EXECUTIVE SUMMARY

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT OF EXISTING MULTICOLOUR GRANITE QUARRY

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

Category- B1

Project Proponent

Tvl. Meenakshi Granites

No: 5, Sri Padmalaya Complex,
Madurai Main Road, Melur
Madurai District – 625106

Project Details

S. F. No	: 348/1(P), 348/2(P), 348/5, 348/6, 349/1, 349/3, 349/4, 350/1, etc.,
Extent Area	: 8.96.6 Ha
Village	: Karapadi
Taluk	: Sathiyamangalam
District	: Erode

ToR Identification No: TO24B0108TN5529412N Dated: 12.07.2024

EIA CONSULTANT

AADHI BOOMI MINING & ENVIRO TECH (P) LTD
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2024

Executive Summary

1.0 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 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.

1.1 Details of Project and Project Proponent

Table No 1. 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

1.2 SCOPE OF THEPROJECT

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.

1.3 ENVIRONMENTAL SETTINGS & MINING DETAILS

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

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 5kmradius 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 1.5 Mining Details

Particulars	Details
Method of Mining	Open cast – mechanized mining
Geological resources	**14,32,908m^3**
Mineable reserves	**9,82,461m^3**
Production	**25,364m^3**@ 30% of granite for five years and **5,073m^3**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	**Pit** / **L(m)** / **W(m)** / **D(m) RL** I / 125m / 70m / 0-12m

1.4 Description of the environment

1.4.1 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 1.6 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)

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	

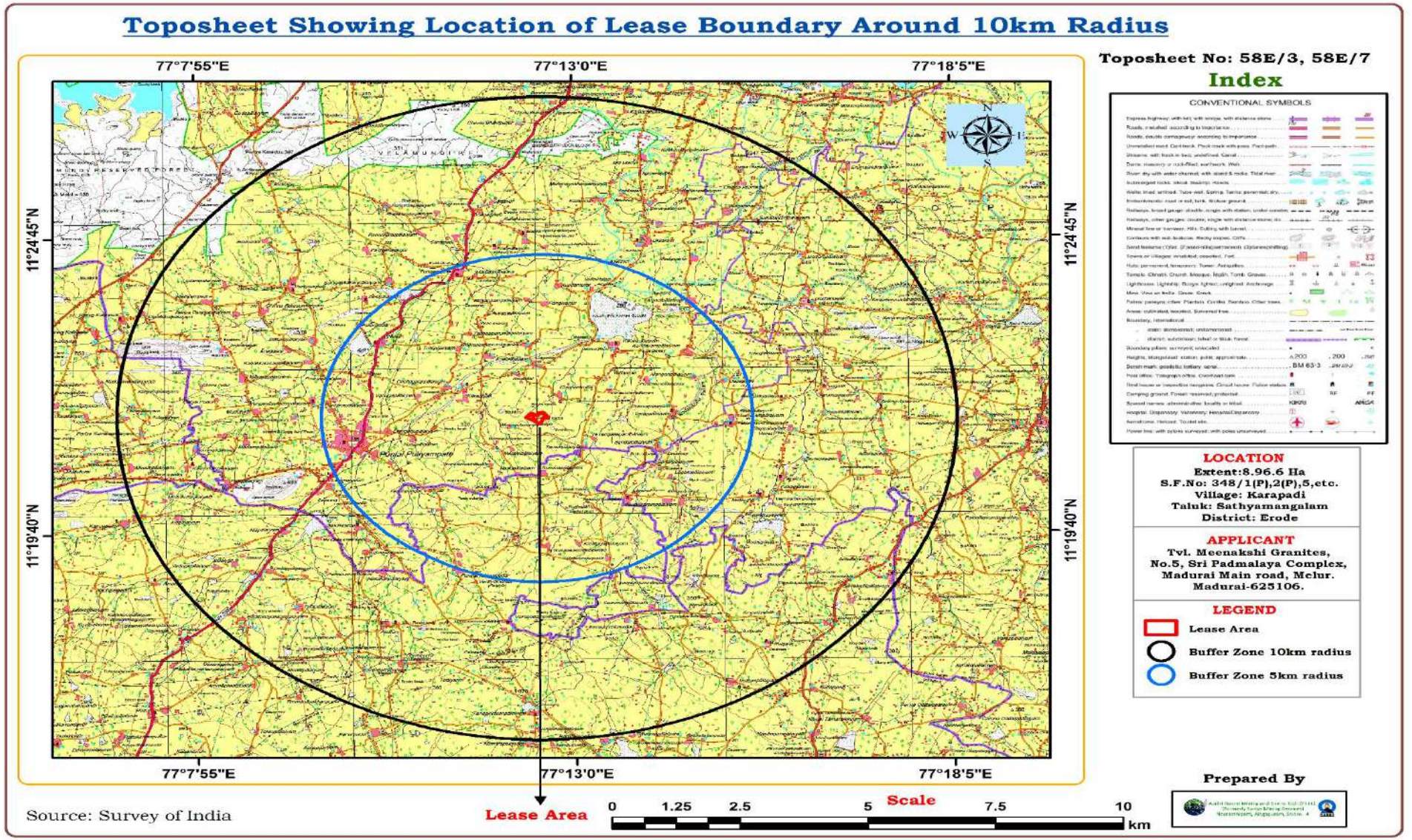

Fig No 1.1 Toposheet showing location of the lease area

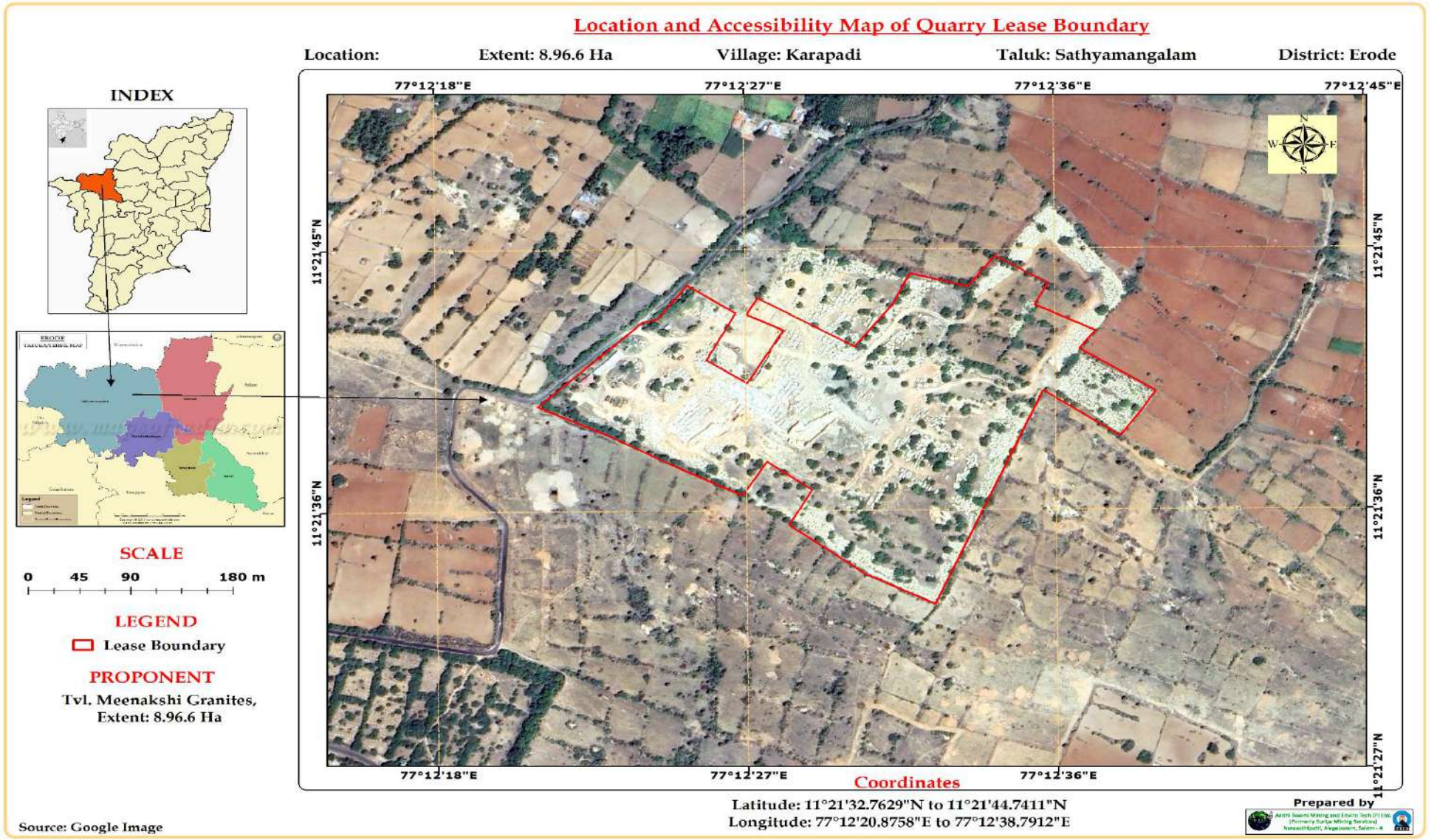

Fig No 1.2 Map Showing the Location and Accessibility of Quarry Lease Boundary

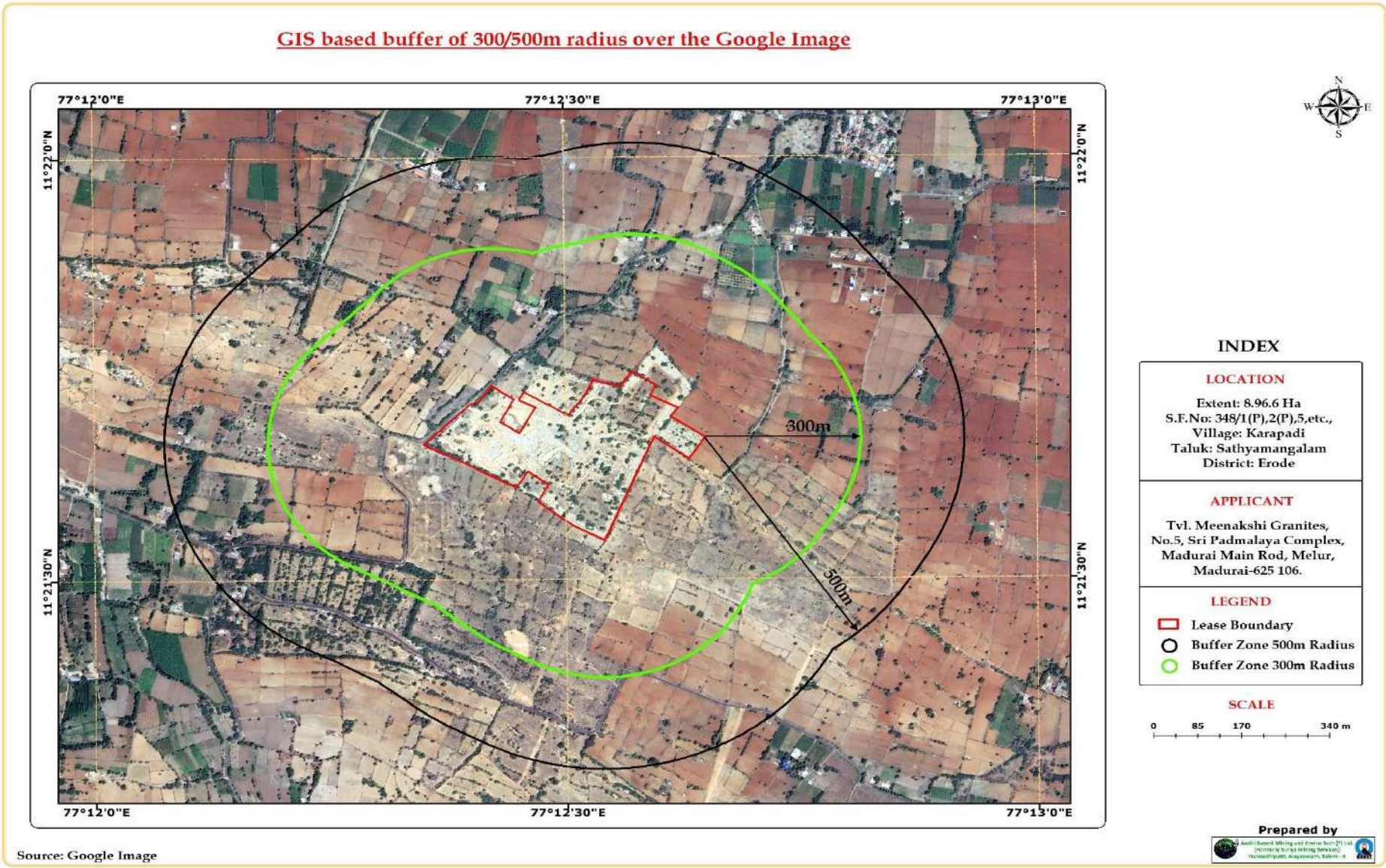

Fig No 1.3 Google Earth Image showing 300m and 500m radius around lease area

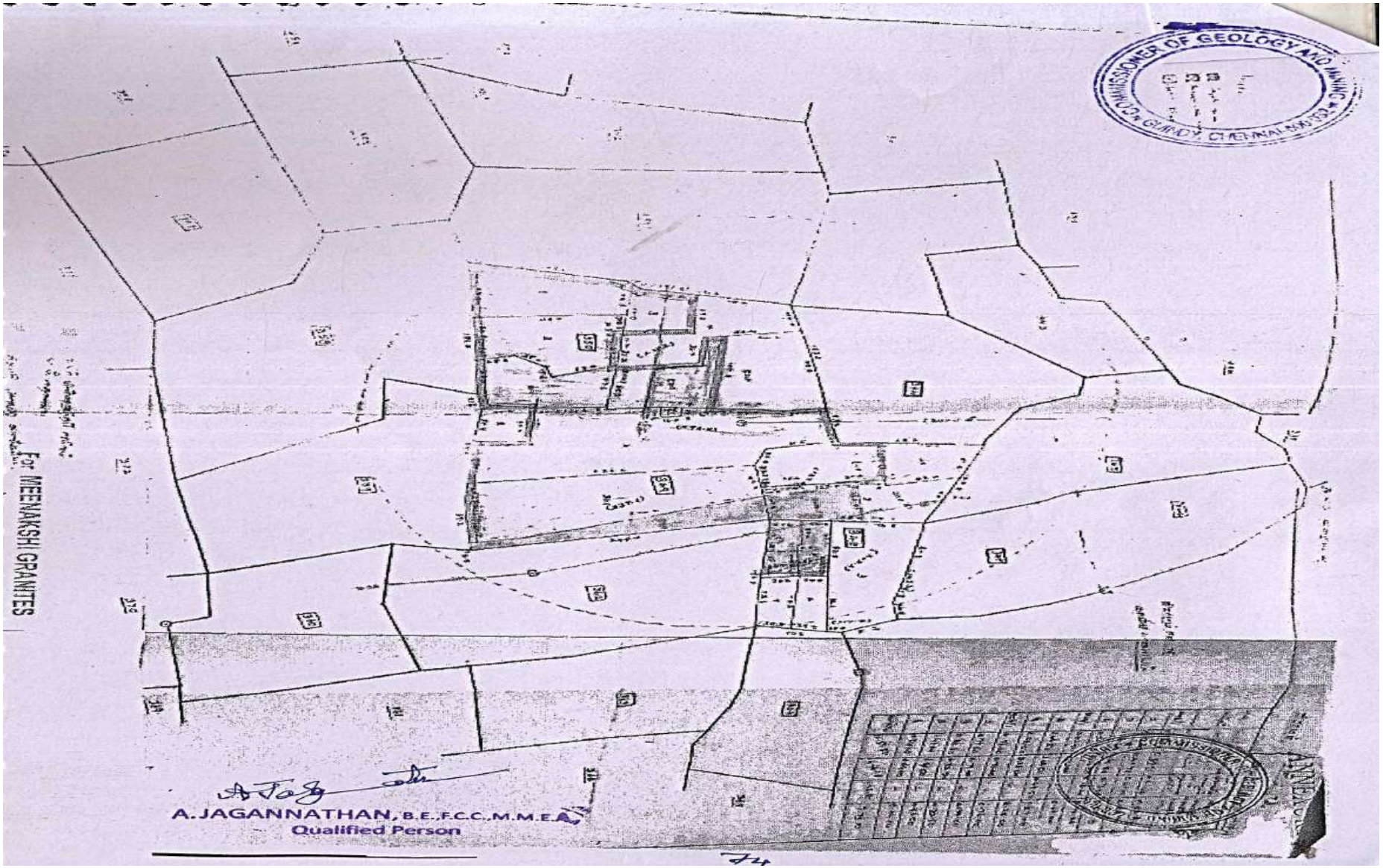

Fig. No. 1.4: Village Map

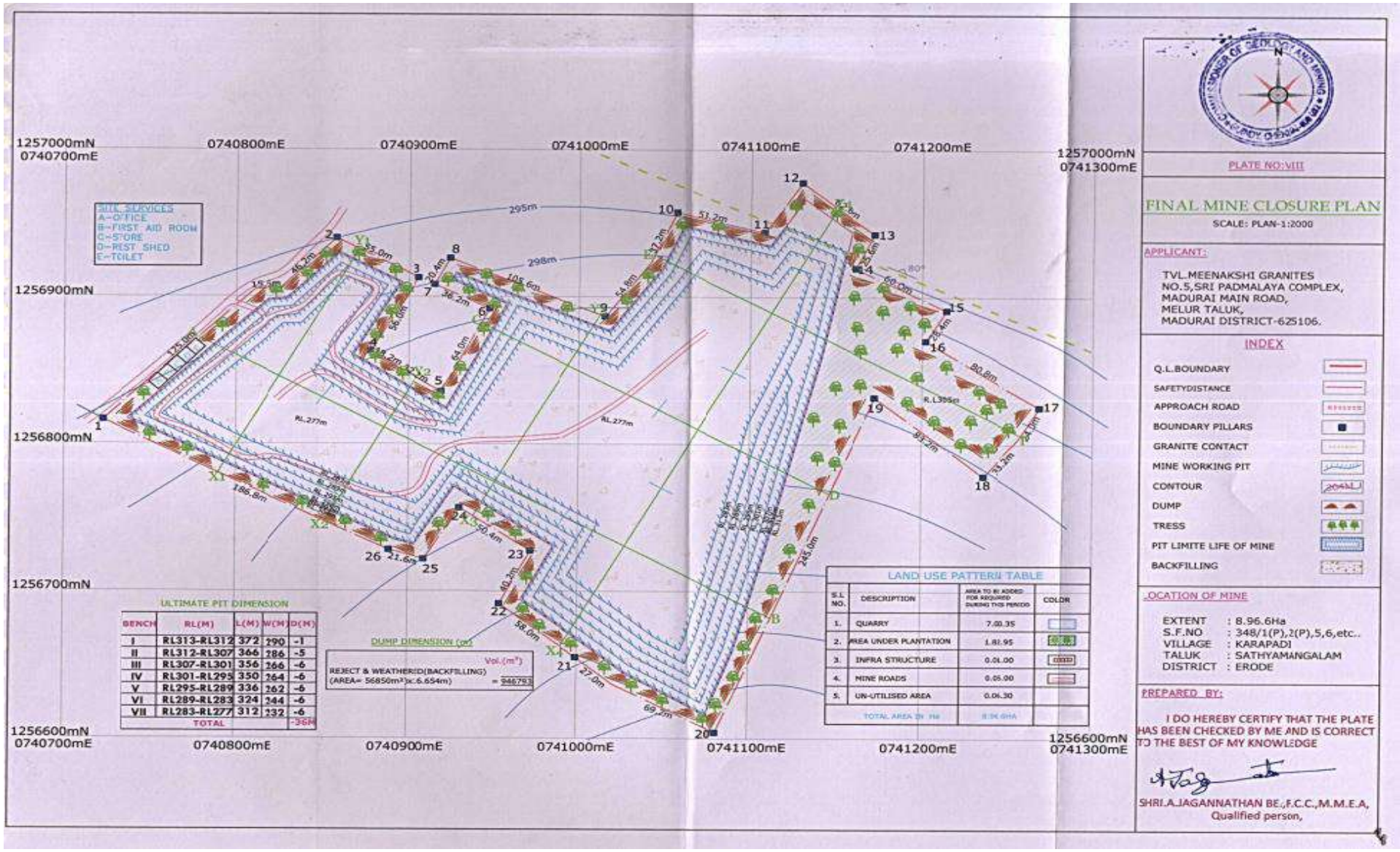

Fig No. 1.5: Conceptual mining plan/ Mine Closure Plan

1.5 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

1.5.1 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 PM_{10} during conditions i) Loading/unloading and transportation of granite and weathered rock by trucks on Haul ii) During blasting of minerals. Total predicted 24-h maximum GLC of PM_{10} at project site for scenario 1 i.e loading-unloading and transportation and scenario 2 i.e. Blasting was 73.98µg/m^3 and 52.13 µg/m^3 occurred at the project site after superposition of base-line value 44 µg/m^3 over the incremental value of 25.98 µg/m^3 and 4.13 µg/m^3 due to combined impact of loading and unloading and transportation over the haul road and due to blasting.

1.5.2 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.

1.5.3 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.

1.5.4 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.

1.5.5 Soil Environment

For the plan period 2023-2028, the generation of top soil is estimated as 15192 m^3. 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.

1.5.6 Waste Dump

The proposed rate of production of multi colour granite for five years is about 25364m^3 at the rate of 30% recovery up to permissible depth. The 70% reject of 59182m^3 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.

1.5.7 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.

1.5.8 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.

1.5.9 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

Table 1.7 Environmental Management Plan			
S. No	**Parameters**	**Mining Activity**	**Mitigation measures**
1	Air Environment	Drilling	○ 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	○ Regular water sprinkling on blasted heaps at regular intervals will help in reducing considerable dust pollution
		Loading	○ Water sprinkling be done before loading by making it moist
		Transportation	○ 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	○ DG sets will be used only during power failure ○ Adequate stack height for DG sets will be provided as per CPCB norms
		General measures	○ 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.

2	Water Environment	Surface water	○ Wastewater discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
		Ground water	○ The mining activity will not intersect the ground water table ○ Desilting will be carried out before and immediately after the monsoon season
		Storm water	○ 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 judicially utilize the rainwater as part of rain water harvesting
		General measures	○ Regular monitoring and analyzing the quality of water
3	Noise Environment	Drilling	○ Limiting time exposure of workers to excessive noise
		Blasting	○ 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	○ 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. ○ It will be ensured that all transportation vehicles carry a valid PUC Certificates
		General measures	○ 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	○ 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	○ 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
6	Waste Dump	Stabilization of Dumps	○ 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	○ 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		○ 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		○ Good maintenance practices will be adopted for machinery and

			equipment, which will help to avert potential noise problems. o Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines. o Drilling, blasting etc at specified location will be followed with proper schedule. o Appropriate air pollution control measure will be taken so as to minimize the environmental impact within the core zone. o An emergency preparedness plan will be prepared in advance, to deal with firefighting, evacuation and local communication. o 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). o As a part of CSR activities community welfare measures will be taken by Proponent through local Panchayat
10	Occupational Health		o First-aid facilities as per provisions under Rule (44) of Mines Rules 1955 o Initial and Periodical medical examination shall be conducted for the employees under Rule 29B & 45 (A). o Insurance will be taken in the name of the labourers working in the mines o Workers involved in mining work shall be provided protective equipments such as Thick Gloves, Goggles, ear plugs, safety boot wears, etc.,

1.6 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.

1.7 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: 1.8 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

		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

1.8 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.

1.9 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.