- and EMP Cost is Rs. 8,25,000/-

- 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"> ○ Dust extractor or wet drilling to be followed to control dust at source of emission ○ Use of Sharp drill bits for drilling holes and charging the holes by using optimum charge and using time delay detonator
		Blasting	<ul style="list-style-type: none"> ○ Regular water sprinkling on blasted heaps at regular intervals will help in reducing considerable dust pollution
		Loading	<ul style="list-style-type: none"> ○ Water sprinkling be done before loading by making it moist
		Transportation	<ul style="list-style-type: none"> ○ Water sprinklers along the sides of haul road shall be fixed to control fly of dust while transporting minerals and waste ○ Overloading will be prevented ○ Trucks/Dumpers covered by tarpaulin covers
		DG Sets	<ul style="list-style-type: none"> ○ DG sets will be used only during power failure ○ Adequate stack height for DG sets will be provided as per CPCB norms
		General measures	<ul style="list-style-type: none"> ○ Avenue trees along roads around ML boundary shall be planted as per the norms of MoEF to control fly of dust. ○ 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. ○ 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.
2	Water Environment	Surface water	<ul style="list-style-type: none"> ○ Wastewater discharge from mine if any will be treated in settling tanks before using for dust suppression and tree plantation purposes.

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		Ground water	<ul style="list-style-type: none"> ○ The mining activity will not intersect the ground water table ○ De silting will be carried out before and immediately after the monsoon season
		Storm water	<ul style="list-style-type: none"> ○ Pit will be used for Storage of rainwater ○ 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. ○ The proponent will collect and judiciously utilize the rainwater as part of rain water harvesting
		General measures	<ul style="list-style-type: none"> ○ Regular monitoring and analyzing the quality of water
3	Noise Environment	Drilling	<ul style="list-style-type: none"> ○ Limiting time exposure of workers to excessive noise
		Blasting	<ul style="list-style-type: none"> ○ 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
		Transportation	<ul style="list-style-type: none"> ○ 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. ○ Adequate silencers will be provided in all the diesel engines of vehicles. ○ Minimum use of horns and speed limit of 10 km/hr in the village area.

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			<ul style="list-style-type: none"> ○ It will be ensured that all transportation vehicles carry a valid PUC Certificates
		General measures	<ul style="list-style-type: none"> ○ Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas ○ 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.
4	Vibration	Blasting	<ul style="list-style-type: none"> ○ No deep holes blasting envisaged. ○ Small dia shot holes are used for breaking boulders. ○ Specific charge pattern has to be designed by proper trial vibration studies with varying charge ratios. ○ 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 ○ 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
5	Soil Environment	Topsoil	<ul style="list-style-type: none"> ○ Humus top soil shall be preserved for reuse in afforestation and agriculture ○ Top soil should not be mixed with other waste or reject materials. It should be conserved by judicious utilization in the mine premises ○ 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

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6	Waste Dump	Stabilization of Dumps	<ul style="list-style-type: none">○ 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 vegetation.○ 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○ Dump should be terraced for every 5m height and stabilized
7	Plantation	Mine lease boundary and waste dump	<ul style="list-style-type: none">○ Provision of green belt all along the periphery of the lease area for control of dust and to attenuate noise○ Stabilization of Dump with plantation○ It is strongly recommended that the loss of plant in each year will be counted and again planted in subsequent plantation.○ The plant should be planted taken from nursery, where the survival rate is high.
8	Land Environment		<ul style="list-style-type: none">○ 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.
9	Socio Economic		<ul style="list-style-type: none">○ Good maintenance practices will be adopted for machinery and equipment, which will help to avert potential noise problems.

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Proponent: Tvl. Meenakshi Granites, Multi Colour Granite Quarry, Erode District

		<ul style="list-style-type: none">○ 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.○ An emergency preparedness plan will be prepared in advance, to deal with firefighting, evacuation and local communication.○ 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).○ As a part of CSR activities, community welfare activities will be undertaken by the proponent which leads to socio economic development
10	Occupational Health	<ul style="list-style-type: none">○ 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○ Workers involved in mining work shall be provided protective equipments such as Thick Gloves, Goggles, ear plugs, safety boot wears, etc...

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 2,25,000
3.	Occupation Health	Rs 1,00,000
4.	Green Belt & Dust suppression	Rs. 4,00,000
	Total	Rs. 8,25,000

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
	Total	Rs 4,50,000

CHAPTER – 11: SUMMARY AND CONCLUSIONS

11.0 Introduction

The applicant, **Tvl. Meenakshi Granites** having registered office at No: 5, Sri Padmalaya Complex, Madurai Main Road, Melur, Madurai District - 625106, have been granted mining lease from the State Government over an extent of 8.96.6 Hectares in S.F. No's: 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, Karapadi village, Sathyamangalam Taluk, Erode District to quarry Multi colour granite under G.O. (3D). No: 18 Industries (MME-2) Dept. dated 22.03.2018.

The mining plan was approved by Commissioner of Geology and Mining vide letter No: 5359/MM5/2017, Dated 27.10.2017. Then, PP had obtained Environmental Clearance from State Environment Impact Assessment Authority (SEIAA), Tamil Nadu vide Letter No. SEIAA-TN/F.No.6464/2017/1(a)/EC.No.3971/2018, dated: 12.03.2018. The lease was granted for a period of 20 years. The lease was executed on 23.04.2018 and has validity till 22.04.2038.

Scheme of mining is 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. Now, the first scheme of mining has been prepared for the period 2023-2024 to 2027-2028 with due consideration of environmental parameters so as to obtain Environmental clearance (EC) from State Environment Impact Assessment Authority (SEIAA) vide MoEF&CC Notification S.O 141(E) dated 15th January, 2016 and it has been first scheme of mining plan was approved by Commissioner of Geology and Mining, Guindy, Chennai vide Lr.No.2305/MM4/23, dated 12.05.2023.

The extent of existing Multi colour granite area is 8.96.6 Ha, hence the proposed project comes under Category B1 as per EIA Notification 2006 and its amendments. Now the application has been made for Terms of Reference for carrying out EIA studies. The project cost is about Rs.97 Lakhs and EMP cost is Rs. 8.25 lakhs.

Based on cluster letter Rc No: 024/Mines/2023 dated: 02.08.2023 issued by Assistant Director, Department of Geology and Mining, Erode District, there is no other quarries with in 500m radius in the lessee area. Further 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

S. No	Name of Applicant	ToR Application No	SEAC and SEIAA Meeting	TOR Identification No
1	Tvl. Meenakshi Granites	SIA/TN/MIN/471668/2024, dt:06/05/2024	SEIAA Meeting dated 10.07.2024	TO24B0108TN55294 12N Dated: 12.07.2024

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 11.2 Production Details from 2018 to 2023

Years	Proposed Production				
	Topsoil (m³)	Weathered (m³)	ROM (m³)	Production Multi Colour Granite @ 30% (m³)	Rejection @ 70% (m³)
2018-2019	6336	29140	16800	5040	11760
2019-2020	3264	15980	17136	5141	11995
2020-2021	3472	16800	16800	5040	11760
2021-2022	--	--	17280	5184	12096
2022-2023	--	--	17280	5184	12096
Total	13072	61920	85296	25589	59707

From the above table, it is shown that the applicant excavates 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 SEIAA is same.

11.1 Details of Project and Project Proponent

Table No 11. 3 Details on Project and Project Proponent

Tvl.Meenakshi Granites	
Particulars	Details
Address of the Project Proponent	TVL.MEENAKSHI GRANITES, No: 5, Sri Padmalaya Complex, Madurai Main Road, Melur, Madurai District - 625 106. Tamil Nadu Mob: +919600634444. Email ID: meenakshigranites2015@gmail.com
Lease Area	8.96.6 Hectares
Site Location	Karapadi village, Sathyamangalam Taluk, Erode District, Tamil Nadu
Geographical Co-ordinates	Latitude: 11°21'44.7411" to 11°21'32.7629" N Longitude: 77°12'20.8758" to 77°12'38.7912" E
Toposheet No.	Toposheet No: 58E/3
Mining plan approval	Scheme of mining approved by Commissioner of Department of Geology and Mining, Guindy, Chennai vide Lr.No.2305/MM4/23, dated 12.05.2023.
Precise Area Communication	G.O. (3D) No. 18, Industries (MME-2) Dept. dt: 22.03.2018
Mining Plan Approval Details	5359/MM5/2017 dated 27.10.2017
EC letter from SEIAA	SEIAA-TN/F.No.6464/2017/03/1(a)/EC.No.3971/2018, Dated 12.03.2018
Period of Lease	20 years (23.04.2018 to 22.04.2038)
Approval of Scheme of mining	Rc.No.2305/MM4/2023 dated 12.05.2023
AD Cluster letter	Rc.No.024/Mines/2023 dated 02.08.2023

Table 1.4 Land Particulars

State & District	Taluk	Village	S.F. No.	Total Extent of area (Ha)	Ownership Occupancy
Tamil Nadu & Erode	Sathyamangalam	Karapadi	348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6	8.96.6	Own patta land

11.2 SCOPE OF THE PROJECT

The proposal for Environmental Clearance of Existing Multi colour Granite quarry of **Tvl. Meenakshi Granites (8.96.6 Ha)** requires EIA/EMP Report as per Terms of Reference for conducting public hearing and obtaining environmental clearance from SEAC/SEIAA.

11.3 ENVIRONMENTAL SETTINGS & MINING DETAILS

Project Details				
Proponent	TVL.MEENAKSHI GRANITES,			
Total Mine Lease Area	8.96.6 Hectares – Multi color granite quarry			
Survey No.	348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6			
Site Location	Karapadi village, Sathyamangalam Taluk, Erode District, Tamil Nadu			
Geographical Co-ordinates	Latitude: 11°21'44.7411" to 11°21'32.7629" N Longitude: 77°12'20.8758" to 77°12'38.7912" E			
Toposheet No.	58E/3			
Elevation	Elevation of the area is 316-295m above MSL			
Accessibility				
Nearest Habitation	153m – NW			
Nearest village	Karapadi – 0.61m – NE			
PMHC	Vinnappalli Government Primary Hospital – 5.8 km - N			
Nearest Settlement	Name of Village	Direction	Distance from Mines (km approx.)	Population
	Chinnankuttai	N	1.5 km	3912
	Marampalaiyamchakkiliyur	SE	1 km	4346
	Karapadi	W	2 km	3352
	Varappalaiyam	E	2 km	4479
Nearest Town	Puliampatti – 4.0km - SW			
Nearest Roadway	NH - 948 (Coimbatore –Sathyamangalam) – 3.7km - W SH-166 (Puliampatti –Avinashi) – 5.3km – SW MDR (Puliampatti – Sathyamangalam) –1.2km –N Chinna Kuttai Village Road - W			
Nearest Railway station	Tiruppur Railway station – 31.3km - SE			
Nearest Airport	Coimbatore International Airport – 40.5km - SW			

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Environmental Sensitiveness	
Interstate Boundary	Karnataka-Tamil Nadu interstate boundary is located at a distance of 41.0 km in NW direction.
Coastal Zone	Arabian Sea – 152.3 km - W
Reserve Forest	No forest is located within 5km radius of the project site. The nearest R.F is Velamundi R.F – 7.7 km – N. The proposed project site is not a forest land. Hence it does not attract Forest Conservation Act, 1980
National Park/Wildlife Sanctuary	Sathyamangalam Tiger Reserve Wildlife Sanctuary – 19.5km – NW. 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	Water bodies within 5km radius, Kavilipalyam Kulam – 2.6km – NE Sungai lake – 4.7km – NW Nallur lake – 4.4km- NW Lower Bavani Main Canal – 4.3km – N Odai – 3.0km - SE
Defense Installations	Nil within 10km radius
Critically Polluted area	Nil within 10km radius
Quarries around 500m radius	Based on cluster letter Rc No: 024/Mines/2023 dated: 02.08.2023 issued by Assistant Director, Department of Geology and Mining, Erode District, there is no other quarries with in 500m radius in the lessee area.
Seismic zone	Zone-II, Low damage risk zone as per BMTPC, Vulnerability atlas Seismic zone of India IS: 1893-2002

Table 2.5 Mining Details

Particulars	Details
Method of Mining	Open cast – mechanized mining
Geological resources	14,32,908m³
Mineable reserves	9,82,461m³
Production	25,364m³@ 30% of granite for five years and 5,073m³per annum.
Reject	59183 m ³ @ 70% for five years (2023-24 to 2027-28)
Top soil	Top soil– 15192m ³ for plan period
Weathered rock	77930m ³

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Ore: Waste ratio	1: 5.4			
Depth of Mining	24m bgl (Ultimate – 36m bgl)			
Water Table	50mbgl			
Road design	1: 10 inside the pit and ramp 1:16 for transport			
Overall Pit Slope	45°			
Period of Lease	20 years (23.04.2018 to 22.04.2038)			
Existing pit dimension	Pit	L(m)	W(m)	D(m) RL
	I	125m	70m	0-12m

11.4 Description of the environment

11.4.1 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 December, 2022 – February, 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 11.6 Baseline Data

Particulars	Details	Standards
Meteorology (December, 2022 – February, 2023)		
Rainfall (Avg.)	43.6 mm	--
Temperature (Avg.)	21-39°C	--
Wind speed	2.4 m/s	--
Wind Direction	From west to east directions	
Ambient Air Quality (NAAQS)		
PM ₁₀	38-57 µg/m ³	100 µg/m ³
PM _{2.5}	17 – 36 µg/m ³	60 µg/m ³
SO ₂	3 - 27 µg/m ³	80 µg/m ³
NO _x	7 - 34 µg /m ³	80 µg/m ³
Noise Level (CPCB Standards)		
Day time (6:00 am - 10:00 pm)	Core zone – 44.2 – 49.2 dB (A) Buffer zone – 42.3- 45.8 dB (A))	Industrial Area Day Time - 75 dB (A) Residential Area Day Time – 55 dB (A)

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Night time (10:00 pm - 06:00 am)	Core zone – 42.8 – 45.8 dB (A) Buffer zone – 39.7 - 42.2 dB(A)	Industrial Area Night Time – 70 dB(A) Residential Area Night Time – 45 dB (A)
Water Quality IS 10500:2012 (Desirable limits)		
pH	6.88 – 8.15	6.5 to 8.5
TDS	436-984 mg/l	500 mg/l
Electrical conductivity at 25°C	740-1586 micromhos/cm	
Total Hardness as CaCO ₃	80-380 mg/l	200 mg/l
Total suspended solids	2 - 8 mg/l	IS 3025:P.17: 1984:R.2017
Chlorides Cl	78 - 472mg/l	250
Total iron Fe	0.024 – 0.042	0.3mg/l
Sulfates SO ₄	24-52mg/l	200 mg/l
Soil Quality		
pH	7.10-8.46	Neutral to slightly alkaline
Bulk density	1.05-1.35 g/cc	Favorable physical condition for plant growth.
EC	75 – 407 μs/cm	-
Organic Matter	1.35 – 1.78 %	-
Hydro Geology		
Water Table	50 m bgl	

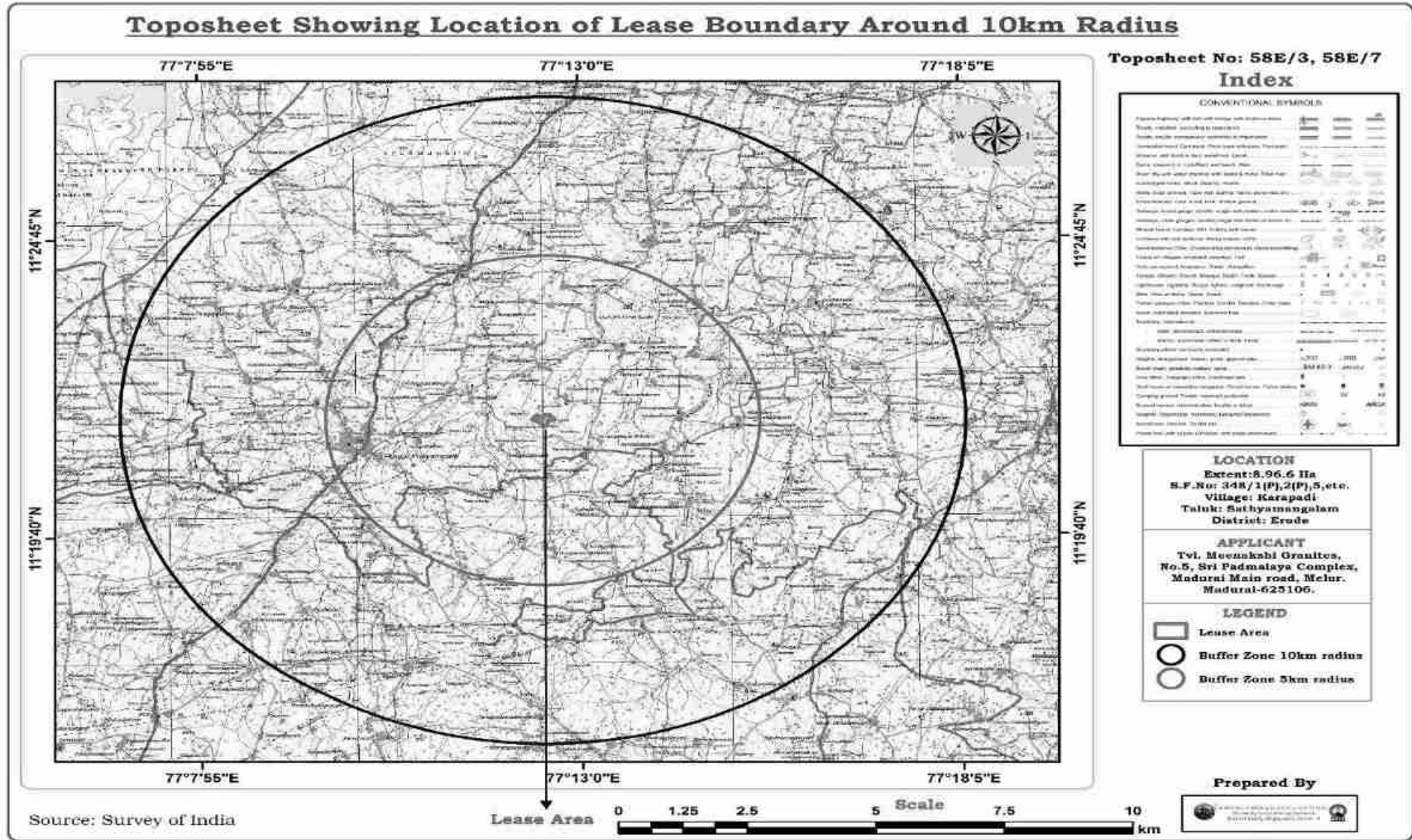


Fig No 11.1 Toposheet showing location of the lease area

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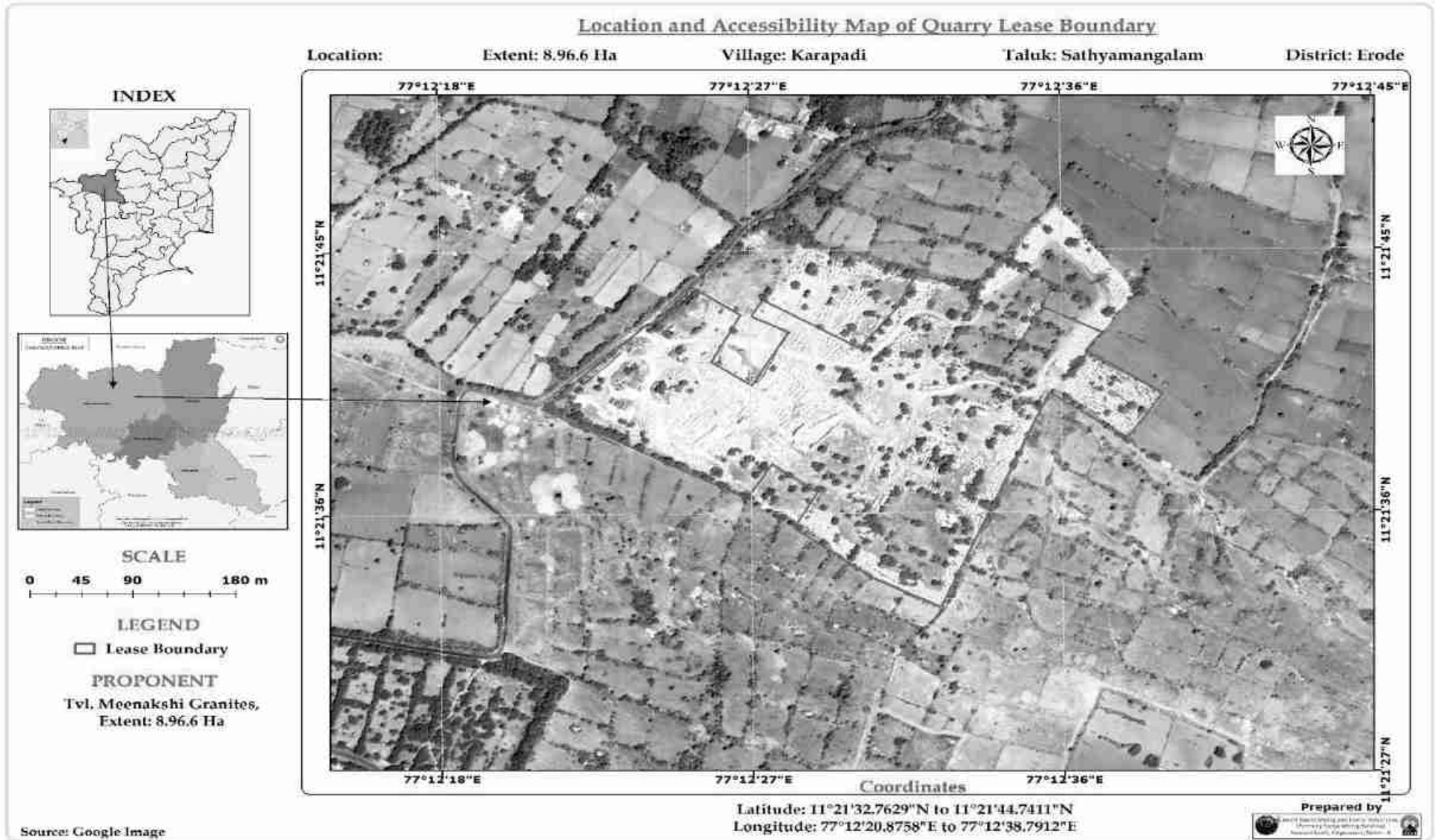


Fig No 11.2 Map Showing the Location and Accessibility of Quarry Lease Boundary

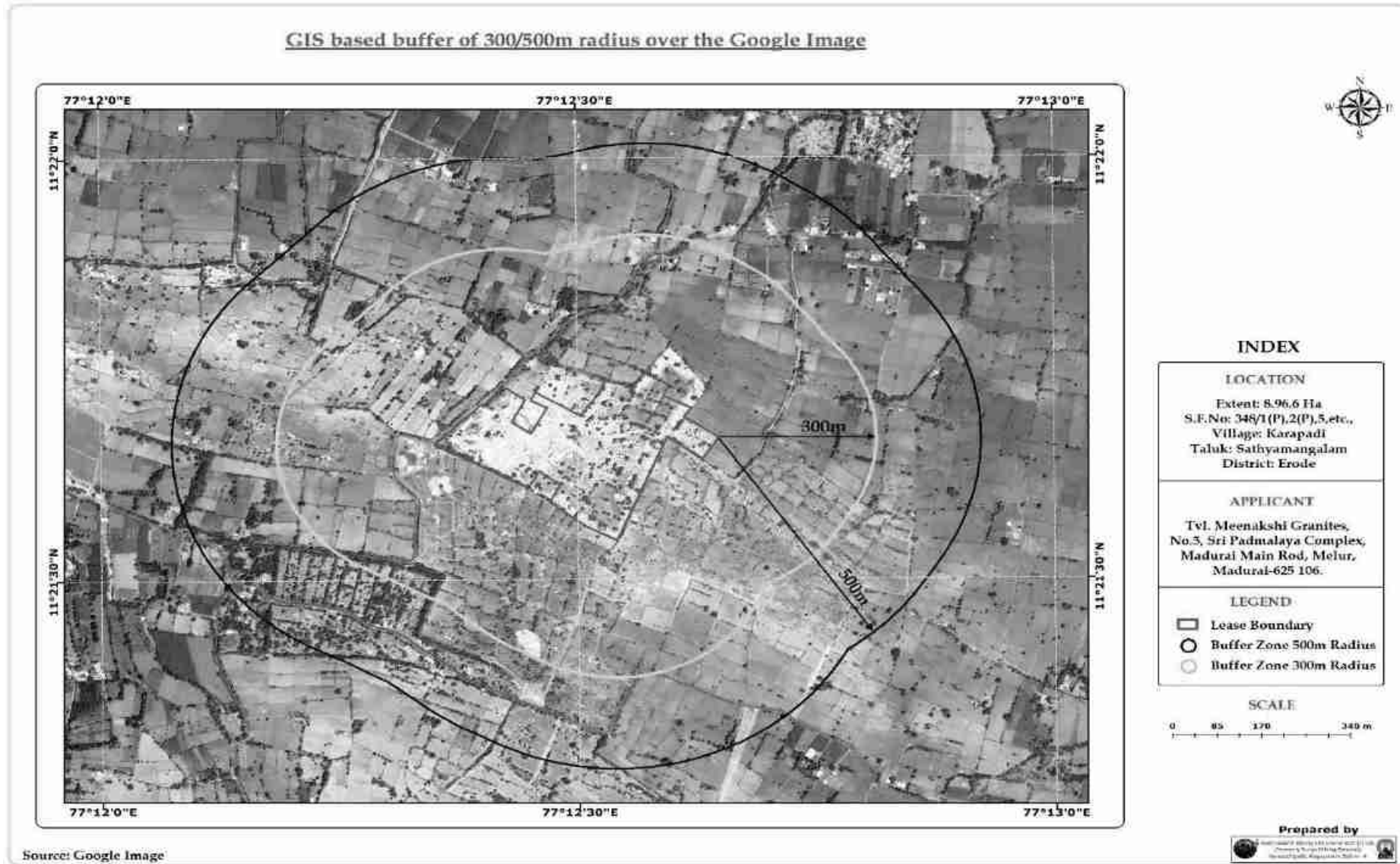


Fig No 11.3 Google Earth Image showing 300m and 500m radius around lease area

11.5 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

11.5.1 Air Environment

The air borne particulate matter is the main air pollutant by opencast mining. The mining operation will be carried out by adopting semi-mechanized methods which involves Jack Hammer drilling and blasting, excavation, loading and transportation.

AERMOD was used for prediction of impact of PM₁₀ 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 PM₁₀ at project site for scenario 1 i.e loading-unloading and transportation and scenario 2 i.e. Blasting was 73.98 $\mu\text{g}/\text{m}^3$ and 52.13 $\mu\text{g}/\text{m}^3$ occurred at the project site after superposition of base-line value 44 $\mu\text{g}/\text{m}^3$ over the incremental value of 25.98 $\mu\text{g}/\text{m}^3$ and 4.13 $\mu\text{g}/\text{m}^3$ due to combined impact of loading and unloading and transportation over the haul road and due to blasting.

11.5.2 Noise Environment

Noise pollution poses a major health risk to the mine workers. The sources of noise in the proposed 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.

11.5.3 Ground Vibration

From the above results, it can be seen that the charge per blast of 20kg is within the Peak Particle Velocity of 5mm/s for the habitation located at the distance of 153m. So, the project proponent if any changes for the production (Tvl. Meenakshi Granites) is recommended to adopt delay detonators to keep PPV of ground vibration below 5mm/s.

11.5.4 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 mine is devoid of any such impacts.

The value of TH, TDS of water sample from all the above said locations are beyond the acceptable limits except core zone. Water sample from Devampalayam and Kandisaalai village has high Chlorides. Based on the Water Quality Index calculated, water qualities from all core zone, Kerapadi, Kandisaalai and Chinakuttai village are found good. In Devampalayam village the water quality is found to be poor. 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 making the water aseptically fit for drinking purposes.

11.5.5 Soil Environment

For the plan period 2023-2028, the generation of top soil is estimated as 15192 m³. 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.

11.5.6 Waste Dump

The proposed rate of production of multi colour granite for five years is about 25364m³ at the rate of 30% recovery up to permissible depth. The 70% reject of 59182m³ shall be dumped over existing dump in South west side and on virgin barren land in east 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.

11.5.7 Biological Environment

There are no notified endangered species in the area, which may be affected due to the quarry activities; therefore, the biological environment will not have significant impact due to quarrying activity. The impact on the biological environment due to amount of dust generation is minimized by well-developed green belt in and around the quarry lease area.

11.5.8 Land Environment

Multi colour 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. The mining operations will impact the land usage and land aesthetics of quarry 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 be used for developing mango plantation around the mining lease area. It will improve the livelihood of village people. The evaporation rate of the water in the pit is given detail in the report.

11.5.9 Socio Economic Environment

The quarrying 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 area is concerned towards employment, education, road and health facilities. The literacy rate may be increased with the economic benefits which may arise from the quarrying activities.

Direct Employment - 24persons

Indirect Employment - 20 persons

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Table 11.7 Environmental Management Plan

S. No	Parameters	Mining Activity	Mitigation measures
1	Air Environment	Drilling	<ul style="list-style-type: none"> ○ Dust extractor or wet drilling to be followed to control dust at source of emission ○ Use of Sharp drill bits for drilling holes and charging the holes by using optimum charge and using time delay detonator
		Blasting	<ul style="list-style-type: none"> ○ Regular water sprinkling on blasted heaps at regular intervals will help in reducing considerable dust pollution
		Loading	<ul style="list-style-type: none"> ○ Water sprinkling be done before loading by making it moist
		Transportation	<ul style="list-style-type: none"> ○ Water sprinklers along the sides of haul road shall be fixed to control fly of dust while transporting minerals and waste ○ Overloading will be prevented ○ Trucks/Dumpers covered by tarpaulin covers
		DG Sets	<ul style="list-style-type: none"> ○ DG sets will be used only during power failure ○ Adequate stack height for DG sets will be provided as per CPCB norms
		General measures	<ul style="list-style-type: none"> ○ Avenue trees along roads around ML boundary shall be planted as per the norms of MoEF to control fly of dust. ○ 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. ○ 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.

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Proponent: Tvl. Meenakshi Granites, Multi Colour Granite Quarry, Erode District

2	Water Environment	Surface water	<ul style="list-style-type: none"> ○ Wastewater discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
		Ground water	<ul style="list-style-type: none"> ○ The mining activity will not intersect the ground water table ○ Desilting will be carried out before and immediately after the monsoon season
		Storm water	<ul style="list-style-type: none"> ○ Pit will be used for Storage of rainwater ○ 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. ○ The proponent will collect and judiciously utilize the rainwater as part of rain water harvesting
		General measures	<ul style="list-style-type: none"> ○ Regular monitoring and analyzing the quality of water
3	Noise Environment	Drilling	<ul style="list-style-type: none"> ○ Limiting time exposure of workers to excessive noise
		Blasting	<ul style="list-style-type: none"> ○ 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
		Transportation	<ul style="list-style-type: none"> ○ 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.

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Proponent: Tvl. Meenakshi Granites, Multi Colour Granite Quarry, Erode District

			<ul style="list-style-type: none"> ○ Adequate silencers will be provided in all the diesel engines of vehicles. ○ Minimum use of horns and speed limit of 10 km/hr in the village area. ○ It will be ensured that all transportation vehicles carry a valid PUC Certificates
		General measures	<ul style="list-style-type: none"> ○ Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas ○ 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.
4	Vibration	Blasting	<ul style="list-style-type: none"> ○ 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 ○ 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 ○ 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
5	Soil Environment	Topsoil	<ul style="list-style-type: none"> ○ Humus top soil shall be preserved for reuse in afforestation and agriculture ○ Top soil should not be mixed with other waste or reject materials. It should be conserved by judicious utilization in the mine premises ○ 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

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			also avoid the soil erosion and siltation in the mining pits and maintaining the stability of the benches
6	Waste Dump	Stabilization of Dumps	<ul style="list-style-type: none"> ○ 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 vegetation ○ 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
7	Plantation	Mine lease boundary and waste dump	<ul style="list-style-type: none"> ○ Provision of green belt all along the periphery of the lease area for control of dust and to attenuate noise ○ Stabilization of Dump with plantation ○ It is strongly recommended that the loss of plant in each year will be counted and again planted in subsequent plantation. ○ The plant should be planted taken from nursery, where the survival rate is high.
8	Land Environment		<ul style="list-style-type: none"> ○ 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.
9	Socio Economic		<ul style="list-style-type: none"> ○ Good maintenance practices will be adopted for machinery and

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			<p>equipment, which will help to avert potential noise problems.</p> <ul style="list-style-type: none">○ 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.○ An emergency preparedness plan will be prepared in advance, to deal with firefighting, evacuation and local communication.○ 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).○ As a part of CSR activities community welfare measures will be taken by Proponent through local Panchayat
10	Occupational Health		<ul style="list-style-type: none">○ 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○ Workers involved in mining work shall be provided protective equipments such as Thick Gloves, Goggles, ear plugs, safety boot wears, etc.,

11.6 Analysis of Alternatives

The quarrying 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.

11.7 Environmental Monitoring Program

Success of any environmental management programme depends upon the efficiency of the organizational set up responsible for the implementation of the programme. Regular monitoring of the various environmental parameters is also necessary to evaluate the effectiveness of the management programme. Environmental Monitoring Programme will be conducted for various environmental components as per conditions stipulated in the Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB.

Table No: 11.8 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 _{2.5} , PM ₁₀ , SO ₂ and NO _x	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.
5	Noise	Mine Boundary, high noise generating	24 hours	Monthly Once	Sound level meter

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		areas within the lease and at 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)	–	Once in six months	Physical and Chemical characteristics

11.8 Project Benefits

The proponent, **Tvl. Meenakshi Granites** is very much conscious of his obligations to society at large. Under plantation programme, it is suggested to develop greenbelt further all along the boundary of the quarry lease area. Apart from the green belts and aesthetic plantation for eliminating fugitive emissions and noise control, all other massive plantation efforts will be executed with the assistance of experts and cooperation of the local community. The quarrying 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 of Granite and gravel to destinations, sanitation, supply of goods and services to the quarry and other community services etc. The local population will have preference to get an employment. The proponent will help in socio economic development of the village by providing educational facilities to children, and welfare amenities like drinking water to school; road and medical facilities to villages and employment opportunities to nearby villagers. CSR budget is allocated as 2.5% of the profit.

11.9 Conclusion

As discussed, it is safe to mention that the project is not likely to cause significant impacts on the ecology and environment of the area, as adequate preventive measures will be adopted to contain the pollutants within permissible limits. The total operations shall be carried out with ease & minimum risk to the workers. The proposed 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 quarrying activity. Quarrying activity will help in improving the socio-economic benefits in areas like employment, communication and infrastructure development.

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 MoEF&CC.

- 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

The Applicants, **Tvl. Meenakshi Granites** 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.

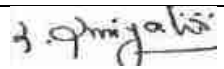
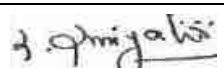
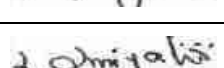
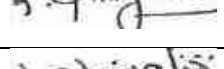
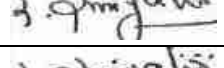

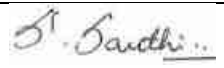




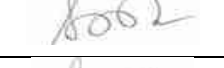

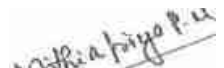
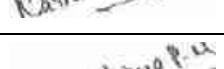
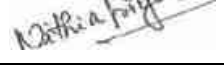

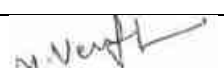
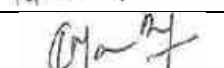
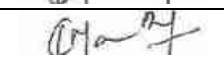
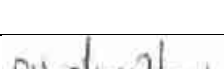
Aadhi Boomi Mining and Enviro Tech Private Ltd has MOU with **EKDANT Enviro Services (P) Ltd** laboratory at Chennai and has own Laboratory named **ABM Environmental and Analytical Laboratory, accredited by NABL** for sampling and testing of air, water, noise and soil samples. Ekdant Enviro Services 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
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



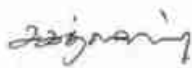
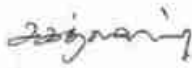




Names of the EIA coordinator, Functional Area Experts and other Team Members engaged and nature of consultancy rendered is provided in NABET Annexure –VII of EIA report. The multidisciplinary team comprises of Environmental Engineers, Geologists and Geographers who involved in preparation of Environmental 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.

Table 12.1: Declaration of Experts, Annexure - VII

S. No	Name of the Expert	Category	Functional Areas	Signature
In-House Experts				
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	
Empanelled Experts				
9.	Dr. Nallathambi Varadarajan	A	Geology (Geo)	
		A	Hydrology, ground water and	

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			water conservation (HG)	
10.	Bidisha Roy	B	Meteorology, Air Quality Modelling & Prediction (AQ)	Bidisha Roy
Team Member Involved in Report Preparation				
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	

Annexure-I: Terms of References



सत्यमेव जयते

File No: 10910

Government of India

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



Dated 12/07/2024

To,

Tvl. MEENAKSHI GRANITES
Tvl. MEENAKSHI GRANITES
No.5, Sri Padmalaya Complex, Madurai Main Road, Melur, Madurai District, TAMIL NADU, , 625106
meenakshigranites2015@gmail.com

Subject: Grant of Terms of Reference under with Public Hearing the provision of the EIA Notification 2006 as amended-regarding.

Sir/Madam,

This is in reference to your application for Grant of Terms of Reference with Public Hearing under the provision of the EIA Notification 2006-regarding in respect of project Existing Multicolour Granite quarry over an extent of 8.96.6 Ha in S.F. Nos. 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3,349/4,350/1, 350/2, 350/3, 350/5(P) & 350/6, Karapadi Village, Sathyamangalam Taluk, Erode District, Tamil Nadu by **M/s. Meenakshi Granites** submitted to SEIAA vide proposal number SIA/TN/MIN/471668/2024 dated 19/06/2024.

Ref:

1. Online proposal No. SIA/TN/MIN/471668/2024, dt:06/05/2024.
2. Your application submitted for Terms of Reference dated:29.05.2024.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5529412N
(ii) File No.	10910
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	Karapadi village Multi colour Granite Quarry (Extent 8.96.6 Ha)
(viii) Name of Company/Organization	M/S. MEENAKSHI GRANITES
(ix) Location of Project (District, State)	MADURAI, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

1. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1 (Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.

2. The above-mentioned proposal has been considered by (SEIAA) Appraisal Committee of SEIAA in the meeting held on 10/07/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.

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

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

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

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

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

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

Copy To

1. The Principal Secretary to Government, Environment, Climate Change and Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
3. The Chair Person, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi - 110 003.
6. The District Collector, Erode District.
7. Stock File.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seiaa Specific Conditions:

S. No	Terms of Reference
1.1	After detailed discussions, the Authority accepted the recommendation of SEAC and decided to grant Terms of Reference (ToR) with Public Hearing based on studies, assessments and records to be produced as sought by the SEAC and SEIAA, for undertaking the Environment Impact Assessment Study and preparation of Environment Management Plan for the quantity of 84546 m³ of RoM and m³ of Granite (30% recovery upto the proposed depth of 27.42m BGL and the annual peak RoM production of 17049 m³ as per the approved mining plan. subject to the

S. No	Terms of Reference
	conditions as recommended by SEAC & SEIAA

2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	<p>1. The project proponent shall submit a Certified Compliance Report obtained from the office of the concerned DEE/TNPCB (or) IRO, MoEF & CC, Chennai as per the MoEF&CC O.M dated.08.06.2022 for the previous EC and appropriate mitigating measures for the non-compliance items, if any.</p> <p>2. For the existing quarry, the PP shall obtain a letter from the concerned AD (Mines) which shall stipulate the following information:</p> <ol style="list-style-type: none"> Original pit dimension of the existing quarry Quantity achieved Vs EC Approved Quantity Balance Quantity as per Mineable Reserve calculated. Mined out Depth as on date Vs EC Permitted depth Details of illegal/illicit mining carried out, if any Quantity of material mined out outside the mine lease area (or) in the adjacent quarry/land. Existing condition of Safety zone/benches Details of any penalties levied on the PP for any violation in the quarry operation <p>3. The structures within the radius of (i) 50 m, and (ii) 100 m 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.</p> <p>4. The Proponent shall develop thick greenbelt for not less than two rows and garland drain around the boundary of the proposed quarry and the photographs indicating the same shall be shown during the EIA appraisal.</p> <p>5. The study on impact of the proposed type of quarrying operation involves controlled blasting or diamond wire saw cutting, etc on the surrounding environment.</p> <p>6. The Project Proponent shall furnish the revised EMP based on the study carried out on impact of the dust & other environmental impacts due to proposed quarrying operations on the nearby agricultural lands for remaining life of the mine in the format prescribed by the SEAC considering the cluster situation.</p> <p>7. A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal:</p> <ol style="list-style-type: none"> Copy of the agreement forming CMC. The Organisation chart of the Committee with defining the role of the members The ‘Standard Operating Procedures’ (SoP) executing the planned activities.

3. Seac Standard Conditions

S. No	Terms of Reference
3.1	<p>1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:</p> <ol style="list-style-type: none"> Original pit dimension Quantity achieved Vs EC Approved Quantity

S. No	Terms of Reference
	<p>(iii) Balance Quantity as per Mineable Reserve calculated.</p> <p>(iv) Mined out Depth as on date Vs EC Permitted depth</p> <p>(v) Details of illegal/illicit mining</p> <p>(vi) Violation in the quarry during the past working.</p> <p>(vii) Quantity of material mined out outside the mine lease area</p> <p>(viii) Condition of Safety zone/benches</p> <p>(ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.</p> <p>2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.</p> <p>3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.</p> <p>4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.</p> <p>5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.</p> <p>6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.</p> <p>7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.</p> <p>8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.</p> <p>9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.</p> <p>10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.</p> <p>11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.</p> <p>12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <p>13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>14. Quantity of minerals mined out.</p> <ul style="list-style-type: none"> · 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.

S. No	Terms of Reference
	<ul style="list-style-type: none"> · 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. <p>15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p> <p>16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,</p> <p>17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.</p> <p>18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.</p> <p>19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.</p> <p>20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.</p> <p>21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.</p> <p>22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.</p> <p>23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.</p> <p>24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p> <p>25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.</p> <p>26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.</p> <p>27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.</p> <p>28. Impact on local transport infrastructure due to the Project should be indicated.</p>

S. No	Terms of Reference
	<p>29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.</p> <p>30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.</p> <p>31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.</p> <p>32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.</p> <p>33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner</p> <p>34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.</p> <p>36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.</p> <p>37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.</p> <p>38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.</p> <p>39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.</p> <p>40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.</p> <p>41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.</p> <p>42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.</p> <p>43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.</p>

4. Seiaa Standard Conditions:

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

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

Standard Terms of Reference for (Mining of minerals)

1.

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

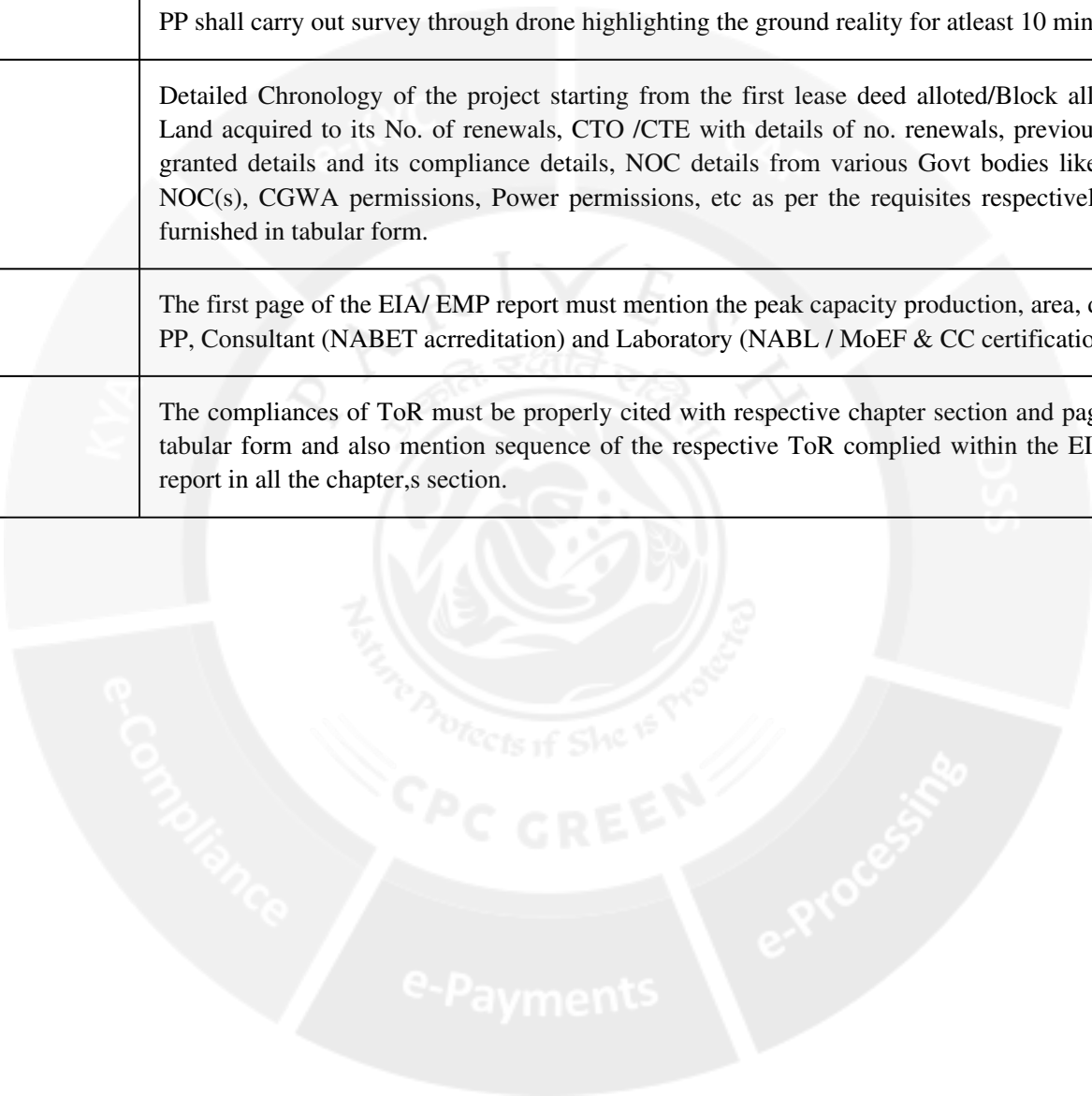
S. No	Terms of Reference																																																						
1.11	<p>A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within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

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

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

S. No	Terms of Reference																								
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.																								
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.																								
1.38	Corporate Environment Responsibility:																								
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.																								
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.																								
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.																								
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.																								
1.43	e) Environment Managment Cell and its responsibilities to be clearly spleel out in EIA/ EMP report																								
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.																								
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.																								
1.46	PP shall submit clarification from PCCF that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.																								
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.																								
1.48	<p>Details on the Forest Clearance should be given as per the format given:</p> <table border="0"> <tr> <td>Total ML</td> <td>Total</td> <td>Date</td> <td>Extent</td> <td>ofBalance</td> <td>area</td> <td>forStatus of</td> <td>appl For</td> </tr> <tr> <td>Project Area</td> <td>Forest</td> <td>of FC</td> <td>Forest</td> <td>which FC</td> <td>is yet to</td> <td>be diversion</td> <td>of forest</td> </tr> <tr> <td>(ha)</td> <td>land (ha)</td> <td></td> <td>Land</td> <td>obtained</td> <td></td> <td>land</td> <td></td> </tr> </table> <p>If more than one provide details of each FC</p>	Total ML	Total	Date	Extent	ofBalance	area	forStatus of	appl For	Project Area	Forest	of FC	Forest	which FC	is yet to	be diversion	of forest	(ha)	land (ha)		Land	obtained		land	
Total ML	Total	Date	Extent	ofBalance	area	forStatus of	appl For																		
Project Area	Forest	of FC	Forest	which FC	is yet to	be diversion	of forest																		
(ha)	land (ha)		Land	obtained		land																			

S. No	Terms of Reference
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter,s section.



A. STANDARD TERMS OF REFERENCE

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

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

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

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

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

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

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

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

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

- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry, should

be followed.

- h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- i) As per the circular no. J-11011/618/2010-IA.II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.



ABSTRACT

Mines and Quarries - Minor Mineral - Multi Colour Granite - Erode District- Sathyamangalam Taluk- Karapadi Village - Over an extent of 8.96.6 hectares of patta lands in S.F.Nos. 348/1 (part) (0.59.9) 348/2 (part) (0.41.7), 348/5 (0.20.5), 348/6 (0.24.5), 349/1 (0.02.0) , 349/3 (2.06.5), 349/4 (2.28.5), 350/1 (0.76.0), 350/2 (0.79.0), 350/3 (0.32.5), 350/5 (part) (0.61.5) and 350/6 (0.64.0) - Over an extent of 8.96.6- Quarry Lease Application of Tvl. Meenakshi Granites - Grant of quarry lease - Sanctioned - Orders - Issued.

INDUSTRIES (MME.2) DEPARTMENT

G.O. (3D) No.18

Dated: 22.03.2018

திருவள்ளூர் ஆண்டு 2049,
ஹேலிளம்பி வருடம், பங்குனி 8.

Read:

- 1) From Tvl. Meenakshi Granites (Tvl.P.Krishnamoorthy, P.Arunraja and P.Illayaraja-Partners) Quarry Lease Application dated: 24.02.2017.
- 2) From the District Collector, Erode, Letter Roc.No.5588/2017/X-1, dated: 26.07.2017.
- 3) From the Commissioner of Geology and Mining, File No.5359/MM5/2017, dated: 11.08.2017.
- 4) Government Letter No.11150/MME.2/2017-1, Dated 4.10.2017.

Read also:

- 5) From the Commissioner of Geology and Mining Letter No.5359/MM5/2017, dated 27.10.2017.
- 6) From the Member Secretary, State Level Environment Impact Assessment Authority-Tamil Nadu, Letter No.SEIAA-TN/F.No.6464/2017/ 1(a)/ EC.No. 3970 / 2018, dated 12.03.2018.

ORDER:

In the reference first read above, Tvl. Meenakshi Granites (Tvl.P.Krishnamoorthy, P.Arunraja and P.Illayaraja-as Partners) have applied in the name of Tvl. Meenakshi Granites for grant of lease for quarrying Multi Colour Granite over an extent of 8.96.6 hectares of patta lands in S.F.Nos. 348/1 (part) (0.59.9) 348/2 (part) (0.41.7), 348/5 (0.20.5), 348/6 (0.24.5), 349/1 (0.02.0) , 349/3 (2.06.5), 349/4 (2.28.5), 350/1 (0.76.0), 350/2 (0.79.0), 350/3 (0.32.5), 350/5 (part) (0.61.5) and 350/6 (0.64.0) of Karapadi Village, Sathyamangalam Taluk, Erode District for a period of 20 years under rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959.




2. In the reference second and third read above, the District Collector, Erode and the Commissioner of Geology and Mining have recommended and forwarded the quarry lease application of Tvl. Meenakshi Granites to the Government for passing orders.

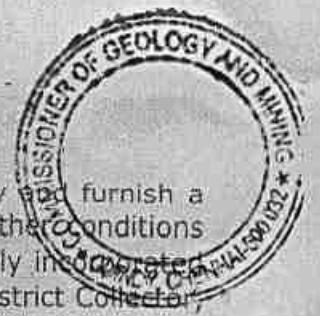
3. Based on the reports of the District Collector, Erode and the Commissioner of Geology and Mining, the Government have examined the quarry lease application of the applicant company and communicated the area recommended by the Commissioner of Geology and Mining as precise area and requested the applicant company in the reference fourth read above to furnish the approved Mining Plan as per sub-rule (13) of rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959 through the Commissioner of Geology and Mining and to produce environmental clearance certificate from the SEIAA/DEIAA. The Commissioner of Geology and Mining in his reference 5th read above has approved the mining plan as per sub-rule (13) of rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959, subject to the condition that the applicant shall obtain the Environmental Clearance as per the orders of the Hon'ble Supreme Court of India 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 State Level Environment Impact Assessment Authority in their reference 6th read above have accorded Environment Clearance for mining in the above said area subject to certain conditions.

4. In the circumstances detailed above, the Government after careful examination have decided to grant lease to quarry Multi Colour Granite to Tvl. Meenakshi Granites in the above patta lands. Accordingly, in exercise of the powers conferred under Rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959, the Governor of Tamil Nadu hereby grant quarry lease to Tvl. Meenakshi Granites for quarrying Multi Colour Granite over an extent of 8.96.6 hectares of patta lands in S.F.Nos. 348/1 (part) (0.59.9) 348/2 (part) (0.41.7), 348/5 (0.20.5), 348/6 (0.24.5), 349/1 (0.02.0) , 349/3 (2.06.5), 349/4 (2.28.5), 350/1 (0.76.0), 350/2 (0.79.0), 350/3 (0.32.5), 350/5 (part) (0.61.5) and 350/6 (0.64.0) of Karapadi Village, Sathyamangalam Taluk, Erode 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 State Level Environment Impact Assessment Authority in the reference 6th read above:

- 1) A safety distance of 50 meters should be left out on either side of the High Tension Power line passing across the applied area bearing S.F.No.348/2 part, 348/5 and 348/6.
- 2) A safety distance of 10 meters should be left out for the Village road passing parallel to the western boundary of the applied area in S.F.No.351/1.
- 3) A Safety distance of 7.5 meters should be left out for the adjacent patta lands and should not cause any hindrance to them while quarrying.

- 
- 4) While quarrying, the applicant should not encroach upon the Boomi Dhan land located in the S.F.Nos.349/2 and 359/13 in the southern side of the applied area providing a safety distance of 10 meters to them. A wire fencing should be erected along the boundary between the Boomi Dhan land and the applied area and maintain them in good condition till the end of the lease period.
 - 5) The applicant company should fence the lease granted area with barbed wire before the execution of lease deed as follows:-
 - ❖ The pillar post shall be firmly grounded with concrete foundation of height not less than 2 meters with a distance between two pillars shall not be more than 3 meters.
 - ❖ The applicant company shall incorporate the DGPS readings for the entire boundary Pillars of the area and the same should be clearly shown in the mining plan.
 - 6) The lessee shall strictly adhere to the statutory and safety requirements.
 - 7) The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
 - 8) 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.
 - 9) 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.
 - 10) The District Collector, Erode shall obtain a sworn-in affidavit from the appellant containing the above conditions before execution of lease deed and also ensure that the instructions issued in Government Letter No. 12789 / MMB2 / 2002-7, Industries Department, dated: 9.1.2003 are complied with.

5. The District Collector, Erode is directed 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 Director of Geology and Mining.



6. The District Collector, Erode 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, Erode is also instructed to include all the conditions imposed by State Level Environment Impact Assessment Authority in the reference 6th read above.

(BY ORDER OF THE GOVERNOR)

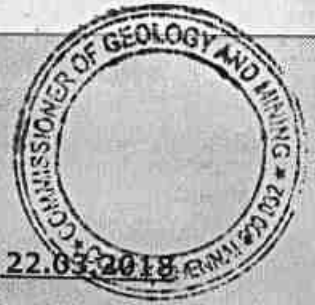
**K.GNANADESIKAN
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT**

To
M/s. Meenakshi Granites,
No.5, Sri Padmalaya Complex,
Madurai Main Road, Melur-625106.
The Director of Geology and Mining,
Chennai - 600 032.
The District Collector,
Erode District.

Copy to:
The Special PA. to Hon'ble Minister for Law,
Courts and Prisons,
Chennai-600 009.
The Industries (OP.II) Department,
Chennai - 600 009.
SF/SC.

// FORWARDED BY ORDER //

S. Vasanthakumari
SECTION OFFICER 22-3-18
22-3-18

AnnexureG.O (3D) No.18, Industries (MME.2) Department, Dated: 22.03.2018

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.

12. The applicant should maintain at his cost proper signboards indicating the survey numbers, years of the lease, name of the lease holder and the lease period to the satisfaction of the District Collector, Director of Geology and Mining and maintain 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, 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. Vasanthakumari
Section Officer 22-3-18

9/6
22-3-18

A. Jagannathan

A. JAGANNATHAN, B.E., FCC., M.M.E.A.,
Qualified Person

1612/507/2018

TP 2018



தமிழ்நாடு தமில்நாடு TAMILNADU ரூ25000/-
4138 MEENAKSHI GRANITES
19.04.2018 MELUR - MADURAI - 106.

D 114047
R. Rajan

சுய. நாகரிக கமிட்டி,
குத்திரப்பாளர் கிட்டுவாசலாண்டி
90. 60-2000 நெடு. ப. புகழிப்பாளர்
உரிமம் எண். 4/84. 66001

SANCTIONED IN THE GO (3D) NO. 18 INDUSTRIES (MME-2) DEPARTMENT, DATED 22.3.2018 FOR A PERIOD OF TWENTY YEARS.

APPENDIX - IV

(See Rule 19A and 22)

FORM OF AGREEMENT FOR QUARRYING AND CARRYING AWAY MINOR MINERALS FROM RYOTWARI LANDS IN WHICH THE MINERALS BELONG TO THE GOVERNMENT

AGREEMENT made this 23rd day of April 2018 between Tvl. Meenakshi Granites, authorized of Thiru. P. Arunraja, No. 5, Sri Padmalaya Complex, Madurai Main road, Melur - 625106, Madurai District (hereinafter referred to as "the registered holder" which term shall include in these presents where the context so admits include also his heirs, executors, administrators, legal representatives and assigns) of the **ONE PART** and the Governor of Tamil Nadu (hereinafter called "the Government" which term shall where the context so admits, include also his successors in office and assigns) of the **OTHER PART**;

For MEENAKSHI GRANITES

REGISTER HOLDER / LESSEE

LESSOR
DISTRICT COLLECTOR,
ERODE.

Document No. 1612/507/2018

TP/11240



தமிழ்நாடு தமில்நாடு TAMILNADU

₹25000/-

சு.பி.நா.0

MEENAKSHI GRANITES
MELUR - MADURAI - 106.

D 114055

செ.கா. சேகராஜ் சிவசாமி
சென்னை

பாடல் : 279
திகதி : 19.4.18



56, 1002...

- 2 -

WHEREAS the registered holder holds (amongst others) the lands described in the schedule hereunder written (hereinafter referred to as the said lands) and demarcated in the map enclosed and coloured.

AND, WHEREAS the registered holder has made application to the Government through the District Collector of the District of Erode (hereinafter referred to as "the Collector") seeking grant of quarrying lease for quarrying **Multi Colour Granite** in the said lands and to deposit mining waste in the said lands and has lodged with the Collector an accurate map or sketch of the said lands and the Government have granted quarry lease in G.O. (3D) No 18 Industries (MME-2) Department dated 22.3.2018.

For MEENAKSHI GRANITES

J. S. Partner
REGISTER HOLDER / LESSEE

செ.கா. சேகராஜ் சிவசாமி
LESSOR

DISTRICT COLLECTOR,
ERODE.

Document No. 1512 of 2018 of Book
Contains 27 Sheets 2 Sheet.
Registered Officer

TP/1124601



தமிழ்நாடு தமில்நாடு TAMILNADU

₹25000/-

MEENAKSHI GRANITES

MELUR - MADURAI - 106.

D 114056
சென்னை மதுரை மாவட்டம்



280
19.4.18

58. 1000

-3-

AND, WHEREAS, the Government has granted a quarrying lease to the registered holder and allowed him to commence quarrying operations for Multi-Coloured granite in the said lands and to deposit mining waste thereon by the registered holder;

AND WHEREAS, the registered holder has deposited with the Collector, the sum of **Rs.40,000/- (Rupees Forty thousand Only)** vide Challan No:53 dated 23.4.2018 remitted at State Bank of India, Erode as security against any loss or damage which may be incurred by the Government by reason of any of the said lands being rendered unfit for cultivation by any mining operations therein of the registered holder or by the deposit of mining waste thereon by the registered holder;

For MEENAKSHI GRANITES

Partner
REGISTER HOLDER / LESSEE

4/26
LESSOR

DISTRICT COLLECTOR,
ERODE.

Document No 1512 of 2018 of Book
Contains 27 Sheets 3 Sheet.



கார்ப்புரேஷன் தமிழ்நாடு TAMILNADU ரூ.10000/-

பெண்மை 4139
 தேதி 19.04.2018

MEENAKSHI GRANITES
 MELUR - MADURAI-106.

D 568566

R. Ramesh

ஆர். ராமேஷ் கார்ப்புரேஷன்,
 குத்தகைகளை விநியோகிப்பவர்கள்
 80, சி.ஆர். ரெட்டி, 4-புளியம்பட்டி
 சி.ஆர். ரெட்டி 4/84, கோட்டை.



-4-

NOW THESE PRESENTS WITNESS and the registered holder doth hereby agree with the Government in the manner following, that is to say.

1. The registered holder shall be at liberty at all times during the period of the lease from 23.4.2018 to 22.4.2038 to carry on mining operations for **Multi Colour Granite** in the said lands in a proper and workmen like manner keeping in view the proper safety of the labourers, conservation of minerals and preservation of environment and ecology and to deposit mining waste on the said lands and shall, at all times, be answerable and accountable to the Government for all acts and defaults by any of his nominees, servants or agents in carrying on such operations or in making such deposit.

For MEENAKSHI GRANITES
 REGISTERED HOLDER LESSEE

Handwritten signature and date 23/4/18

LESSOR
 DISTRICT COLLECTOR,
 ERODE.

Document No. 112 of 2018 of Book
 Contains 27 Sheets 4 Sheet.
 Registrar of Companies



தமிழ்நாடு தமில்நாடு TAMILNADU ரூ. 10000/-



சலுகை 4140
19-04-2018

MEENAKSHI GRANITES
MELUR - MADURAI-106.

D 568567
R. Rajan
ஆர். ராஜகணேசன்,
குந்தலபாளையம் விற்பனைகாரன்
90, சா.பு.பா. சி.நா. 4, புளியம்பட்டி
உதும்பேட்டை 4/24, கோட்டை.

-5-

2.(a) The registered holder shall and will on the 23rd day of April next and on the 22 day of April every succeeding year during so long as he shall have carried on any such mining operations as aforesaid pay to the Collector for and on behalf of the Government in addition to the land assessment for the time being payable in respect of the said lands, seigniorage on the minor minerals at the rate specified in Appendix II to the Tamil Nadu Minor Mineral Concession Rules, 1959.

2.(b) For the transport of quarried minerals the lessee shall produce despatch slips in the form prescribed in **Appendix-XIII** of the Rules, in duplicate, for authentication by the authority authorized by the Collector and should issue each slip duly filled in, to each transporting medium which carry away the minerals. Non compliance will be viewed as illicit transport of minerals and action will be pursued under relevant rules and Acts.

For MEENAKSHI GRANITES

REGISTER HOLDER / LESSEE

LESSOR
DISTRICT COLLECTOR,
ERODE.

Document No 1512 of 2018 of Book
1 Contains 27 Sheets 5 Sheet.
Registering Officer

TP/11246



தமிழ்நாடு தமில்நாடு TAMILNADU

(₹5000) =

சமீபம் 4141
19.04.2018

MEENAKSHI GRANITES
MELUR - MADURAI - 106.

P 510452
R. Rajendran

ஆர். ராஜேந்திரன்
குந்தமலூர் கிராம நிர்வாக அலுவலர்
90, ச.ப. மண்டல தெரு, பு. புலியம்பட்டி
உ. சிமம 4/14, கோட்டி.

-6-

3. The registered holder shall and will 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 from the said lands and also the number of persons employed in carrying on the said mining operations therein and shall from time to time when so directed by the District Collector prepare and maintain complete and correct plans of all mines and working in the said lands and shall allow any officer hereunto authorized by the Commissioner / Director of Geology and Mining, Tamil Nadu from time to time, and at any time to examine such accounts and any such plans and shall when so required supply and furnish all such informations, plans and returns regarding all or any of the matter aforesaid as " the Government" shall, from time to time, require and direct.

For MEENAKSHI GRANITES

[Signature]
REGISTER HOLDER / LESSEE

[Signature]
LESSOR
DISTRICT COLLECTOR,
ERODE.

Document No 1512 of 2018 of Book
Contains 07 Sheets 6 Sheet.



4. The registered holder shall and will at all times allow any officer authorized by the Commissioner/Director of Geology and Mining, Tamil Nadu in that behalf to enter upon any part of the said lands where any mining operations may be carried on for the purpose of inspecting the same.

5. The registered holder shall forthwith send to the District Collector a report of any accident which may occur at or in the said lands and also of the discovery of any mineral other than Multi Colour Granite (here enter the mineral already specified in the notice given by the registered holder).

6. It shall be lawful for the registered holder at any time to cease mining operations under these presents, provided he shall pay to the Collector for and on behalf of the Government land assessment, cess and seigniorage due to the Government and shall restore the said lands or fence or fill in abandoned pits and excavations therein if required by the Collector and upon his so doing, these present shall cease and determine.

7. In case the registered holder shall relinquish the whole or any part of the said lands or in case of the expiry or sooner determination of this agreement, then, and in any such case, he shall restore the lands so relinquished or so much thereof as the Collector shall require to be restored to a state fit for cultivation or shall securely and permanently fence or fill in all such abandoned pits and excavations therein as the Collector shall require to be so fenced or filled in, and in case the registered holder shall fail or neglect to restore any such land which he shall be required to restore to a state fit for cultivation or to so fence, or fill in any such abandoned pit, or excavation which he shall be required to so fence, or fill in them and in any such case, it shall be lawful for the Collector to so restore any such lands, or as the case may be, to so fence or fill any such pits of excavation at the expense of the registered holder and to apply the said sum of **Rs.40,000/- (Rupees Forty thousand only)** so deposited in or towards the cost of so doing and to deduct from the amount of the said deposit and retain on behalf of the Government a sum equal to thirty times the assessment of the said lands which shall have been rendered unfit for

For MEENAKSHI GRANITES

REGISTER HOLDER LESSEE

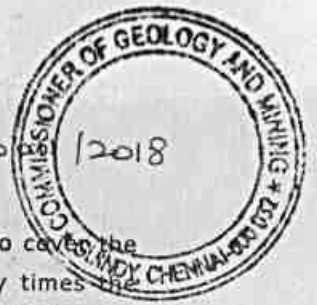
8/26
LESSOR

DISTRICT COLLECTOR,
ERODE.

Document No 1512 of 2018 of Book
1 Contains 27 Sheets, 7 Sheet.
Registering Officer

TP/11246

2018



cultivation. If, however, the amount of deposit is not sufficient to cover the cost of such restoration of fencing or filling in or to meet thirty times the assessment on the area rendered uncultivable, it shall be lawful for the Government to recover the balance by resort to Civil Court.

8. The registered holder shall not be entitled to any remission of assessment in respect of any of the said lands which shall be rendered unfit for surface cultivation by the carrying on of any mining operations or by the deposit of mining waste, unless thirty times the assessment thereon has already been deducted under the preceding clause.

9. The registered holder shall not assign, lease or part with the possession of the said lands or any part thereof for the whole or any part of the said term without previous intimation in writing to the Collector.

10. If the registered holder does not intend to carry on mining operations himself, but intends to lease out the right to do so to another person, the registered holder and his lessee shall enter into an agreement with the Government binding themselves jointly and severally to accept the conditions and stipulations herein contained which agreement shall be in the Form set out in Appendix -V to the TamilNadu Minor Mineral Concession Rules, 1959

11.a) All the land assessment, cess and seigniorage payable under these presents shall be recoverable under the provisions of the Madras Revenue Recovery Act 1864, as if they were arrears of land revenue.

11.b) Area Assessment payable apart from land assessment shall be paid at the beginning of ever lease year. Interest for the belated payment will be payable at the rate specified in the Rules, from time to time.

12. In the event of any breach by the registered holder by any of the conditions of this agreement, it shall be lawful for the Government to levy enhanced seigniorage or for the Collector to give notice in writing to the registered holder of his intention to cancel these presents whereupon the same shall stand cancelled but without prejudice to any rights which the Government may have against the pattadar in respect of any antecedent claim or breach of covenant or condition.

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REGISTER HOLDER / LESSEE Partner

LESSOR DISTRICT COLLECTOR, ERODE

TP/118



13. Any notice to be given to the registered holder may be addressed to his last known place of abode and where a notice has been so addressed shall be deemed to have been duly served for the purpose of these presents.

14. Should any question or dispute arise regarding the agreement executed in pursuance of these rules, or any matter or thing connected therewith or the powers of the registered holder there under, the amount or payment of the seigniorage fee or area assessment made payable thereby, the matter in issue shall be decided by the Commissioner/Director of Geology and Mining. In case of the registered holders/ registered holder, lessees/lessee is not satisfied with the decision of the Commissioner/Director of Geology and Mining, the matter shall be referred to the State Government for decision.

15.a) 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) Mines and Minerals (Development and Regulation) Act, 1957 and the rules and regulations made there under.

15.b) The lessee shall comply with the provisions of the labour laws applicable to quarrying. Any contravention of the provisions shall attract legal proceedings of the appropriate authorities.

16. Anticipated seigniorage for the minerals to be quarried from the demised land is Rs. 23,75,77,560/- (Rupees Twenty three Crore seventy five lakhs seventy seven thousand five hundred and sixty only) and security deposit of Rs. 40,000/- (Rupees Forty thousand only) and Area Assessment amount of Rs. 53,796/- (Rupees fifty three thousand seven hundred and ninety six only) were taken into account for the purpose of calculation of stamp duty.

17. The lessee should not engage child labour in the quarrying activities.

18. The lease period starts from the 23rd day of April 2018 and ends on the 22nd day of April 2038.

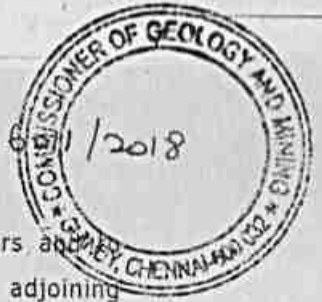
For MEENAKSHI GRANITES

REGISTER HOLDER / LESSEE

LESSOR
DISTRICT COLLECTOR,
ERODE.

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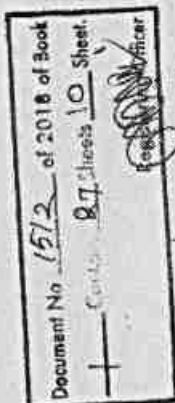


19. The registered holder / lessee shall put up boundary pillars and effectively fence off the same demised pieces of land from the adjoining lands and to keep the fences in good repairs and condition during the entire period of lease.

20. The registered holder / lessee shall not assign lease or part with the possession of the said lands or any part thereof for the whole or any part of the said term without previous permission in writing to the Government.

21. SPECIAL CONDITION AS PER G.O. NO 18 INDUSTRIES (MME-2) DEPARTMENT DATED 22.3.2018.

- (1) The applicant should allow a safety distance of 50 mts to the either side of the High Tension Power line passing across the applied area bearing S.F. No 348/2 part, 348/5 and 348/6
- (2) The applicant should allow a safety distance of 10 mts left out to the village road passing parallel to the western boundary of the applied area in S.F 351/1
- (3) The applicant should allow a safety distance of 7.5 mts left out to the adjacent patta lands and not cause any hindrance to them while quarrying.
- (4) The applicant should not encroach upon the Boomi Dhan land located in the S.F. Nos 349/2 and 359/13 in the southern side of the applied area by providing a safety distance of 10 mts to them. A wire fencing should be erected along the boundary between the Boomi Dhan land and the applied area and maintain them in good condition till the end of the lease period.
- (5) The applicant should fence the lease granted area with Barbed wire fencing before the execution of the lease deed as follows:
 - a) The pillar post shall be firmly grounded with concrete foundation of height not less than 2 meters with a distance between two pillars shall not be more than 3 meters
 - b) 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.
- (6) The applicant shall strictly adhere to the statutory and safety requirements.
- (7) The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
- (8) 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.



For MEENAKSHI GRANITES

REGISTER HOLDER / LESSEE

LESSOR
DISTRICT COLLECTOR,
ERODE.



- (9) The applicant grantee shall submit scheme of mining, closure plan and other statutory requirements within the stipulated for submission of the above, as per rules.
- (10) The applicant should follow the special conditions imposed by the Tamil Nadu Pollution Control Board.
- (11) The applicant should strictly adhere all the conditions imposed by State Level Environment Impact Assessment Authority in their Letter No. SEIAA-TN / F.No. 6464/2017/1(a) / E.C.No. 3970/2018 dt 12.3.2018 during the entire lease period without any violations.

22. 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 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.
- (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 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 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 to shall be done before the execution of the agreement and registration is at the cost of the lessee.
- (8) No hindrance shall be caused to the adjoining pattadars or public
- (9) The applicant should restrict his mining operation strictly within the leasehold area as defined in the sketch.

For MEENAKSHI GRANTEE

2. - 2 Partner
REGISTER HOLDER / LESSEE

Document No. 15131 of 2018 of Book
1 Contains 27 Sheets 11 Sheet.

Registering Officer

LESSOR
DISTRICT COLLECTOR,
ERODE.



- (10) 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.
- (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 and Commissioner / Director of Geology and Mining and maintain it all time at the quarry site.
- (12) No Quarrying shall be done within a distance of 7.5 metres 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 applicant shall strictly adhere to the statutory and safety requirements.
- (15) The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
- (16) That the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such loss 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 Mineral Concession Rules, 1959.
- (18) That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.

23. Conditions imposed by the State Level Environment Impact

Assessment Authority

Conditions to be complied before commencing mining operations:-

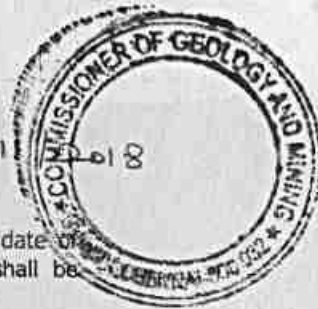
1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be the vernacular language informing the public that
 - i. The project as been accorded Environment Clearance
 - ii. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - iii. Environment Clearance may also be seen on the website of the SEIAA

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 Mining Officer

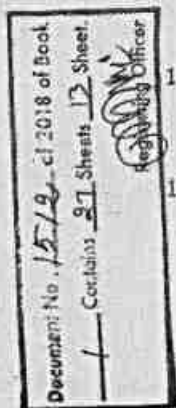
For MEENAKSHI GRANITES

REGISTER HOLDER / LESSEE

LESSOR
 DISTRICT COLLECTOR,
 ERODE.



- iv. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. The lessee 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 area.
 4. The project proponent shall comply the conditions laid down in the Section T, Rule 36 of Tamil Nadu Minor Mineral Concession Rules, 1959.
 5. A Copy of the Environmental Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayath 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 operations 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 2 m above the ground water table / approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
 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.



For MEENAKSHI GRANT

Partners
REGISTER HOLDER / LESSEE

LESSOR
DISTRICT COLLECTOR,
ERODE.

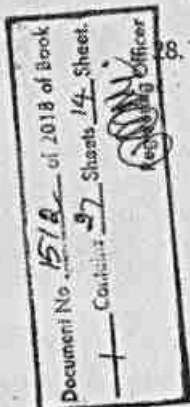


18. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
19. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
20. A study has to be conducted to assess the optimum 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 GLS 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
- Roads shall be graded to mitigate the dust emission.
 - 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
- Proper and regular maintenance of vehicles and other equipment.
 - Limiting time exposure of workers to excessive noise.
 - The workers employed shall be provided with protection equipment and earmuffs etc.
 - 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 11.1.2010 issued by the MoE&F, GoI to control noise to the prescribed levels.
25. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
26. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
27. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
28. The following measures are to be adopted to control erosion of dumps:-
- Retention / toe walls shall be provided at the foot of the dumps.
 - Worked out slopes are to be stabilized by planting appropriate shrub / grass species on the slopes.

For MEENAKSHI GRANITES

[Signature]
 REGISTER HOLDER / **Partner**
 LESSEE

[Signature] 11/11/2011
 LESSOR
 DISTRICT COLLECTOR,
 ERODE.



TP/11246011



29. Waste oils, used oils generated from the EM machines, mining operations, shall be disposed as per the Hazardous Wastes (Management, Handling, and boundary movement) Rules, 2008 and its amendments thereof to the recycling 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 hydrogeological 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, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out. District Collector / mining officer shall ensure this.
34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
35. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora / fauna environment, slurry water generated / disposed and method of disposal, involving a reputed academic institution.
36. It shall be ensured that the total extent of nearby quarries (Existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 25 hectares within the mining lease period of this application.
37. It shall be ensured that there is no habitation is located within 500 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site.
38. Ground water quality monitoring should be conducted once in 3 months.
39. Transportation of the quarried materials shall not cause any hindrance to the Village people / Existing Village road.

For MEENAKSHI GRANITES

[Signature] Partner
REGISTER HOLDER / LESSEE

[Signature] 16/26
LESSOR
DISTRICT COLLECTOR,
ERODE.

Document No. 15/A	of 2018 of Book
1	Contains 27 Sheets 15 Sheets
<i>[Signature]</i> Mining Officer	



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 area.
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 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 CSR funds should be channelized for planting programme, nature conservation support, tribal development and activities that support forest and environment.
48. The CSR funds should be provided to sathyamangalam reserve forest as reported.
49. The Project Proponent shall provide solar lighting system to the nearby villages.
50. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
51. Rainwater shall be pumped out Via Settling Tank only.
52. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
53. As per MoEF&CC, GoI, Office Memorandum dated 30.3.2015, 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 10 KM from National Park and Sanctuaries.
54. 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.
55. Safety equipments to be provided to all the employees.
56. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai.
56. The Assistant / Deputy Director, Department of Geology and Mining shall ensure that the proponent has engaged the blaster with valid blasting licence / certificate obtained from the competent authority before execution of mining lease

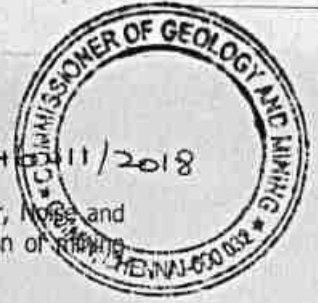
For MEENAKSHI GRANITES

[Signature]
REGISTER HOLDER / LESSEE

[Signature] 17/26
LESSOR
DISTRICT COLLECTOR,
ERODE.

Document No.	1512	of 2018 of Book
Contains	27	Sheets 16 Sheet.
<i>[Signature]</i> Registering Officer		

TP/1124/11/2018



57. 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.
58. 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.
59. 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.
60. 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.
61. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
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 Geology and Mining shall ensure that the depth of mining shall be restricted as per the MMCR, 1959 before execution of the mining lease.
63. 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 bio diversity, surrounding water bodies etc.
64. The Project proponent is also directed to strictly adhere to the Sustainable Sand Mining Management Guidelines, 2016 wherever applicable.
65. The proponent shall provide Green Belt development at the rate of not less than 400 trees / Hectrare. The tree saplings shall be not less than 1m height.
66. The quarrying activity in no way should disturb the Wildlife habitat, free migratory movement of the wildlife nor disturb the wildlife in any way.
67. The project proponent should spent minimum of 5% of and more on turnover for restoration at the periphery of reserved forest / community forest towards environmental protection. The fact of expenditure of work carried out for restoration should be reported to District Administration / MoEF & CC / SEIAA with photo documents for records.
68. The EMP cost shall be deposited in a nationalized bank by opening separate account head wise expense statement shall be furnished to TNPCB with a copy of SEIAA annually.
69. Adequate number of exploratory bore holes needs to be drilled to ascertain the fractures, joints in the formation for arriving at the recovery percentage.
70. The area earmarked for the dumps should be reworked on the basis of the waste percentage evaluated from the further exploration data to determine the capacity of the dump scientifically.

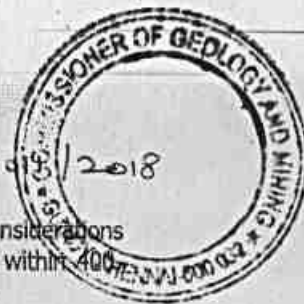
Document No. <u>15/2</u> of 2018 of Book
Contains <u>27</u> Sheets of <u>17</u> Sheet.
Registered

For MEENAKSHI GRANITES

[Signature] Partner
REGISTER HOLDER / LESSEE

[Signature] 11/12/18
LESSOR
DISTRICT COLLECTOR,
ERODE.

TP/11246/2018



71. The site of waste dump should be evaluated critically such that due considerations are given to the environmental aspects as the habitations are located within 400m to 500m in North - East direction from the boundary of the proposed mine.
72. The depth of water table is mentioned as 30m below ground level (bgl) whereas the mining is anticipated upto 36m from bgl. The placement of the sump and the discharge of water need to be worked out before reaching the intersection level of ground water.
73. Use of explosives to be kept at minimum for development purpose. The scientific studies involving blast induced ground vibration need to be carried up before the commencement of the mining to design the suitable controlled blasting technique which will also ensure that no flying fragments are produced.
74. In case of non-explosive techniques such as wire cutting used during the mining operation, the employers shall be provided with adequate protective measures against the dust and noise pollution. Similarly, proper measures shall be taken to ensure that the aforesaid dust and noise pollution shall not travel towards the nearby habitations at any cost.
75. The slope of the working benches shall be properly maintained based on the scientific studies carried out in respect of slope stability from a reputed scientific research institution such as National Institute of Rock Mechanics, Bangalore or any other reputed institutions.
76. CSR activities should be need based taking in to consideration the requirement of the people in the adjacent villages within a radius of 5km
77. Similarly, the management shall ensure that the employment opportunities are given to the locals.
78. The provisions of Mines Act, 1952 and MMR 1961 (& 2017) shall be followed without any deviations while engagement of statutory personnel (mining engineers and geologist) and also while carrying out the mining operations in the proposed mine.
79. The project proponent has to obtain necessary permission from the Director of Tiger reserves of Sathyamangalam or District Forest Officer (DFO) consent before commencement of mining lease.
80. The activity of the proposed quarrying site should not affect the movement of fauna and avifauna
81. The activity of the proposed quarrying should not disturb the local water bodies and agricultural activities surrounding site.
82. The project proponent has to get biodiversity plan approved by local District Forest Officer (DFO) or Director of Tiger reserves of Sathyamangalam Forest before execution of mining lease.

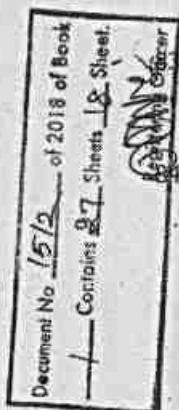
The District Collector should ensure Boomi Dhal land existing adjacent to the proposed quarrying site should not have any adverse effect, due to the mining operations.

Overburden of the reject shall be kept in the quarrying site and that area shall be planted with indigenous species of plant.

For MEENAKSHI GRANITES

REGISTER HOLDER PARTNER

LESSOR
DISTRICT COLLECTOR,
ERODE.



TP/11246011/20



85. The depth of mining should not exceed 6 mtr and should match with the contour map of the site provided in the mining plan.
86. The project proponent has to spent Rs. 30000/- per annum for afforestation with maintenance for 5 years.

General Conditions:

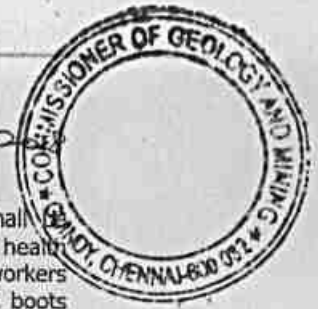
1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
 2. The project proponent shall obtain Consent for Establishment from the TNPC Board before commencing the activity.
 3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
 4. No change in the calendar plan including excavation, quantum of mineral should be made.
 5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in the regard.
 6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
 7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth or proposed excavation.
 8. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
 9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
 10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
1. 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.

Document No. 15/2	of 2018 of Book
Contains 27	Sheets, 12
Sd/- Officer	

For MEENAKSHI GRANITES

Partner
REGISTER HOLDER / LESSEE

Sd/-
LEASOR
DISTRICT COLLECTOR,
ERODE.



12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
16. The Environmental Clearance does not absolve the applicant / proponent of his obligation / requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance.
18. The SEIAA, TN may alter / modify the above conditions or stipulate any further condition in the interest of environment protection.
19. The SEIAA, TN may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, if at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and / or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
20. Failure to comply with any of the conditions mentions above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be forced 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.

Document No. 1572 of 2018 of Book
 1 Contains 27 Sheets
 [Signature]
 [Signature]
 [Signature]

For MEENAKSHI GRANITES

[Signature] Partner
 REGISTER HOLDER / LESSEE

[Signature] 24/26
 LESSOR
 DISTRICT COLLECTOR,
 ERODE.

TP/112460 2018



22. Any other conditions stipulated by other Statutory / Government authorities shall be complied.

In addition to the above conditions the applicant should obtain consent order from the Tamil Nadu Pollution Control Board before commencement of the quarrying operation and strictly adhere the special conditions stipulated there in.

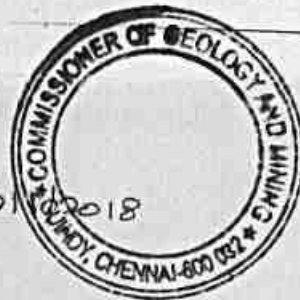
For MEENAKSHI GRANITES


REGISTER HOLDER / LESSEE
Partner

 12/21
LESSOR
DISTRICT COLLECTOR,
ERODE.

Document No. 1512 of 2012 of Book
1 Contains 27 Sheets 21 Sheet.
Registrar





TP/12460/2018

THE SCHEDULE

District : Erode
 Taluk : Sathyamangalam
 Village : Karapadi

Survey Number	Extent Hects.	BOUNDARIES			
		North By SF No.	South by SF No.	East by SF No.	West by SF No.
348/1 part	0.59.9	348/1 part	349/3 and 349/4	348/2	344 and 349/4
348/2 part	0.41.7	348/2 part	349/3	348/3, 348/5 and 348/6	348/1
348/5	0.20.5	348/3	348/6	348/4	348/2
348/6	0.24.5	348/5	362/1, and 362/2	348/7	348/2
349/1	0.02.0	349/4	349/4	349/4	350/5
349/3	2.06.5	348/1 and 348/2	359/6	362/1 and 362/3	349/4
349/4	2.28.5	344	349/2, 356/1 and 359/13	348/1 and 349/3	349/2, 350/5 and 350/6
350/1	0.76.0	350/3	358/1	350/2	351/7, 351/8, 358/5, 358/10 and 358/9
350/2	0.79.0	350/3 and 350/4	358/1	350/6	350/1
350/3	0.32.5	350/4	350/1 and 350/2	350/4	351/5, 351/6 and 351/7
350/5 part	0.61.5	350/5 part	350/6	349/1 and 349/4	350/4
350/6	0.64.0	350/4 and 350/5	358/1 and 359/1	349/2 and 349/4	350/2
Total	8.96.6				

WITNESS, Whereof Tvi. Meenakshi Granites, authorized of Thiru. P. Arunraja, No. 5, Sri Padmalaya Complex, Madurai Main road, Melur - 625106, Madurai District and DR. S. PRABHAKAR, I.A.S., DISTRICT COLLECTOR, ERODE DISTRICT, for and on behalf of and by the order and direction of the Government of Tamil Nadu have hereunto set their hands.

For MEENAKSHI GRANITES

[Signature]
 REGISTER HOLDER / LESSOR

[Signature] 29/26
 LESSOR
 DISTRICT COLLECTOR,
 ERODE.

Signed by the above named
 In the presence of

1. *[Signature]*
 S/o Pandai Sany
 4/77 Alagon Hoult, Mangalam
 Madurai

2. *[Signature]*
 S/o Rajendran
 14/15 Kalilar Street
 Sathasivan Nagar
 Madurai

Signed by the above named
 in the presence of

1. *[Signature]*
 Assistant Director,
 Dept. of Geology and Mining
 Erode.

2. *[Signature]*
 Special Revenue Inspector
 (Mines)
 Erode District

Document No 15/2 of 2018 of Book
 Contains 27 Sheets 82 Sheet.

சென்னை சுற்றுச்சூழல் மற்றும் மின்னியல் துறைமுகம், 47/1/2, சாலை, சென்னை-600 082
 5. 47/1/2, சாலை, சென்னை-600 082

COIMBATORE:
TATYAMANGALAM
Taluk: CHICHITPALAYAM.

TP/112460/2018

Survey Old No. 25 New No. 21



Village

No. 72
48.

Name: KARAPADI

Area: HECT. 3.67.5 Acres

Field No. 348

Index

- Safety area
- Quarrying area
- HPT Line

Johni
Deputy Director,
Geology and Mining,
Erode

Johni
COLLECTOR,
ERODE DISTRICT,
ERODE.

		E	
		117.2	
D	15.4	48.6	
		C	
		E	
		202.2	
		123.6	21.4
C	81.4	118.2	10
		107.4	3.6
		93.0	55.2
		90.8	53.4
		80.6	98.8
		B	
		140.8	
		74.4	0.6
5	3.2	67.4	
A	98.0	65.8	
		G	
		127.6	
4	49.6	91.2	
3	488	65.4	
		F	
		B	
		143.2	

HOT MEENAKSHI GRANITES

Partner

1-2
Documents
1512 of 2018 of Book
Contains 97 Sheets of 20 Sheet.
Scale
Registered Officer

Inch = One Chain

Puzhuvan
District: COIMBATORE

SATYAMANGALAM
GODICHETPALAYAM

TP/11246/2018
Surv. No. 21



Village

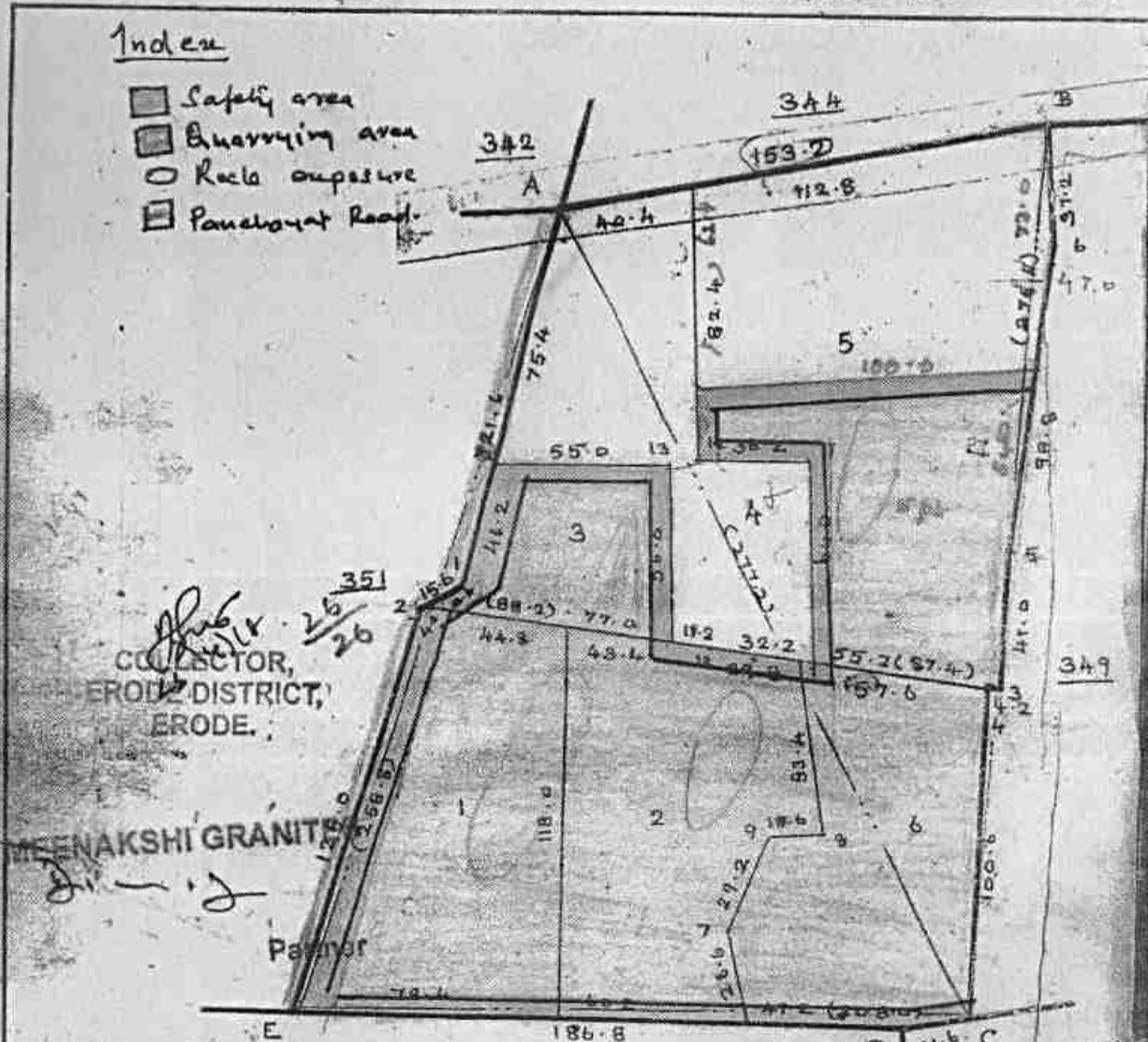
No. 49
Name: JAKAPADI
Area: HECTS 4.56.0

Adres

Field No. 350

Index

- ▣ Safety area
- ▣ Quarrying area
- Rock exposure
- ▭ Panchayat Road



(Signature)
COLLECTOR,
ERODE DISTRICT,
ERODE.

	236.8							E				
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	175.0							21.6				
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		99.8	1.2	3	13	4.6		193.8				
		c						192.0	1.8	12		
		E						176.2	34.1	11		
		258.9			10	21.0		137.8				
		134.0	3-2	2	9	31.4		76.8				
1	5-b	121.0			8	7.0		69.6				

(Signature)
Deputy Director,
Geology and Mining,
Erode

(Signature)
24.12.2017

Drawn by: [Name] Scale: 1:5000
Contains: 25 sheets of 25 sheets
Registered Officer

Inch = One Chain
1 in. = 2000 m.
Comparison of
1:50000

TY/11246011/2018

Survey Old No. 23, New No. 21

No. 21

District: ~~Coimbatore~~ **COIMBATORE.**

Block: **SATYAMANGALAM**
~~GOBICHETTIPALAYAM.~~

Village

No. ~~72~~ **44**

Name: **JCAR**

Area: HECT: **57.0** Acres

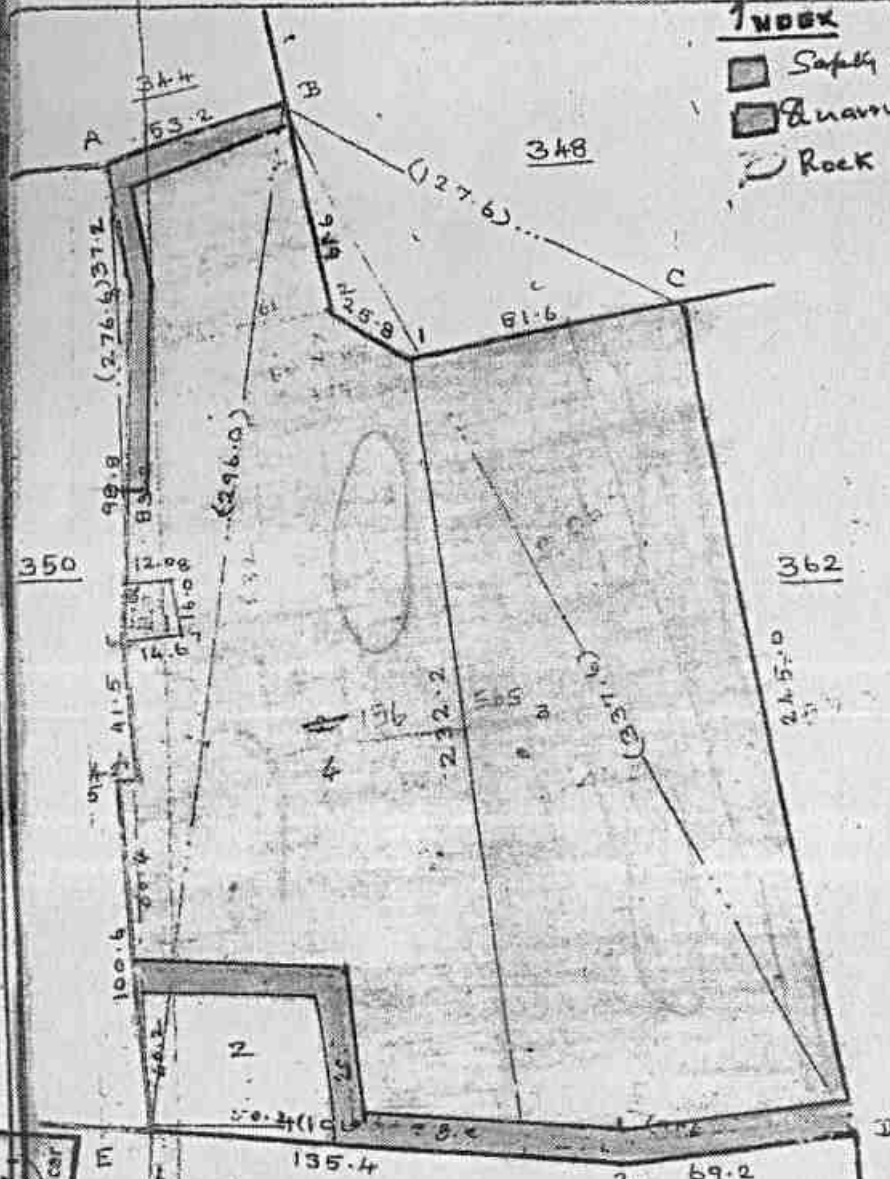


Field No. 349

Acres

INDEX

- Safety area
- Quarrying area
- Rock exposure



[Signature]
COLLECTOR,
ERODE DISTRICT,
ERODE.

B	337.6		
	2338	74.0	C
D			
E	296.0		
	28.4	48.0	A
B			
A	276.6		
	2394	4.4	9
	151.2	3.2	
	144.6	1.4	
	56.6	12.2	8
	140.8	14.6	7
	140.8	line	6
5	3.0	100.2	
	99.8	1.2	4
E			
D	204.6		
	135.2	7.6	3
E			
B			
	127.6		
	2	496	21.2
	1	488	21.4
			C

Document No. **1512** of 2018 of Book
 Contains **27** Sheets of Sheet.

[Signature]
 Deputy Director,
 Geology and Mining,
 Erode.

[Signature]
 24/2/2017

S.D. NO 2 plotted as 2 and 4 as per
 S.O 44/80 of T.R. 189/80 B.4 dt 18.9.70
 S.O 214 changed to S.O 201.72

Prepared by: *[Signature]* Scale: 1 inch = One Chain
KEENAKSHI GRAPHICS
 For: *[Signature]* Checked by: *[Signature]*
 15-11-2017

R/Punchaipullyampatti/Book-1/1512/2018



CERTIFICATE UNDER SECTION 42 OF THE INDIAN STAMP ACT 1899

S.No 633 of 2018

I hereby certify that a sum of ₹ 22,77,000/- (Rupees Twenty Two Lakh Seventy Seven Thousand only) on account of deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from Mr. ARUNRAJA residing at NO,5J-12, SOORAKUNDU ROAD, MELUR, Melur, Madurai, Tamil Nadu, India, 625106

Sub Registrar: Punchaipullyampatti
Date: 25/04/2018

Signature of Sub Registrar and Collector under Section 41 of the Indian Stamp Act

Presented in the office of the Sub Registrar of Punchaipullyampatti and fee of ₹ 20,375/- paid at 05:26 PM on the 25/04/2018 by

Left Thumb



For MEENAKSHI GRANITES

[Signature]
Partner

Additions as per recitals of document

Execution admitted by

Left Thumb



For MEENAKSHI GRANITES

[Signature]
Partner

Additions as per recitals of document

Identified By

1. *[Signature]*

[Signature]

Mr. JOTHIRAJAN Son of PONODASAMY 4/77, AZAKAR KOIL ROAD, Mangulam Bit 1, Madurai East, Madurai, Tamil Nadu, India, 625301.

Mr. NAGARAJAN Son of RAJENDRAN 714/5 KABILAR STREET, Vandiyur Bit 1, Madurai East, Madurai, Tamil Nadu, India, 625020.

Document No 1512 of 2018 of Boo:
1 Contains 27 Sheets 2 1/2 Sheet.


Registering Officer



R/Punchaipuliyampatti/Book-1/1512/2018



25th day of April 2018


Sub Registrar
Punchaipuliyampatti

Registered as Number R/Punchaipuliyampatti/Book-1/1512/2018.

Date: 25/04/2018
Punchaipuliyampatti


Sub Registrar
Punchaipuliyampatti



Document No 1512 of 2018 of Book
1 Contains 27 Sheets 27 Sheet.


Registrar





District: COIMBATORE
Taluk: CATYAMANGALAM
Taluk: CHICHIPALAYAM

Survey No. 23, New No. 21

Village No. 72
No. 49

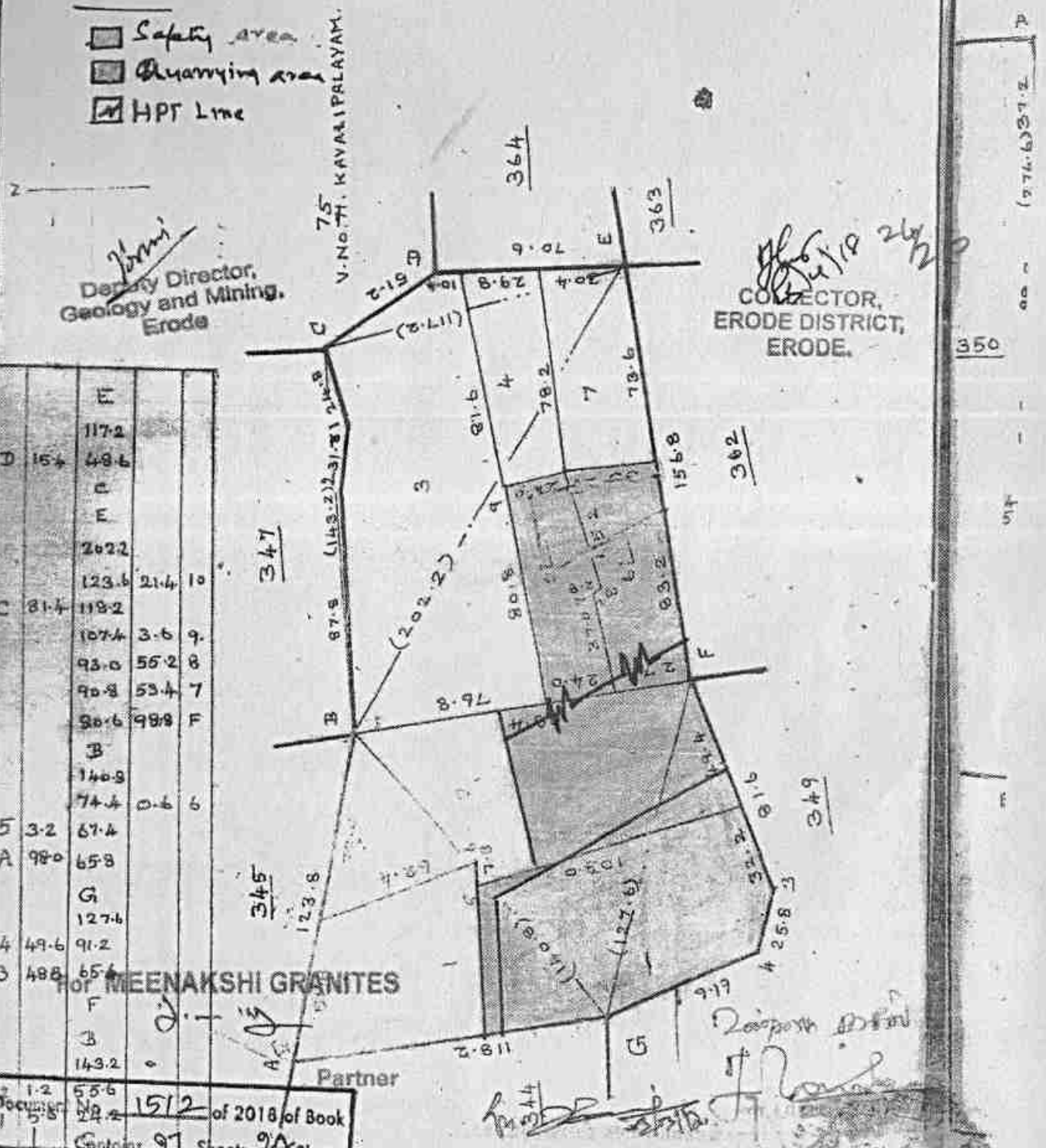
Name: KARAPADI

Area: HECT. 3.67.5 Acres

Field No. 348

Index

- Safety area
- Quarrying area
- HPT Line



Deputy Director,
Geology and Mining,
Erode

Collector,
ERODE DISTRICT,
ERODE.

		E	
		117.2	
D	154	48.6	
		C	
		E	
		2022	
		123.6	21.4
		10	
C	81.4	118.2	
		107.4	3.6
		93.0	56.2
		90.8	53.4
		90.6	99.9
		B	
		140.9	
		74.4	0.6
		6	
5	3.2	67.4	
A	98.0	65.8	
		G	
		127.6	
4	49.6	91.2	
3	488	65.4	
		F	
		3	
		143.2	

MEENAKSHI GRANITES

Partner

1.2 55.6
 1 58 22.2 1512 of 2018 of Book
 Contains 97 Sheets of Sheet
 Scale
 Registrar

Inch = One Chain

Periyar
 District: ~~COIMBATORE~~
 SATTYAMANGALAM
 G. BICHETAPALAYAM

TP/11246/011

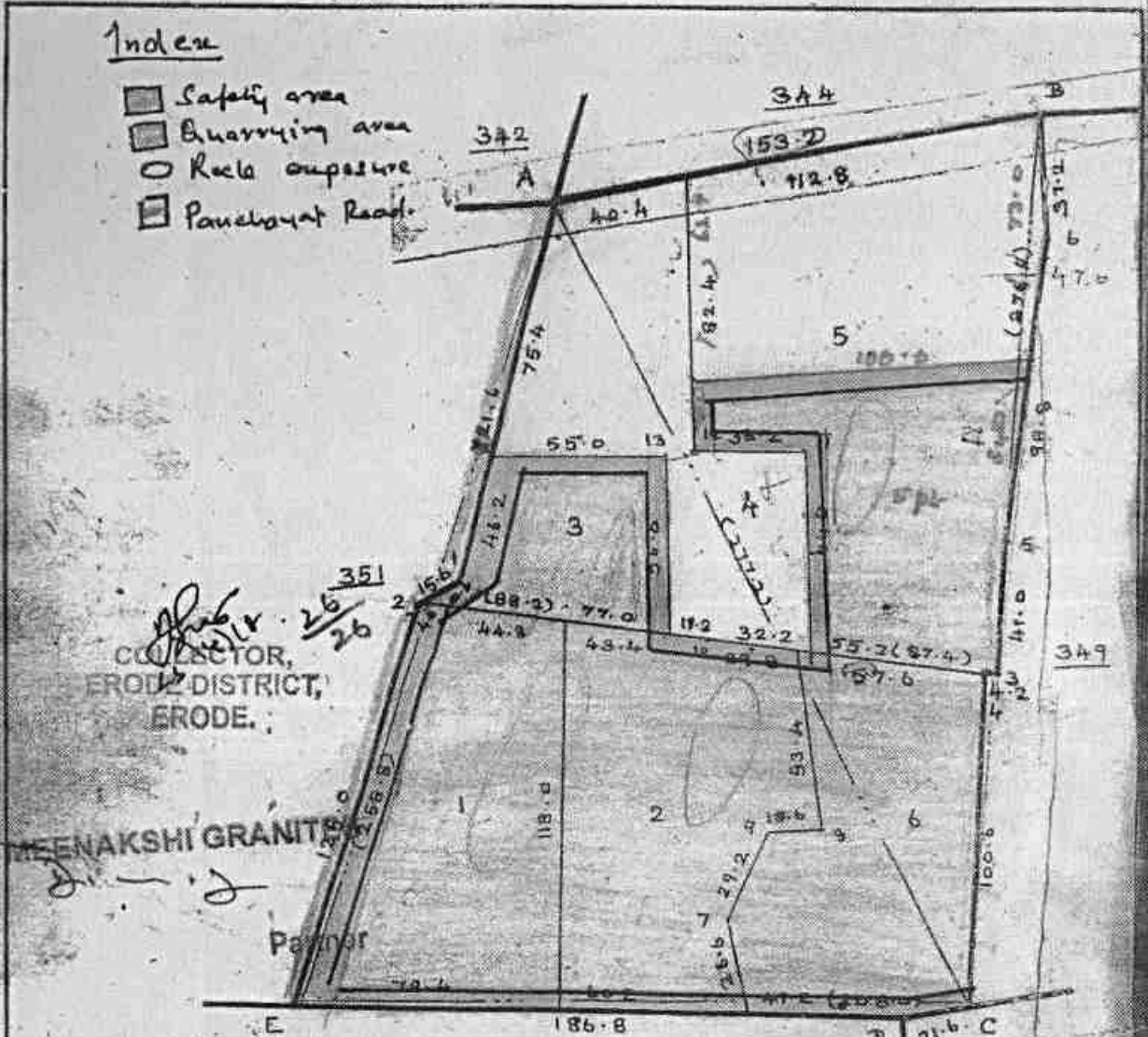


Surv. No. 72
 Village Name: J. KARAPAD
 Area: 4.560 HECT.

Field No. 350

Index

- Safety area
- Quarrying area
- Road exposure
- ▭ Panchayat Road.



	B				E	
	276.8				208.2	
	239.4	4.4	6		78.2	27.0
H	10.0			D	0.2	
	179.8				21.6	
	10.2				A	
	140.8	line	5		277.2	
4	30				234.9	46.6
	100.2	1.1			193.8	
	99.8	1.2	3	B	4.6	
					192.0	1.8
					176.2	31.1
					197.8	
	258.8		10		210	
	134.0	3.2	2	9	31.4	
1	5.6			8	7.0	
	121.6				69.6	

Deputy Director,
 Geology and Mining,
 Erode

24.12.2017

Scale
 Contains 25 Sheets
 Register

Inch = One Chain

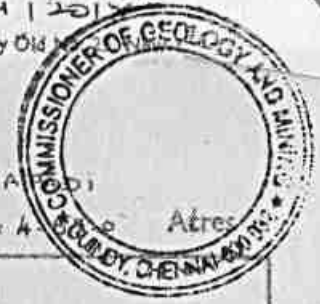
1 m. = 2000 m.m.

Compare with
 10/12

TY11245011 | 2011
Survey Old

No. 21 District: **COIMBATORE.**
Taluk: **SATYAMANJALAM**
GODICHETTIPALAYAM.

Village {
No. **70**
48
Name: **KARAI**
Area: HECT: **4**
Atres

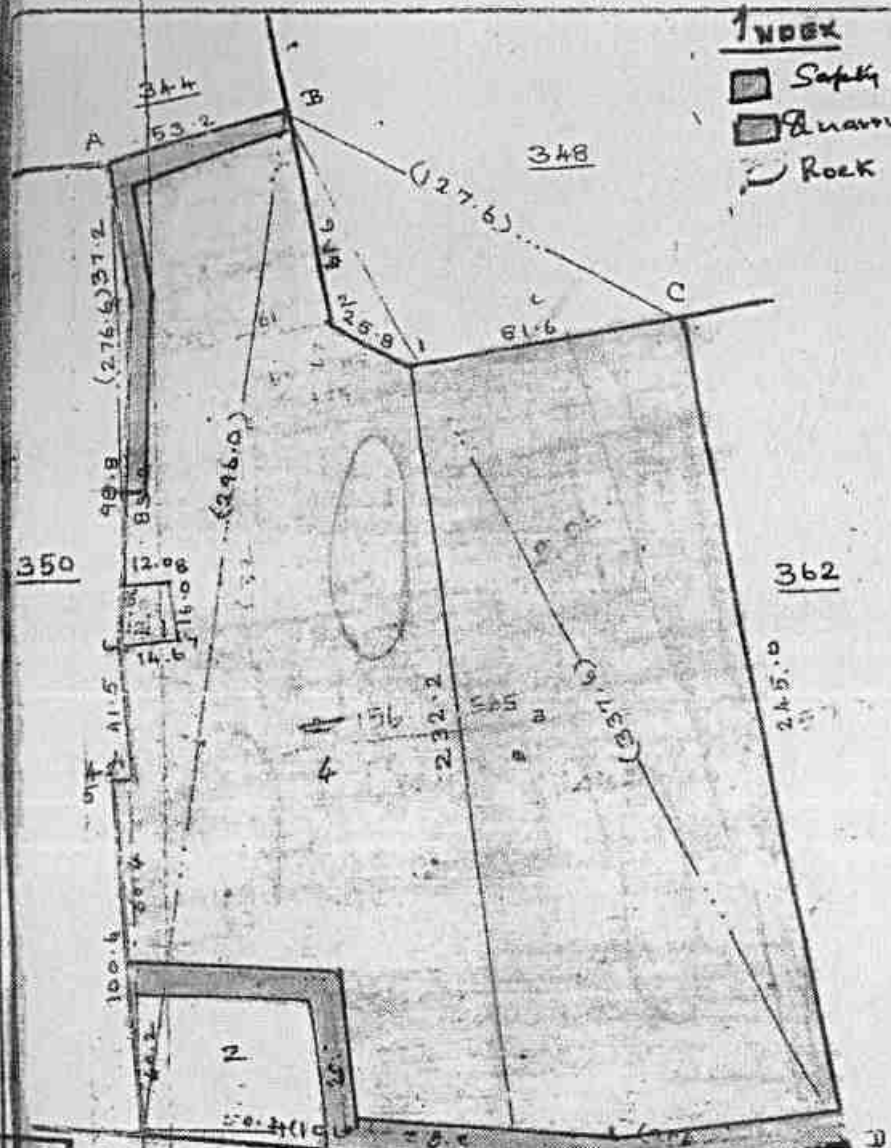


Field No. **349**

Acres

INDEX

- Safety area
- Quarrying area
- Rock exposure



[Handwritten Signature]
27/26
COLLECTOR,
ERODE DISTRICT,
ERODE.

B		
337.6		
2338	74.0	C
D		
2960		
234	18.0	A
B		
A		
276.6		
2394	44	9
151.6	32	6
144.6	14	1
156.6	12.2	8
140.8	14.6	7
140.8	line	6
5	3.0	1002
E		
D		
204.6		
10	37.8	35.2
E		76
		3
B		
276.6		
2	494	212
1	488	654
		C

Document No. **1512** of 2018 of Book
Contains **27** Sheets of Sheet.
Surveying Officer

Deputy Director,
Geology and Mining,
Erode.

S.O. No 2 plotted as 2 and 4 as per
S.A. 4480 of T.A. 189/80 B-4 dt 18.9.70
S.A. 214 changed to S.A. 201.72

Prepared by: *[Signature]* Scale **2 1/2" = 100** Inch = One Chain
For: **VEENAKSHI GRANITES** 1 m. m. = 2000 m. m.

A. JAGANNATHAN, B.E., FCC, M.M.E.A.,
Qualified Person



For MEENAKSHI GRANITES

A. Jag

A. JAGANNATHAN, B.E., F.C.C., M.M.E.A.
Qualified Person



ANNEXURE IV



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 1000

உரிமையாளர்கள் பெயர்

1. பெரியசாமி

மகன்

அருண்ராஜா

நன்செய்

புன்செய்

மற்றவை

புல எண்	உட்பிரிவு	நன்செய்		புன்செய்		மற்றவை	
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை
348	2	--	--	0 - 82.00	1.64	--	--
348	5	--	--	0 - 20.50	0.41	--	--
348	6	--	--	0 - 24.50	0.49	--	--
349	1	--	--	0 - 2.00	0.06	--	--
349	3	--	--	2 - 6.50	4.13	--	--
349	4	--	--	2 - 28.50	4.57	--	--
350	1	--	--	0 - 76.00	1.52	--	--
350	2	--	--	0 - 79.00	1.58	--	--
350	3	--	--	0 - 32.50	0.65	--	--
350	5	--	--	1 - 41.00	2.82	--	--
350	6	--	--	0 - 64.00	1.28	--	--
				9 - 56.50	19.15		

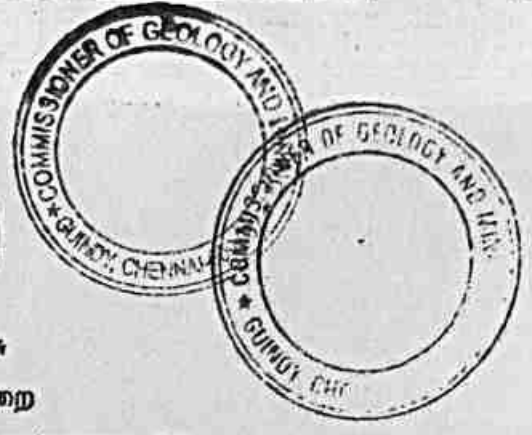
குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/01000/110221 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

2. இத் தகவல்கள் 06-02-2017 அன்று 12:45:53 PM நேரத்தில் அச்சடிக்கப்பட்டது.

3. என்கப்பெரி கோமராவின் 2D barcode டிடிபான் மூலம் டிடித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு
வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 997

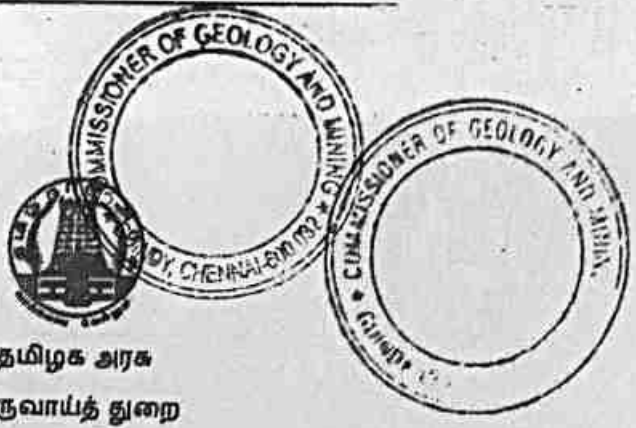
உரிமையாளர்கள் பெயர்

1.	பெரியசாமி	மகன்	நன்செய்		புன்செய்		மற்றவை	
			பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
	புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
	349	3	--	--	2 - 6.50	4.13	--	--
					2 - 6.50	4.13		

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00997/190295 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 15-12-2016 அன்று 10:58:37 AM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 996

உரிமையாளர்கள் பெயர்

1.	பெரியசாமி	மகன்		அருண்ராஜா		மற்றவை	
		நன்செய்		புன்செய்			
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல எண்	உட்பிரிவு	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை
350	6	--	--	0 - 64.00	1.28	--	--
				0 - 64.00	1.28		

குறிப்பு :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00996/190284 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 15-12-2016 அன்று 10:59:26 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படப்பாள் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 995

உரிமையாளர்கள் பெயர்

1.	பெரியசாமி	மகன்		அருண்ராஜா			
		நன்செய்	புன்செய்	மற்றவை			
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல எண்	உட்பிரிவு	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை
349	1	--	--	0 - 2.00	0.06	--	--
				0 - 2.00	0.06		

குறிப்பு :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00995/190273 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
 2. இத் தகவல்கள் 15-12-2016 அன்று 10:56:48 AM நேரத்தில் அச்சடிக்கப்பட்டது.
- சுற்றுச்சூழல் மற்றும் வன அமைச்சு



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 994



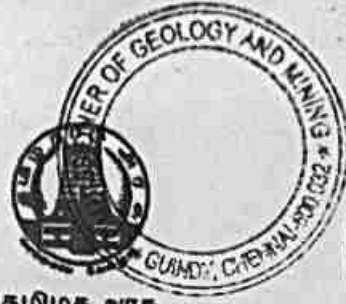
உரிமையாளர்கள் பெயர்

1.	பெரியசாமி		மகன்		அருண்ராஜா		
	நன்செய்		புன்செய்		மற்றவை		
	பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
348	2	--	--	0 - 82.00	1.64	--	--
				0 - 82.00	1.64		

குறிப்பு :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00994/190262 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 15-12-2016 அன்று 10:57:37 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 993

உரிமையாளர்கள் பெயர்

1. பெரியசாமி மகன் அருண்ராஜா

நன்செய்

புன்செய்

மற்றவை

பரப்பு

தீர்வை

பரப்பு

தீர்வை

பரப்பு

தீர்வை

புல எண்
348

உட்பிரிவு
6

ஹெக்டர் - ஏர்
--

ரூ - பை
--

ஹெக்டர் - ஏர்
0 - 24.50

ரூ - பை
0.49

ஹெக்டர் - ஏர்
--

ரூ - பை
--

0 - 24.50

0.49

குறிப்பு :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை நாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00993/190251 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

2. இத் தகவல்கள் 15-12-2016 அன்று 10:55:15 AM நேரத்தில் அச்சடிக்கப்பட்டது.

3. கைப்பேசி கேமராவின் 2D barcode லடிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 992

உரிமையாளர்கள் பெயர்

1. பெரியசாமி மகன் அருண்ராஜா

நன்செய்

புன்செய்

மற்றவை

பரப்பு

தீர்வை

பரப்பு

தீர்வை

பரப்பு

தீர்வை

புல எண்

உட்பிரிவு

ஹெக்ட - ஏர்

ரூ - பை

ஹெக்ட - ஏர்

ரூ - பை

ஹெக்ட - ஏர்

ரூ - பை

350

2

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0 - 79.00

1.58

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0 - 79.00

1.58

குறிப்பு :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00992/190240 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.

2. இத் தகவல்கள் 15-12-2016 அன்று 10:56:05 AM நேரத்தில் அச்சடிக்கப்பட்டது.

3. கைப்பேசி கேமராவின் 2D barcode படப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

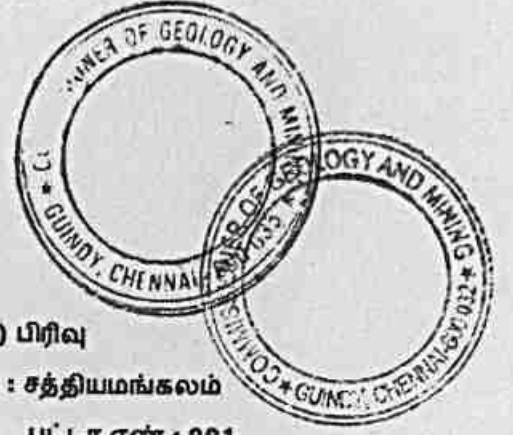
நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 991



உரிமையாளர்கள் பெயர்

1.	பெரியசாமி		மகன்		அருண்ராஜா		
	நன்செய்		புன்செய்		மற்றவை		
	பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
348	5	--	--	0 - 20.50	0.41	--	--
				0 - 20.50	0.41		

குறிப்பு :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00991/190239 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 15-12-2016 அன்று 10:52:29 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

10/32/072/00990/190228

உரிமையாளர்கள் பெயர்

1.	பெரியசாமி	மகன்		அருண்ராஜா				
		நன்செய்	புன்செய்	மற்றவை				
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
	புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	சூ - பை	ஹெக்ட - ஏர்	சூ - பை	ஹெக்ட - ஏர்	சூ - பை
	350	1	--	--	0 - 76.00	1.52	--	--
					0 - 76.00	1.52		

குறிப்பு :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00990/190228 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 15-12-2016 அன்று 10:51:40 AM நேரத்தில் அச்சிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படப்பான் மூலம் படத்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 989

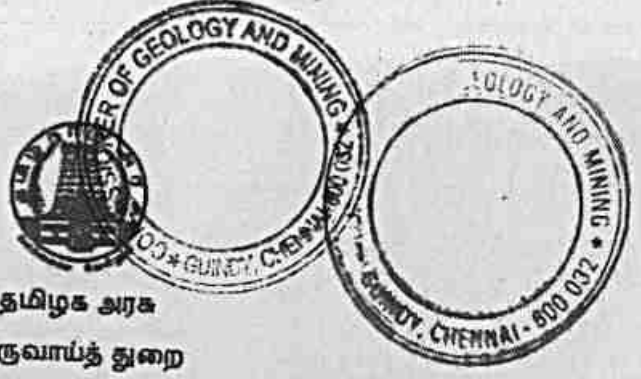
உரிமையாளர்கள் பெயர்

1.	பெரியசாமி	மகன்		அருண்ராஜா			
		நன்செய்	புன்செய்	மற்றவை			
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல எண்	உட்பிரிவு	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை
350	3	--	--	0 - 32.50	0.65	--	--
				0 - 32.50	0.65		

குறிப்பு :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00989/190216 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 15-12-2016 அன்று 10:54:34 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 988

உரிமையாளர்கள் பெயர்

1.	பெரியசாமி		மகன்		அருண்ராஜா		
	நன்செய்		புன்செய்		மற்றவை		
	பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
350	5	-	-	1 - 41.00	2.82	-	-
				1 - 41.00	2.82		

குறிப்பு :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00988/190205 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 15-12-2016 அன்று 10:53:23 AM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி சமராவின் 2D barcode படப்பான் மூலம் படத்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

நில உரிமை விபரங்கள் : இ. எண் 10(1) பிரிவு

மாவட்டம் : ஈரோடு

வட்டம் : சத்தியமங்கலம்

வருவாய் கிராமம் : 072 காரப்பாடி

பட்டா எண் : 987

உரிமையாளர்கள் பெயர்

1.	பெரியசாமி	மகன்		அருண்ராஜா			
		நன்செய்	மற்றவை	புன்செய்	மற்றவை		
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
348	1	--	--	0 - 95.00	1.90	--	--
				0 - 95.00	1.90		

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 10/32/072/00987/190294 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 15-12-2016 அன்று 10:50:22 AM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode பிடிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

Annexure-VI: Copy of SOM Approved Letter

COMMISSIONERATE OF GEOLOGY AND MINING

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

To
Tvl.Meenakshi Granites,
No.05, Sri Padmalaya Complex,
Madurai Main Road,
Melur,
Madurai - 625 106.

Rc. No.2305/MM4/2023, dated: 12.05.2023

Sir,

Sub: Mines and Minerals - Minor Mineral - Multi Colour Granite- Erode district - Sathyamangalam taluk - Karapadi village - S.F.Nos. 348/1 (P), 348/2 (P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5 (P) and 350/6 - over and extent of 8.96.6 hecets of patta lands - Quarry lease granted to Tvl. Meenakshi Granites, Madurai - 1st scheme of mining for the period of 2023-24 to 2027-28 - recommended and forwarded by the Deputy Director (G&M), Erode - Approval accorded.

- Ref:**
1. Mining plan approved by Commissioner of Geology and Mining in letter No.5359/MM5/2017 dated: 27.10.2017.
 2. G.O. (3D) No.18, Industries (MME-2) Department dated:22.03.2018.
 3. First Scheme of Mining submitted by the lessee at district office on 12.01.2023.
 4. The Assistant Geologist (Mines), Erode inspection report dated 20.02.2023.
 5. The Deputy Director, Geology and Mining, Erode letter in Rc.No. 024/Mines/2023 dated 30.03.2023.

Kind attention is invited to the above references

2) Tvl.Meenakshi Granites, Madurai vide reference 3rd cited, has submitted the first Scheme of Mining for approval for the quarry lease granted vide G.O.(3D) No.18 Industries (MME-2) Department, dated 22.03.2018 for quarrying Multi Colour Granite over an extent of 8.96.6 ha of patta lands in S.F.Nos. 348/1 (P), 348/2 (P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1,

350/2, 350/3, 350/5 (P) and 350/6 of Karapadi village, Sathyamangalam taluk, Erode district for a period of 20 years under rule 19-A of TNMMCR, 1959. The lease deed was executed on 23.04.2018 and the lease period is from 23.04.2018 to 22.04.2038.

3) The Deputy Director,(G&M),Erode in the reference 5th cited has recommended and forwarded the first scheme of Mining for the period 2023-24 to 2027-28 submitted by Tvl.Meenakshi Granites and reported as follows.

- i. The mining plan for the subject Multi Colour Granite lease of Karapadi village, Sathyamangalam taluk, Erode district was approved by the Commissioner of Geology and Mining Chennai vide letter No.5359/MM5/2017 dated 27.10.2017.
- ii. As per Rule 18 (3) of GCDR 1999 scheme of mining shall be submitted at least 120 days before the expiry of the five years period for which it was approved on the last occasion. The lessee has submitted the scheme of mining belatedly on 12.01.2023.
- iii. As per the 1st scheme of mining plan submitted by the lessee for approval for the period from 2023-24 to 2027-28, the total mineable reserves @ 30% recovery is about 294738 cbm for a maximum depth of 36mts and the proposed recoverable reserves @ 30% for the present plan period i.e. 2023-2024 to 2027-2028 is about 25364 cbm is acceptable. The year wise production for the proposed five years is furnished as below.

Year	ROM (cbm)	Recoverable reserves @ 30% (cbm)	Granite waste @ 70% (cbm)	Topsoil (cbm)	Weathered Rock (cbm)
2023-24	16800	5040	11760	2132	10000
2024-25	16815	5045	11771	2000	15190
2025-26	17028	5108	11920	7840	37440
2026-27	16854	5056	11798	0	0
2027-28	17049	5115	11935	3220	15300
Total	84546	25364	59184	15192	77930

- iv. With regard to dumping of waste during the scheme of mining period, it has been proposed to dump all along the boundary of the lease area.
- v. The lessee had obtained transport permit for 4111.520 cbm (upto 19.12.2022) as against the proposed production of 25589 cbm (for the mining plan period from 2018-19 to 2022-23).
- vi. The lease was granted only on 22.03.2018 on submission of Environmental Clearance vide SEIAA-TN/F.No.6464/2017/1(a)/EC.No.3970/2018 dated 12.03.2018 and hence, it does not come under violation category.
- vii. The Geological plan, Geomorphological and reserve details furnished in the scheme of mining plan has been verified with the ground realities during the field inspection conducted by the Assistant Geologist (mines) and found to be correct. Further, conditions laid down in the lease granting order are also complied with.
 - A safety distance of 7.5 mts has been maintained for the adjoining patta lands.
 - A safety distance of 50 mts has been maintained for the High Tension Power line passing the applied area bearing S.F.No. 348/2 (P), 348/5 and 348/6.
 - A safety distance of 10 mts has been maintained for village road passing on the western side in S.F.No. 351/1.
- viii. There is no litigation in the subject area and there is no archeological monuments within the radial distance of 300m from the subject area and no reserve forest is situated within 100 meter radius from the lease area. Further the area falls away from the Sathyamangalam Tiger Reserve/ eco Sensitive Zone.

Finally, the Deputy Director, Erode has recommended and forwarded the first scheme of mining for the period 2023-24 to 2027-2028 submitted by Tvl.Meenakshi Granites, Madurai in respect of the area granted in S.F.Nos. 348/1 (P), 348/2 (P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5 (P) and 350/6 of Karapadi village, Sathyamangalam taluk, Erode district to the Commissioner of Geology and Mining for approval.

4) The First Scheme of Mining forwarded by the Deputy Director (G&M), Erode district for approval have been scrutinized and found to be correct as per Rules.

5) Therefore, based on the recommendation of the Deputy Director (G&M), Erode 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 Tvl.Meenakshi Granites, Madurai is hereby approved for the period from 2023-2024 to 2027-28.

Year	ROM (cbm)	Recoverable reserves @ 30% (cbm)
2023-24	16800	5040
2024-25	16815	5045
2025-26	17028	5108
2026-27	16854	5056
2027-28	17049	5115
Total	84546	25364

subject to the following conditions in addition to the conditions stipulated in Government Order under reference 2nd cited:

- i. The lessee should remit the penalty amount Rs.5000/- at the earliest for the violation as per rule 47 of Granite Conservation and Development Rules, 1999.
- ii. The lessee should maintained safety distance of 50 m to the either side of the High Tension Power line passing across the applied area bearing S.F.No. 348/2 (Part), 348/5 and 348/6.
- iii. The lessee should should maintained safety distance of 10 m left out to the village road passing parallel to the western boundary of the applied area in S.F.No.351/1.
- iv. The lessee should maintained safety distance of 7.5 m left out to the adjacent patta lands and not cause any hindrance to the pattadars while quarrying.

- v. The lessee should not encroach upon the Boomi Dhan land located in the S.F.No.349/2 and 359/13 in the southern side of the applied area by providing a safety distance of 10 m to them. A wire fencing should be erected along the boundary between the Boomi Dhan land and the applied area and maintain them in good condition till the end of the lease period.
- vi. 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.
- vii. 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.
- viii. 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.
- ix. 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.
- x. 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.
- xi. 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.

- xii. 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.
- xiii. Relaxation to be obtained under Rule 106(2)(b) of Metalliferous Mines Regulations, 1961 from the Director of Mines Safety, if necessary.
- xiv. 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.
- xv. 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.
- xvi. The earlier instances of irregular / illegal quarrying, if any, shall not be regularized through the approval of this document.
- xvii. The lessee shall remit the penalty / cost of mineral / other dues if any as arrived by the District Collector / Deputy Director (G&M), Erode district.
- xviii. Non adherence to any condition set-out above, the approval shall be deemed to have been withdrawn with immediate effect.
- xix. 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.

- xx. The lessee should remit the Stamp Duty as per the approved modified Scheme of mining during the currency of the lease period if any.
- xxi. The lessee should carry out DGPS survey and erection of RCC boundary pillars as per the norms stipulated in the EOI notification in Rc.No.2921/MM4/2019 dated.01.02.2018 and subsequent corrigendum dated 13.08.2019 through the empaneled agencies.
- xxii. A green belt should be constructed to prevent sound and air pollution due to the proposed quarrying activity of Multicolour Granite over an extent of 8.96.6 ha of patta lands in S.F.Nos. 348/1 (P), 348/2 (P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5 (P) and 350/6 of Karapadi village, Sathyamangalam taluk, Erode district.
- xxiii. 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.
- xxiv. The lessee shall submit Scheme of Mining, mine closure plan and other statutory requirements within the time stipulated for submission of the above as per rules.
- xxv. The lessee 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 2mts with a distance between two pillars shall not be more than 3mts.
 - The lessee shall incorporate the DGPS readings for the entire boundary pillars of the area and the same should be clearly shown in the mining plan.
 - A soft copy of the digitized map with DGPS readings should be submitted in the CD to the Deputy Director (G&M), Erode.

- xxvi. 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.
- xxvii. As per rule 12 (v) of Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the lessee shall at his own expense, erect, maintain and keep in repair all boundary pillars.
- xxviii. The lessee may use mild explosives during quarrying, and storing of explosives if required, by obtaining valid license under Explosive Act and Rules.
- xxix. 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.
- xxx. Child labour should not be engaged in the quarry works and the quarry workers should be registered with the Labour board and enrolled under insurance scheme through the Labour Department.

Encl: Two copies of Approved 1st Scheme of mining

for the period 2023-24 to 2027-28.

M. R. S. G. S.
Commissioner of Geology and Mining
12/5/2023

Copy to:

1. The District Collector,
Erode District.

Annexure - VII: Copy of 500m Radius Cluster Letter

From

To

Thiru. K.Ramesh, M.Sc.,
Deputy Director,
Dept.of Geology and Mining,
Erode

Tvl. Meenakshi Granites,
No.5, Sri Padmalaya Complex,
Madurai Main road, Melur,
Madurai - 625 106.

R.C. No. 024/Mines/2023 dated: 02.08.2023.

Sir,

Sub: Mines and Minerals - Minor Minerals - Multi Colour Granite - Erode District - Sathyamangalam Taluk - Karapadi Village - S.F.Nos. 348/1 (p), 348/2 (p), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5 (p) and 350/6 over an extent of 8.96.6 hecets of Patta lands - Quarry lease granted to Tvl. Meenakshi Granites - Details of Quarries situated around 500m radius - Requested - Reg.

- Ref: 1. G.O.(3D)No.18, Industries (MME-2) Department dated: 22.03.2018.
2. Tvl. Meenakshi Granites letter dated 02.08.2023.

With reference to your letter in the reference 2nd cited, the details of existing, proposed and abandoned quarries situated within a radius of 500m from the Multi Colour Granite quarry lease granted vide reference 1st cited are furnished as follows:

1. Existing quarries:

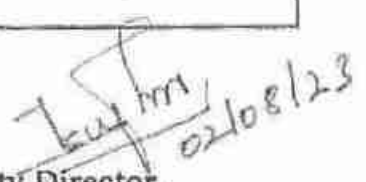
S. No	Name of the Applicant	S.F.Nos	Extent(Hect)	Lease Details	Lease period
1.	Meenakshi Granites	348/1 (p), 348/2 (p), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5 (p) and 350/6	8.96.6 Hect	G.O.(3D)No.18, Industries (MME- 2) Department dated: 22.03.2018	23.04.2018 to 22.04.2038

2. Proposed area :

S. No	Name of the Applicant	Village	S.F.Nos	Extent (Hect)
----- NIL -----				

3. Lease expired and abandoned area:

S. No	Name of the Owner	S.F.Nos	Extent (Hect)	Lease Period	Remarks
----- NIL -----					


 Deputy Director,
 Dept. of Geology and Mining,
 Erode.


 02/29/23

Annexure-VIII: Copy of Previous Environmental Clearance



THIRU A.V. VENKATACHALAM, I.F.S
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY - TAMIL NADU

3rd Floor, Panagal Maaligai,
No.1 Jeenis Road, Saidapet,
Chennai-15.

Phone No.044-24359973

Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr. No. SEIAA-TN/F.No.6464/2017/1(a)/ EC.No: 3970/2018 dated: 12.03.2018

To

M/s. Meenakshi Granites
No.5, Sri Padmalaya Complex
Madurai Main Road, Melur
Madurai District-625106

Sir,

Sub: SEIAA-TN – Proposed **Multi colour granite** quarry of M/s. Meenakshi Granites, located at S.F.No 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, Karapadi Village, Sathyamangalam Taluk, Erode District- issue of Environmental Clearance – Reg.

- Ref:**
1. Your Application for Environmental Clearance dt: 10.11.2017
 2. Lr.No.SEIAA-TN/File No.6464/2017 dated: 06.12.2017
 3. Your reply Dated: 26.12.2017
 4. Minutes of the 102th SEAC held on 02.02.2018
 5. Minutes of the 271st SEIAA meeting held on 13.02.2018
 6. Lr.No.SEIAA-TN/F.No.6464/2018 dated: 14.02.2018
 7. Your reply Dated: 07.03.2018
 8. Minutes of the 279th SEIAA meeting held on 08.03.2018
 9. Minutes of the 280th SEIAA meeting held on 12.03.2018

Details of Minor Mineral Activity:-

This has reference to your application first cited. The proposal is for obtaining environmental clearance for mining/ quarrying of minor minerals based on the particulars furnished in your application as shown below.



MEMBER SECRETARY
SEIAA-TN



1	Name of Project Proponent and address	M/s. Meenakshi Granites No.5, Sri Padmalaya Complex Madurai Main Road, Melur Madurai District-625106
2	Location of the Proposed Activity	
	Survey Number	348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6
	Latitude and Longitude	11°21' 32.72"N to 11°21'45.22"N 77°12'20.98"E to 77°12'38.79"E
	Village	Karapadi
	Taluk	Sathyamangalam
	District	Erode
3	Proposed Activity	
	i. Minor mineral	Multi colour granite
	ii. Mining Lease Area	8.96.6 Ha
	iii. Approved quantity	25589 cu.m of Multi colour Granite
	iv. Depth of Mining	6 m
	v. Type of mining	Opencast Semi Mechanised Mining
	vi. Category(B1/B2)	B2
	vii. Precise area communication	Letter No:11150/MME.2/2017-1 Dated:04.10.2017
	viii. Mining plan approval	Commissioner of Geology & Mining Lr.No.5359/MM5/2017 Dated:27.10.2017
	ix. Mining lease period	5 Years
4	Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:-	Not attracted. Affidavit furnished



MEMBER SECRETARY
SEIAA-TN

5	Man Power requirement per day:	16 Employees
6	Utilities	
	i. Source of Water :	Water canes/Bore wells
	ii. Quantity of Water Requirement in KLD:	
	a. Domestic	1.2KLD
	b. Industrial	} 3.0KLD
	c. Green Belt & Dust Suppression	
	iii. Power Requirement:	
	a. Domestic Purpose	TNEB
	b. Industrial Purpose	
7	Cost	
	i. Project Cost	Rs.97.00 Lakhs
	ii. EMP Cost	Rs.7.25 Lakhs
8	Public Consultation:-	Not required as per O.M. dated 24.12.2013 of MoEF, Gol.
9	Date of Appraisal by SEAC:-	02.02.2018
	Agenda No:	102-04
10	Date of Review/Discussion by SEIAA and the Remarks:-	
	The proposal was placed before the SEIAA in its 280 th Meeting held on 12.03.2018 and the Authority after careful consideration, decided to grant environmental clearance to the said project Mining of Multi colour granite subject to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.	
11	Validity:	
	This Environmental Clearance is granted to Mining of Multi colour granite for the production quantity of 25589 cu.m of Multi colour Granite for the period of 5 Years from the date of execution of the Mining Lease period.	



MEMBER SECRETARY
SEIAA-TN



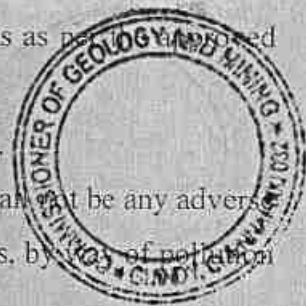
Conditions to be Complied before commencing mining operations:-

- I. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. The District Collector shall ensure that the DSR (District Survey Report) shall be finalized before execution of mining lease, as per EIA Notifications 2016 as amended in 15.01.2016 and the copy of the approved DSR may be sent to SEIAA for record.
3. Mining activity should be reviewed by the District Collector after three years and decide for further extension.
4. The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.
5. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
6. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
7. 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.
8. 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.
9. The proponent shall ensure that First Aid Box is available at site.
10. The excavation activity shall not alter the natural drainage pattern of the area.
11. The excavated pit shall be restored by the project proponent for useful purposes.

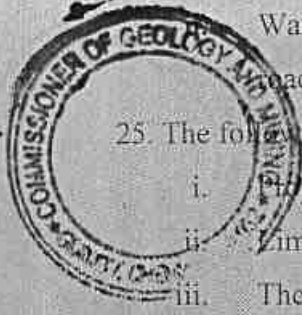


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SEIAA-TN
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12. The proponent shall quarry and remove only in the permitted areas as per approved Mining Plan details.
13. The quarrying operation shall be restricted between 7AM and 5 PM.
14. The proponent 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.
15. A minimum distance of 15 mts. From any civil structure shall be kept from the periphery of any excavation area.
16. 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.
17. 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.
18. 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.
19. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
20. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
21. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
22. 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.
23. 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.
24. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.



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Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust

25. 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.

26. 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.

27. 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.

28. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.

29. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.

30. 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.

31. 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.

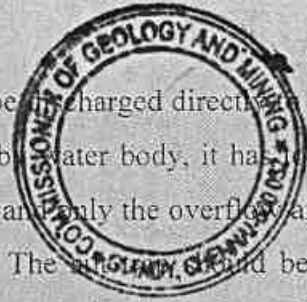
32. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

33. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.

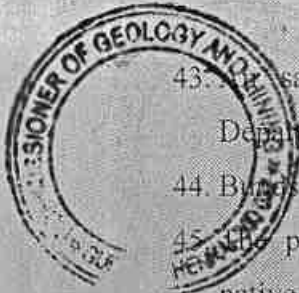


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SEIAA-TN
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34. Rain water getting accumulated in the quarry floor shall not be discharged directly into the nearby stream or water body. If it is to be let into the nearby water body, it has to be 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.
35. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
36. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
37. 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.
38. 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.
39. 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
40. Ground water quality monitoring should be conducted once in 3 Months
41. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
42. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.



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 MEMBER SECRETARY
 SEIAA-TN
 12/03/18

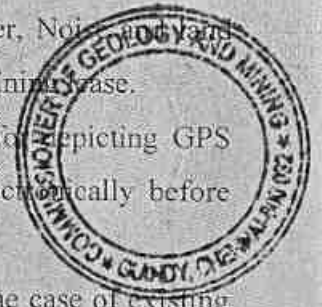



43. Sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI..
44. Bunds to be provided at the boundary of the project site.
45. The project proponent shall undertake plantation/afforestation work by planting the native 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.
46. At least 10 Neem trees should be planted around the boundary of the quarry site.
47. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
48. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
49. The CSR funds should be channelized for planting programme, nature conservation support, tribal development and activities that support forest and environment.
50. The CSR funds should be provided to sathyamangalam reserve forest as reported.
51. The Project Proponent shall provide solar lighting system to the nearby villages
52. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
53. Rainwater shall be pumped out Via Settling Tank only
54. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
55. 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.
56. 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.
57. Safety equipments to be provided to all the employees.
58. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
59. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.

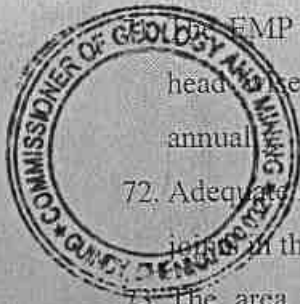


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12/03/18

60. The proponent shall furnish the Baseline data covering the Air, Water, Noise and environment quality for the proposed quarry site before execution of mining lease.
61. 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.
62. 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.
63. 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.
64. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
65. The Proponent has to carry out the Resistivity survey through authorized experts/institutes for Ground water table and based on the report, the Assistant/Deputy Director of Department of Geology & mining shall ensure that the depth of mining shall be restricted as per the MMCR, 1959 before execution of the mining lease.
66. 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 bio diversity, surrounding water bodies etc.
67. The Project Proponent is also directed to strictly adhere to the Sustainable Sand Mining Management Guidelines, 2016, wherever applicable.
68. The proponent shall provide Green Belt development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 1m height.
69. The quarrying activity in no way should disturb the Wildlife habitat, free migratory movement of the wildlife nor disturb the wildlife in any way.
70. The project proponent should spent minimum of 5% of and more on turnover for restoration at the periphery of reserved forest/ community forest towards environmental protection. The fact of expenditure of work carried out for restoration should be reported to District Administration / MoEF & CC / SEIAA with photo documents for records.




MEMBER SECRETARY
SEIAA-TN
5
12/03/18



EMP Cost shall be deposited in a nationalized bank by opening separate account head. The expense statement shall be furnished to TNPCB with a copy to SEIAA annual.

72. Adequate number of exploratory bore holes needs to be drilled to ascertain the fractures, joints in the formation for arriving at the recovery percentage.
73. The area earmarked for the dumps should be reworked on the basis of the waste percentage evaluated from the further exploration data to determine the capacity of the dump scientifically.
74. The site of waste dump should be evaluated critically such that due considerations are given to the environmental aspects as the habitations are located within 400-500 m in North-East direction from the boundary of the proposed mine.
75. The depth of water table is mentioned as 30m below ground level (bgl) whereas the mining is anticipated upto 36m from bgl. The placement of the sump and the discharge of water need to be worked out before reaching the intersection level of ground water.
76. Use of explosives to be kept at minimum for development purposes. The scientific studies involving blast induced ground vibration need to be carried up before the commencement of the mining to design the suitable controlled blasting technique which will also ensure that no flying fragments are produced.
77. In case of non-explosive techniques such as wire-cutting used during the mining operation, the employers shall be provided with adequate protective measures against the dust and noise pollution. Similarly, proper measures shall be taken to ensure that the aforesaid dust and noise pollution shall not travel towards the nearby habitations at any cost.
78. The slope of the working benches shall be properly maintained based on the scientific studies carried out in respect of slope stability from a reputed scientific research institution such as National Institute of Rock Mechanics, Bangalore or any other reputed institutions.
79. CSR activities should be need based taking in to consideration the requirement of the people in the adjacent villages within a radius of 5 km.
80. Similarly, the management shall ensure that the employment opportunities are given to the locals.




MEMBER SECRETARY
SEIAA-TN
12/03/18

81. The provisions of Mines Act, 1952 and MMR 1961 (& 2017) shall be followed without any deviations while engagement of statutory personnel (mining engineers and geologist) and also while carrying out the mining operations in the proposed mine.
82. The project proponent has to obtain necessary permission from the Director of Tiger reserves of Sathayamangalam or District Forest Officer (DFO) before commencement of mining lease.
83. The activity of the proposed quarrying site should not affect the movement of Fauna and avifauna.
84. The activity of the proposed quarrying should not disturb the local water bodies and agricultural activities surrounding site.
85. The project proponent has to get biodiversity plan approved by local District Forest Officer (DFO) or Director of Tiger reserves of Sathayamangalam Forest before execution of mining lease.
86. The District Collector should ensure Boomi Dhan Land existing adjacent to the proposed quarrying site should not have any adverse effect, due to the mining operations.
87. Overburden of the reject shall be kept in the quarrying site and that area shall be planted with indigenous species of plant.
88. The depth of mining should not exceed 6 meter and should match with the contour map of the site provided in the mining plan.
89. The project proponent has to spent Rs.30000/- per annum for afforestation with maintenance for 5 Years.

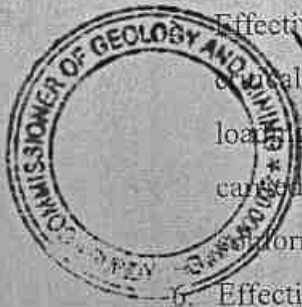
General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.



[Handwritten Signature]
MEMBER SECRETARY
SEIAA-TN

[Handwritten Date]
12/03/18



- Effective safeguard measures, such as regular water sprinkling shall be carried out in special areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
 7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
 8. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
 9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
 10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
 11. All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
 12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
 13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
 14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.




MEMBER SECRETARY
SEIAA-TN

12/03/18

15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied



[Handwritten Signature]
MEMBER SECRETARY
SEIAA-TN

[Handwritten]
12/03/18



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.

12/3/18
12/3/18
MEMBER SECRETARY
SEIAA-TN

Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary, Environment and Forests Department, Government of Tamil Nadu, Tamil Nadu.
3. The Additional Chief Secretary, Industries Department, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-32.
7. The District Collector, Erode District
8. The Commissioner of Geology and Mines, Guindy, Chennai-32
9. E1 Division, Ministry of Environment & Forests, Parivaran Bhawan, New Delhi.
10. Spare.





TAMIL NADU POLLUTION CONTROL BOARD

Category of the Industry :

RED



CONSENT ORDER NO. 2308253080718 DATED: 22/06/2023.

PROCEEDINGS NO.F.1021PND/RS/DEE/TNPCB/PND/A/2023 DATED: 22/06/2023

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT –M/s. MEENAKSHI GRANITES MULTI COLOUR GRANITE QUARRY , S.F.No. 348/1(P) & 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, KARAPADI village, Sathyamangalam Taluk and Erode District - Renewal of Consent for the operation of the plant and discharge of emissions under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) –Issued- Reg.

REF: 1. CTO Proc. No.F.1021PND/RS/DEE/TNPCB/PND/W&A/2018 Dated: 14/08/2018
2. Your Unit's application for Renewal of Consent Dated: 25-05-2023
3. IR.No : F.1021PND/RS/AE/PND/2023 Dated: 21/06/2023

RENEWAL OF CONSENT is hereby granted under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) (hereinafter referred to as “The Act”) and the rules and orders made there under to

The Partner

M/s . MEENAKSHI GRANITES MULTI COLOUR GRANITE QUARRY

S.F No. 348/1(P) & 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6

KARAPADI Village

Sathyamangalam Taluk

Erode District.

Authorizing the occupier to operate the industrial plant in the Air Pollution Control Area as notified by the Government and to make discharge of emission from the stacks/chimneys.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending **March 31, 2028**

**District Environmental Engineer,
Tamil Nadu Pollution Control Board,
PERUNDURAI**



TAMIL NADU POLLUTION CONTROL BOARD

SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
Product Details			
1.	Multi Colour Granites	25589	Cu.m/ 5 Years

2. This renewal of consent is valid for operating the facility with the below mentioned emission/noise sources along with the control measures and/or stack. Any change in the emission source/control measures/change in stack height has to be brought to the notice of the Board and fresh consent/Amendment has to be obtained.

I Point source emission with stack :				
Stack No.	Point Emission Source	Air pollution Control measures	Stack height from Ground Level in m	Gaseous Discharge in Nm ³ /hr
01	DG Set 125 KVA	Acoustic enclosures with stack	3	
II Fugitive/Noise emission :				
Sl. No.	Fugitive or Noise Emission sources	Type of emission	Control measures	
1.	Drilling & Blasting	Fugitive	Water sprinkler system	

Special Additional Conditions:

The unit shall obtain No Objection Certificate (NOC) from the Tamil Nadu Bio Diversity Board /National Bio Diversity Authority if the unit is using any Biological resources or knowledge associated thereto as per the provisions of Biological Diversity Act 2002.

The industries shall take all efforts to use and popularize “Mission LiFE” logo and mascot which is available in TNPCB & MoEFCC website. They shall also request their employees to adopt “Mission LiFE” action points and document the same and furnish half yearly report to Board.

Additional Conditions:



TAMIL NADU POLLUTION CONTROL BOARD

1. The unit is permitted to mine the balance quantity of Multi Colour Granites – 21194.392 Cu.m in connection with the extended mining lease period, 1st scheme of mining approved by the Commissioner, Department of Geology and Mining, Chennai vide Rc.No.2305/MM4/2023, Dated: 12.05.2023.
2. The unit shall carry out Water Sprinkling as Air Pollution Control Measures to control the Particulate Matter during Drilling, blasting, loading, unloading and all transfer points.
3. The unit shall operate and maintain the Air Pollution Control Measures so as to achieve the AAQ/ Emission Standards prescribed by the Board.
4. The quarrying operation shall be restricted between 7 AM to 5 PM.
5. The unit shall carryout controlled Blasting operations so as to avoid fugitive emission during Blasting Operations.
6. The unit shall satisfy the Ambient Noise level standards prescribed by the Board.
7. The unit shall adopt the procedures and safety measures as per the recommendations of the Mines Department.
8. Vehicular emissions shall be kept under control and be regularly monitored and the vehicles carrying the granite shall not be overloaded.
9. The mining operation like drilling, blasting and the vehicle movements shall not make any adverse impact to the nearby habitations.
10. The unit shall continue to develop the green belt at the rate of 400 trees/ hectare.
11. The applicant should strictly adhere all the conditions imposed by State Level Environment Impact Assessment Authority in their letter No. SEIAA-TN/F.No.6464/2017/1(a)/E.C.No.3970/2018 dated 12/03/2018 during the entire lease period without any violations.
12. The unit shall comply the conditions stipulated in the lease agreement with the District Collector, Erode for quarrying and carrying away minor minerals from Ryotwari lands in which the minerals belong to the Government on 23/04/2018.
13. The unit shall carry out the Granite mining operation as per the conditions stipulated in the mining plan approved by the Commissioner of Geology and Mining, Chennai.
14. The unit shall under take the Granite quarrying in strict accordance with the orders of the Government of Tamil Nadu, as upheld by the Hon'ble High Court of Madras.
15. The unit shall ensure that the quarrying of Granite shall be within the quantity as per the EC issued dated: 12/03/2018.
16. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Chennai.
17. The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
18. 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.
19. The unit shall ensure that the operation of the Quarry shall not attract any public complaints.
20. The unit shall not use 'use and throwaway plastics' such as plastic sheets used for food wrapping, spreading on dining table, etc., plastic plates, plastic coated tea cups, plastic tumbler, water pouches and packets, plastic straw, plastic carry bag and plastic flags irrespective of thickness, within the industry premises. Instead unit shall encourage use of eco-friendly alternative such as banana leaf, arecanut palm plate, stainless steel, glass, porcelain plates/ cups, cloth bag, jute bag, etc.,

**District Environmental Engineer,
Tamil Nadu Pollution Control Board,
PERUNDURAI**

To
The Partner,
M/s.MEENAKSHI GRANITES MULTI COLOUR GRANITE QUARRY,
No.5,
Sri Padmalaya Shopping Complex,
Madurai Main Road,
Melur - 625106
Pin: 625106



TAMIL NADU POLLUTION CONTROL BOARD

Copy to:

1. The Commissioner, SATHYAMANGALAM-Panchayat Union, Sathyamangalam Taluk, Erode District .
2. Copy submitted to the Member Secretary, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.
3. The District Environmental Engineer, Tamil Nadu Pollution Control Board, PERUNDURAI for favour of kind information.
4. File



TAMIL NADU POLLUTION CONTROL BOARD

Category of the Industry :

RED



CONSENT ORDER NO. 2308153080718 DATED: 22/06/2023.

PROCEEDINGS NO.F.1021PND/RS/DEE/TNPCB/PND/W/2023 DATED: 22/06/2023

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT – M/s. MEENAKSHI GRANITES MULTI COLOUR GRANITE QUARRY , S.F.No. 348/1(P) & 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, KARAPADI village, Sathyamangalam Taluk and Erode District - Renewal of Consent for the operation of the plant and discharge of sewage and/or trade effluent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act 6 of 1974) – Issued- Reg.

REF: 1. CTO Proc. No.F.1021PND/RS/DEE/TNPCB/PND/W&A/2018 Dated: 14/08/2018
2. Your Unit's application for Renewal of Consent Dated: 25-05-2023
3. IR.No : F.1021PND/RS/AE/PND/2023 Dated: 21/06/2023

RENEWAL OF CONSENT is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act, 6 of 1974) (hereinafter referred to as “The Act”) and the rules and orders made there under to

The Partner

M/s . MEENAKSHI GRANITES MULTI COLOUR GRANITE QUARRY

S.F No. 348/1(P) & 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6

KARAPADI Village

Sathyamangalam Taluk

Erode District.

Authorising the occupier to make discharge of sewage and /or trade effluent.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending **March 31, 2028**

**District Environmental Engineer,
Tamil Nadu Pollution Control Board,
PERUNDURAI**



TAMIL NADU POLLUTION CONTROL BOARD

SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products/byproducts (Col. 2) at the rate (Col 3) mentioned below. Any change in the product/byproduct and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
Product Details			
1.	Multi Colour Granites	25589	Cu.m/ 5 Years

2. This renewal of consent is valid for operating the facility with the below mentioned outlets for the discharge of sewage/trade effluent. Any change in the outlets and the quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Outlet No.	Description of Outlet	Maximum daily discharge in KLD	Point of disposal
Effluent Type : Sewage			
1.	Sewage	1.2	On Industrys own land
Effluent Type : Trade Effluent - NIL			

Special Additional Conditions:

The unit shall obtain No Objection Certificate (NOC) from the Tamil Nadu Bio Diversity Board /National Bio Diversity Authority if the unit is using any Biological resources or knowledge associated thereto as per the provisions of Biological Diversity Act 2002.

The industries shall take all efforts to use and popularize “Mission LiFE” logo and mascot which is available in TNPCB & MoEFCC website. They shall also request their employees to adopt “Mission LiFE” action points and document the same and furnish half yearly report to Board.

Additional Conditions:



TAMIL NADU POLLUTION CONTROL BOARD

1. The unit is permitted to mine the balance quantity of Multi Colour Granites – 21194.392 Cu.m in connection with the extended mining lease period, 1st scheme of mining approved by the Commissioner, Department of Geology and Mining, Chennai vide Rc.No.2305/MM4/2023, Dated: 12.05.2023.
2. The unit shall treat and dispose the sewage generated through septic tank and soak pit arrangement.
3. The unit shall not generate trade effluent at any stage of the quarrying operation.
4. The applicant should strictly adhere all the conditions imposed by State Level Environment Impact Assessment Authority in their letter No. SEIAA-TN/F.No.6464/2017/1(a)/E.C.No.3970/2018 dated 12/03/2018 during the entire extended lease period without any violations.
5. The unit shall comply the conditions stipulated in the 1st scheme of Mining lease approved by by the Commissioner, Department of Geology and Mining, Chennai vide Rc.No.2305/MM4/2023, Dated: 12.05.2023.
6. The unit shall comply the conditions stipulated in the lease agreement with the District Collector, Erode for quarrying and carrying away minor minerals from Ryotwari lands in which the minerals belong to the Government on 23/04/2018.
7. The unit shall carry out the Granite mining operation as per the conditions stipulated in the mining plan approved by the Commissioner of Geology and Mining, Chennai.
8. The unit shall under take the Granite quarrying in strict accordance with the orders of the Government of Tamil Nadu, as upheld by the Hon'ble High Court of Madras.
9. The unit shall ensure that the quarrying activity shall be carried out only in the permitted areas as per approved mining plan details.
10. The unit shall ensure that the quarrying of Granite shall be within the quantity as per the 1st scheme of Mining lease approved by the Commissioner, Department of Geology and Mining, Chennai vide Rc.No.2305/MM4/2023, Dated: 12.05.2023.
11. The unit shall ensure that the mined-out pits should be backfilled wherever warranted and area should be suitably landscaped to prevent environmental degradation.
12. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Chennai.
13. All necessary statutory clearances shall be obtained before start of mining operation.
14. The applicant shall strictly adhere to the statutory and safety requirements.
15. The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.
16. 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.
17. The application 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.
18. The unit shall not use 'use and throwaway plastics' such as plastic sheets used for food wrapping, spreading on dining table, etc., plastic plates, plastic coated tea cups, plastic tumbler, water pouches and packets, plastic straw, plastic carry bag and plastic flags irrespective of its thickness, within the industry premises. Instead unit shall encourage use of eco-friendly alternative such a banana leaf, arecanut palm plate, stainless steel, glass, porcelain plates/cups, cloth bag, jute bag, etc.,
19. The unit shall ensure that the operation of the Quarry shall not attract any public complaints.

**District Environmental Engineer,
Tamil Nadu Pollution Control Board,
PERUNDURAI**

To
The Partner,
M/s.MEENAKSHI GRANITES MULTI COLOUR GRANITE QUARRY,
No.5,
Sri Padmalaya Shopping Complex,
Madurai Main Road,
Melur - 625106
Pin: 625106



TAMIL NADU POLLUTION CONTROL BOARD

Copy to:

1. The Commissioner, SATHYAMANGALAM-Panchayat Union, Sathyamangalam Taluk, Erode District .
2. Copy submitted to the Member Secretary, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.
3. The District Environmental Engineer, Tamil Nadu Pollution Control Board, PERUNDURAI for favour of kind information.
4. File



தமிழ்நாடு தமிழ்நாடு TAMILNADU

DY 197740

17.05.24

கோதண்டராமன்
புலவர்

A. கோதண்டராமன்
எட்டமங்கலம் வெண்டர்
ஆ.பி.எண்-5800/B-1/2008
பி.டி.எண்-625 106

AFFIDAVIT TO SEIAA, TAMIL NADU

I, TVL.Meenakshi Granites, residing at No: 5, Sri Padmalaya Complex, Madurai Main Road, Melur, Madurai District, Pincode – 625106, Tamil Nadu state do hereby solemnly declare and sincerely affirm that,

I have applied for getting Environmental Clearance to SEIAA, Tamil Nadu for Multi Colour Granite quarry lease over an extent of 8.96.6 Ha at S.F.No. 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6, Karapadi village, Sathyamangalam Taluk, Erode District

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.

For MEENAKSHI GRANITES

J. u - 2.

Partner



A. Rajendran
17/05/2024
A. RAJENDRAN, M.A., B.Ed., B.L.,
Advocate/Notary Public
2/15, Ettimangalam P.O. 625 105
Melur Taluk, Madurai District
Mob: 9786616822

- Critically polluted area as identified by CPCB constituted under Water (Prevention and Control of Pollution) Act, 1974.
- Eco Sensitive areas identified by the Forest Dept/State Govt.
- 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 Lakhs)
Developing Sanitary facilities and Library Facilities, RO Water supply system, tree plantation and environmental awareness sign Boards to Government High School, Karapadi Village.	97.00	5.0
Total Cost Allocation	97.00	5.0

3. Quarries located within 500m radius from the periphery of our quarry as per DD's 500m radius cluster letter is given below.

i) Existing Quarries:

S. No.	Name of the Applicant	S.F. No	Extent in Ha	Lease Details	Lease Period
1	Meenakshi Granites	348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, 350/2, 350/3, 350/5(P) & 350/6	8.96.6 Ha	G.O.(3D) No.18, Industries (MME-2) Department dated: 22.03.2018	23.04.2018 to 22.04.2038



A. Rajendran
17/05/2024
A. RAJENDRAN, M.A., B.Ed., B.L.,
Advocate/Notary Public
2/15, Ettimangalam P.O. 625 105
Melur Taluk, Madurai District
Mob: 9786616822

For MEENAKSHI GRANITES
J. S. S.

Partner

ii) Proposed area:

S.No.	Name of the Applicant	Village	S.F.No	Extent in Ha
---- Nil----				

iii) Lease expired and abandoned area:

S.No.	Name of the Owner	S.F.No	Extent in Ha	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 within 120m radius of mining lease boundary.

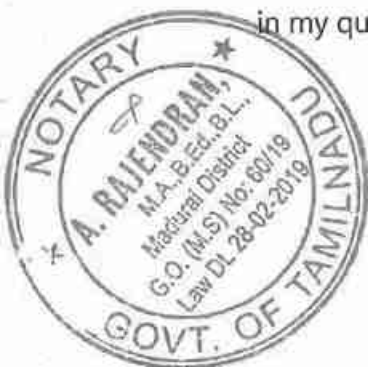
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.

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 equipment will be provided to all the labourers working in my quarry.

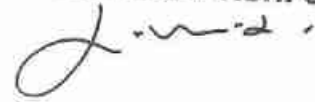


A. Rajendran
17/05/2024
A. RAJENDRAN, M.A., B.Ed., B.L.,
Advocate/Notary Public
2/15, Ettimangalam P.O. 625 105
Melur Taluk, Madurai District
Mob: 9786616822

Partner

11. No place of important such as archaeological site, temple, schools and hospitals located within 500m radius of proposed mining lease boundary.
12. The quarrying activity has not yet commenced and it will be carried out only after obtaining environmental clearance.

Deponent
For **MEENAKSHI GRANITES**



TVL. Meenakshi Granites Partner
(Project proponent)

Solemnly and sincerely affirmed and
Signed before the Notary Public on
the day of 17/05/2024



A. RAJENDRAN, M.A., B.Ed., B.L.,
Advocate/Notary Public
2/15, Ettimangalam P.O. 625 105
Melur Taluk, Madurai District
Mob: 9786616822

ABM ENVIRONMENTAL AND ANALYTICAL LABORATORY

(Unit of Aadhu Boomi Mining and Enviro Tech Pvt Ltd)



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Narasothipatti, Salem-636004, TN.
Ph: (0427)2441297, 2440416
Mob: 9842729655, 9443290855



Email: suriyakumarsembau@gmail.com, abinlabnabl@gmail.com

TEST REPORT

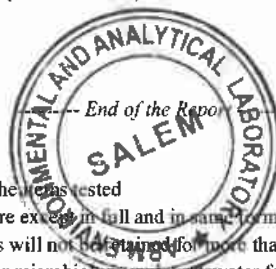
Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-823(a)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: Bore Water	Received On : 21.02.2023
Sample Description	: Colourless Liquid	Commenced On : 21.02.2023
Sample Drawn By/ Date	: By hand/21.02.2023	Completed On : 24.02.2023
Sample method	: ABMEAL/QSP/21	Sample latitude : 11°21'41.71" N
Sample Plan	: ABMEAL/QSP/22	Sample Longitude : 77° 12'23.56" E
Sample Mark	: Core Zone	
Site Address	: Village : Kerapadi District : Erode State : Tamil Nadu.	

S.No	Parameters	Units	Methods	Results
1.	pH	-	IS 3025:P.11:1983:R.2019	6.88
2	Electrical Conductivity (EC)	µs/cm	IS 3025:P.14:1984:R.2019	740
3	Turbidity	NTU	IS 3025:P.10:1984:R.2017	BDL(DL:0.1)
4	Temperature	°C	IS 3025:P.09:1984:R.2017	26
5	Total Suspended Solids (TSS)	mg/l	IS 3025:P.17:1984:R.2017	2
6	Total Dissolved Solids (TDS)	mg/l	IS 3025:P.16:1984:R.2012	436
7	Total Hardness as CaCO ₃	mg/l	IS 3025:P.21:2009:R.2019	80
8	Calcium as Ca	mg/l	IS 3025:P.40:1991:R.2019	18
9	Magnesium as Mg	mg/l	IS 3025:P.46:1994:R.2019	9
10	Chloride as Cl ⁻	mg/l	IS 3025:P.32:1988:R.2019	78
11	Total Alkalinity as CaCO ₃	mg/l	IS 3025:P.23:1986:R.2019	66
12	Phenolphthalein	mg/l	IS 3025:P.51:1986:R.2017	<2
13	Sulfate	mg/l	IS 3025:P.24:1986:R.2019	24
14	Iron	mg/l	IS 3025:P.53:1984:R.2017	0.024

V.Kaj
Prepared by
(V.KALAIVANI)

V.Kaj
Verified by
(V.KALAIVANI)

S. Suryakumar
Authorized Signatory
(S.SURYAKUMAR)



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Email: suriyakumarsemhan@gmail.com, abmlabuab1@gmail.com

TEST REPORT

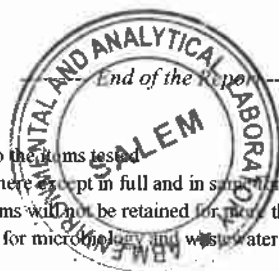
Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-824(a)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date :25.02.2023 Page : 1 of 1
Sample Name	: Bore Water	Received On : 21.02.2023
Sample Description	: Colourless Liquid	Commenced On : 21.02.2023
Sample Drawn By/ Date	: By hand/21.02.2023	Completed On : 24.02.2023
Sample method	: ABMEAL/QSP/21	Sample latitude : 11°21'29.50" N
Sample Plan	: ABMEAL/QSP/22	Sample Longitude : 77° 12'8.86" E
Sample Mark	: Buffer Zone-I	
Site Address	: Village : Kerapadi District : Erode State : Tamil Nadu.	

S.No	Parameters	Units	Methods	Results
1.	pH	-	IS 3025:P.11:1983:R.2019	7.38
2	Electrical Conductivity (EC)	µs/cm	IS 3025:P.14:1984:R.2019	1066
3	Turbidity	NTU	IS 3025:P.10:1984:R.2017	BDL(DL:0.1)
4	Temperature	°C	IS 3025:P.09:1984:R.2017	27
5	Total Suspended Solids (TSS)	mg/l	IS 3025:P.17:1984:R.2017	4
6	Total Dissolved Solids (TDS)	mg/l	IS 3025:P.16:1984:R.2012	640
7	Total Hardness as CaCO ₃	mg/l	IS 3025:P.21:2009:R.2019	170
8	Calcium as Ca	mg/l	IS 3025:P.40:1991:R.2019	37
9	Magnesium as Mg	mg/l	IS 3025:P.46:1994:R.2019	19
10	Chloride as Cl ⁻	mg/l	IS 3025:P.32:1988:R.2019	194
11	Total Alkalinity as CaCO ₃	mg/l	IS 3025:P.23:1986:R.2019	110
12	Phenolphthalein	mg/l	IS 3025:P.51:1986:R.2017	<2
13	Sulfate	mg/l	IS 3025:P.24:1986:R.2019	32
14	Iron	mg/l	IS 3025:P.53:1984:R.2017	0.042

Prepared by
(V.KALAIVANI)

Verified by
(V.KALAIVANI)

Authorized Signatory
(S.SURYAKUMAR)



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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-825(a)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023
		Page : 1 of 1
Sample Name	: Bore Water	Received On : 21.02.2023
Sample Description	: Colourless Liquid	Commenced On : 21.02.2023
Sample Drawn By/ Date	: By hand/21.02.2023	Completed On : 24.02.2023
Sample method	: ABMEAL/QSP/21	Sample latitude : 11°21'4.69" N
Sample Plan	: ABMEAL/QSP/22	Sample Longitude : 77° 13'7.14" E
Sample Mark	: Buffer Zone-II	
Site Address	: Village : Devampalayam District : Erode State : Tamil Nadu.	

S.No	Parameters	Units	Methods	Results
1.	pH	-	IS 3025:P.11:1983:R.2019	8.15
2	Electrical Conductivity (EC)	µs/cm	IS 3025:P.14:1984:R.2019	1586
3	Turbidity	NTU	IS 3025:P.10:1984:R.2017	BDL(DL:0.1)
4	Temperature	°C	IS 3025:P.09:1984:R.2017	26
5	Total Suspended Solids (TSS)	mg/l	IS 3025:P.17:1984:R.2017	8
6	Total Dissolved Solids (TDS)	mg/l	IS 3025:P.16:1984:R.2012	984
7	Total Hardness as CaCO ₃	mg/l	IS 3025:P.21:2009:R.2019	348
8	Calcium as Ca	mg/l	IS 3025:P.40:1991:R.2019	79
9	Magnesium as Mg	mg/l	IS 3025:P.46:1994:R.2019	36
10	Chloride as Cl ⁻	mg/l	IS 3025:P.32:1988:R.2019	470
11	Total Alkalinity as CaCO ₃	mg/l	IS 3025:P.23:1986:R.2019	220
12	Phenolphthalein	mg/l	IS 3025:P.51:1986:R.2017	20
13	Sulfate	mg/l	IS 3025:P.24:1986:R.2019	49
14	Iron	mg/l	IS 3025:P.53:1984:R.2017	0.06

Prepared by
(V.KALAIVANI)

Verified by
(V.KALAIVANI)

Authorized Signatory
(S.SURYAKUMAR)



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TEST REPORT

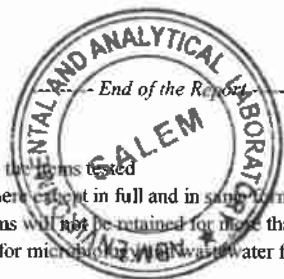
Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-826(a)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: Bore Water	Received On : 21.02.2023
Sample Description	: Colourless Liquid	Commenced On : 21.02.2023
Sample Drawn By/ Date	: By hand/21.02.2023	Completed On : 24.02.2023
Sample method	: ABMEAL/QSP/21	Sample latitude : 11°22'23.80" N
Sample Plan	: ABMEAL/QSP/22	Sample Longitude : 77° 12' 13.65" E
Sample Mark	: Buffer Zone-III	
Site Address	: Village : Kandisaalai District : Erode State : Tamil Nadu.	

S.No	Parameters	Units	Methods	Results
1.	pH	-	IS 3025:P.11:1983:R.2019	7.65
2	Electrical Conductivity (EC)	µs/cm	IS 3025:P.14:1984:R.2019	1570
3	Turbidity	NTU	IS 3025:P.10:1984:R.2017	BDL(DL:0.1)
4	Temperature	°C	IS 3025:P.09:1984:R.2017	28
5	Total Suspended Solids (TSS)	mg/l	IS 3025:P.17:1984:R.2017	8
6	Total Dissolved Solids (TDS)	mg/l	IS 3025:P.16:1984:R.2012	976
7	Total Hardness as CaCO ₃	mg/l	IS 3025:P.21:2009:R.2019	320
8	Calcium as Ca	mg/l	IS 3025:P.40:1991:R.2019	76
9	Magnesium as Mg	mg/l	IS 3025:P.46:1994:R.2019	32
10	Chloride as Cl ⁻	mg/l	IS 3025:P.32:1988:R.2019	472
11	Total Alkalinity as CaCO ₃	mg/l	IS 3025:P.23:1986:R.2019	190
12	Phenolphthalein	mg/l	IS 3025:P.51:1986:R.2017	10
14	Sulfate	mg/l	IS 3025:P.24:1986:R.2019	52
15	Iron	mg/l	IS 3025:P.53:1984:R.2017	0.036

Prepared by
(V.KALAIVANI)

Verified by
(V.KALAIVANI)

Authorized Signatory
(S.SURYAKUMAR)



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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-827(a)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: Bore Water	Received On : 21.02.2023
Sample Description	: Colourless Liquid	Commenced On : 21.02.2023
Sample Drawn By/ Date	: By hand/21.02.2023	Completed On : 24.02.2023
Sample method	: ABMEAL/QSP/21	Sample latitude : 11°21'54.50" N
Sample Plan	: ABMEAL/QSP/22	Sample Longitude : 77° 12'39.70" E
Sample Mark	: Buffer Zone-IV	
Site Address	: Village : Chinakuttai District : Erode State : Tamil Nadu.	

S.No	Parameters	Units	Methods	Results
1.	pH	-	IS 3025:P.11:1983:R.2019	7.86
2	Electrical Conductivity (EC)	µs/cm	IS 3025:P.14:1984:R.2019	1440
3	Turbidity	NTU	IS 3025:P.10:1984:R.2017	BDL(DL:0.1)
4	Temperature	°C	IS 3025:P.09:1984:R.2017	25
5	Total Suspended Solids (TSS)	mg/l	IS 3025:P.17:1984:R.2017	4
6	Total Dissolved Solids (TDS)	mg/l	IS 3025:P.16:1984:R.2012	892
7	Total Hardness as CaCO ₃	mg/l	IS 3025:P.21:2009:R.2019	380
8	Calcium as Ca	mg/l	IS 3025:P.40:1991:R.2019	88
9	Magnesium as Mg	mg/l	IS 3025:P.46:1994:R.2019	39
10	Chloride as Cl ⁻	mg/l	IS 3025:P.32:1988:R.2019	430
11	Total Alkalinity as CaCO ₃	mg/l	IS 3025:P.23:1986:R.2019	110
12	Phenolphthalein	mg/l	IS 3025:P.51:1986:R.2017	20
14	Sulfate	mg/l	IS 3025:P.24:1986:R.2019	49
15	Iron	mg/l	IS 3025:P.53:1984:R.2017	0.03

V. Kalavani
Prepared by
(V.KALAVANI)

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(V.KALAVANI)

S. Suryakumar
Authorized Signatory
(S.SURYAKUMAR)



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TEST REPORT

Sample Ref No: ABM-TRF- 232		Report No. : ABM-TR- 823(b)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam , Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: Soil	Received On : 21.02.2023
Sample Drawn By/ Date	: By hand/21.02.2023	Commenced On : 21.02.2023
Sample method	: ABMEAL/QSP/21	Completed On : 24.02.2023
Sample Plan	: ABMEAL/QSP/22	Sample latitude : 11°21'36.52" N
Sample Mark	: Core Zone	Sample Longitude : 77° 12'31.68" E
Site Address	: Village : Kerapadi District : Erode State : Tamil Nadu.	

S.No	Parameters	Test Methods	Units	Results
1.	pH	IS: 2720 (P-26):1987	-	7.10
2.	Electrical Conductivity	IS :14767 : 2000	µs/cm	84
3.	Moisture	IS:2720 (P-2):1972	%	2.38
4.	Bulk density	ABMEAL/CH/SO/SOP/18	g/cc	1.05
5.	Water holding capacity	IS :14765 : 2000	%	54
6.	Texture	IS:10317:1982	Sand	54
			Silt	26
			Clay	20
			Sandy Clay Loam	
7.	Organic Matter	IS:2720 (P-22):1972	%	1.47
8.	Calcium	ABMEAL/CH/SO/SOP/12	%	0.004
9.	Magnesium	ABMEAL/CH/SO/SOP/13	%	BDL(DL:0.1)
10.	Chloride	ABMEAL/CH/SO/SOP/14	%	0.006

BDL = Below Detectable Limit : DL: Detection Limit

Prepared by
(V.KALAIVANI)

Verified by
(S.SAGATHSRI KRISHNAN)

Authorized Signatory
(S.SURYAKUMAR)



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TEST REPORT

Sample Ref No: ABM-TRF- 232		Report No. : ABM-TR- 824(b)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam , Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: Soil	Received On : 21.02.2023
Sample Drawn By/ Date	: By hand/21.02.2023	Commenced On : 21.02.2023
Sample method	: ABMEAL/QSP/21	Completed On : 24.02.2023
Sample Plan	: ABMEAL/QSP/22	Sample latitude : 11°21'27.33" N
Sample Mark	: Buffer Zone-I	Sample Longitude : 77° 12'9.93" E
Site Address	: Village : Kerapadi District : Erode State : Tamil Nadu.	

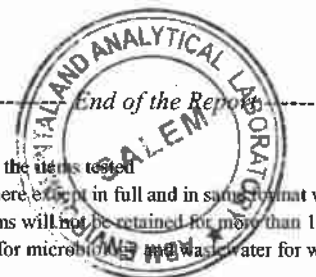
S.No	Parameters	Test Methods	Units	Results	
1.	pH	IS: 2720 (P-26):1987	-	7.41	
2.	Electrical Conductivity	IS :14767 : 2000	µs/cm	75	
3.	Moisture	IS:2720 (P-2):1972	%	2.05	
4.	Bulk density	ABMEAL/CH/SO/SOP/18	g/cc	1.15	
5.	Water holding capacity	IS :14765 : 2000	%	48	
6.	Texture	IS:10317:1982	%	Sand	48
				Silt	48
				Clay	4
				Sandy Loam	
7.	Organic Matter	IS:2720 (P-22):1972	%	1.56	
8.	Calcium	ABMEAL/CH/SO/SOP/12	%	0.003	
9.	Magnesium	ABMEAL/CH/SO/SOP/13	%	BDL(DL:0.1)	
10.	Chloride	ABMEAL/CH/SO/SOP/14	%	0.005	

BDL = Below Detectable Limit : DL: Detection Limit

V. Kalaivani
Prepared by
(V.KALAIVANI)

S. Sagathri Krishnan
Verified by
(S.SAGATHSRI KRISHNAN)

S. Suryakumar
Authorized Signatory
(S.SURYAKUMAR)



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TEST REPORT

Sample Ref No: ABM-TRF- 232		Report No. : ABM-TR- 825(b)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam , Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: Soil	Received On : 21.02.2023
Sample Drawn By/ Date	: By hand/21.02.2023	Commenced On : 21.02.2023
Sample method	: ABMEAL/QSP/21	Completed On : 24.02.2023
Sample Plan	: ABMEAL/QSP/22	Sample latitude : 11°21'7.98" N
Sample Mark	: Buffer Zone-II	Sample Longitude : 77° 13'12.48" E
Site Address	: Village : Devanpalayam District : Erode State : Tamil Nadu.	

S.No	Parameters	Test Methods	Units	Results	
1.	pH	IS: 2720 (P-26):1987	-	7.30	
2.	Electrical Conductivity	IS :14767 : 2000	µs/cm	93	
3.	Moisture	IS:2720 (P-2):1972	%	2.65	
4.	Bulk density	ABMEAL/CH/SO/SOP/18	g/cc	1.09	
5.	Water holding capacity	IS :14765 : 2000	%	44	
6.	Texture	IS:10317:1982	%	Sand	48
				Silt	32
				Clay	20
				Sandy Loam	
7.	Organic Matter	IS:2720 (P-22):1972	%	1.35	
8.	Calcium	ABMEAL/CH/SO/SOP/12	%	0.005	
9.	Magnesium	ABMEAL/CH/SO/SOP/13	%	BDL(DL:0.1)	
10.	Chloride	ABMEAL/CH/SO/SOP/14	%	0.007	

BDL = Below Detectable Limit ; DL: Detection Limit

V. Kalavani
Prepared by
(V.KALAVANI)

S. Sagath Sri Krishnan
Verified by
(S.SAGATHSRI KRISHNAN)

S. Suryakumar
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TEST REPORT

Sample Ref No: ABM-TRF- 232		Report No. : ABM-TR- 826(b)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam , Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: Soil	Received On : 21.02.2023
Sample Drawn By/ Date	: By hand/21.02.2023	Commenced On : 21.02.2023
Sample method	: ABMEAL/QSP/21	Completed On : 24.02.2023
Sample Plan	: ABMEAL/QSP/22	Sample latitude : 11°22'25.65" N
Sample Mark	: Buffer Zone-III	Sample Longitude : 77° 12'9.11" E
Site Address	: Village : Kandisaalai District : Erode State : Tamil Nadu.	

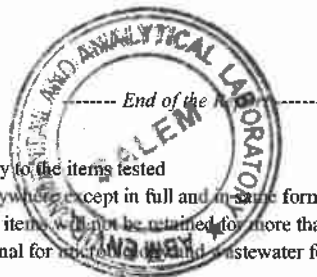
S.No	Parameters	Test Methods	Units	Results	
1.	pH	IS: 2720 (P-26):1987	-	8.46	
2.	Electrical Conductivity	IS :14767 : 2000	µs/cm	407	
3.	Moisture	IS:2720 (P-2):1972	%	2.98	
4.	Bulk density	ABMEAL/CH/SO/SOP/18	g/cc	1.22	
5.	Water holding capacity	IS :14765 : 2000	%	56	
6.	Texture	IS:10317:1982	%	Sand	48
				Silt	28
				Clay	24
				Sandy Loam	
7.	Organic Matter	IS:2720 (P-22):1972	%	1.78	
8.	Calcium	ABMEAL/CH/SO/SOP/12	%	0.007	
9.	Magnesium	ABMEAL/CH/SO/SOP/13	%	BDL(DL:0.1)	
10.	Chloride	ABMEAL/CH/SO/SOP/14	%	0.009	

BDL = Below Detectable Limit : DL: Detection Limit

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S. Sagathri Krishnan
Verified by
(S.SAGATHSRI KRISHNAN)

S. Suryakumar
Authorized Signatory
(S.SURYAKUMAR)



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ABM ENVIRONMENTAL AND ANALYTICAL LABORATORY
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TEST REPORT

Sample Ref No: ABM-TRF- 232		Report No. : ABM-TR- 827(b)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam , Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: Soil	Received On : 21.02.2023
Sample Drawn By/ Date	: By hand/21.02.2023	Commenced On : 21.02.2023
Sample method	: ABMEAL/QSP/21	Completed On : 24.02.2023
Sample Plan	: ABMEAL/QSP/22	Sample latitude : 11°223.35" N
Sample Mark	: Buffer Zone-IV	Sample Longitude : 77° 12'49.78" E
Site Address	: Village : Chinakuttai District : Erode State : Tamil Nadu.	

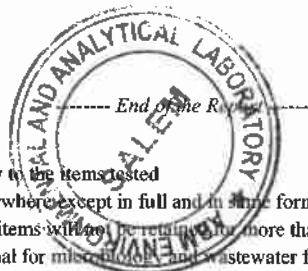
S.No	Parameters	Test Methods	Units	Results	
1.	pH	IS: 2720 (P-26):1987	.	8.04	
2.	Electrical Conductivity	IS :14767 : 2000	µs/cm	276	
3.	Moisture	IS:2720 (P-2):1972	%	2.52	
4.	Bulk density	ABMEAL/CH/SO/SOP/18	g/cc	1.35	
5.	Water holding capacity	IS :14765 : 2000	%	54	
6.	Texture	IS:10317:1982	%	Sand	48
				Silt	32
				Clay	20
				Sandy Loam	
7.	Organic Matter	IS:2720 (P-22):1972	%	1.65	
8.	Calcium	ABMEAL/CH/SO/SOP/12	%	0.006	
9.	Magnesium	ABMEAL/CH/SO/SOP/13	%	BDL(DL:0.1)	
10.	Chloride	ABMEAL/CH/SO/SOP/14	%	0.008	

BDL = Below Detectable Limit ; DL: Detection Limit

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S. Sagath Sri Krishnan
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S. Suryakumar
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(S.SURYAKUMAR)



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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-823(c)
Issued To :	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Description	: AMBIENT AIR	Received On : 21.02.2023
Sampling Method	: IS 5182(Part-14):2000	Commenced On : 21.02.2023
Date of Sampling	: 20.02.2023	Completed On : 24.02.2023
Sample Mark	: Core Zone	Sample latitude : 11° 21'40.88" N
Sample Drawn By/ Date	: By hand/21.02.2023	Sample Longitude : 77°12'24.30" E
Sampling Method	: ABMEAL/QSP/22	
Ambient Temperature	: 30°C	
Relative Humidity	: 67%	
Site Address	: Village : Kerapadi District : Erode State : Tamil Nadu.	

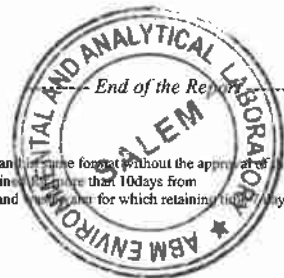
S.NO	PARAMETERS	PROTOCOL	UNIT	RESULT
1	Particulate Matter(PM2.5)	IS 5182 (Part 24): 2019	µg/m ³	27
2	Respirable Particulate Matter(PM10)	IS 5182 (Part 23): 2006	µg/m ³	49
3	Sulphur Dioxide(SO ₂)	IS 5182 (Part 2): 2006	µg/m ³	12
4	Nitrogen Dioxide(NO ₂)	IS 5182(Part 6) : 2006	µg/m ³	22
5	Ozone(O ₃)	IS 5182(Part 9): 1974	µg/m ³	30
6	Ammonia(NH ₃)	IS 5182 (Part 25): 2018	µg/m ³	25
7	Nickel(Ni)	IS 5182 (Part 26) : 2020	µg/m ³	BDL(DL:0.1)
8	Lead(Pb)	IS 5180(Part22): 2004	µg/m ³	BDL(DL:0.1)

BDL = Below Detectable Limit ; DL = Detection Limit

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(V.KALAIVANI)

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Verified by
(V.KALAIVANI)

S. Suryakumar
Authorized Signatory
(S.SURYAKUMAR)



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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-824(c)
Issued To :	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Description	: AMBIENT AIR	Received On : 21.02.2023
Sampling Method	: IS 5182(Part-14):2000	Commenced On : 21.02.2023
Date of Sampling	: 20.02.2023	Completed On : 24.02.2023
Sample Mark	: Buffer Zone-I	Sample latitude : 11° 21' 28.02" N
Sample Drawn By/ Date	: By hand/21.02.2023	Sample Longitude : 77° 12' 9.54" E
Sampling Method	: ABMEAL/QSP/22	
Ambient Temperature	: 29°C	
Relative Humidity	: 68%	
Site Address	: Village : Kerapadi District : Erode State : Tamil Nadu.	

S.NO	PARAMETERS	PROTOCOL	UNIT	RESULT
1	Particulate Matter(PM2.5)	IS 5182 (Part 24): 2019	µg/m ³	28
2	Respirable Particulate Matter(PM10)	IS 5182 (Part 23): 2006	µg/m ³	50
3	Sulphur Dioxide(SO ₂)	IS 5182 (Part 2): 2006	µg/m ³	14
4	Nitrogen Dioxide(NO ₂)	IS 5182(Part 6) : 2006	µg/m ³	23
5	Ozone(O ₃)	IS 5182(Part 9): 1974	µg/m ³	31
6	Ammonia(NH ₃)	IS 5182 (Part 25): 2018	µg/m ³	26
7	Nickel(Ni)	IS 5182 (Part 26) : 2020	µg/m ³	BDL(DL:0.1)
8	Lead(Pb)	IS 5180(Part22): 2004	µg/m ³	BDL(DL:0.1)

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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-825(c)
Issued To :	Meenakshi Granite, Kerapadi Village, Sathyamangalam , Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Description	: AMBIENT AIR	Received On : 21.02.2023
Sampling Method	: IS 5182(Part-14):2000	Commenced On : 21.02.2023
Date of Sampling	: 20.02.2023	Completed On : 24.02.2023
Sample Mark	: Buffer Zone-II	Sample latitude : 11° 21'3.98" N
Sample Drawn By/ Date	: By hand/21.02.2023	Sample Longitude : 77°13'12.04" E
Sampling Method	: ABMEAL/QSP/22	
Ambient Temperature	: 32°C	
Relative Humidity	: 69%	
Site Address	: Village : Devampalayam District : Erode State : Tamil Nadu.	

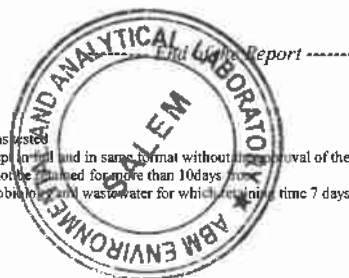
S.NO	PARAMETERS	PROTOCOL	UNIT	RESULT
1	Particulate Matter(PM2.5)	IS 5182 (Part 24): 2019	µg/m ³	25
2	Respirable Particulate Matter(PM10)	IS 5182 (Part 23): 2006	µg/m ³	48
3	Sulphur Dioxide(SO ₂)	IS 5182 (Part 2): 2006	µg/m ³	11
4	Nitrogen Dioxide(NO ₂)	IS 5182(Part 6) : 2006	µg/m ³	21
5	Ozone(O ₃)	IS 5182(Part 9): 1974	µg/m ³	28
6	Ammonia(NH ₃)	IS 5182 (Part 25): 2018	µg/m ³	23
7	Nickel(Ni)	IS 5182 (Part 26) : 2020	µg/m ³	BDL(DL:0.1)
8	Lead(Pb)	IS 5180(Part22): 2004	µg/m ³	BDL(DL:0.1)

BDL = Below Detectable Limit ; DL = Detection Limit

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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-826(c)
Issued To :	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Description	: AMBIENT AIR	Received On : 21.02.2023
Sampling Method	: IS 5182(Part-14):2000	Commenced On : 21.02.2023
Date of Sampling	: 20.02.2023	Completed On : 24.02.2023
Sample Mark	: Buffer Zone-III	Sample latitude : 11° 22'23.24" N
Sample Drawn By/ Date	: By hand/21.02.2023	Sample Longitude : 77°12'12.51" E
Sampling Method	: ABMEAL/QSP/22	
Ambient Temperature	: 33°C	
Relative Humidity	: 72%	
Site Address	: Village : Kandisaalai District : Erode State : Tamil Nadu.	

S.NO	PARAMETERS	PROTOCOL	UNIT	RESULT
1	Particulate Matter(PM2.5)	IS 5182 (Part 24): 2019	µg/m ³	29
2	Respirable Particulate Matter(PM10)	IS 5182 (Part 23): 2006	µg/m ³	47
3	Sulphur Dioxide(SO ₂)	IS 5182 (Part 2): 2006	µg/m ³	13
4	Nitrogen Dioxide(NO ₂)	IS 5182(Part 6) : 2006	µg/m ³	24
5	Ozone(O ₃)	IS 5182(Part 9): 1974	µg/m ³	32
6	Ammonia(NH ₃)	IS 5182 (Part 25): 2018	µg/m ³	26
7	Nickel(Ni)	IS 5182 (Part 26) : 2020	µg/m ³	BDL(DL:0.1)
8	Lead(Pb)	IS 5180(Part22): 2004	µg/m ³	BDL(DL:0.1)

BDL = Below Detectable Limit ; DL = Detection Limit

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(V.KALAIVANI)

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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-827(c)
Issued To :	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Description	: AMBIENT AIR	Received On : 21.02.2023
Sampling Method	: IS 5182(Part-14):2000	Commenced On : 21.02.2023
Date of Sampling	: 20.02.2023	Completed On : 24.02.2023
Sample Mark	: Buffer Zone-IV	Sample latitude : 11° 22' 2.95" N
Sample Drawn By/ Date	: By hand/21.02.2023	Sample Longitude : 77° 12' 50.39" E
Sampling Method	: ABMEAL/QSP/22	
Ambient Temperature	: 28°C	
Relative Humidity	: 65%	
Site Address	: Village : Chinakuttai District : Erode State : Tamil Nadu.	

S.NO	PARAMETERS	PROTOCOL	UNIT	RESULT
1	Particulate Matter(PM2.5)	IS 5182 (Part 24): 2019	µg/m ³	26
2	Respirable Particulate Matter(PM10)	IS 5182 (Part 23): 2006	µg/m ³	46
3	Sulphur Dioxide(SO ₂)	IS 5182 (Part 2): 2006	µg/m ³	15
4	Nitrogen Dioxide(NO ₂)	IS 5182(Part 6) : 2006	µg/m ³	25
5	Ozone(O ₃)	IS 5182(Part 9): 1974	µg/m ³	29
6	Ammonia(NH ₃)	IS 5182 (Part 25): 2018	µg/m ³	22
7	Nickel(Ni)	IS 5182 (Part 26) : 2020	µg/m ³	BDL(DL:0.1)
8	Lead(Pb)	IS 5180(Part22): 2004	µg/m ³	BDL(DL:0.1)

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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-823(d)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam , Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: NOISE	Data Received On : 21.02.2023
Monitoring Date	: 20.02.2023	
Site Address	: Village : Kerapadi District : Erode State : Tamil Nadu.	

S.NO	PARAMETERS	TEST METOD	UNIT	LOCATION	RESULT
1	NOISE	IS:9989-1981	dB(A)	N	47.6
2				W	49.2
3				E	47.8
4				S	45.0
5				Core Zone	44.2

Prepared by
(V.KALAIVANI)

Verified by
(S.SURYAKUMAR)



End of the Report -----

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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-824(d)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: NOISE	Data Received On : 21.02.2023
Monitoring Date	: 20.02.2023	
Site Address	: Village : Kerapadi District : Erode State : Tamil Nadu.	

S.NO	PARAMETERS	TEST METOD	UNIT	LOCATION	RESULT
1	NOISE	IS:9989-1981	dB(A)	Buffer Zone-I	42.3

Prepared by
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(V.KALAVANI)

S.Suryakumar
Verified by
(S.SURYAKUMAR)



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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-825(d)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: NOISE	Data Received On : 21.02.2023
Monitoring Date	: 20.02.2023	
Site Address	: Village : Devampalayam District : Erode State : Tamil Nadu	

S.NO	PARAMETERS	TEST METOD	UNIT	LOCATION	RESULT
1	NOISE	IS:9989-1981	dB(A)	Buffer Zone-II	45.8

V.Kaly
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(V.KALAIVANI)

gh
Verified by
(S.SURYAKUMAR)



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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-826(d)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: NOISE	Data Received On : 21.02.2023
Monitoring Date	: 20.02.2023	
Site Address	: Village : Kandisaalai District : Erode State : Tamil Nadu.	

S.NO	PARAMETERS	TEST METOD	UNIT	LOCATION	RESULT
1	NOISE	IS:9989-1981	dB(A)	Buffer Zone-III	42.7

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S. Suryakumar
Verified by
(S.SURYAKUMAR)



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TEST REPORT

Sample Ref No: ABM-TRF-232		Report No. : ABM-TR-827(d)
Issued To:	Meenakshi Granite, Kerapadi Village, Sathyamangalam, Erode (Dt).	Report Date : 25.02.2023 Page : 1 of 1
Sample Name	: NOISE	Data Received On : 21.02.2023
Monitoring Date	: 20.02.2023	
Site Address	: Village : Chinakuttai District : Erode State : Tamil Nadu.	

S.NO	PARAMETERS	TEST METOD	UNIT	LOCATION	RESULT
1	NOISE	IS:9989-1981	dB(A)	Buffer Zone-IV	44.5

V. Kalaiyani
Prepared by
(V.KALAIYANI)

S. Suryakumar
Verified by
(S.SURYAKUMAR)



- Note: 1. Test Results Shown in this test report only to the items tested
2. This test report shall not be reproduce anywhere except in full and in same format without the approval of the laboratory
3. Unless informed by the customer the test items will not be retained for more than 10days from
The date of issue of test report (exceptional for microbiology and wastewater for which retaining time 7 days)