DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT OF GREY GRANITE QUARRY

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

CATEGORY - B1 – CLUSTER - MINOR MINERAL – NON-FOREST LAND

Project Proponent

M/s. M.P. Mining and Leasing Company

No.2/226, Karisalkulam Road, Vakkanangundu,
Kariyapatti Taluk,
Virudhunagar District – 626 104

Proposed Production	*Project Site Details*
Geological Reserves : 3,69,160 m^3 Mineable Reserves : 1,35,396 m^3 Production : 42,381 m^3 Proposed depth : 25m bgl	Extent Area : 1.84.0 Ha S.F. No : 268/1Y, etc., Jagadevipalayam Village Bargur Taluk, Krishnagiri District

Terms of Reference (ToR)

TOR Identification No. TO26B0108TN5155508N Dated: 25.06.2026

Laboratory

ABM Enviro Lab

NIPBASS PLAZA, 4/77-L, Narasothipatti, Salem-636004
NABL Certificate No: **TC-15822/** Valid up to: **01.04.2029**
Baseline Monitoring Period: March, 2026 to May, 2026

EIA Consultant

UIN: ABM/MIN/EIA/2026-27/003/R1/2026

AADHI BOOMI MINING & ENVIRO TECH (P) LTD

(NABET Accredited EIA Organization)

NABET Certificate No: NABET/EIA/24-27/RA 0365/Valid Up to: 23.10.2027

3/216, K.S.V. Nagar, Narasothipatti, Alagapuram (PO),
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2026

M/s. M.P Mining and Leasing Company
No. 2/226, Karisalkulam Road,
Vakkanangundu,
Kariyapatti Taluk,
Virudhunagar - 626104.
Tamil Nadu.
Contact No: +91-9751520324

Date:

To

District Environmental Engineer

Tamil Nadu Pollution Control Board (TNPCB),

Plot No:140A, SIPCOT Industrial Complex,

Hosur - 635 126

Sub: Submission of **Draft Environmental Impact Assessment Report** as per EIA Notification, 2006 dated 14.09.2006 and amendments for the Grey Granite Quarry located within cluster area over an extent of 1.84.0 Ha of S.F.No's: 268/1Y, 268/1Z, 268/1AA, 268/2K in Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu–reg.

Ref:

1. Precise area communication letter. No: 1298/MME.2/2016-1, dated 04.07.2016
2. Approval of Mining Plan Vide Rc. No. 8035/MM4/2022, Dated: 30.12.2022
3. ToR Identification No: TO26B0108TN5155508N Dated: 25.06.2026

Dear Sir,

With reference to the above mentioned subject, we herewith submit the hard copy of **Draft Environmental Impact Assessment Report** as per the Terms of Reference vide ToR Identification No: TO26B0108TN5155508N Dated: 25.06.2026 with a Demand Draft of Rs._____in favour of DEE, TNPCB, Hosur for your kind perusal. Hence, we kindly request you to process our application for Public Hearing as per EIA Notification, 2006 for obtaining Environment Clearance from SEIAA/SEAC, Tamil Nadu as early as possible.

Thanking You,

Yours faithfully,

M/s. M.P Mining and Leasing Company
(Project Proponent)

Encl:
Draft EIA Report along with the soft copy.

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M/s. M.P Mining and Leasing Company
No. 2/226, Karisalkulam Road,
Vakkanangundu,
Kariyapatti Taluk,
Virudhunagar - 626104.
Tamil Nadu.
Contact No: +91-9751520324

Undertaking by Project Proponent

I, **M/s. M.P. Mining and Leasing Company** (G.P. Panneer, Managing Partner), as **Project Proponent,** hereby give this undertaking to the effect that the conditions laid down in Terms of Reference vide ToR Identification No. TO26B0108TN5155508N Dated: 25.06.2026 for our existing Grey granite quarry, in S.F. No. 268/1Y, 268/1Z, 268/1AA, 268/2K, over an extent 1.84.0 Ha in Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu, 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

GST : 33AAOC0944L1ZJ

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**, CEO 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. TO26B0108TN5155508N Dated: 25.06.2026 for conducting Public Hearing and obtaining Environment Clearance from SEIAA/SEAC, Tamil Nadu for existing grey granite quarry of M/s. M.P. Mining and Leasing Company located in Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.

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

Name : **Dr.S.Suriyakumar**

Signature : For Aadhi Boomi Mining And Enviro Tech (P) Ltd., Director

Designation : **EIA Coordinator**

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

QCI/NABET Accredited Consultant, Certificate No: **NABET/EIA/24-27/RA 0365**.

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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

S. No		TERMS OF REFERENCE		P. No
1. SEAC Conditions - Site Specific				
	1	The pp shall obtain certified compliance report for the project from the concerned Regional Office of the Ministry and action taken report for all the non-compliances in the CCR, if any.	Under Process.	-
1.1	2	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 required statutory personnel, appropriate environmental management, system of maintaining the haul roads and village/panchayat roads, authorized blasting operation, Monitoring system of the environmental & other statutory compliances & its reporting status, etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (iii) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii)The 'Standard Operating Procedures' (SoP) executing the planned activities.	Under Process.	-
	3	The PP shall ensure the installation of CCTV at the proposed quarry site and ensure its inclusion during the EIA Presentation.	We have already installed the CCTV in quarry lease area.	-
1. SEIAA Specific Condition				
1.1		After detailed discussions, the Authority accepts the recommendation of SEAC-I and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of ROM- 42,381m^3 of Grey Granite which includes 16,952m^3 of Grey Granite Recovery @40% and 25,429m^3 of Granite waste @60% up to the depth of 25m BGL (including the existing pit depth of 13m BGL) and annual peak production shall not exceed 3,603m^3 of Grey Granite Recovery @40% per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment	Agreed.	-

		Management Plan subject to the conditions as recommended by SEAC & normal conditions & the SEIAA Specific & Standard conditions.		
		The PP shall obtain and submit a revised Scheme of Mining Plan from the competent Authority, as the one already submitted is for the period 2022-2023 to 2026-2027.	Agreed.	-
1. SEIAA Standard Conditions				
Cluster Management Committee				
3.1	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, the usage of haul roads by the individual quarry in the form of route map and network.	Certified Blaster will be engaged for blasting having adequate knowledge in Environmental safety aspects. Plan will be included in the EIA report. The usage of haul roads by the individual quarry is attached in EIA report.	-
	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.	161
	6	The Cluster Management Committee shall form Environmental Policy to practice	Agreed. The CMC will form Environmental Policy to practice sustainable mining in a	-

		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.	scientific and systematic manner. The same shall be displayed within the cluster area.	
	7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	The conceptual plan for the quarry area 1.84.0 Ha is attached in the EIA report. After forming CMC, the restoration strategy of individual quarry will be submitted to AD Mines, Keishnagiri.	-
	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.	-
	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.	144
	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 grey granite quarry there is no trees or plants in quarry area. However, PP planted Neem trees along the boundary of mining lease area. There are only few numbers of Neem trees, coconut trees, palm trees, *Prosopis juliflora* are found 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-cultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed bank sand suggest measures to maintain the natural Ecosystem.	The impact on ecology and biodiversity including the soil micro flora, fauna and soil seed banks around the project site is mentioned in chapter 4.	144
	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.	151

	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.	155
	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.	15 to 17
	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 grey granite 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 mine lease period.	The hydro geology study has been conducted within the study area of project site in Chapter 3. The details of water bodies in the study area are given chapter 2. The depth of water table identified by Geo resistivity survey is 64m bgl whereas the proposed depth of mining is 25m bgl. Therefore, the mining activity will not intersect ground water table.	15 to 17 65
	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.	144
	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. The soil physical, chemical components and microbial components are given in Chapter 3.	143
	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.	139
	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.	-
	Energy			
	28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished	Agreed	-

Climate Change			
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.	The carbon emission due to proposed mining activity and its mitigation measures are given in Chapter 4.	131
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.	The carbon emission due to proposed mining activity and its mitigation measures are given in Chapter 4.	131
31	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			
32	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Detailed mine closure plan incorporate in chapter 2 in the EIA report.	38
EMP			
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.	Detailed Environmental management plan is given in chapter 10.	173
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.	The Environmental management plan is given chapter 10. The cost for green belt development is mentioned in table 10.2 in chapter 10. Budget for mine closure plan is given in table 10.3 in chapter 10. The disaster management plan is given in chapter 7.	173 to 180
Risk Assessment			
35	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Risk Assessment and management Plan has been prepared and included in the EIA report. Refer Chapter 7.	161
Disaster Management Plan			

	36	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	The Disaster management Plan has been prepared and included in the EIA report of chapter 7.	161
	Others			
	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.	The project proponent obtained from VAO certificate for 300m radius in the lease area	291
	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.	Agreed.	-
	39	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the Environment. The ecological risks and impacts of plastic & microplastics on aquatic Environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	The study on pollution due to plastic and micro plastic and its ecological risk is mentioned in chapter 7.	167
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	Under Process.	-

		Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.		
	2	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	Yes, The Latest habitations detail VAO certificate enclose in annexures.	291
	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 table 2.2 in chapter 2.	15 to 17
	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 chapter 3 in EIA report. The details of water bodies in the study area are given table 2.2 in chapter 2.	65, 15 to 17
	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. The impact on Ecology and Biodiversity are given in chapter 4.	75 & 144
	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 EIA report.	15 to 17

	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.	Slope stability study under preparation and incorporated in final EIA Report.	-
	8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.	Slope stability study under preparation and incorporated in final EIA Report.	-
	9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	Agreed. The affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961.	-
	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 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 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 included in final EIA report.	-
	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,	Under process	-
	13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Under Process	-
	14	Quantity of minerals mined out. ❖ Highest production achieved in any one year ❖ Detail of approved depth of mining. ❖ Actual depth of the mining achieved earlier. ❖ Name of the person already mined in that leases area. ❖ If EC and CTO already obtained, the copy of the same shall be submitted. ❖ Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	Under Process	-
	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).	The Toposheet showing location of the lease area is attached in Chapter 1. The geology and geomorphology of the 10km radius of proposed area is given in chapter 3. The land use/land cover image is given chapter 3.	6 116 109
	16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,	The drone video, fencing and green belt development along the periphery is under process. The photographs will be attached in final EIA Report.	-
	17	The proponent shall furnish photographs of	The fencing and green belt development	-

		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.	along the periphery is under process. The photographs will be attached in final EIA Report.	
	18	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.	The details of reserves, production capacity and methodology are given in chapter – 2. The impacts on surrounding environment due to mining activity are given in chapter 4.	33 to 36 147
	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.	The employment potential of proposed project is given in chapter 2.	39
	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 thei mpacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.	The hydro 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 chapter 2. The depth of water table identified by Geo resistivity survey is 64m bgl whereas the proposed depth of mining is 25m bgl. Therefore, the mining activity will not intersect ground water table.	65 15 to 17 65
	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	The baseline data for the environmental and ecological parameters were collected. Refer chapter 3.	44 to 89

		quality & flora/fauna including traffic/vehicular movement study.		
	22	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	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.	118 to 162 181
	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.	165
	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.	109
	25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.	Not applicable. All waste and rejects shall be dumped within the lease area of 1.84.0 Ha of M.P. Mining and Leasing Company.	-
	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	No. There is no boundary of critically polluted area found within 10km radius proposed mining lease area.	-

		considered.		
	27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	At the end of mining, the quarried-out pit will be used for storing rain water which will enhance agricultural activity around the lease area. The rain harvesting plan is given detail in chapter 7.	165
	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 chapter 2.	19
	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 in chapter 2.	38
	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 should be planted in a mixed manner.	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	-
	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	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.	-

		authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner		
	34	A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	The Disaster management Plan has been prepared and included in the EIA report of chapter 7.	161
	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 Chapter 7.	161
	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.	160
	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.	153
	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.	90 to 104

	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.	Not applicable.	-
	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.	168 to 170
	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.	Under Process.	-
	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.	172
	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.	-

Standard Terms of Reference and Standard Terms of Reference for (Mining of minerals)

S. No	Conditions	Compliance	P. No
1.	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one-year prior to1994. It may also becateg or ically informed whether there had been any increase in production after the EIA Notification1994 came into force, w.r.t. the highest production achieved prior to 1994.	NA	-
2.	A copy of the document in support of the fact that the Proponent is the right full lessee of the	The Director of Geology and Mining, Chennai grant of Granite quarry lease, G.O.	232

	mine should be given.	No. (3D)-72 Industries (MME-2) Department, Dated: 01.12.2016.	
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 12°28'25.42"N to 12°28'33.04"N and eastern longitude of 78°21'00.16"E to 78°21'05.59"E. Toposheet No. 58L/7. Details are given in Chapter 1. Geomorphology & Geology of the area is given in fig no 2.11 in Chapter 2. Land Use details given in Table 3.18 and also refer fig No.3.24. Land use within the lease area is mentioned in Table No 2.9 in Chapter 2.	6 116 109 & 110 30
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. 58L/7 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, and 3.27.	6 to 7, 27
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 2.9 of Chapter 2.	30
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	The proponent M/s. M.P. Mining and Leasing Company is very much conscious of complying with the Environmental Regulations with systematic mining. The	-

	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.	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 in chapter 7. Safety for blasting is given under Table 10.1 in chapter 10.	161 173
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 of the EIA report.	-
10.	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use of the study area, parks, migratory routes of fauna, water bodies, human settlements, other existing mines/ industrial activity and other ecological features are shown in delineating forest area, agricultural land, grazing land, wildlife sanctuary and national parks. Refer Clause 3.11.6 in Chapter 3. Land use plan of the mine lease area is given in Table No.2.9.	107 30
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 Chapter - 2. The mining operation will not disturb/relocate any villages and hence R & R plan not required. Refer Chapter 7.	36 165

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 in chapter-2.	15 to 17
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.	15 to 17
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 chapter-2. The details of flora within the study area are given detail Refer Clause 3.9 in Chapter 3.	15 to 17 75 to 89
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.	144
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	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	15 to 17

	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.	No. Refer Table 2.2 in chapter -2.	
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 in the EIA Report. No scheduled list of fauna is found in this study area.	75 to 89
19.	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	The project site is neither falling under ‘Aravalli range’ not it is located in proximity to area declared as Critically Polluted Area.	-
20.	Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies 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	Not Applicable. Bay of Bengal is located 145 km away from the lease area towards the east side. Hence the project does not attract the C.R.Z. Notification.	18 & 19

	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 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 grey 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. The Socio-Economic study detailed in included in Clause 3.10 of Chapter 3.	90 to 104
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.	Monitoring data for a period of three months (March 2026– May 2026) on Air quality, Water quality, Noise level, Soil, Flora and Fauna in the core and buffer zones is collected and complied data wise in the EIA report. Refer Chapter 3.	42 to 74
23.	Air quality modeling should be carried out for prediction of impact of the project on the air	Air quality modelling carried out for prediction of impact of the project on the air	125

	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.	quality of the area, which is included in Chapter 4, Refer Clause 4.1. Wind Rose Pattern is shown in fig. 3.1 in Chapter 3.	44
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 3.5 KLD; the details are given in Chapter – 2. A detailed water balance is shown in fig 4.4 in Chapter 4.	39 139
25.	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	The granite quarry project requires water for drinking, dust suppression and plantation. Drinking water is obtained from Mineral water industries. For Dust suppression, green belt and other uses water will be obtained from ordinary water vendors through water tank. There is no extraction of ground water within lease area for the quarry activity. So, no clearance from the Competent Authority is required.	-
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.	165
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 in Chapter 4.	139
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	The mining operation will not intersect the ground water table. The depth of mining is 25m bgl whereas the depth of water table is 64m bgl. So, No NOC is required from CGWA for the proposed project.	

	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.	However detailed Hydro geological study has been carried out and incorporated in Chapter 3.	65
29.	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	There is no stream crossing inside the mining lease area and hence there is no need of modification/diversion.	-
30.	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	Elevation of the quarry area is 316m above MSL. The mining operation will be at a maximum depth of 25m bgl. The ground water table is at 64m bgl from the surface in the adjacent tube well, and mine workings are above groundwater table.	-
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.	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.	151
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	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 in fig	19

	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.	no: 2.5.	
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 of clause 2.13.	39
34.	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Conceptual mining plan is given in Chapter 2. Refer Fig 2.19.	38
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.	153
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.	180
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.	170
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	Environmental Management Plan (EMP) for the proposed quarry project has been prepared and incorporated in Chapter 10.	173

	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.	Public hearing yet to be conducted in this 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 – 295 L EMP cost- 3.80 L	48
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.	169
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.	168 to 170
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	 Yes, Yes, all the document to be proper referenced with indexed and page no also. Yes, Yes,	-

	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.	We are prepared in EIA draft English and Tamil	
	f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	No	
	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.	Yes,	
	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.	PH yet to be conducted after any change, we have submitted Form -I and PFR.	
	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.	Under Process.	

	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.	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.	

CHAPTER – 1: INTRODUCTION

1.1 PURPOSE OF THE REPORT

The applicant, M/s. M.P Mining and Leasing Company, No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhungar District – 626104 has applied for grant of Granite quarry lease to the secretary to Government, Industries Dept, Fort St. George, Chennai-9 through District Collector, Krishnagiri District and Commissioner of Geology and Mining, Chennai for quarrying Grey Granite from a patta land over an extent of 1.84.00 Hectares in S.F. Nos: 268/1Y, 268/1Z, 268/1AA and 268/2K, Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.

The principal secretary, Govt. of Tamil Nadu directed the applicant M/s. M.P Mining and Leasing Company, through his precise area communication letter No. 1298/MME-2/2016-1, Dated 04.07.2016 to get approved mining plan and obtain Environmental clearance from the Environment Impact Assessment Authority (SEIAA) as per the EIA Notification, 2006 and its amendments for grant of quarrying for Grey Granite over an extent of 1.84.00 hectares of patta land in S.F. No's: 268/1Y, 268/1Z, 268/1AA and 268/2K, Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu for a period of 20 years under Rule 19A of Tamil Nadu Minor Mineral Concession Rules, 1959.

Accordingly, Mining Plan is prepared under Rule 12 & 13 of Granite conservation and development Rules, 1999 for quarrying Grey Granite with due consideration of environmental parameters so as to obtain Environmental clearance (EC) from Environment Impact Assessment Authority (SEIAA) vide MoEF&CC Notification S.O 141(E) dated 15th January, 2016. The mining plan was approved by Department of Geology and Mining, Guindy, Chennai vide his letter Roc No. 330/MM5/2016 Dated: 24.08.2016 for the period of 5 years. The Mining plan was completed. Now the applicant prepared 1st Scheme of Mining Plan and same was approved by Department of Geology and Mining, Guindy, Chennai vide letter Roc No. 8035/MM4/2022, Dated: 30.12.2022 for five years.

The proposal was placed in 82nd SEAC meeting held on 21, 22.10.2016 and SEIAA meeting held on 18.11.2016 and EC was granted vide Lr. No. SEIAA-TN/F.No.5764/1(a)/EC. No: 3904/2016 dated: 18.11.2016 for a period of 5 years from the date of execution of the mining lease period. The mining lease was executed on 10.02.2017 for the period of 20 years up to 09.02.2037. The Environmental Clearance expired on 09.02.2022.

The cluster letter issued by Deputy Director, Department of Geology and Mining, Kaishnagiri vide No. 435/2015/Mines/ Dated 16.04.2026 for M/s. M.P. Mining and Leasing Company, (1.84.0 Ha) the lease area of above said there is 3 existing quarries comes under the cluster of 500m radius. Namely M/s. M.P. Granites an extent of 1.80.0 Ha, Thiru.S.S. Jamaludeen an extent of 1.25.0 Ha and Thiru. E. Jagadeesan an extent of 1.56.5 Ha respectively the total area of cluster is 6.51.0Ha. Which is above 5 hectares 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. 2.95 crores and EMP cost is Rs. 3.80 lakhs.

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

Table 1.1 Details on Terms of Reference

S.No	Name of Applicant	ToR Application No	SEAC and SEIAA Meeting No	TOR Letter No
1	M/s. M.P Mining and Leasing Company	SIA/TN/MIN/577692/ 2026	718th SEAC Meeting, dated 12.01.2023 and 1017th SEIAA Meeting dated 17.06.2026	TO26B0108TN5155508 N Dated: 25.06.2026

In TOR letters, it is mentioned that public hearing needs to be conducted for the existing grey granite quarry for obtaining EC.

Table 1.2 Production Details from 2017 – 2022

Year	RoM (m^3) A	Recovery (%)	Production & Dispatch (m^3)	Granite Waste (m^3)	Topsoil (m^3) B	Weathered Rock (m^3) C	Total Excavated Volume (m^3) (A+B+C)
2017-18	7920	4	290.354	7629.646	1280	2400	11600
2018-19	8210	9	739.335	7470.665	1560	2680	12450
2019-20	8610	4	305.070	8304.33	1470	3890	13970
2020-21	8180	4	306.426	7873.574	1430	2830	12440

2021-22	3600	3	94.751	3505.249	1410	1700	6710
Total	**36520**	**5 (Avg.)**	**1735.936**	**34783.464**	**7150**	**13500**	**57170**

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. Therefore, there is no violation in this proposed project.

1.2. IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

Table 1.3 Details on Project and Project Proponent

Particulars	**Details**
Address of the Project Proponent	**M/s. M.P. Mining and Leasing Company,** No.2/226, Karisalkulam Road, Vakkanangundu Kariyapatti Taluk, Virudhunagar District - 626104, Tamil Nadu.
Lease Area	1.84.0 Hectares (Patta Land)
Site Location	S. F. No: 268/1Y, 268/1Z, 268/2K and 268/1AA, Jagadevipalayam village, Bargur Taluk, Krishnagiri District, Tamil Nadu
Geographical Co-ordinates	Latitude: 12°28'25.42"N to 12°28'33.04"N Longitude: 78°21'00.16"E to 78°21'05.59"E
Toposheet No.	57L/7
Elevation	Elevation of the area is 451m above MSL
Government Order	G.O.(3D). No. 72 Industries (MME.2) Dept. dated 01.12.2016.
Precise Area Communication	letter No. 1298/MME.2/2016-1, dated 04.07.2016
Mining Plan Approval Details	Rc. No: 330/MM5/2016 Dated 24.08.2016
EC letter from SEIAA	Lr. No: SEIAA-TN/F.No.5764/1(a)/EC. No: 3904/2016 dated: 18.11.2016
Period of Lease	20 years (10.02.2017 to 09.02.2037)
Approval of Scheme of mining	Rc. No. 8035/MM4/2022, Dated: 30.12.2022
AD Cluster letter	Rc. No. 435/2015/Mines/ Dated 16.04.2026.

Table No: 1.4 Land Particulars

District & State	Taluk	Village	S.F. No.	Area (Ha)	Ownership/ Occupancy
Tamil Nadu & Krishnagiri	Bargur	Jagadevipalayam	268/1Y	0.46.0 Ha	Patta land
			268/1Z	0.84.0 Ha	
			268/2K	0.12.0 Ha	
			268/1AA	0.42.0 Ha	
Total				**1.84.0 Ha**	

1.3. BRIEF DESCRIPTION OF THE PROJECT

1.3.1. Nature and Size of the Project

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

Geological resources and Mineable reserves: Geological resource of total ROM is estimated to be 3,69,160 m^3 including the resources of safety zone of which, grey granite is about 1,47,664 m^3 at the recovery of 40% and granite rejects of 2,21,496 m^3. The mineable reserve of total ROM is estimated to be 1,35,396 m^3 by deducting the reserve safety zone, block in benches from the total mineable resources of which, grey granite is about 54,158 m^3 at the recovery of 40% and granite rejects are 81,238 m^3 MT of 60% up to a depth of 25m below the ground level.

Total proposed production of ROM is about 42,381 m^3 of grey granite is about 16,952 m^3 at the recovery of 40% and granite rejects are 25,429 m^3 of 60%, up to a depth of 25m below the ground level for 1st Scheme of Mining Plan for next five years. Annual Peak production is 8,476.2 m^3 of grey granite.

1.3.2. LOCATION OF THE PROJECT

The proposed sites are easily accessible from Krishnagiri. By travelling from Krishnagiri via NH77 (Krishnagiri to Uthangarai) Bagimanur X road is reached at the distance of 15km. From the Bagimanur X road, by travelling via Bagimanur village road, the

project site is reached at the distance of 2.3km in left side. The area is represented by Survey of India Toposheet No. 57L/7. The location map is given in fig no 1.1. The latitude and longitude of two lease areas are given in below table

Table No.1.5 Latitude and Longitude of proposed project

S. No	Project Site	Latitude	Longitude
1	M/s. M.P. Mining and Leasing Company	12°28'25.42"N to 12°28'33.04"N	78°21'00.16"E to 78°21'05.59"E

1.4. SCOPE OF THE PROJECT

The proposal for Environment clearance for existing grey granite quarry of M.P. Mining and Leasing Company (1.84.0 Ha) requires Environmental Impact Assessment (EIA) study to be carried out as per Standard, Specific 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(Cluster) and schedule 1(a) of the EIA Notification, 2006 as the cluster area is greater than 5 Ha and less than 100 Ha. This is primarily to ascertain the potential impacts of the mining activity on environmental components, prediction and evaluation of environmental impacts to delineate Environment 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 from the mine lease Area. The EIA covers one season baseline environmental data, as per the standard generic model given by the MoEFCC, New Delhi.

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 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 along with the specific and additional TOR prescribed by SEAC/SEIAA, Tamil Nadu vide Lr. No. TO26B0108TN5155508N Dated: 25.06.2026

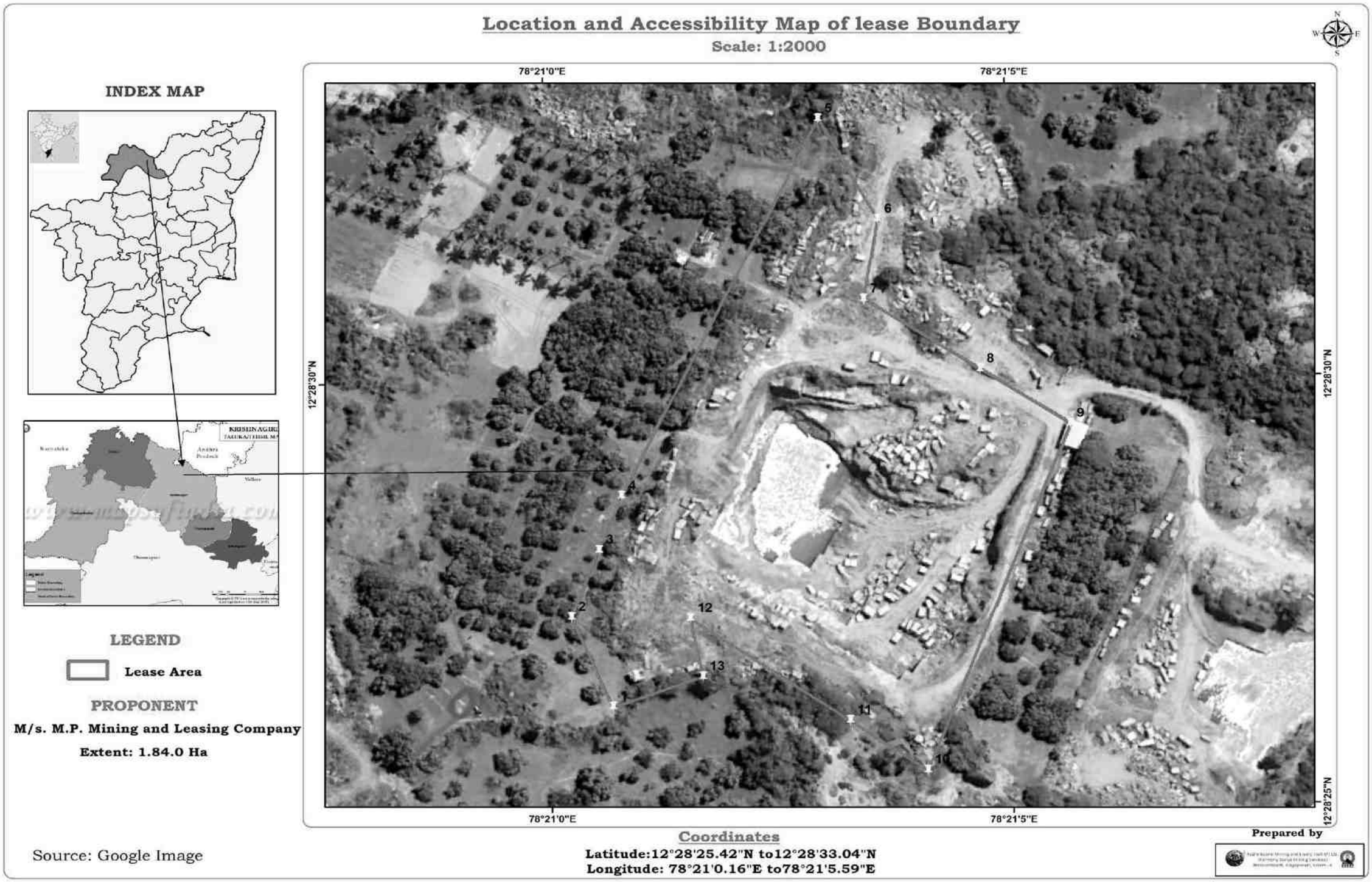


Fig.No:1.1 Showing Location and route map for grey granite quarry

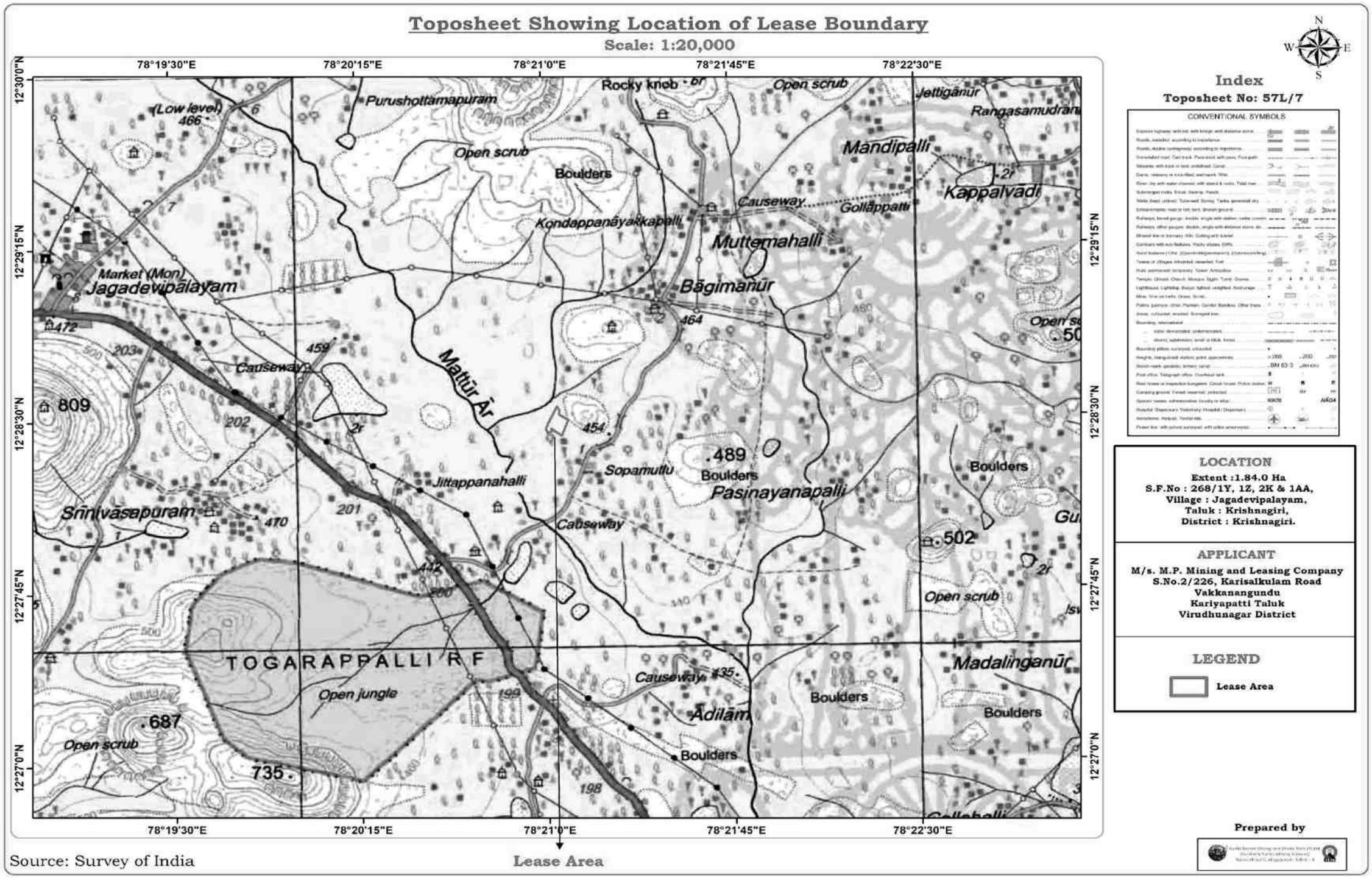


Fig 1.2: Toposheet showing Location of the existing grey granite quarry

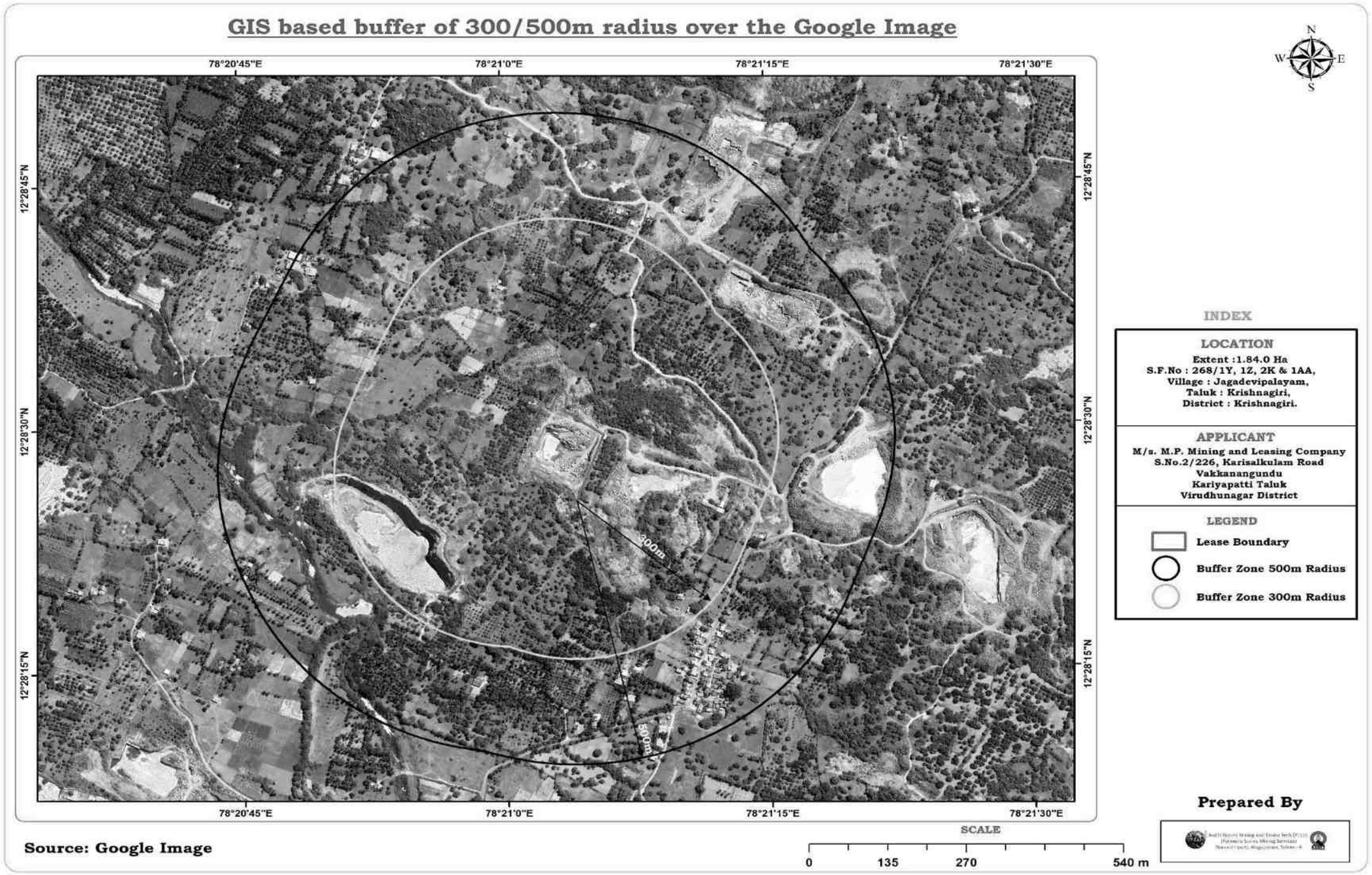


Fig 1.3: Google Earth Image showing 300m and 500m radius around existing grey granite quarry

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 10km radius with the project as its centre for various environmental components viz. air, noise, water, land, geo-hydrology, Noise & Vibration, 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, biota, water, land, biological and socio-economic components of environment within 10km radius of study area from the project site.
- 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 identify the impact and description of the impact with quantitative and qualitative data
- To prepare a detailed Environment Management Plan for implementation of mitigate measures
- To suggest a monitoring program to evaluate the effectiveness of mitigate measures
- Post-project environmental quality monitoring program to be followed

The baseline monitoring study has been carried out during the March 2026 to May 2026 for various environmental components so as 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 1.6.

Table: 1.6 Environment Attributes

S. No	Attributes	Parameters	Source and Frequency
1	Meteorology	Temperature, Wind Speed, Wind Direction, Rain fall, Relative Humidity,	Secondary sources of IMD station, Hosur. Hourly recorded data for the period of 3months.
2	Ambient Air Quality	PM_{10}, $PM_{2.5}$, SO_2, NO_x	8 hour samples twice in a week for three months at 5 locations.
3	Water Quality	Physical, Chemical and Biological parameters	Grab sampling at 3 locations once during study period.
4	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.
5	Soil Characteristics	Physical and Chemical parameters	Once at 3 locations during study period
6	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 study.
7	Land use	Existing land use for different categories	Based on Survey of India Toposheet and Google Earth imagery
8	Ecology and Biodiversity	Existing terrestrial flora and fauna within 10Km radius	Field observation and utilization of Secondary data.
9	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, topo sheets, health records and relevant official records.
10	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 associated with explosives, landslides, slips and fire/explosion during blasting etc..,

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 applicant, M/s. M.P Mining and Leasing Company, No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhungar District – 626104 has applied for grant of Granite quarry lease to the secretary to Government, Industries Dept, Fort St. George, Chennai-9 through District Collector, Krishnagiri District and Commissioner of Geology and Mining, Chennai for quarrying Grey Granite from a patta land over an extent of 1.84.00 Hectares in S.F. Nos: 268/1Y, 268/1Z, 268/1AA and 268/2K, Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.

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

Granite is one of the important materials for the 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 very need to excavate the granite for economic and infrastructure development of our Nation.

2.2 DEMAND – SUPPLY GAP

Construction of building, temple and monuments takes place in all villages, towns, cities and metropolitan cities. There is great demand in availability of granite. So, it is necessary to fulfill the demand by operating the existing grey granite quarry.

2.3 LOCATION

The areas are represented by Survey of India Toposheet No. 57L/7. The lease boundary with Geo Co-ordinates is shown in Fig no 2.1. The latitude and longitude of existing lease area is given in below table 2.1.

Table No.2.1 Latitude and longitude of existing quarry

S. No	Project Site	Latitude	Longitude
1	M/s. M.P Mining and Leasing Company	12°28'25.42"N to 12°28'33.04"N	78°21'00.16"E to 78°21'05.59"E

Table No-2.2 Co-ordinates of Quarry Lease Boundary Pillars by DGPS Survey

ID	Latitude (Global)	Longitude (Global)
1	12° 28' 26.20" N	78° 21' 00.60" E
2	12° 28' 27.25" N	78° 21' 00.16" E
3	12° 28' 28.03" N	78° 21' 00.47" E
4	12° 28' 28.66" N	78° 21' 00.72" E
5	12° 28' 33.04" N	78° 21' 02.99" E
6	12° 28' 31.86" N	78° 21' 03.53" E
7	12° 28' 30.93" N	78° 21' 03.37" E
8	12° 28' 30.10" N	78° 21' 04.62" E
9	12° 28' 29.45" N	78° 21' 05.59" E
10	12° 28' 25.42" N	78° 21' 04.00" E
11	12° 28' 25.97" N	78° 21' 03.13" E
12	12° 28' 27.22" N	78° 21' 01.45" E
13	12° 28' 26.54" N	78° 21' 01.58" E

- No Trees will be uprooted due to this quarrying operation.
- The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of granite.

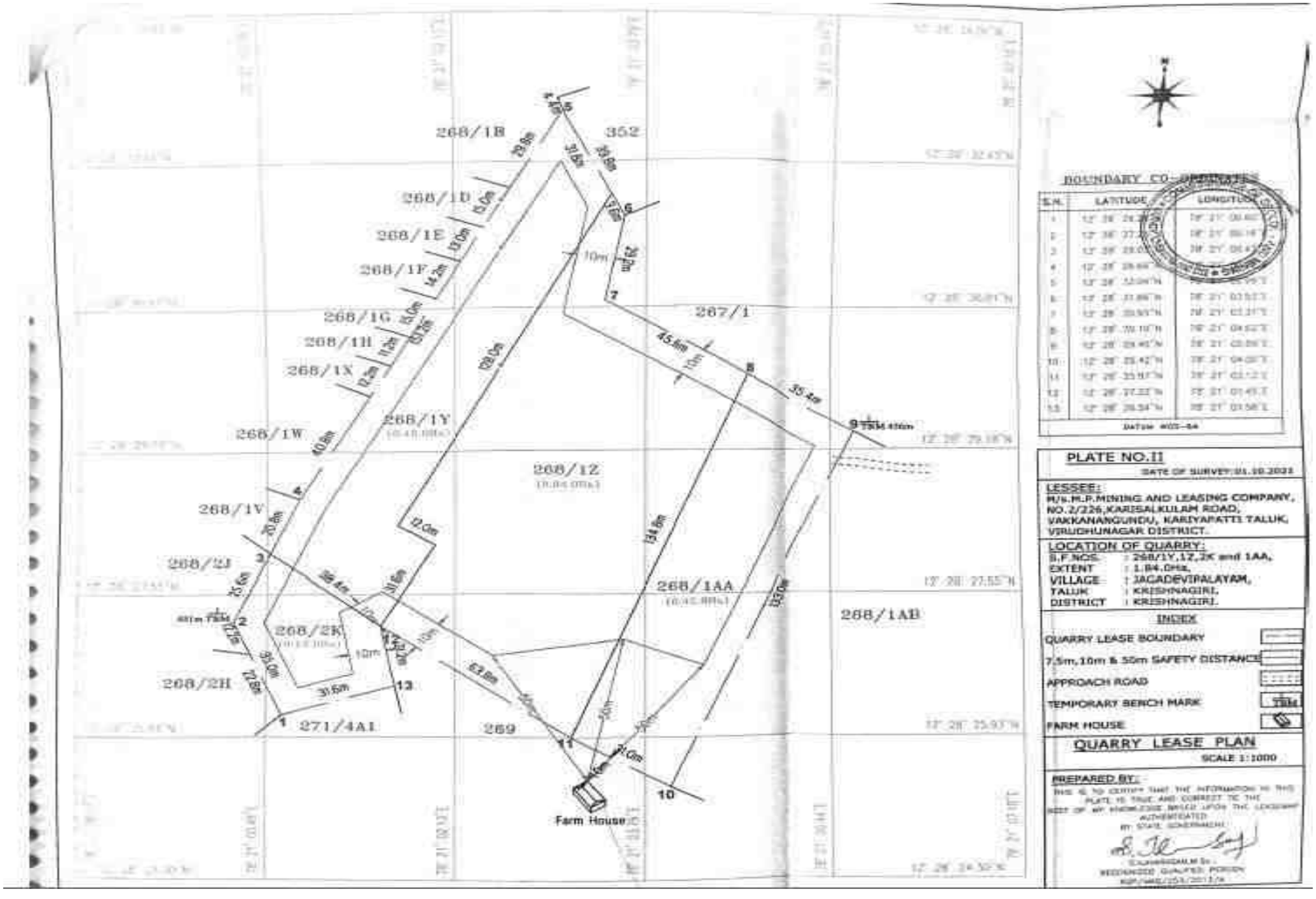


Fig.No.2.1: Lease Plan of Existing Grey Granite Quarry

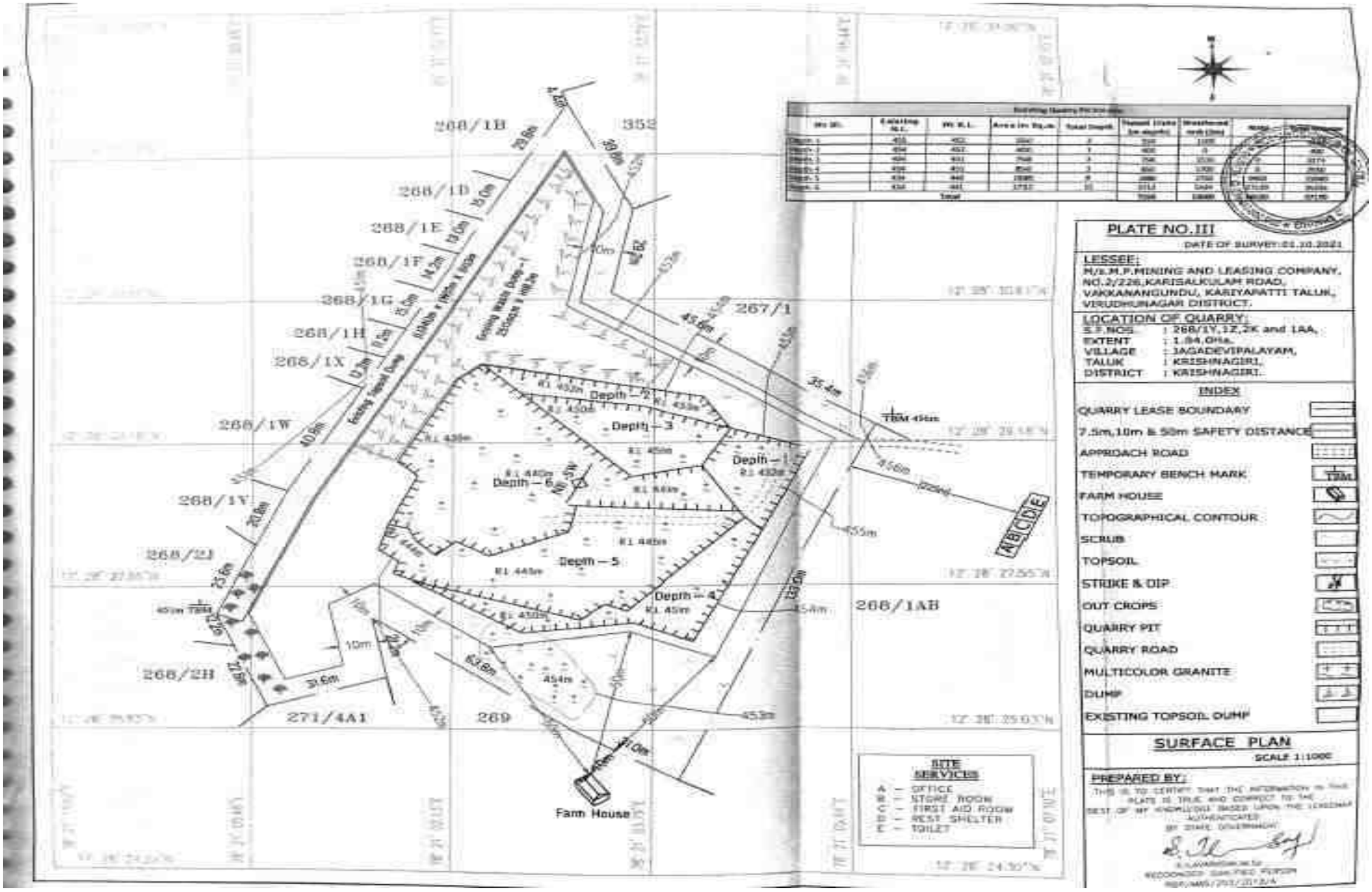


Fig.No.2.2: Surface Plan of Existing Grey Granite Quarry



Fig. No. 2.3 Photos showing general view of the lease area.

Table 2.3.: Environmental Settings

FEATURE	DETAILS
Name of the Proponent and address	**M/s. M.P. Mining and Leasing Company,** No.2/226, Karisalkulam Road, Vakkanangundu Kariyapatti Taluk, Virudhunagar District - 626104, Tamil Nadu.
Existing/New Quarry	Existing
Survey number	268/1Y, 268/1Z, 268/2K and 268/1AA
Geographical features	Latitude: 12°28'25.42"N to 12°28'33.04"N Longitude: 78°21'00.16"E to 78°21'05.59"E Toposheet No: 57L/07
Site Location	Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.
Type of Project	Grey Granite
Category	B1
Mining lease area	1.84.0 Hectares
Geological Resources (RoM)	3,69,160 m^3
Mineable Reserves (RoM)	1,35,396 m^3
Production (RoM)	42,381 m^3 (16,952 m^3 of Granite @ 40% of recovery and 25,429 m^3 of Granite @ 60% of waste) up to a depth of 25m during the 1st Scheme of Mining plan period of five years
Depth of Mining	25 m bgl
Water Table	64 m bgl
Method of Mining	Open cast - mechanized mining
Blasting Pattern	Chemical rock blasting, also known as non-explosive rock blasting, uses a chemical agent that expands when mixed with

	water, creating pressure that fractures the rock.
Types of Explosives	Chemical explosive is not proposed chemical powder called as Rock breaking powder Ca $(OH)_2$ are also used for granite splitting.
Measures proposed to minimize ground vibrations due to blasting	It is an Eco-friendly quarry operation; diamond wire saw cutting method shall be practiced to this quarrying operation. Chemical rock blasting, also known as non-explosive rock blasting No impact on surroundings due to blasting.
Storage of Explosive	Not Applicable
Category	B1
Scheme of Mining approval	Commissioner of Geology and Mining, Chennai vide Rc. No: 8035/MM4/2022 Dated 30.12.2022
Period of Lease	20 years.
Does it attract any general conditions specified in the EIA notification, 2006?	Not applicable
Man Power	35 persons
Water requirement	Total water requirement – 5.0 KLD Drinking water – 1.0 KLD Domestic purposes – 1.0 KLD Water sprinkling – 1.0 KLD, Wet drilling and Green Belt 2.0 KLD. Source: Mineral water supply and nearby bore wells
EMP Cost	Rs. 3.80 Lakhs
Project Cost	Rs. 2,95,16,000/-
Nearest habitation	0.40 km-South East
Nearest Village	Sappamuttlu - 0.40 km- South East
PMHC	Bargur –8 km –North
Nearest Town	Bargur –8 km –North
Nearest Road	NH -77 –1.35 km- South MDR – 3.24 km - West Approach road for the Transportation is located at the eastern side.
Nearest Railway station	Tirupattur – 23 km – East
Nearest Airport	Bengaluru – 100 km –North West
Water bodies	Mattur River- 0.40 km – South West A small Lake – 1.40 km - East A small Lake – 1.16 km - West A small Lake – 1.7 km – North East
Interstate Boundary	Tamil Nadu -Andhra Pradesh Interstate Boundary –18km -North
Coastal Zone	Bay of Bengal – 183km - East
Reserve Forest	Reserve forest around 10km radius from the periphery of the lease applied area.

<table>
<tr><td></td><td>Thogarapalli R.F. – 1.70 km – South
Bargur R.F. – 7.62 km – North East
Varatanapalli R.F – 8.50 km – North West
Nandibenda R.F – 8.78 km - North East</td></tr>
<tr><td>Wildlife Sanctuary</td><td>There is no wild life sanctuary or National Park found within 10km radius
Cauvery North Wildlife Sanctuary – 52 km – South West
Cauvery South Wildlife Sanctuary – 92 km – South West</td></tr>
<tr><td>Land use pattern</td><td>
<table>
<tr><th>S. No</th><th>Description</th><th>Present Area (Ha)</th><th>Area utilized in %</th></tr>
<tr><td>1</td><td>Area Under Quarry</td><td>0.71.5</td><td>38.9</td></tr>
<tr><td>2</td><td>Waste Dump</td><td>0.48.65</td><td>26.4</td></tr>
<tr><td>3</td><td>Infrastructure</td><td>Nil</td><td>-</td></tr>
<tr><td>4</td><td>Roads</td><td>0.01.0</td><td>0.5</td></tr>
<tr><td>5</td><td>Green Belt</td><td>0.03.0</td><td>1.6</td></tr>
<tr><td>6</td><td>Stocking Blocks</td><td>0.59.85</td><td>32.5</td></tr>
<tr><td colspan="2">Total</td><td>1.84.0</td><td>100 %</td></tr>
</table>
</td></tr>
</table>

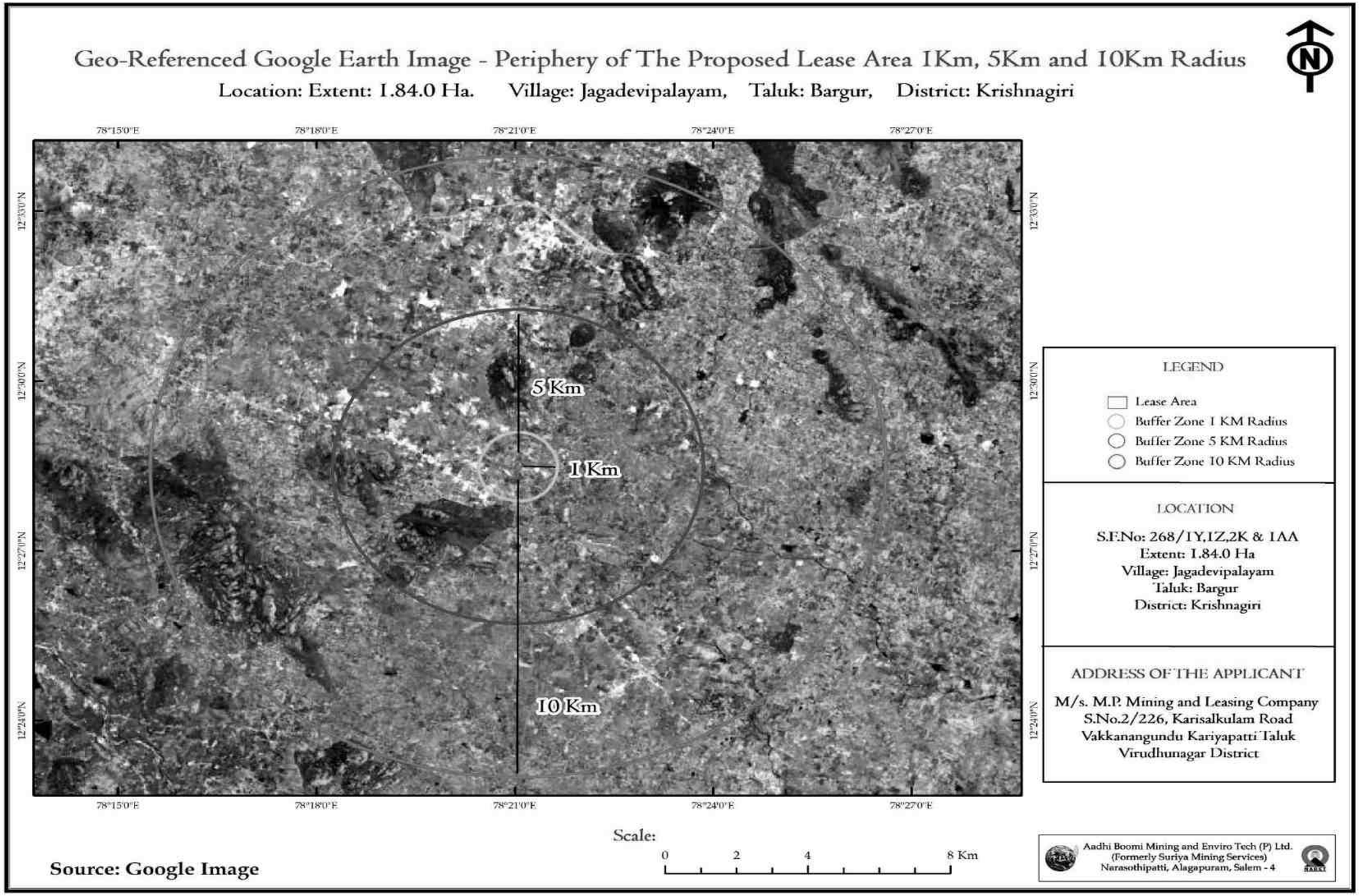


Fig No: 2.4 Google Earth Image showing 1km, 5km, 10 km radius around existing grey granite quarry

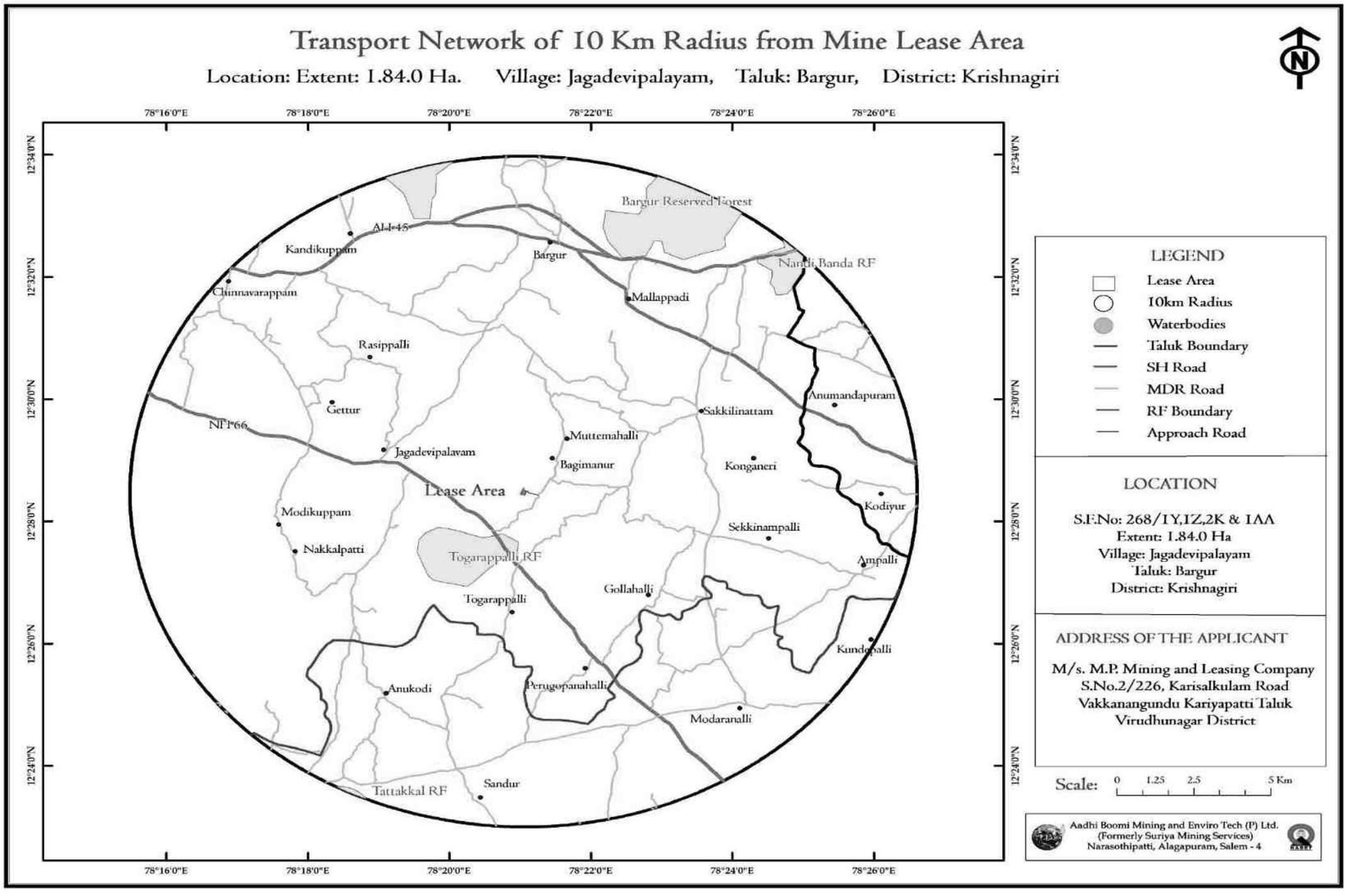
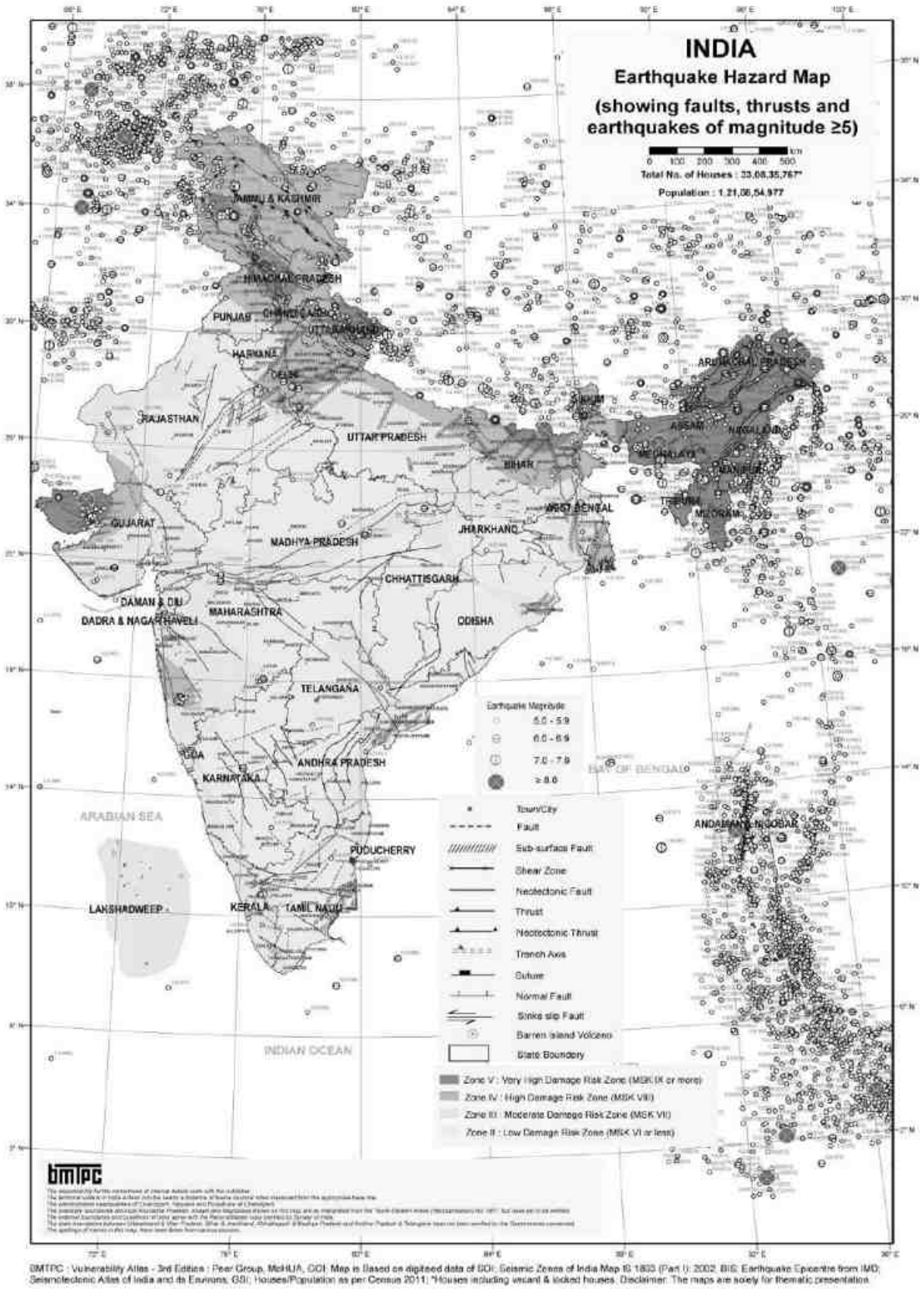


Fig No 2.5: Google Earth Image showing Transport Network of 10 km radius around existing grey granite quarry



BMTPC : Vulnerability Atlas - 3rd Edition ; Peer Group, MoHUA, GOI. Map is Based on digitised data of SOI; Seismic Zones of India Map IS 1893 (Part I): 2002, BIS; Earthquake Epicentre from IMD; Seismotectonic Atlas of India and its Environs, GSI; Houses/Population as per Census 2011; *Houses including vacant & locked houses. Disclaimer: The maps are solely for thematic presentation.

Fig No: 2.6 Earthquake Hazard Map

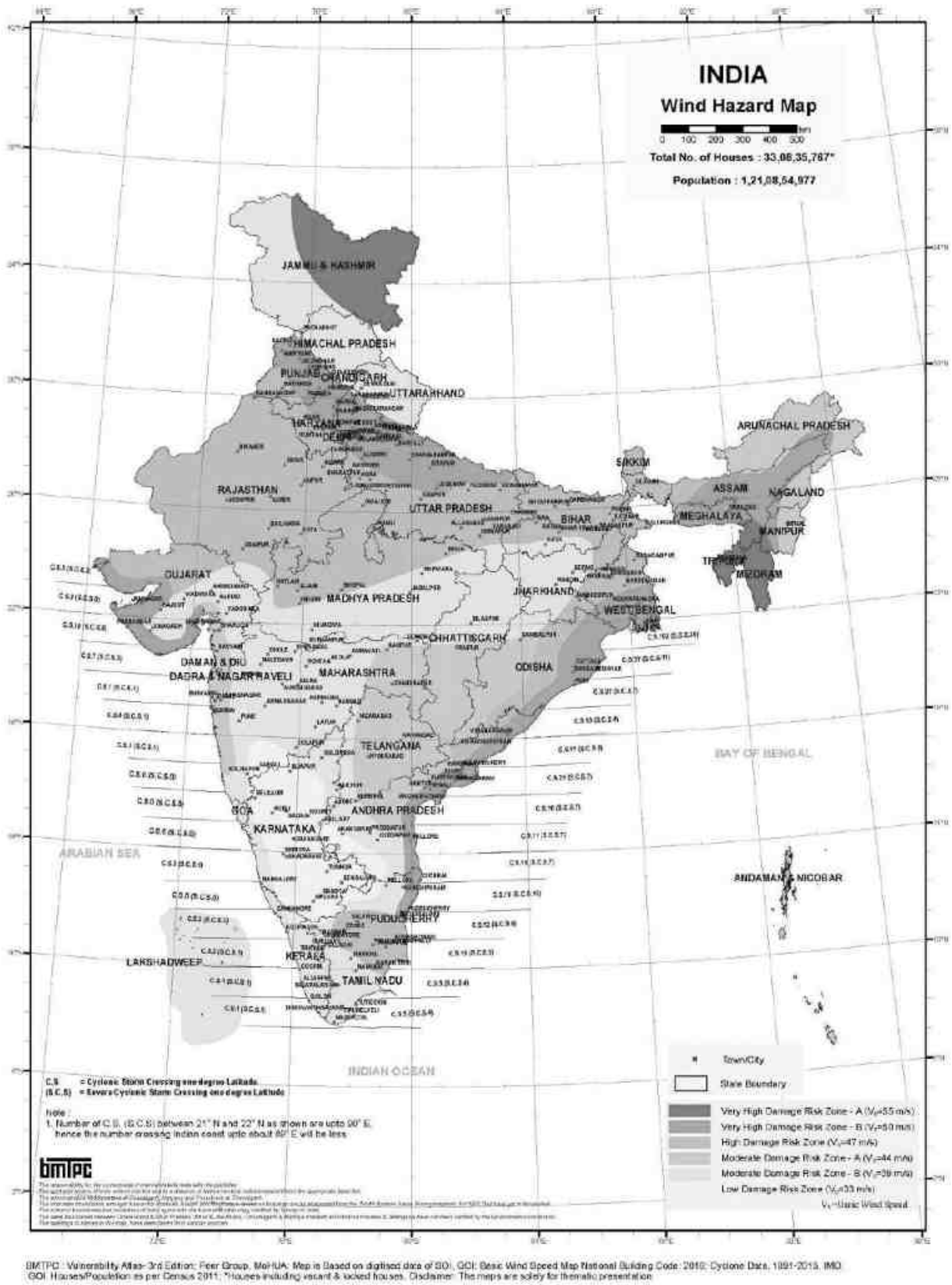
The area falls under Zone-III, Moderate damage risk zone as per BMTPC, Vulnerability atlas Seismic zone of India IS: 1893-2002.



BMTPC : Vulnerability Atlas - 3rd Edition; Peer Group, MoHUA; Map is Based on digitised data of SOI, GOI; Census of India 2011; Flood Atlas (1987),Task Force Report (2004), C.W.C., G.O.I. Houses/Population as per Census 2011; * Houses including vacant & locked houses. Disclaimer: The maps are solely for thematic presentation.

Fig No: 2.7 Flood Hazard Map

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



BMTPC : Vulnerability Atlas- 3rd Edition; Peer Group, MoHUA; Map is Based on digitised data of SOI; GOI Basic Wind Speed Map National Building Code 2016; Cyclone Data, 1891-2019, IMD
GOI Houses/Population as per Census 2011; *Houses including vacant & locked houses. Disclaimer: The maps are solely for thematic presentation

Fig No: 2.8 Winds and Cyclone Hazard Map

The cluster area falls under Low Damage Risk Zone-B (V_b = 33 m/s).

2.4 Size or Magnitude of Operation

Table 2.4: Mining Details

<table>
<tr><th colspan="2">M/s. M.P Mining and Leasing Company</th></tr>
<tr><td>Method of Mining</td><td>Open cast Mechanized method of mining</td></tr>
<tr><td>Geological resources</td><td>3,69,160m^3</td></tr>
<tr><td>Mineable reserves</td><td>1,35,396m^3</td></tr>
<tr><td>Run of Mine (ROM)</td><td>42,381m^3 for plan period (2022-23 to 2026-27)</td></tr>
<tr><td>Production (40%)</td><td>16,952m^3 for five years</td></tr>
<tr><td>Reject (60%)</td><td>25,429 m^3</td></tr>
<tr><td>Top soil</td><td>11,290m^3</td></tr>
<tr><td>Weathered Rock</td><td>23,380m^3</td></tr>
<tr><td>Ore: Waste ratio</td><td>1: 1.7</td></tr>
<tr><td>Depth of Mining</td><td>25m bgl</td></tr>
<tr><td>Water Table</td><td>64 m bgl</td></tr>
<tr><td>Road design</td><td>1: 10 inside the pit and ramp
1:16 for transport</td></tr>
<tr><td>Overall Pit Slope</td><td>45°</td></tr>
<tr><td>Period of Lease</td><td>20 years (28.05.2018 to 27.05.2038)</td></tr>
<tr><td>Existing pit dimension</td><td>
<table>
<tr><th>Pit</th><th>L(m)</th><th>W(m)</th><th>Max. D(m)</th></tr>
<tr><td>I</td><td>107m</td><td>82m</td><td>13m</td></tr>
</table>
</td></tr>
<tr><td>Existing dump dimension</td><td>
<table>
<tr><th>S. No</th><th>L(m)</th><th>W(m)</th><th>Depth in (m)</th></tr>
<tr><td>I</td><td>340m</td><td>7m</td><td>3m</td></tr>
</table>
</td></tr>
<tr><td>Project Cost</td><td>Rs 304 Lakhs</td></tr>
<tr><td>EMP Cost</td><td>Rs 3.80 lakhs</td></tr>
<tr><td>CER Cost</td><td>Rs.6 lakhs</td></tr>
</table>

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

Krishnagiri District is comprised of Archaen peninsular gneisses such as Charnockites, Hornblende gneisses, Biotite gneisses, and dolerites migmatites are intruded by younger formations like pegmatite and quartz veins. The dolerite dyke is intruded into the pre-existing country rock namely Biotitic Gneisses and Schist and trending 1-2kms from West to East direction and dipping almost vertical. The width of dyke is about 30m.

The order of superposition of geological sequence are given as under,

Description		**Age**
Top soil – Morum (2m Thick)	-	Recent age
Dolerite dyke	-	Recent age
Peninsular gneisses	-	Archaen age
Biotite gneisses	-	Archaen complex

The Biotite gneisses are oldest rock into which the younger dolerite dykes intruded later.

2.6.2 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 grey granite deposit. Different joint pattern and their pattern of repetition etc. have been marked. Based on the features, estimation of geological and mineable reserves has been arrived having considered the market potentiality. Three more bore holes in lease area of 1.84.0 Ha as per plate-III is proposed to be carried out during the next Scheme period.

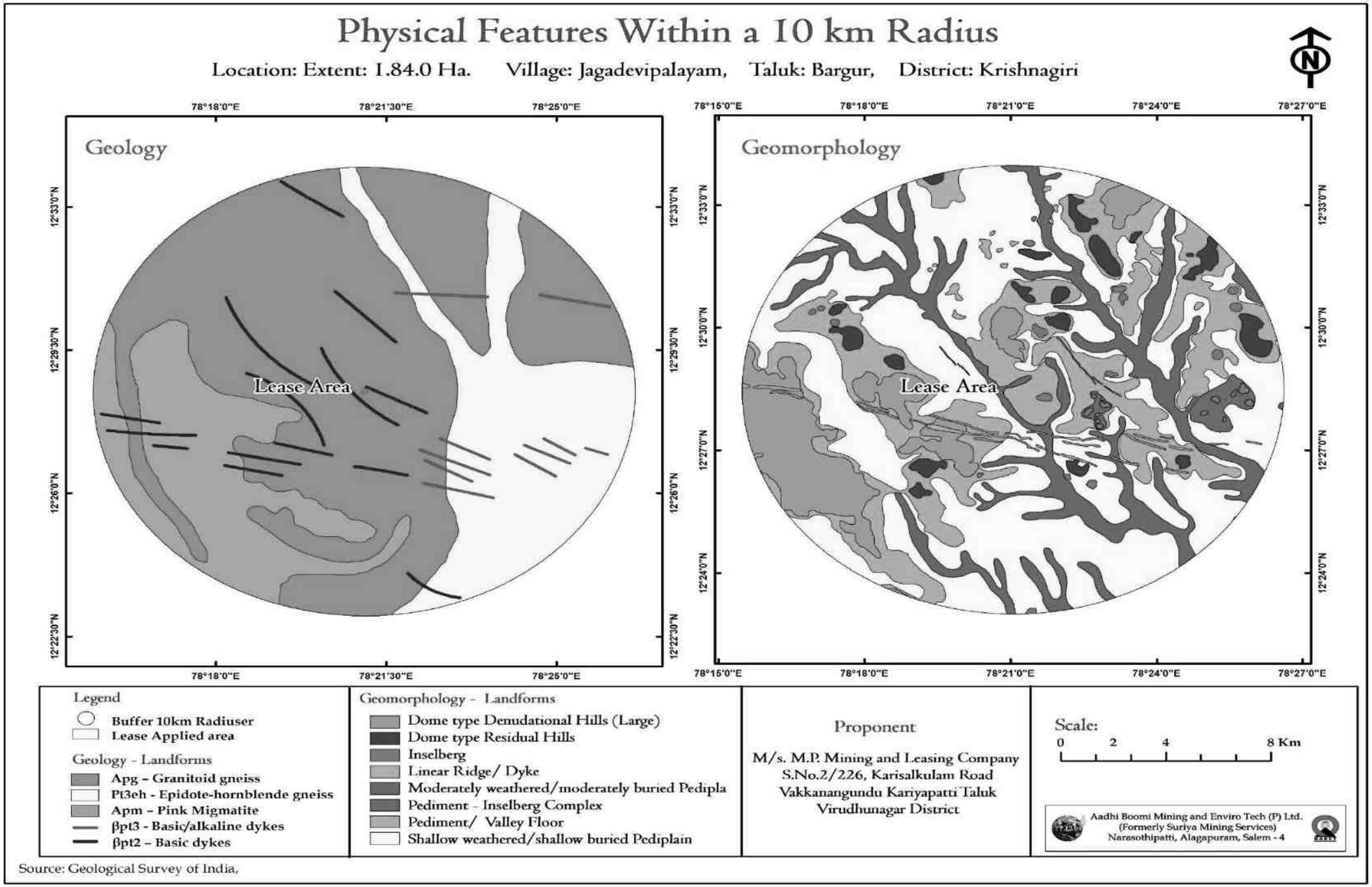


Fig. No: 2.9: Regional Geology & Geomorphology Map

2.6.3 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 1m depth from surface in the lease area of 1.84.0 Ha. The recovery factor is taken as 40% 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 labors for operation of machineries. The materials required for manual workings are listed as under,

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

2.6.4 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.

Table No 2.5: Details of drilling equipment

Type	Nos	Dia.of hole	Bucket/ Capacity (m^3)	Make	Motive Power
Jack Hammer	6	32mm	1.2m to 6m	Atlas copco	Compressed Air
Compressor	2	-	450/150psi	Atlas copco 2010	Diesel
Diamond Wire Saw	2	-	$20m^3$/day	Optima	Diesel
Generator	1	-	-	Powerica	Diesel

ii) Loading Equipment: Loading of waste and granite rejects shall be done by hydraulic excavator into tippers for clearing of waste and rejects from the working place periodically. One hydraulic excavator with $1.7m^3$ bucket capacity is engaged for clearing of wastes in the lease area

Table No-2.6: Details of loading equipment

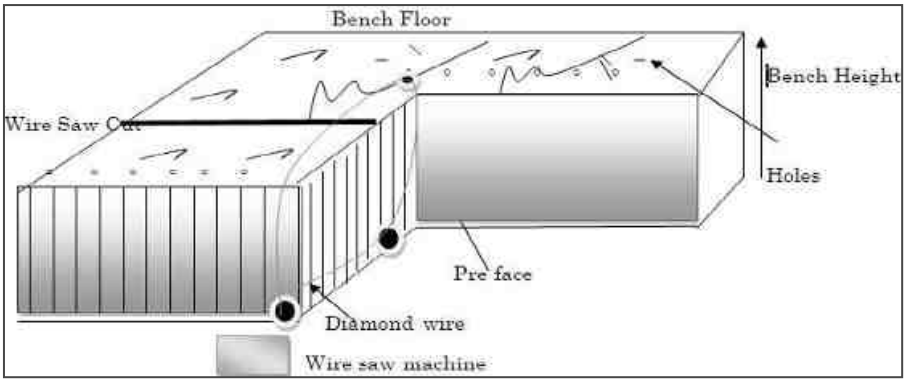
Type	Nos	Capacity	Make	Motive Power
Hydraulic Excavator	2	300	Tata Hitachi	Diesel Drive
Crawler Crane	1	855	Tata P&H	Electric

iii) Transportation: One tipper of 20MT capacity is engaged for internal transport of rejects from the working face to the dumps. Details of transporting tippers are tabulated below,

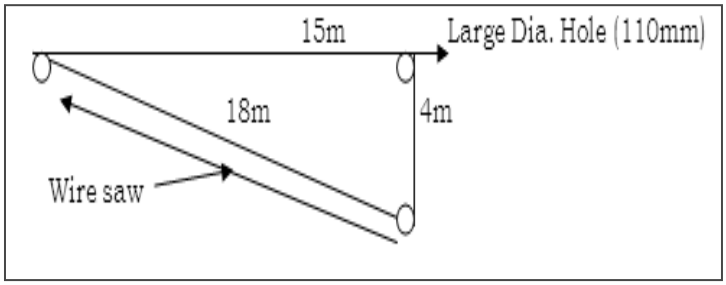
Table No-2.7: Details of transportation vehicles

Type	Nos	Size/Capacity	Make	Motive Power	H.P
Tipper	1	20M.T	TATA	Diesel	180

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:



v) Blasting Pattern

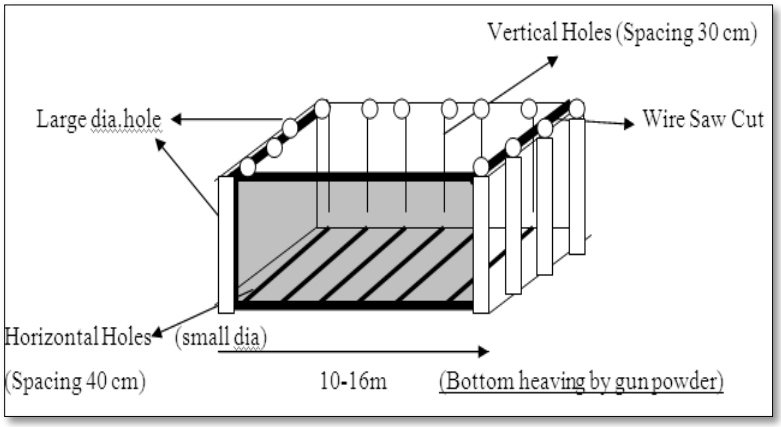
Blasting: A controlled Blasting technique is adopted to open a pre-determined crack of the block from the parent body. Shot-hole with 32-40mm dia which are drilled by line drilling and Jack hammers at a close spaced interval of 30-40cms will be initiated suitably with any one or more of the following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

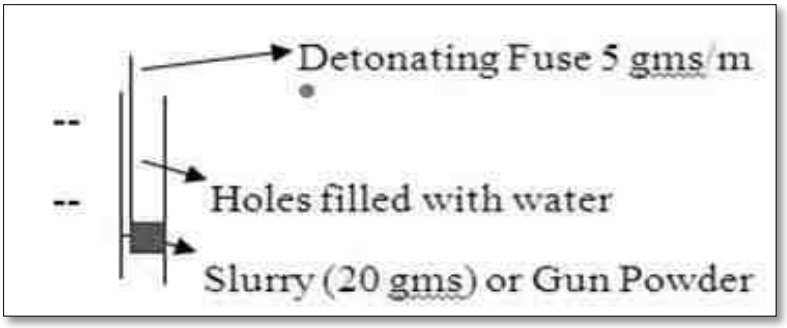
a) BROAD BLASTING PARAMETER:

i. Dia. of the hole = 32 - 40 mm
ii. Spacing = 30cms
iii. Depth = 2.5 m
iv. Burden = Min =1m; Max = 2m
v. Charge per Hole = D.cord with water or 70gms of gun powder

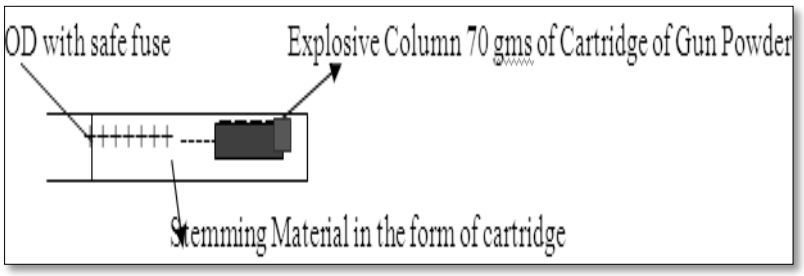
Wire Saw Cut and Drilling Pattern



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 Explosives Per meter,

ii) Low explosives like Gun powder or 70gms of slurry cartridges,

iii) Ordinary Detonator, class- 6

iv) Safety fuse, class -6.

c) Powder factor: The Powder factor for waste rock development shall be $2m^3$ 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 25m bgl 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 No 2.9: Computation of existing and proposed land use pattern

S. No	Head	Area put on use at start of plan (Ha) (Present)	Total Area used at the end of 5 years plan (Ha)
i)	Area under mining	0.71.50	1.26.3
ii)	Road	0.01.0	0.02.0
iii)	Safety and Plantation area	0.03.0	0.48.90
iv)	Labour shed and office	-	-
v)	Waste dump	0.48.65	Backfill
vi)	Virgin area	0.59.85	0.06.80
Total		**3.19.5**	**3.19.5**

2.8 ESTIMATION OF RESERVES

a) Geological resources and reserves

The geological resources are estimated by cross sectional method is as **$369160m^3$** of granite up to a depth of 25m 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 no –2.10.

TABLE NO-2.10: Computation of Geological Resources and Reserves

Geological Resources					
Total Geological Resources as per approved Mining Plan (A)	ROM (m^3)	Recoverable Reserves @ 60% (m^3)	Granite Rejection @ 40% (m^3)	Weathered Rock (m^3)	Topsoil (m^3)
	405680	243408	162272	36880	18440
Total Depletion has taken from the excavation carried out during the past five years (B)	36520	-	-	13500	7150
Total Available Geological Resources during the present scheme period (A-B)	ROM (m^3)	Recoverable Reserves @ 60% (Reduced from 60% to 40%) (m^3)	Granite Rejection @ 60% (m^3)	Weathered Rock (m^3)	Topsoil (m^3)
	369160	147664	221496	23380	11290

Note:

Total Available Geological resources in ROM = 3,69,160 m^3

Total Geological reserves @40% = 1,47,664 m^3

Granite Waste @60% = 2,21,496 m^3

Weathered Rock (WR) = 23,380 m^3

Total Waste (Granite Waste + Weathered Rock) = 2,44,876 m^3

Top Soil = 11,290 m^3

Granite: Waste Ratio = 1:1.7

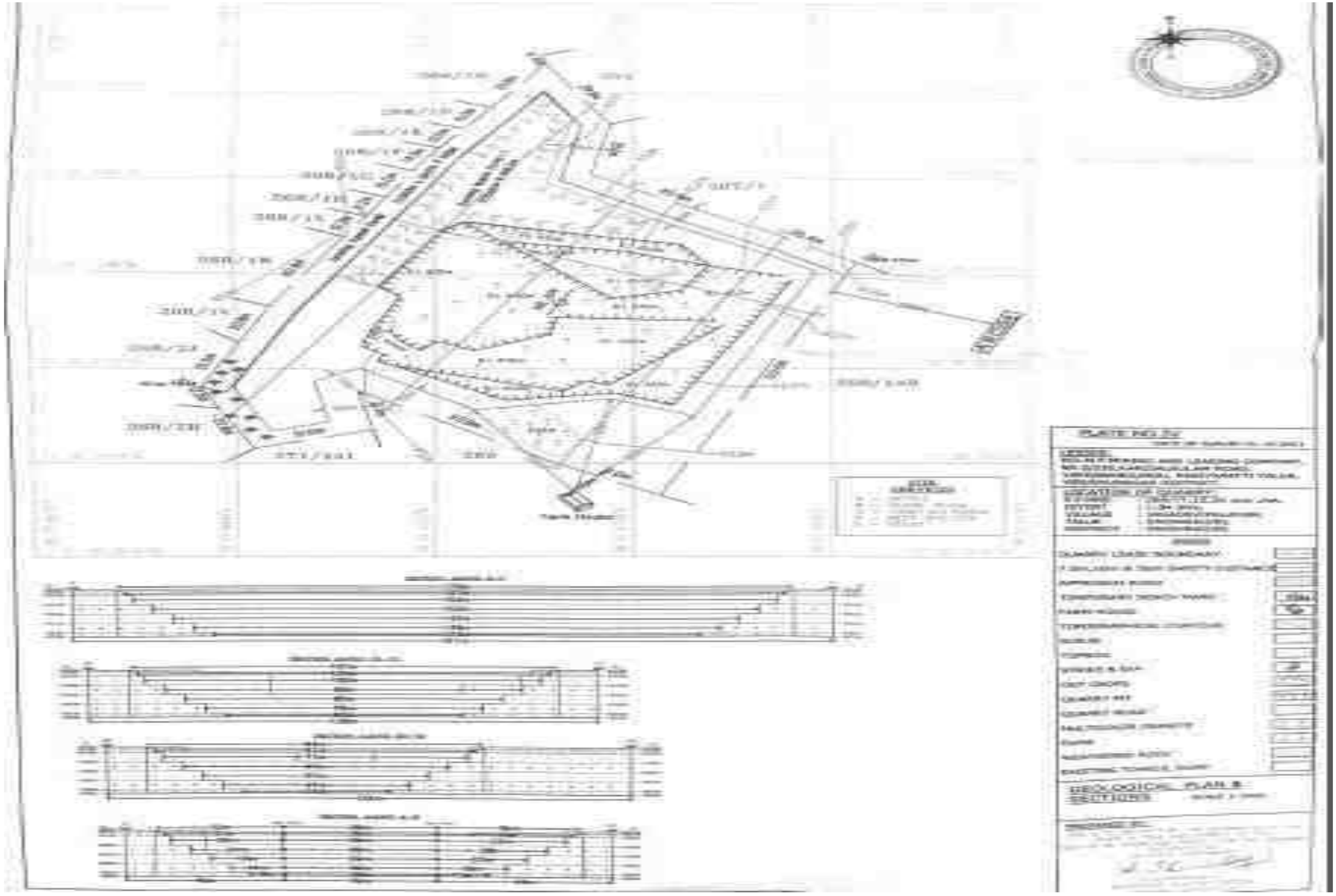


Fig No 2.10 Geological plan and Sections

b) MINEABLE/RECOVERABLE RESERVES:

The mineable reserves are estimated by cross-sectional method having considered the recovery factor, depth of mining, safety barriers etc., The mineable reserves are estimated as 1,35,396m^3 recovery based on exploration results. Details of estimation of mineable reserve are given in Table no. 2.11.

TABLE NO-2.11: Computation of Mineable/Recoverable Reserves

Mineable Resources					
Total Mineable Resources as per approved Mining Plan (A)	ROM (m^3)	Recoverable Reserves @ 60% (m^3)	Granite Rejection @ 40% (m^3)	Weathered Rock (m^3)	Topsoil (m^3)
	171916	103150	68766	24136	12637
Total Depletion has taken from the excavation carried out during the past five years (B)	36520	-	-	13500	7150
Total Available Mineable Resources during the present scheme period (A-B)	ROM (m^3)	Recoverable Reserves @ 60% (Reduced from 60% to 40%) (m^3)	Granite Rejection @ 60% (m^3)	Weathered Rock (m^3)	Topsoil (m^3)
	135396	54158	81238	10636	5487

Note:

Total Available Geological resources in ROM = 1,35,396 m^3

Total Geological reserves @40% = 54,158 m^3

Granite Waste @ @60% = 81,238 m^3

Weathered Rock (WR) = 10636 m^3

Total Waste (Granite Waste + Weathered Rock) = 91,874 m^3

Top Soil = 5,487 m^3

Granite: Waste Ratio = 1:1.7

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 for grey Granite. The five years production is designed up to a depth of 25m. The waste ratio with reference to the production of grey Granite would be 1:1.5. The year-wise development /production plan is shown in Plate No-V-A.

Table No: 2.12. Computation of year wise production

Section	Year	Bench	Length (m)	Width (m)	Depth (m)	ROM (m^3)	Recovery @ 40% (m^3)	Waste @ 60% (m^3)
XY-AB	2022-23	III	7	13	5	455	182	273
		IV	39.97	39	5	7794	3118	4676
					Total	**8249**	**3300**	**4949**
	2023-24	IV	1.03	39	5	201	80	121
		V	21.46	75	5	8048	3219	4829
					Total	**8249**	**3299**	**4950**
	2024-25	V	23	75	5	8625	3450	5175
					Total	**8625**	**3450**	**5175**
	2025-26	V	3.54	75	5	1328	531	797
		VI	21.3	65	5	6923	2769	4154
					Total	**8251**	**3300**	**4951**
	2026-27	VI	15.7	65	5	5103	2041	3062
		VII	32	61	2	3904	1562	2342
					Total	**9007**	**3603**	**5404**
					Grand Total	**42381**	**16952**	**25429**

Note:

Total Proposed ROM = 42,381 m^3

Total Recoverable Reserves @ 40% = 16,952 m^3

Granite Waste @ 60% = 25,429 m^3

Granite: Waste Ration = 1:1.5

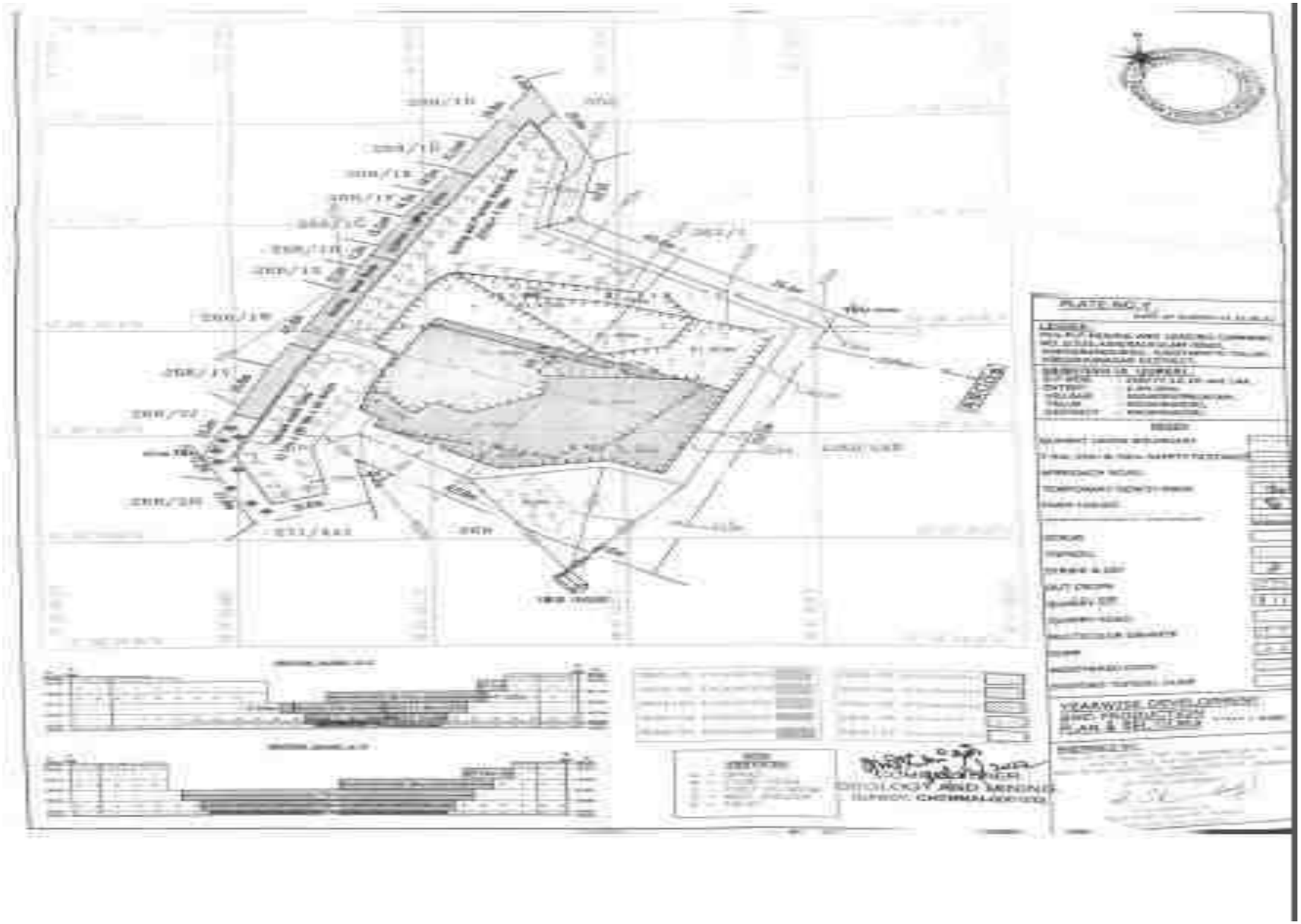


Fig. 2.12: Year wise Production and Development Plan and Sections

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

The waste rocks to be generated from the mine will be fragmented gneisses and rejects of Granite with patches, cracks and small size blocks. The site selected for dumping waste and Granite rejects on the barren area and stable, therefore no chance for instability of dumps and washouts. Total generation of Granite rejects and waste for the plan period will be 25,429m^3.

For the next five years, all the rejects and weathered rock will be dumped over existing dump in South west side and on virgin barren land in east side as per approved scheme of mining. Top soil will be used for afforestation purposes.

2.11 Conceptual Mining Plan/ Final Mine Closure Plan

Conceptual Mining Plan is prepared with an object of long-term systematic development of bench lay - outs, selection of dump site, 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 no-2.15 & Plate No-VIII in Fig 2.18

2.11.1 Ultimate Pit Dimensions

The ultimate pit size is so designed based on certain practical factors such as the economical depth of mining, safety zones followed, available area for mining.

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.

At the end of mining, all rejects and weathered rock will be dumped in same place in South west and east 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.

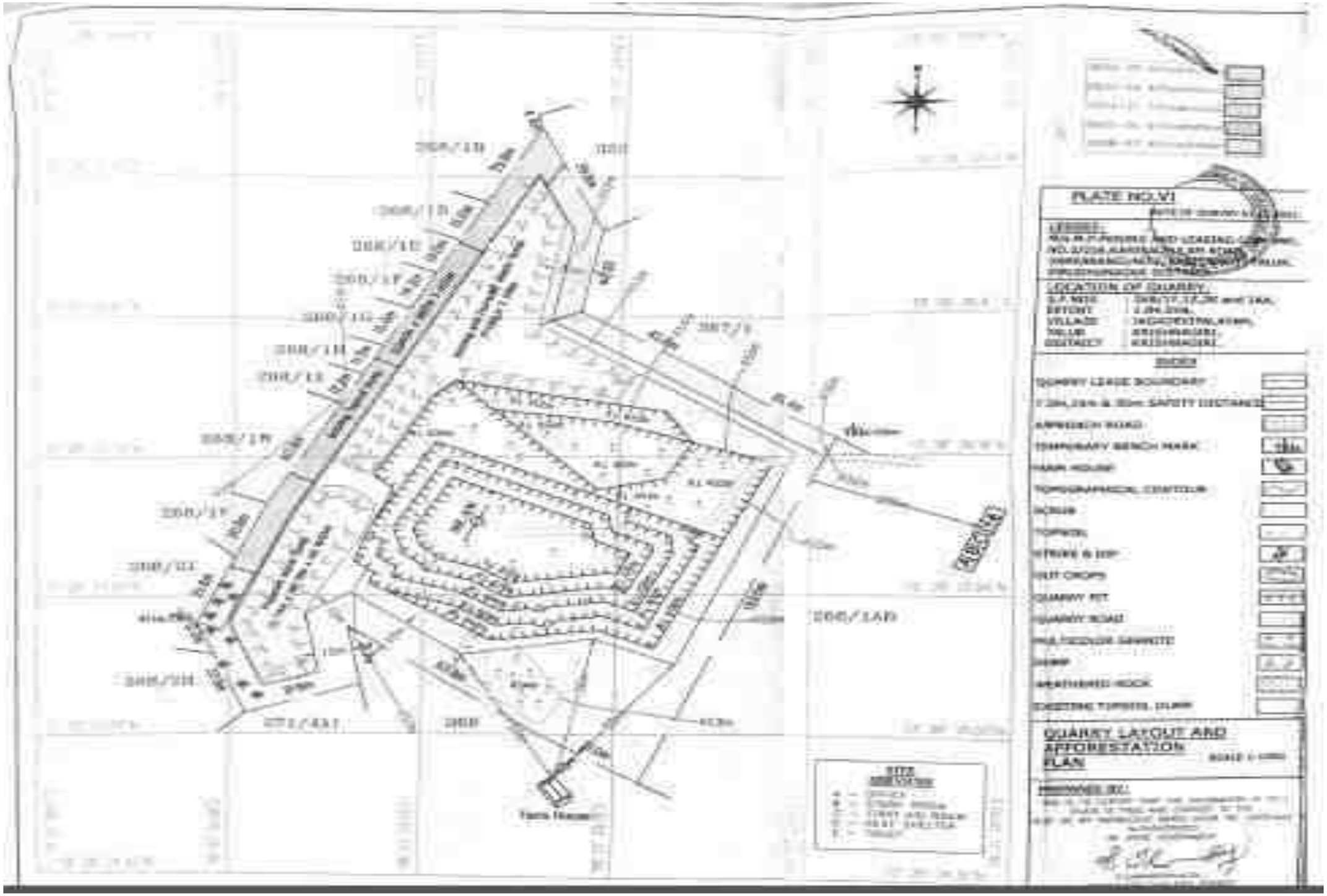


Fig. 2.17: Quarry Layout and Afforestation Plan

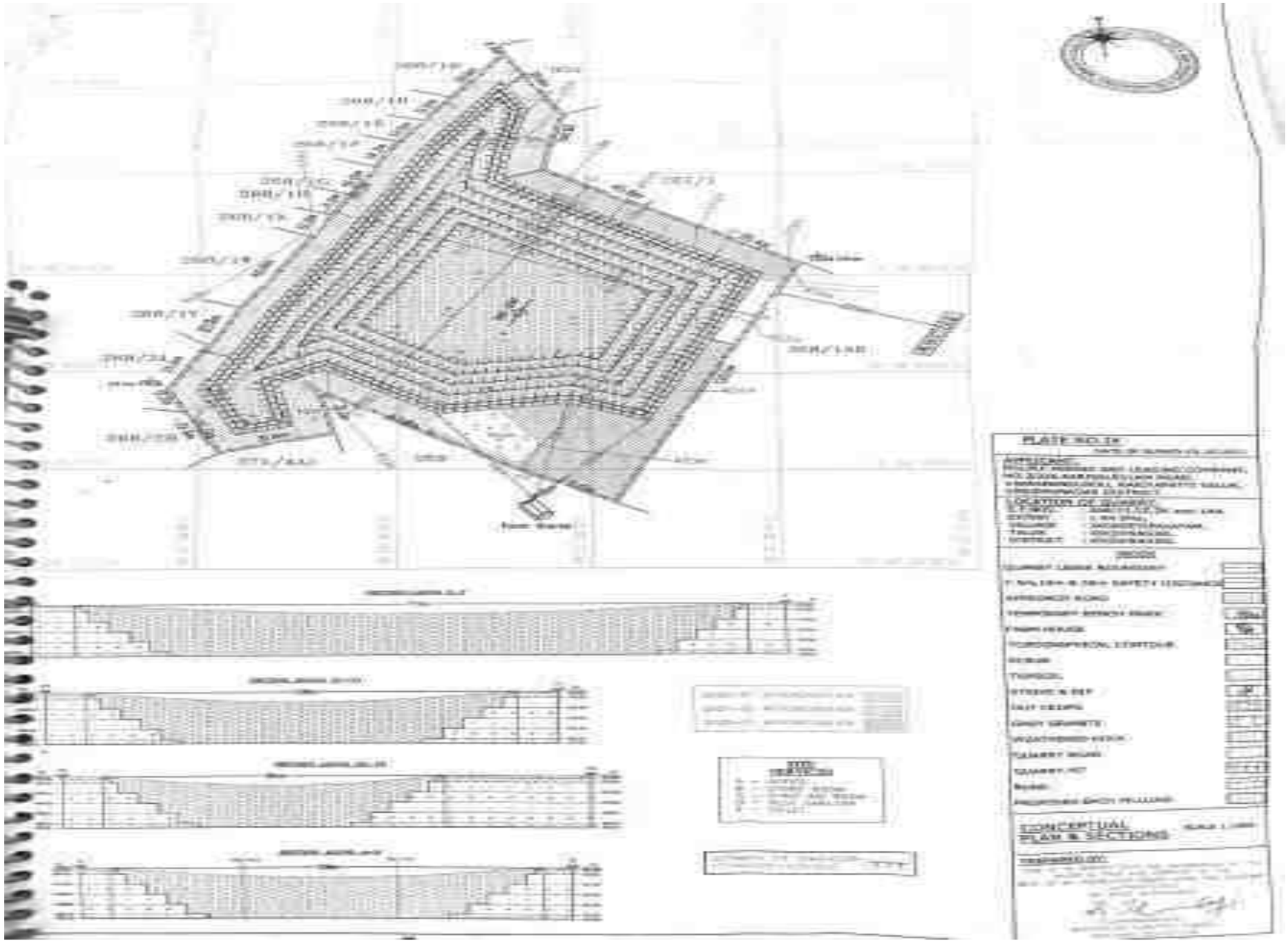


Fig. 2.18: Conceptual plan

2.12 Employment Potential (Management & Supervisory personal)

Table No 2.17: Employment Potential

Management and supervisory personal		Mines manager	1 No
		Mines Foreman	1 No
		Machinery Operators	4 No's
Workers	Skilled labour		5 No's
	Semi-skilled labour		18 No's
	Unskilled labour		6 No's
		Total	**35 No's**

Table No 2.18: Water Requirements (3.5 KLD)

Drinking and Domestic purposes	1.5 KLD
Dust suppression & Green Belt	2.0 KLD
Source	Drinking - Mineral water supply Domestic, Dust suppression and Greenbelt – Water vendors through water tank

2.13 Amenities

The quarry are existing quarries good approach road is already available. All site services such as first-aid room, office, rest room, canteen and toilets will be renovate before commencing the project. 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

First Aid station as per provisions under Rule (44) of the Mines Rules, 1955 will be provided and First aid kits kept in mines office room, the qualified first aid personnel should be appointed or nominated to attend emergency first aid treatment.

In case of eventuality, the victim will be given first aid immediately at the site and the injured person will be taken to the hospital located in Jagadevi. The competent and statutory of Foreman / Mate / Permit Manager will be incharge of the First aid.

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 labor Employment

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

2.14 Project Cost

S. No	Description	Approximate Cost (Rs)
1	Land Cost	9,76,000
2	Labour Shad	2,50,000
3	Sanitary Facility	80,000
4	First Aid Room and Accessories	50,000
5	Excavator	1,12,00,000
6	Crawler Crane	75,00,000
7	Diesel Generator	7,50,000
8	Tipper	50,00,000
9	Wire Saw	8,00,000
10	Compressor with loose tools	18,00,000
11	Jack Hammer	5,40,000
12	Drinking Water facility	1,00,000
13	Safety Kits	50,000
14	Fencing Cost	1,95,000
15	Garland Drain	1,05,000
16	Tree samplings under safety zone during this scheme period	20,000
17	Water sprinkling	1,00,000
	Total Project Cost	**2,95,16,000/-**

b) EMP Cost

S. No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ Six months	Total Charges/ year	Total Charges for this Scheme period
1	Ambient air quality monitoring	6500	4	26000	52000	260000
2	Noise Level Monitoring	250	4	1000	2000	10000
3	Ground Vibration Monitoring	1000	2	2000	4000	20000
4	Water sampling and analysis	9000	1	9000	18000	90000
Total EMP Cost/year					**76000**	**3,80,000**
The EMP cost for this scheme period would be around Rs. 3,80,000/-						

2.15 End Use

The applicant does not have the facilities to cut and polish the rough blocks of granite. He proposes to export 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 March, 2026 – May, 2026 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), Hosur observatory, Krishnagiri 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, HOSUR OBSERVATORY, KRISHNAGIRI DISTRICT

The meteorology of the project area plays very important role in dispersion of pollutants and build-up of pollution within the air atmosphere. In the present study, in the month of March, 2026 – May, 2026 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 3.1 Summary of the Meteorological data for the study period

S. No	Parameters	Months	March 2026	April 2026	May 2026
1	Temperature (°C)	Max	36	38	37
		Min	22	22	23
		Average	27	31	30
2	Rainfall (mm)	Total Average Rainfall	8.6	22.2	45
		No. of rainy days	1	4	8
3	Humidity (%)	Average	20	43	72
4	Wind speed (mps)	Average	2.4	2.2	2.5

3.3.1 Wind Rose

Wind speed and wind direction data is useful in identifying the influence of meteorology on the air quality of the area. The observed wind pattern during the study period is described below. In the present study, in the month of March, 2026 – May, 2026 meteorological data has been taken to find the dispersion of pollutant concentration. Wind-rose diagram for the study period is shown given below in Fig No. 3.1.

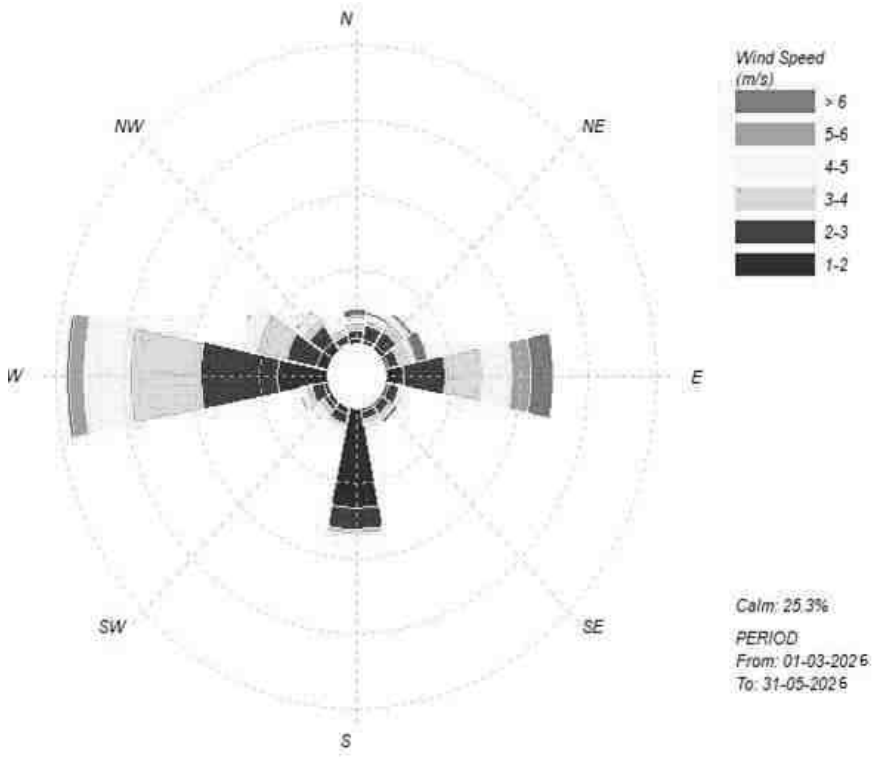


Fig No 3.1 Wind Rose Pattern for the Study period

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 No. 3.2, 3.3 and presented in Table 3.1(a).

The existing Ambient Air Quality status (AAQ) has been monitored for parameters PM_{10}, $PM_{2.5}$, SO_2 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 hour continuously. Respirable dust samplers have been used for monitoring the existing PM_{10} 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 3.1 (a) Ambient Air Quality Monitoring Locations

S. No	Sample Location	Station Code	Direction/ Distance (w.r.t. mine)	Core Zone/ Buffer Zone	Latitude	Longitude
1	Core Zone	AAQ-1	--	Core	12°28'28.15"N	78°21'04.89"E
2	Sappamuttlu	AAQ-3	0.41 km (SE)	Buffer	12°28'15.05"N	78°21'11.02"E
3	Sekilnatham	AAQ-4	4.2 km (E)	Buffer	12°29'45.11"N	78°23'24.69"E
4	Gandhinagar	AAQ-5	2.6 km (S)	Buffer	12°27'12.75"N	78°20'55.38"E
5	MGR Nagar	AAQ-6	5.6 km (N)	Buffer	12°31'55.08"N	78°20'58.31"E

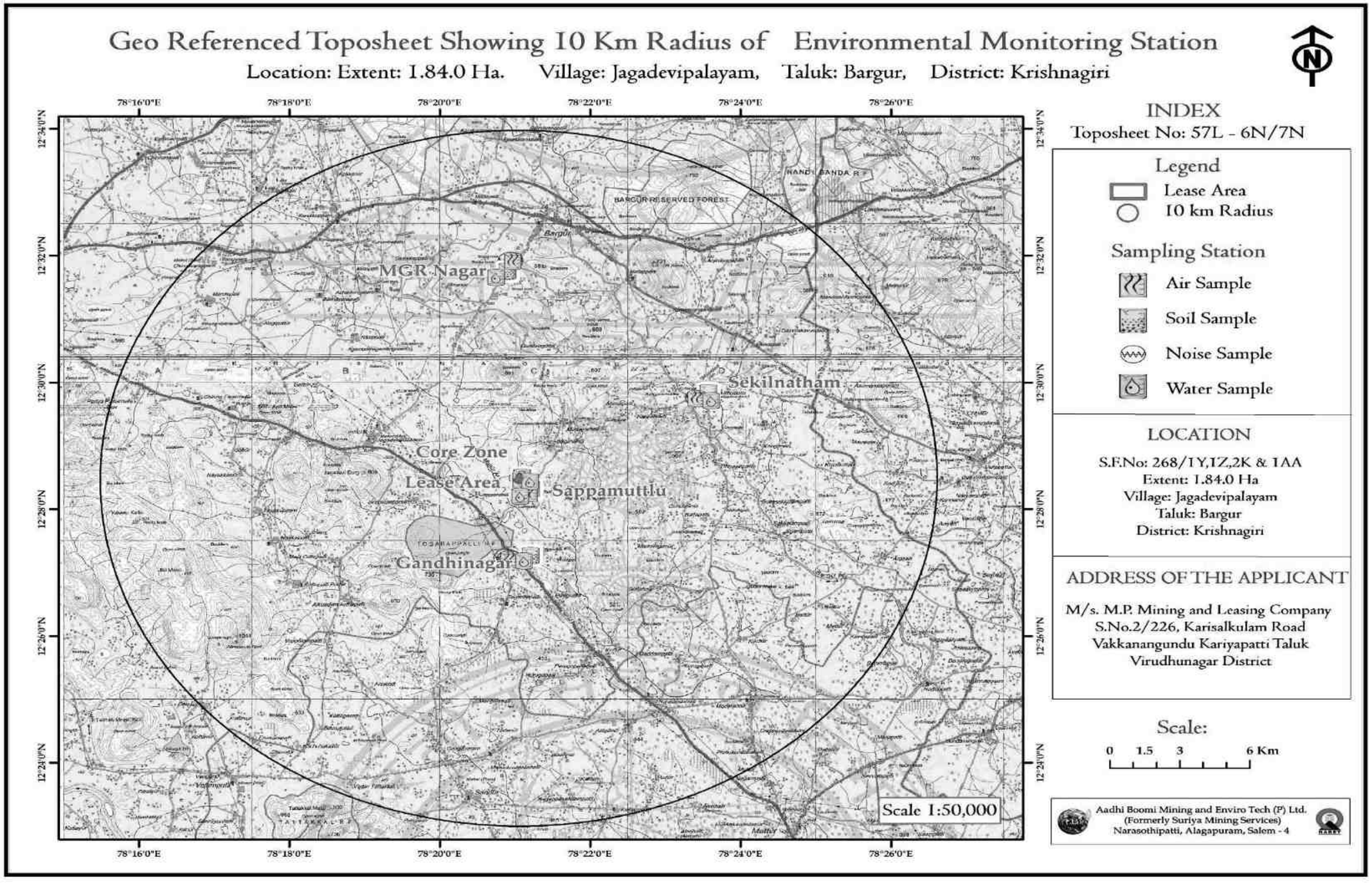


Fig No 3.2 Geo Referenced Toposheet showing Sampling station around 10km radius

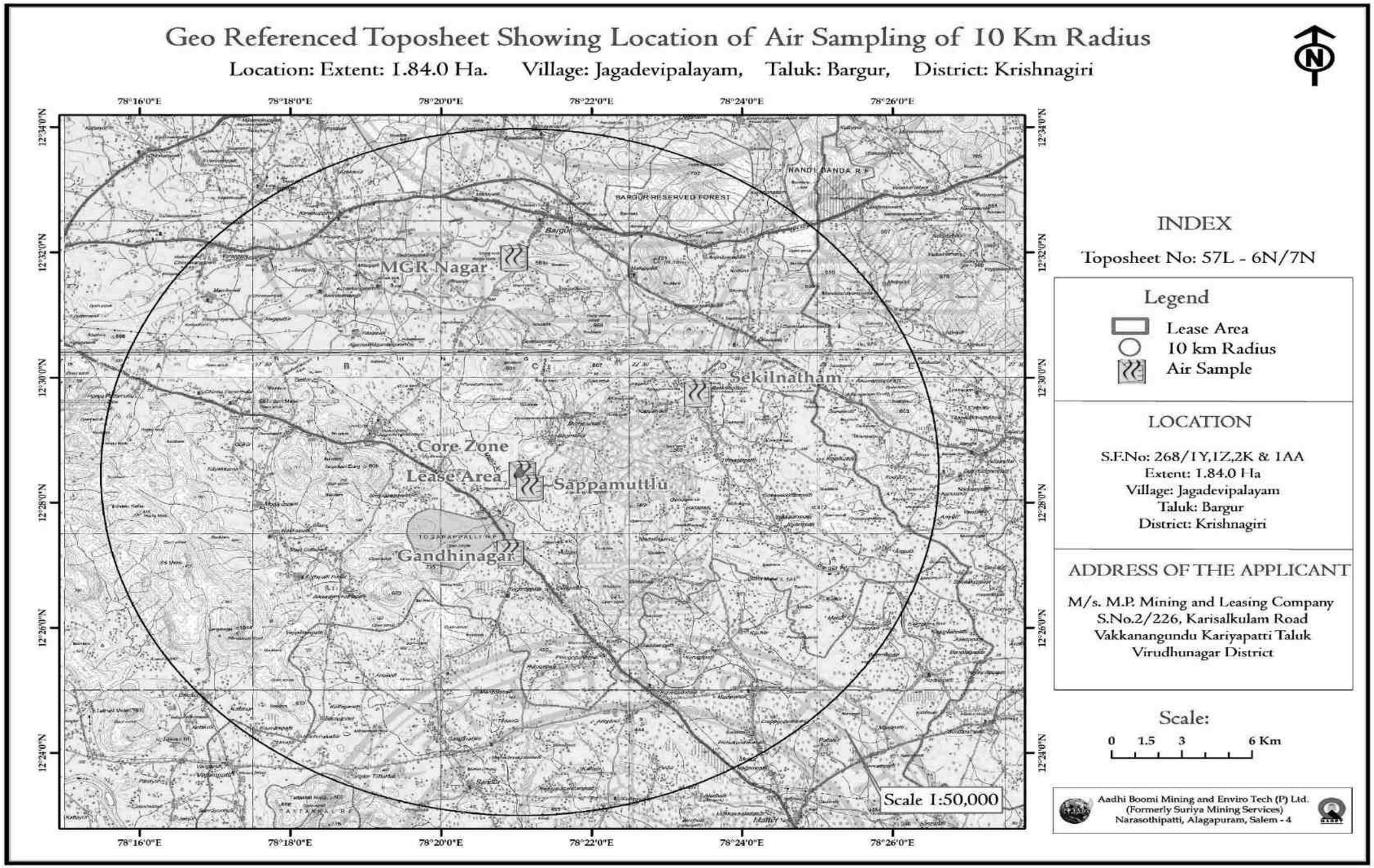


Fig No 3.2 (a) Geo Referenced Toposheet showing Air Sampling station around 10km radius





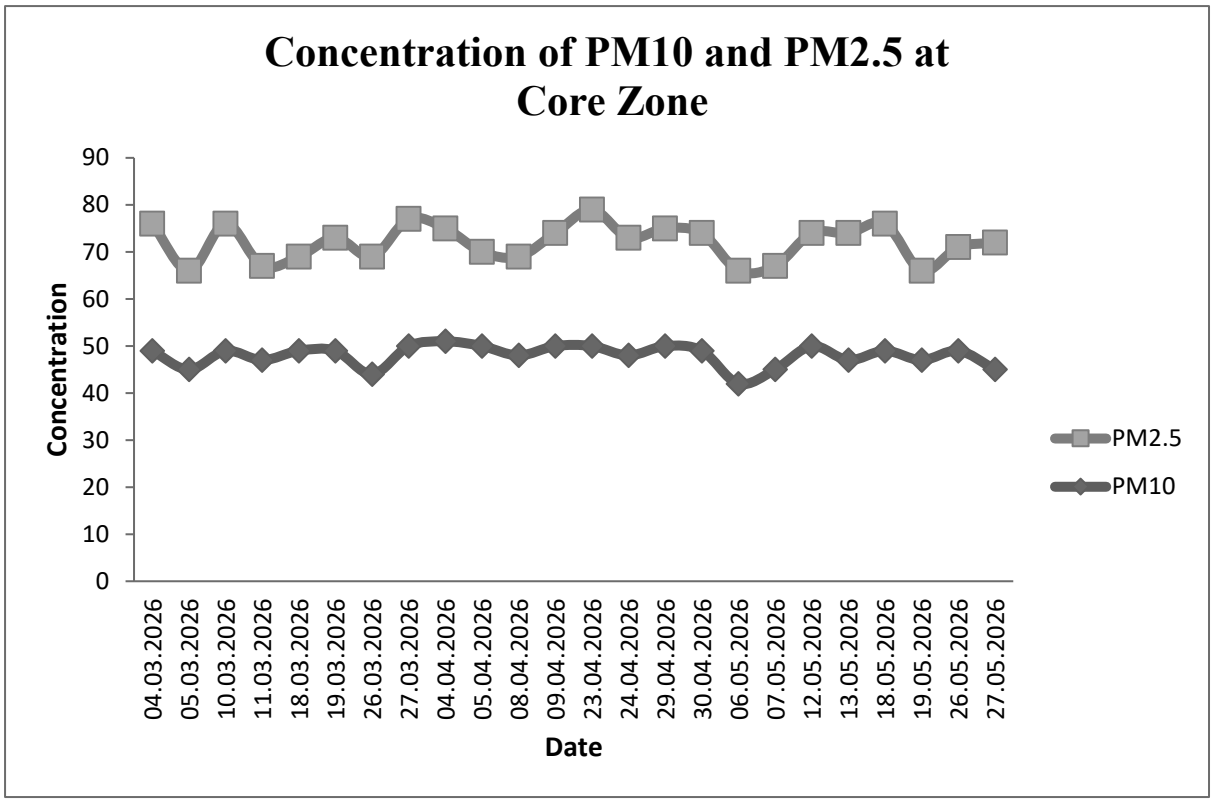
Fig No 3.3 Air Monitoring locations at Core Zone

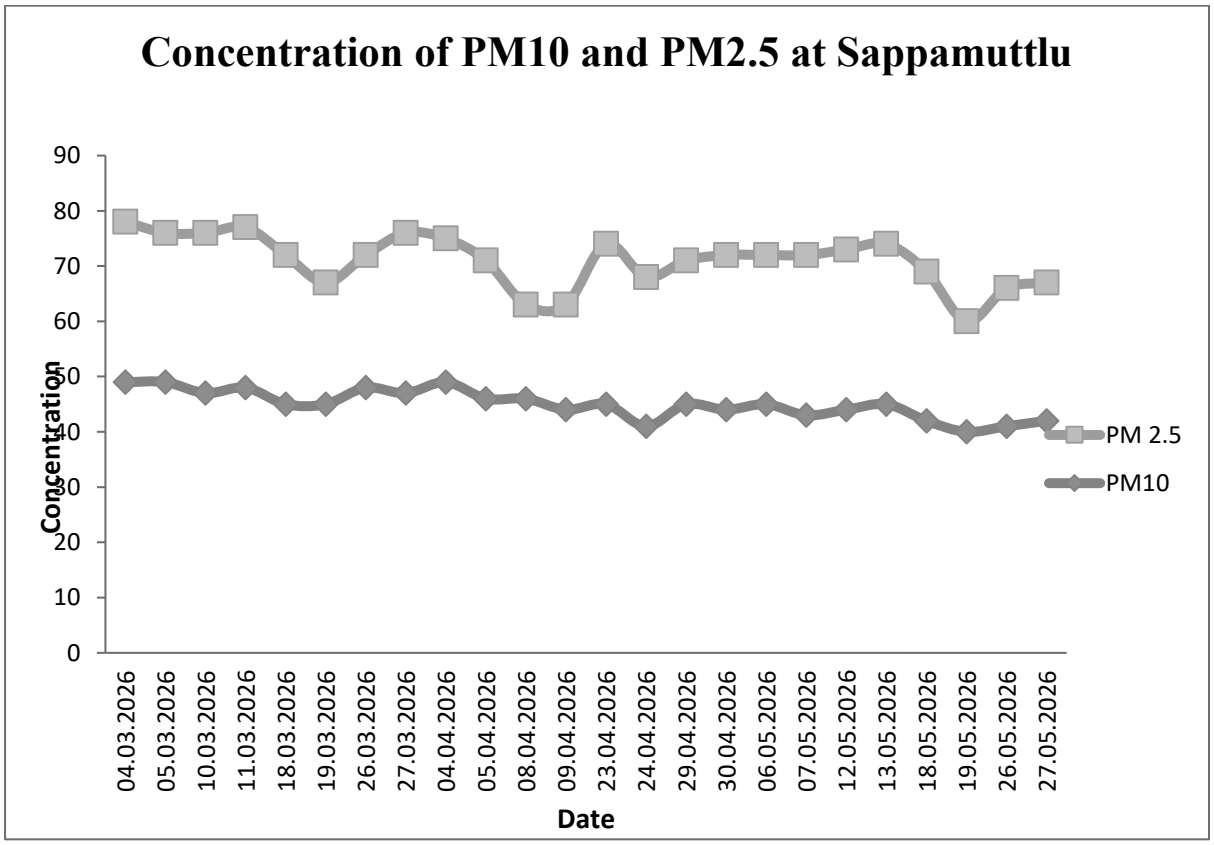
3.4.2 Monitoring Result

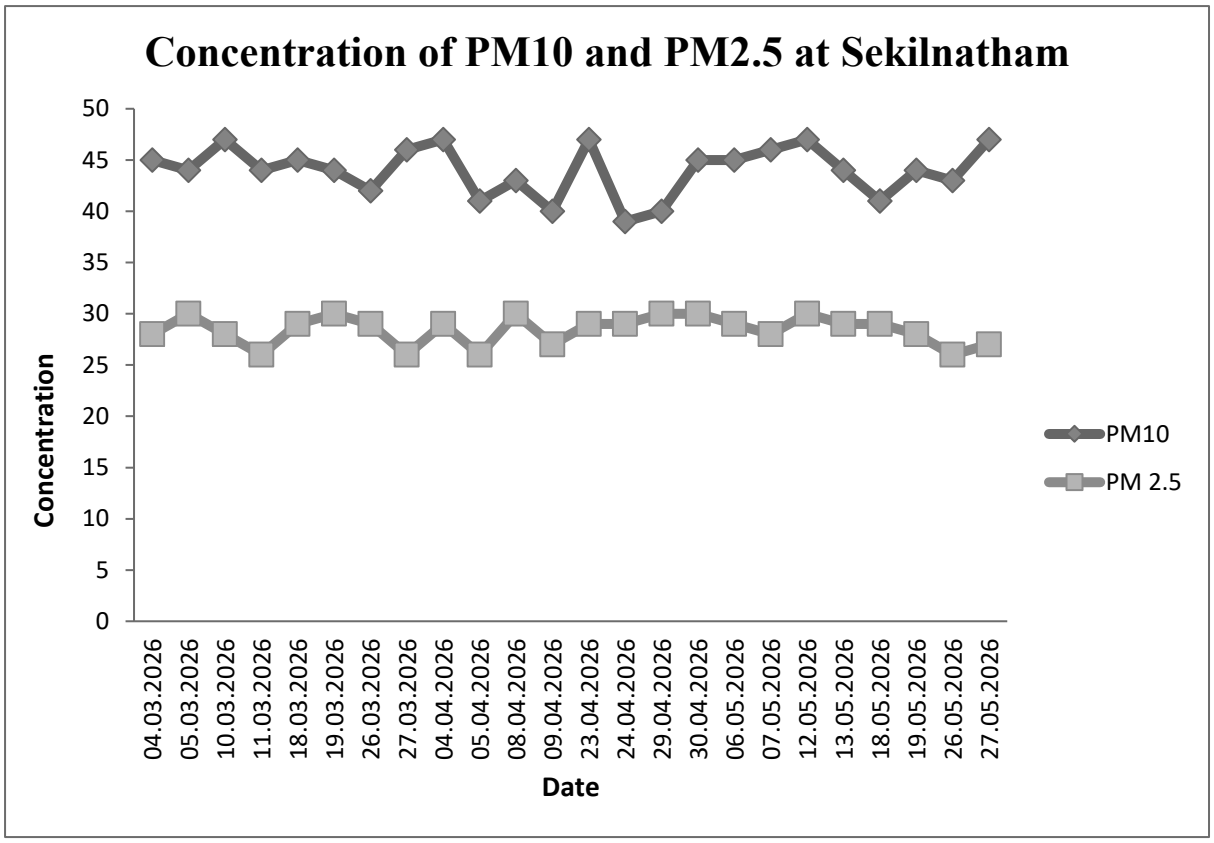
Monitoring station-wise minimum and statistical analysis (minimum, maximum, arithmetic mean) for measured levels of PM_{10}, $PM_{2.5}$, SO_2, NO_x in study area for the monitoring period are shown parameter wise in Table 3.2 and graphical representation of concentration pollutants are showing in Fig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

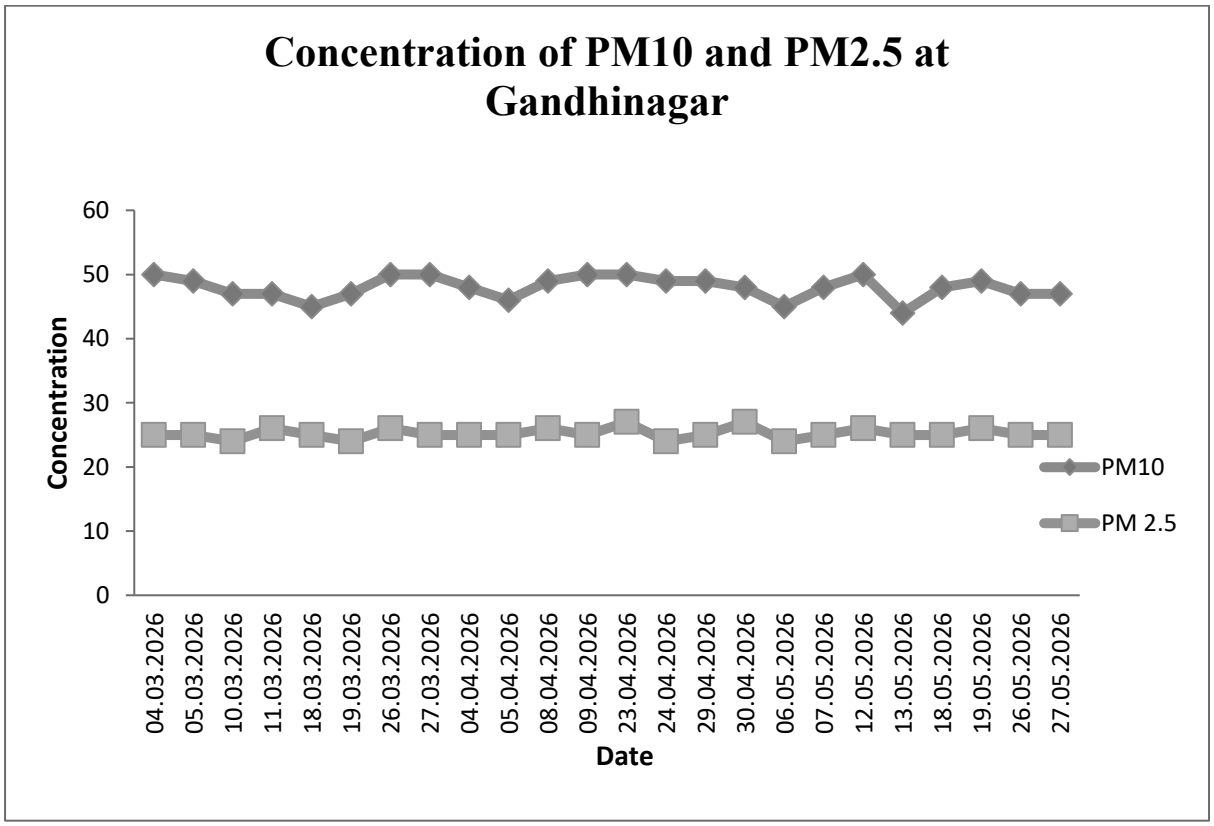
Table 3.2 Summaries of Ambient Air Quality Results

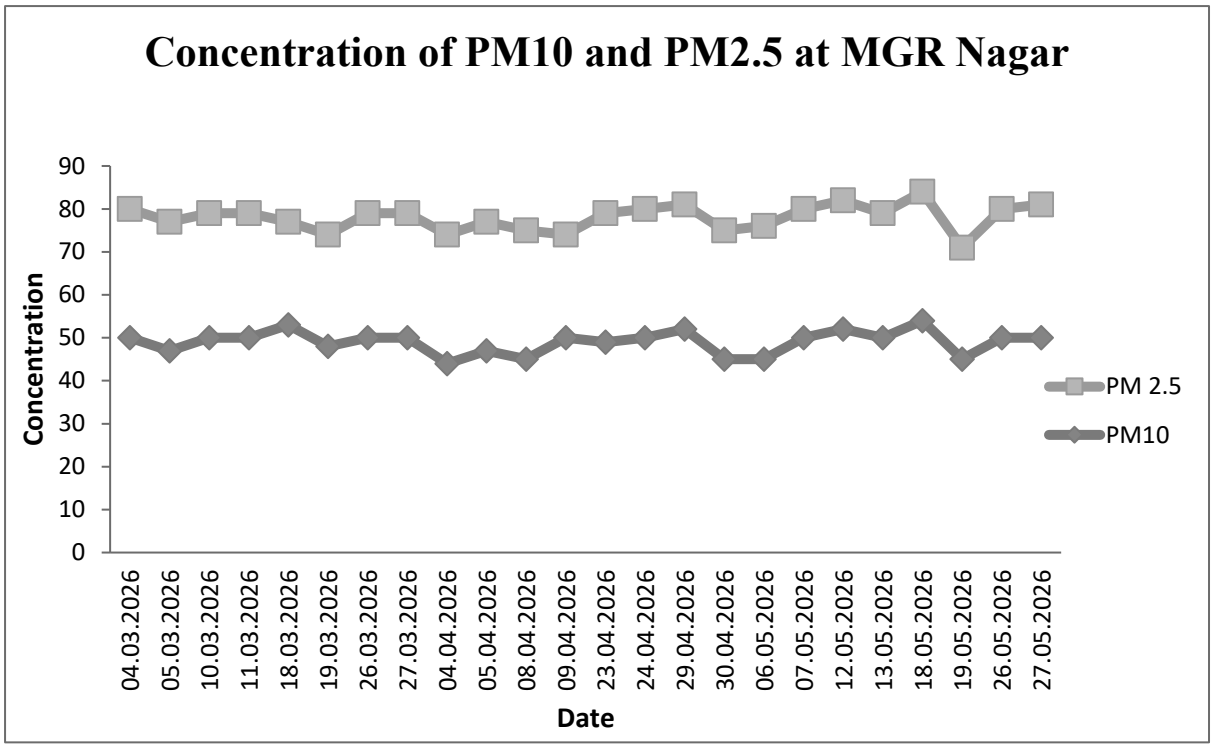
Location		Code	PM_{10} (µg/m³)				$PM_{2.5}$ (µg/m³)				SO_2 (µg/m³)				NO_x (µg/m³)			
			Max	**Min**	**Avg**	**98%**	**Max**	**Min**	**Avg**	**98%**	**Max**	**Min**	**Avg**	**98%**	**Max**	**Min**	**Avg**	**98%**
Core Zone		A_1	52	40	46	48.5	33	19	26	28.6	12	6	9	11	19	13	16	18
Buffer zone	Sappamuttlu	A_2	50	39	44.5	49	28	19	24	28	17	8	12	14	25	17	12	14
	Sekilnatham	A_3	54	41	47	48.5	32	17	25	28.5	19	12	16	18	27	16	22	23.5
	Gandhinagar	A_4	49	40	44	47	33	22	28	30.5	21	10	16	18	26	19	23	27
	MGR Nagar	A_5	58	46	51	53	31	23	27	28.5	20	13	17	18.5	25	16	21	23.5
NAAQS			**100**				**60**				**80**				**80**			

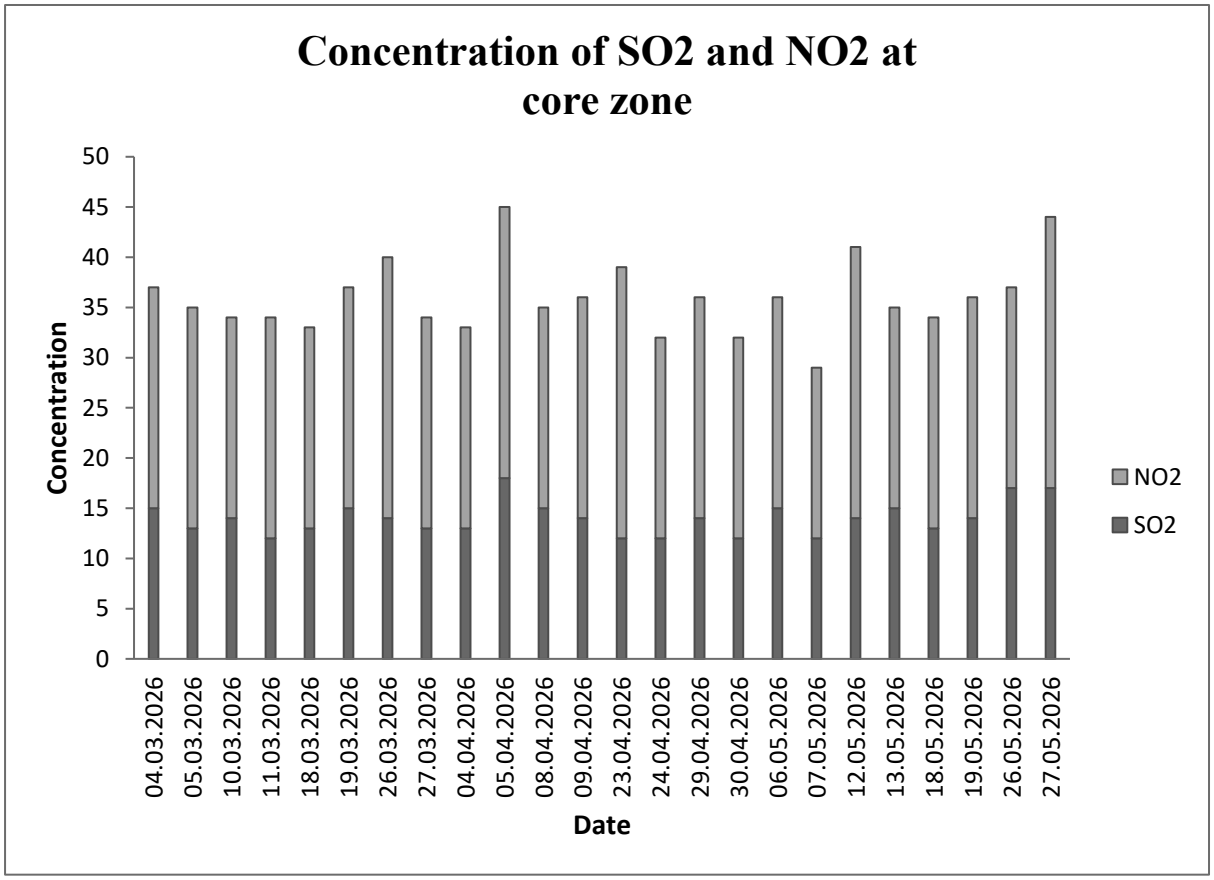

Concentration of PM10 and PM2.5 at Core Zone
Concentration
90
80
70
60
50
40
30
20
10
0
04.03.2026
05.03.2026
10.03.2026
11.03.2026
18.03.2026
19.03.2026
26.03.2026
27.03.2026
04.04.2026
05.04.2026
08.04.2026
09.04.2026
23.04.2026
24.04.2026
29.04.2026
30.04.2026
06.05.2026
07.05.2026
12.05.2026
13.05.2026
18.05.2026
19.05.2026
26.05.2026
27.05.2026
Date
PM2.5
PM10

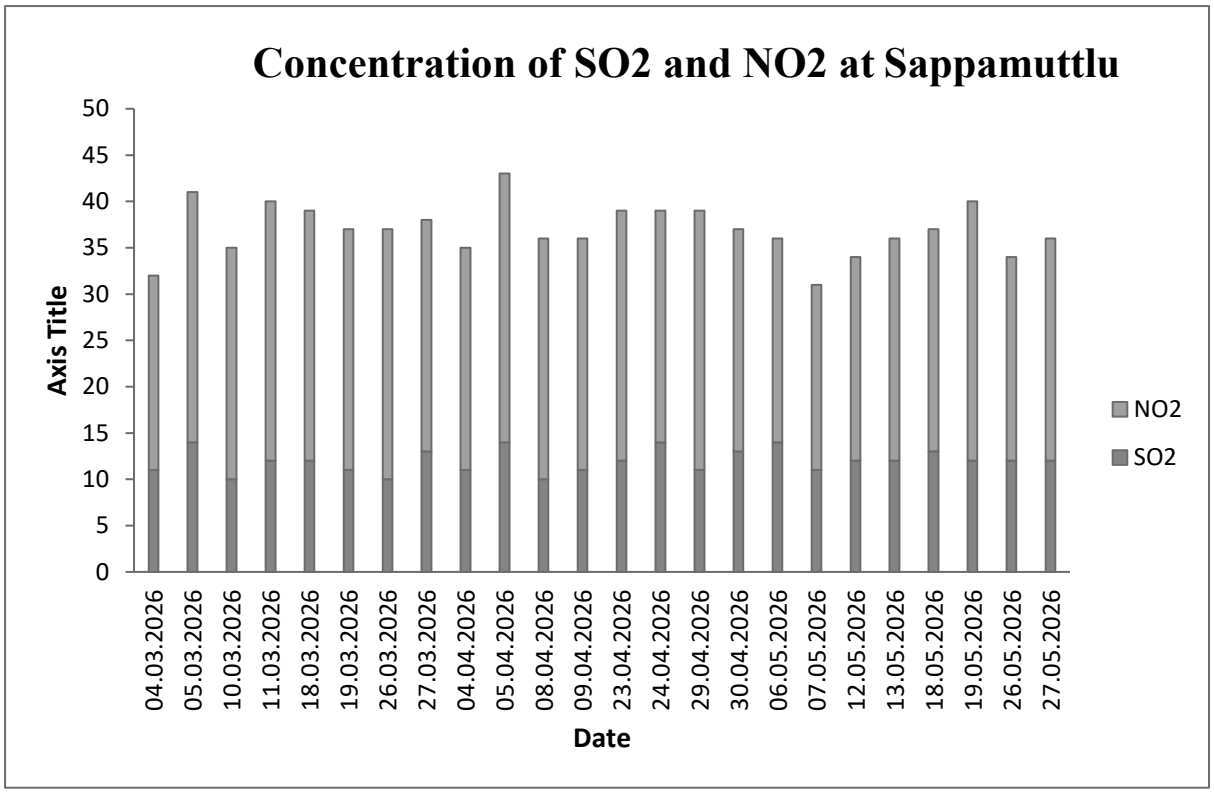

Concentration of PM10 and PM2.5 at Sappamuttlu
Concentration
90
80
70
60
50
40
30
20
10
0
04.03.2026
05.03.2026
10.03.2026
11.03.2026
18.03.2026
19.03.2026
26.03.2026
27.03.2026
04.04.2026
05.04.2026
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24.04.2026
29.04.2026
30.04.2026
06.05.2026
07.05.2026
12.05.2026
13.05.2026
18.05.2026
19.05.2026
26.05.2026
27.05.2026
Date
PM 2.5
PM10

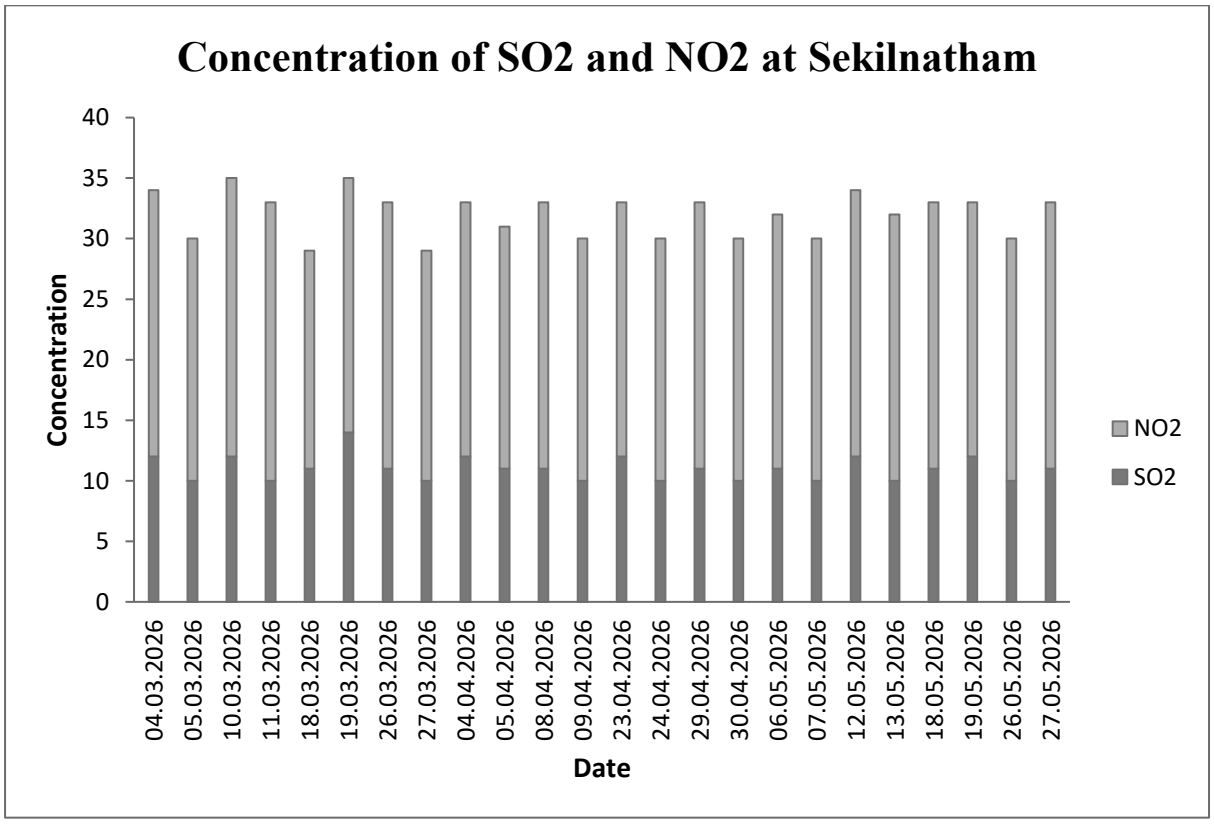

Concentration of PM10 and PM2.5 at Sekilnatham
Concentration
Date
PM10
PM 2.5
0
5
10
15
20
25
30
35
40
45
50
04.03.2026
05.03.2026
10.03.2026
11.03.2026
18.03.2026
19.03.2026
26.03.2026
27.03.2026
04.04.2026
05.04.2026
08.04.2026
09.04.2026
23.04.2026
24.04.2026
29.04.2026
30.04.2026
06.05.2026
07.05.2026
12.05.2026
13.05.2026
18.05.2026
19.05.2026
26.05.2026
27.05.2026

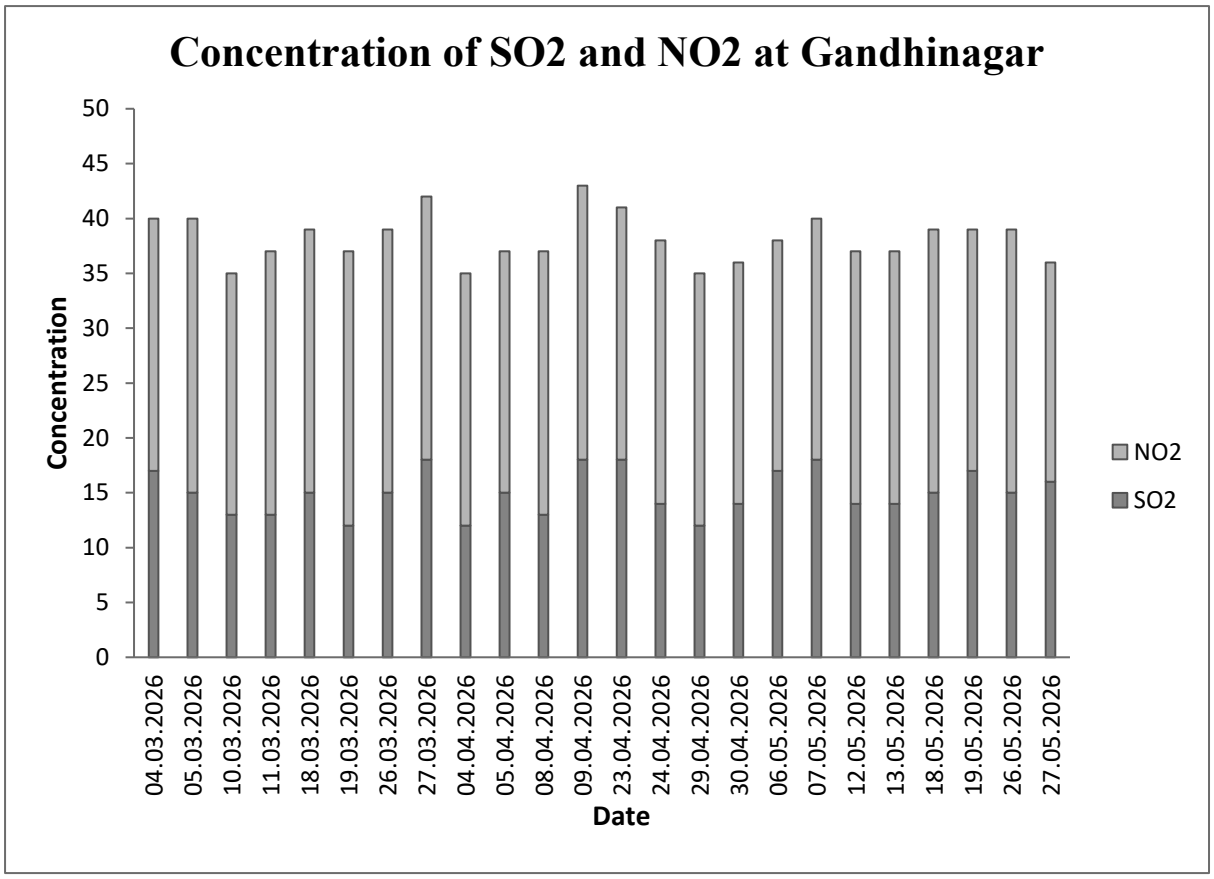

Concentration of PM10 and PM2.5 at Gandhinagar
Concentration
Date
PM10
PM 2.5
0
10
20
30
40
50
60
04.03.2026
05.03.2026
10.03.2026
11.03.2026
18.03.2026
19.03.2026
26.03.2026
27.03.2026
04.04.2026
05.04.2026
08.04.2026
09.04.2026
23.04.2026
24.04.2026
29.04.2026
30.04.2026
06.05.2026
07.05.2026
12.05.2026
13.05.2026
18.05.2026
19.05.2026
26.05.2026
27.05.2026


Concentration of PM10 and PM2.5 at MGR Nagar
Concentration
90
80
70
60
50
40
30
20
10
0
04.03.2026
05.03.2026
10.03.2026
11.03.2026
18.03.2026
19.03.2026
26.03.2026
27.03.2026
04.04.2026
05.04.2026
08.04.2026
09.04.2026
23.04.2026
24.04.2026
29.04.2026
30.04.2026
06.05.2026
07.05.2026
12.05.2026
13.05.2026
18.05.2026
19.05.2026
26.05.2026
27.05.2026
Date
PM 2.5
PM10


Concentration of SO2 and NO2 at core zone
Concentration
50
45
40
35
30
25
20
15
10
5
0
04.03.2026
05.03.2026
10.03.2026
11.03.2026
18.03.2026
19.03.2026
26.03.2026
27.03.2026
04.04.2026
05.04.2026
08.04.2026
09.04.2026
23.04.2026
24.04.2026
29.04.2026
30.04.2026
06.05.2026
07.05.2026
12.05.2026
13.05.2026
18.05.2026
19.05.2026
26.05.2026
27.05.2026
Date
NO2
SO2


Concentration of SO2 and NO2 at Sappamuttlu
Axis Title
Date
NO2
SO2
0
5
10
15
20
25
30
35
40
45
50
04.03.2026
05.03.2026
10.03.2026
11.03.2026
18.03.2026
19.03.2026
26.03.2026
27.03.2026
04.04.2026
05.04.2026
08.04.2026
09.04.2026
23.04.2026
24.04.2026
29.04.2026
30.04.2026
06.05.2026
07.05.2026
12.05.2026
13.05.2026
18.05.2026
19.05.2026
26.05.2026
27.05.2026


Concentration of SO2 and NO2 at Sekilnatham
Concentration
Date
NO2
SO2
0
5
10
15
20
25
30
35
40
04.03.2026
05.03.2026
10.03.2026
11.03.2026
18.03.2026
19.03.2026
26.03.2026
27.03.2026
04.04.2026
05.04.2026
08.04.2026
09.04.2026
23.04.2026
24.04.2026
29.04.2026
30.04.2026
06.05.2026
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26.05.2026
27.05.2026



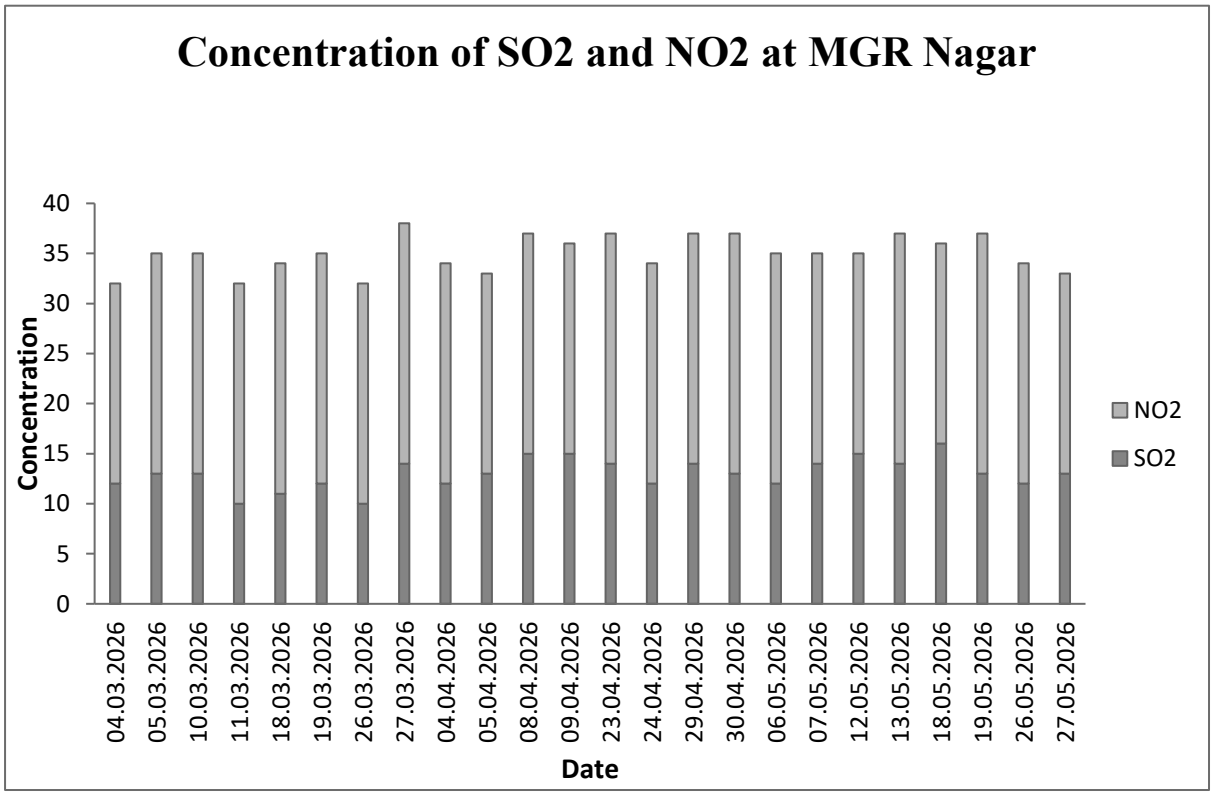


Fig No 3.4 Variation in Concentration of air pollutants

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 PM_{10} for all the 5 stations was found to be 39µg/m^3 at Sappamuttlu village. The maximum concentration was observed in MGR Nagar as 46µg/m^3. The average PM_{10} level at all stations varies from 44µg/m^3 to 51 µg/m^3.
- The average $PM_{2.5}$ level at all stations varies from 24µg/m^3 to 28µg/m^3. The minimum concentrations of $PM_{2.5}$ for all the 5 stations were found to be 17µg/m^3 at Sekilnatham and Core, Sappamuttlu village as 19µg/m^3. The maximum concentration was found to be 28 µg/m^3 at Gandhinagar.
- The maximum concentrations of SO_2 were found to be 20 and 21µg/m^3 at Gandhinagar and MGR Nagar villages. The minimum concentration was found to be 6µg/m^3 at Core Zone. The average SO_2 level at all stations varies from 9 µg/m^3 to 17 µg/m^3.
- The minimum NOx concentrations were recorded as 13 µg/m^3 at Core zone. The maximum concentration was found to be 27 µg/m^3 at Sekilnatham Village. The average NOx level at all stations varies from 12µg/m^3 to 23µg/m^3. The concentration levels of the above pollutants were observed to be well within the limits of AAQS prescribed by CPCB.

3.5 NOISE ENVIRONMENT

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

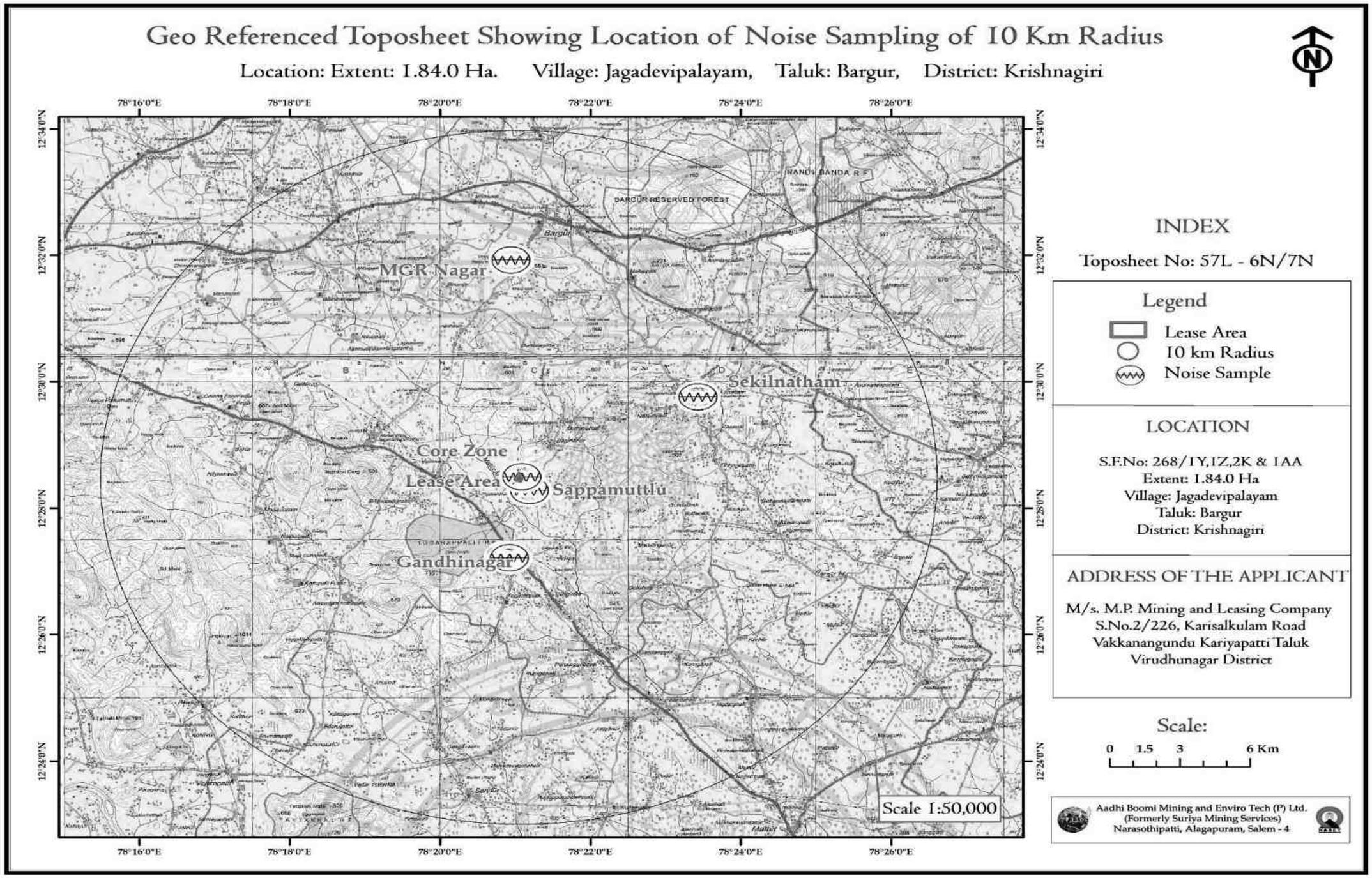


Fig No 3.5 Geo Referenced Toposheet showing Noise sampling stations around 10km radius

Table 3.3 Noise Sampling Locations

Sl. No	Location	Station code	Distance (km)	Direction
1	Core area	NQ1	--	--
	Lease boundary pillar (North)	NQ2	0.1	N
	Lease boundary pillar (South)	NQ3	0.1	S
	Lease boundary pillar (East)	NQ4	0.1	E
	Lease boundary pillar (West)	NQ5	0.1	W
2	Sappamuttlu	NQ11	0.41	SE
3	Sekilnatham	NQ12	4.2	E
4	Gandhinagar	NQ13	2.6	S
5	MGR Nagar	NQ14	5.6	N

3.5.1 Method of Monitoring

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

Table 3.4 Noise Monitoring Results in Core and Buffer Zone

Sample code	Location	Decibel dB (A)		TNPCB Standards
		Day Time	Night Time	
NQ1	Core area	40.2	36.4	<u>Industrial</u> Day Time - 75 dB(A) Night Time – 70 dB(A) <u>Residential</u> Day Time - 55 dB(A) Night Time - 45 dB (A)
NQ2	Lease boundary pillar (North)	37.8	32.5	
NQ3	Lease boundary pillar (South)	36.2	33.5	
NQ4	Lease boundary pillar (East)	39.5	35.4	
NQ5	Lease boundary pillar (West)	41.3	37.9	
NQ6	Sappamuttlu	43.2	34.5	
NQ7	Sekilnatham	41.9	37.2	
NQ8	Gandhinagar	42.4	39.1	
NQ9	MGR Nagar	46.4	41.2	
Remarks	Day Time	Leq (6.00 AM to 10.00 PM)		
	Night Time	Leq (10.00 PM to 6.00 AM)		



Noise monitoring locations at Core Zone

Fig No 3.6 Noise Monitoring at Lease and Buffer

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 46.4 dB (A) at MGR Nagar & 36.2 dB (A) at Sekilnatham respectively in buffer zone. The minimum and maximum noise level at core area is 41.9 dB (A) and 40.2 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 41.2 dB (A) at MGR Nagar & 34.5 dB (A) at Sappamutlu respectively in buffer zone. The minimum and maximum noise level at core area is 37.9 dB (A) and 32.5 dB (A). The Noise level measured is found within the permissible limits during night time as specified by CPCB Standard.

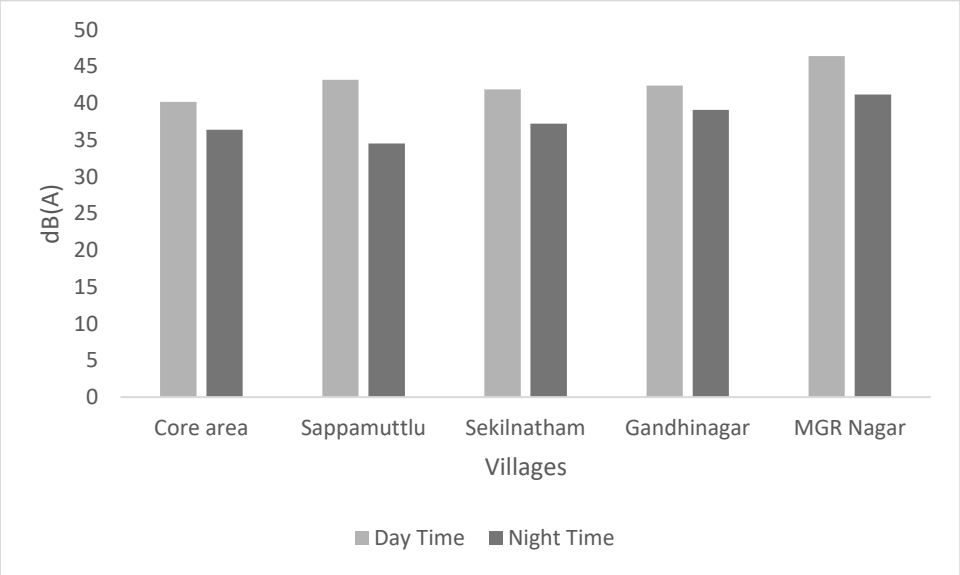


Fig No 3.7 Noise Level of the Study Area

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. The following image of Geo referenced Topomap showing locations of water samples are given in the Figure No. 3.8. Locations of Core and Buffer Zone water samples are given in the Figure No. 3.9.

Table 3.5 Water Sampling Locations

Sampling Code	Location	Surface/ Ground water	Latitude	Longitude	Distance (km)	Direction
WQ1	Core Zone	GW	12°28'26.02"N	78°21'12.08"E	-	-
WQ2	Sappamuttlu	GW	12°28'12.09"N	78°21'04.13"E	0.48	SE
WQ3	Sekilnatham	GW	12°29'42.63"N	78°23'36.53"E	4.6	E
WQ4	Gandhinagar	GW	12°27'10.92"N	78°21'7.10"E	2.7	S
WQ5	MGR Nagar	GW	12°31'39.36"N	78°20'44.86"E	5.2	N

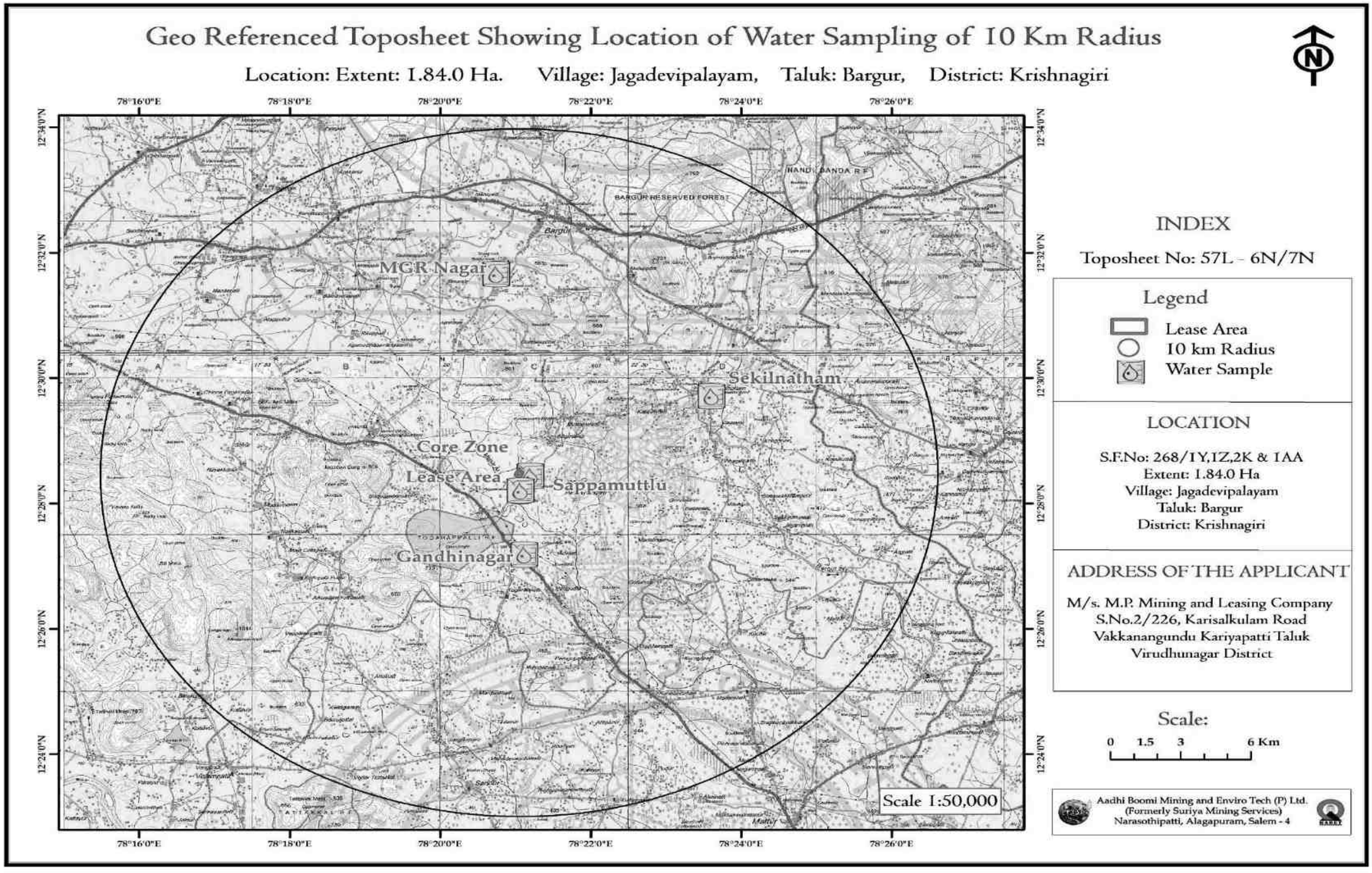


Fig No 3.8 Geo Referenced Toposheet showing water sampling station around 10km radius



Fig No 3.9 Water Sample Collection at Core and Buffer Zone

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)	**$CaCo_3$** (mg/l)	**SO_4^{2-}** (mg/l)	**Fe** (mg/l)
Core Zone			7.05	780	-	2	292	126	38	12	28	116	116	20	0.012
Buffer Zone	Sappamuttlu		6.98	1925	-	8	724	524	140	78	180	160	160	40	0.04
	Sekilnatham		7.60	1425	-	4	580	480	130	38	260	280	280	30	0.04
	Gandhinagar		6.98	1554	-	12	794	640	180	114	140	184	184	32	0.016
	MGR Nagar		7.10	860	-	12	784	432	124	30	180	120	120	36	0.014
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, **Ca^{2+}**- Calcium, **Mg^{2+}**-Magnesium, **Cl^-**Chloride, **TA**-Total Alkalinity, **Phe**- Phenolphthalein, **SO_4^{2-}**- 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 6.98-7.60 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 780 to 1925 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 2-12 mg/l in all the water samples collected from both core and buffer area.
- Total Dissolved Solids found in the range of 292-794 mg/l. In all the samples TDS was found beyond the acceptable limit of 500mg/l and maximum value of 794 mg/l was recorded at Gandhinagar village.
- Total Hardness of water samples exceeding the acceptable limit of four villages like Sappamuttlu (524 mg/l), Sekilnatham (480 mg/l), Gandhinagar (640 mg/l) and MGR Nagar (432 mg/l) of buffer zone. The hardness within the limit in core zone (126 mg/l).
- Calcium value observed in entire buffer locations were in the range of 124-180 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 38 which is well within the limit of 75 mg/l.
- Magnesium value recorded in all the locations including the core zone was within the limit of 12-114 mg/l and found to be within the permissible limit of 100 mg/l except Gandhinagar Village.
- Chlorides in all the water samples were recorded and highest chloride concentration found in Gandhi Nagar Village and was found above the acceptable limit. In other villages the values observed were within limits. The observed value was within the range of 28-260 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 Krishnagiri District

Krishnagiri district is underlined by Archaean crystalline formations with Recent alluvial deposits of limited areal extent and thickness along the courses of major rivers. The occurrence and movement of ground water are controlled by various factors such as physiography, climate, geology and structural features. Weathered and fractured crystalline rocks constitute the important aquifer systems in the district. Ground water generally occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fractured zones at deeper levels. The thickness of weathered zones in the district ranges from less than a meter to more than 15 m. The yield of large diameter dug wells in the district, tapping the weathered mantle of crystalline rocks ranges from 100 to 500 lpm. These wells normally sustain pumping for 2 to 6 hours per day, depending upon the local topography and characteristics of the weathered mantle. The depth to water level (DTW) during pre-monsoon (May 2025) ranged between 0.5 and 9.9 m bgl in the district. In major part of the district the DTW is more than 5.5 m bgl. Whereas it ranged between 2 and 9.9 m bgl during post monsoon, in the district and the DTW is in the range of 5 – 10 m bgl in the entire district except a few isolated pockets. The yield of successful exploratory wells drilled in the district ranged from 0.78 lps to 26 lps. As per the studies the wells drilled in granitic gneiss have higher yields than the wells drilled in charnockites. The specific capacity of the wells ranged from 1.2 to 118.0 lpm/m/dd. The piezometric head of fracture zones varied between 0.50 and 18.45 m bgl.

3.7.2 Geophysical Electrical Resistivity Survey

For understanding subsurface hydrogeological conditions geophysical investigation is carried out. The geophysical investigation is especially useful in the areas where there are no adequate exploratory well data about the aquifer conditions. Electric resistivity method is one of the well-known geophysical methods for delineating lateral as well vertical discontinuities in the resistivity's of the earth's subsurface layers. It is mainly applied to locate aquifers in the field of hydrogeology. The present study makes use of vertical electric sounding (VES) to delineate earth's subsurface layers. The electrical resistivity investigation used four electrodes collinear set up where current is sent through outer electrodes into the ground and the inner electrodes measure the potential difference, as shown in Figure 3.10.

3.7.3 Methodology and Data Acquisition

Geophysical Electrical Resistivity survey conducted in schlumberger Configuration (VES) method using IPI2 win 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.

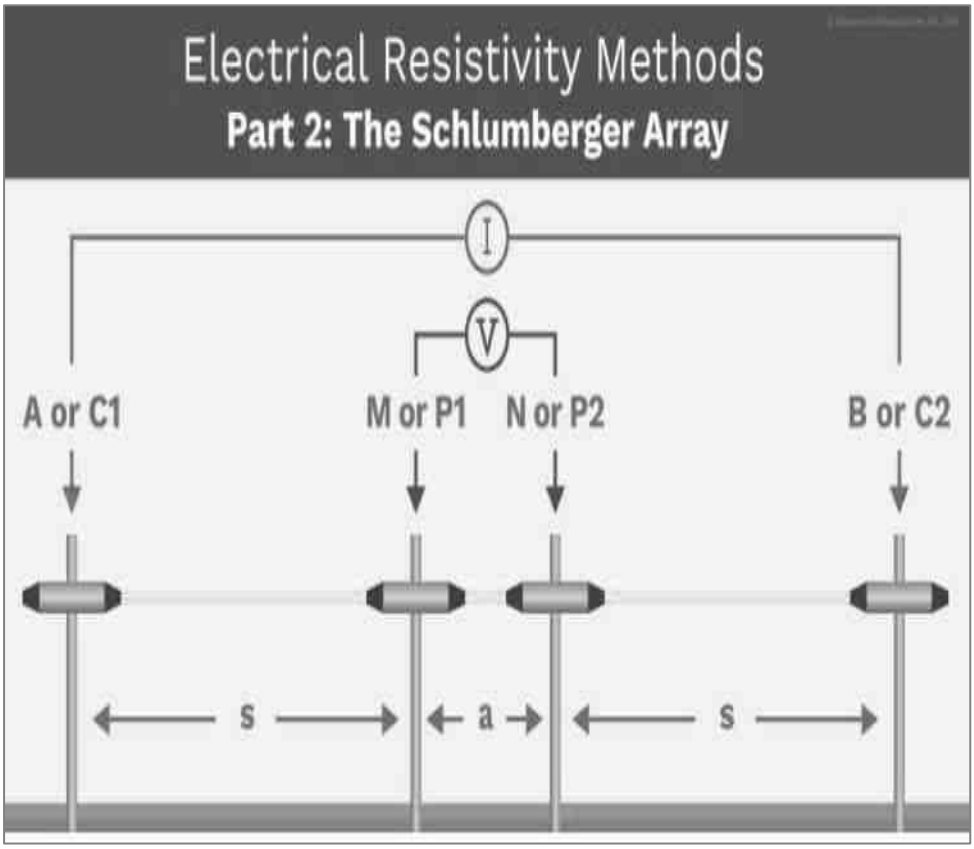


Figure 3.10 Schlumberger Array



Figure 3.11. DDR-3 Electrical Resistivity Meter

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. IPI2 win software is used and the data are interpreted. The computer output of geo-electric layers are given in Figure 3.13 which gives the Resistivity cross section and Resistivity curve, depth wise resistance and interpreted layers with corresponding resistivity.



Figure 3.12. Photos showing Geophysical survey conducted at proposed project site

The study area of lies in the Northern latitude of 12°28'27.73"N, Eastern longitude 78°21'4.84"E which is represented by Toposheet No. 57L/7. The applied area is mostly plain, elevation of 493m above mean sea level.

Table 3.7 Geophysical Vertical Electrical Sounding Data

Geo-Coordinates: Latitude 12°28'27.73"N, Longitude 78°21'4.84"E					
S.No.	**AB/2 (m)**	**MN/2 (m)**	**Geometric factor (K)**	**Resistance Value (R) ohm**	**Apparent Resistivity Rho ohm-meter meter**
1	1.5	0.5	6.3	28.35	178.6
2	3	0.5	27.5	1.69	46.5
3	6	0.5	112.3	0.47	52.8
4	9	0.5	253.6	0.54	136.9
5	12	0.5	451.4	0.43	194.1
6	12	2	109.9	5.38	591.3
7	15	2	173.5	4.62	801.6
8	20	2	310.9	3.29	1022.9
9	25	2	487.5	2.83	1379.6
10	30	2	703.4	2.56	1800.7
11	30	6	226.1	5.34	1207.4
12	35	6	311.1	3.91	1216.4
13	40	6	409.2	3.63	1485.4
14	45	6	520.5	3.09	1608.3
15	50	6	644.7	2.96	1908.3
16	60	6	932.6	0.79	736.8
17	60	10	549.5	2.56	1406.7
18	70	10	753.6	2.41	1816.2
19	80	10	989.1	2.24	2215.6
20	90	10	1256	1.86	2336.2
21	100	10	1554.3	1.75	2720.0

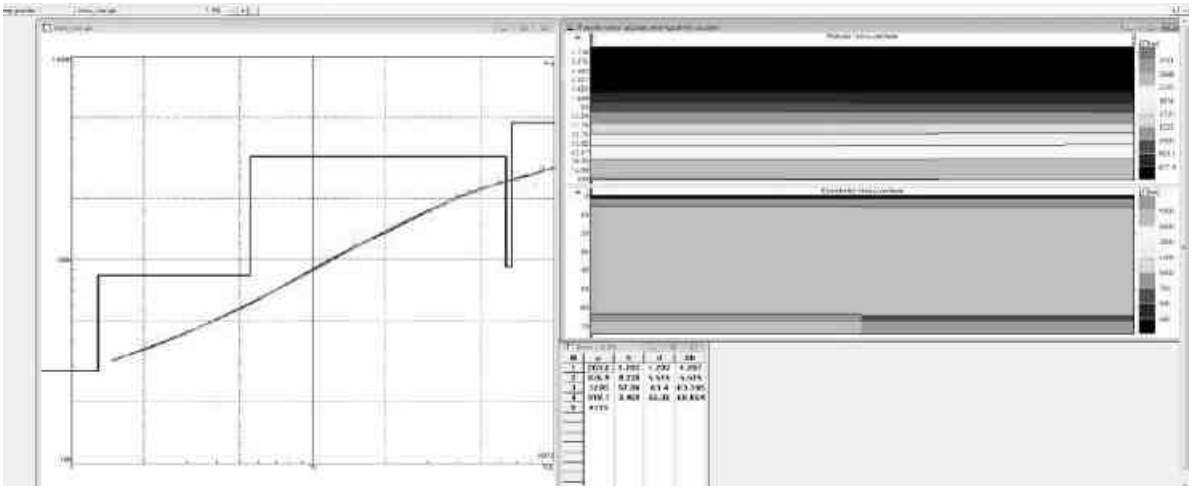
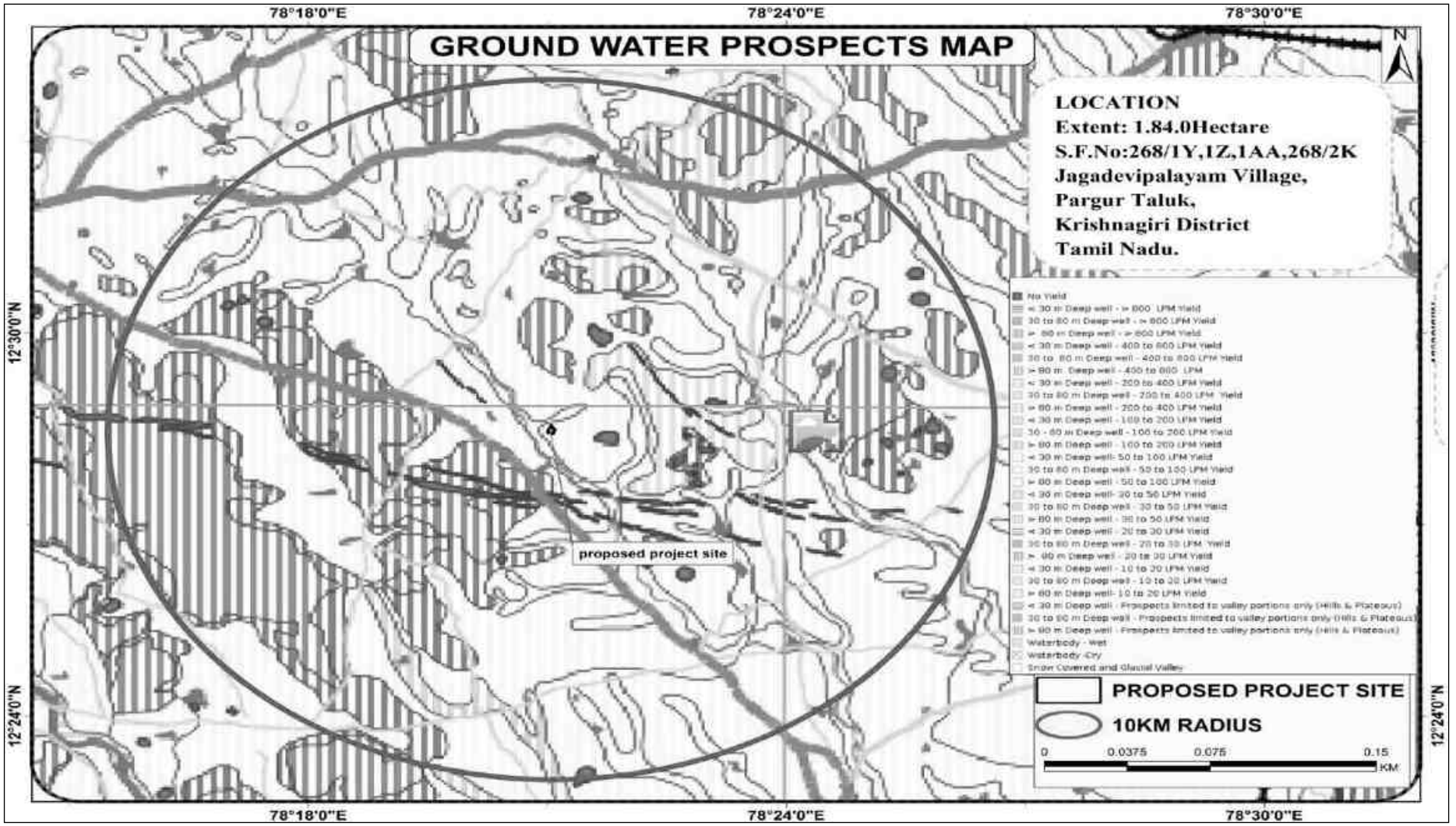


Figure 3.13. Image showing Resistivity cross section & pseudo cross section and Resistivity curve, depth of data



Source ***https://bhuvan-app1.nrsc.gov.in/gwis/gwis.php***

Figure 3.14 Ground Water prospects map proposed project site around 10km Radius

3.7.4 Geophysical Data Interpretation

0-1.28m: Top soil & Gravel with 286 ohm. Resistivity

1.35-5.5 Weathered rock formation with 836.9 ohm. Resistivity

5.97-63.4m: Massive Charnockite formation with 3205 ohm. Resistivity

63.4-66.86m –Jointed and fractured rock with about 918 ohm. Resistivity

Above 66.8m: hard massive formation with 4715 Ohm. Resistivity

The presence of top soil and Gravel 0-1.28m followed by 1.35-5.5m with medium resistivity is indicative of the weathered rock. The water table is having curve breaks around 63.4-66.8m depth with possible water bearing aquifer.

3.7.5 Conclusions

Hydrogeological and geophysical investigations carried out in the lease area indicate that the major groundwater-bearing fractured zone is encountered at a depth of approximately 63–66 m below ground level (BGL). The proposed quarrying operations are planned to a maximum depth of only 25m BGL during the plan period,

In view of this significant buffer between the proposed quarry floor and the aquifer horizon, the quarrying activities will not intersect the groundwater table at any stage of mining operations. Consequently, no adverse impacts are anticipated on groundwater recharge, groundwater flow patterns, groundwater storage, or groundwater quality within and around the lease area.

Furthermore, appropriate environmental management measures, including the construction of garland drains, storm water diversion channels, sedimentation pits, and regular maintenance of surface drainage systems, will be implemented to prevent runoff contamination and ensure proper water management. Therefore, the proposed granite quarrying activity is not expected to have any detrimental effect on the hydrogeological regime of the area throughout the operational life of the quarry.

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 No.3.8. Moreover, Georeferenced soil Map of around 10 km radius is given in Fig No.3.13. Table 3.8(a) 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 3.8 (a) Soil Sampling Locations

Code	Place	Latitude (N)	Longitude (E)	Distance w.r.t Mine Site (KM)	Direction w.r.t Mine Site
SQ1	Core Zone	12°28'30.00"N	78°21'05.67"E	_	_
SQ2	Sappamuttlu	12°28'19.04"N	78°21'12.78"E	0.40	SE
SQ3	Sekilnatham	12°29'50.20"N	78°23'34.45"E	4.59	E
SQ4	Gandhinagar	12°27'15.94"N	78°21'12.54"E	2.57	S
SQ5	MGR Nagar	12°31'44.90"N	78°20'53.93"E	5.39	N

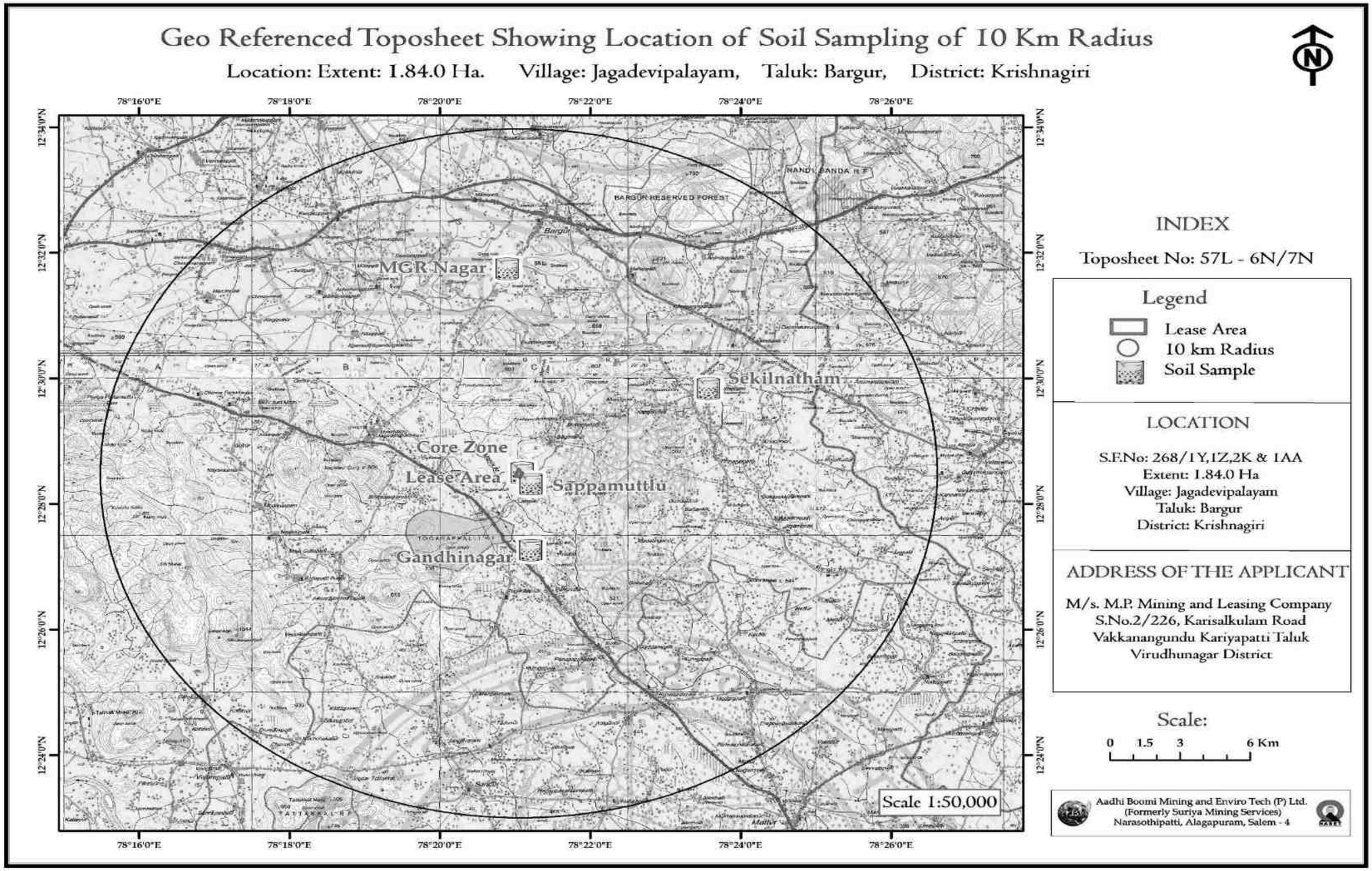


Fig No 3.15 Geo referenced Toposheet showing Soil sampling Locations around 10km radius

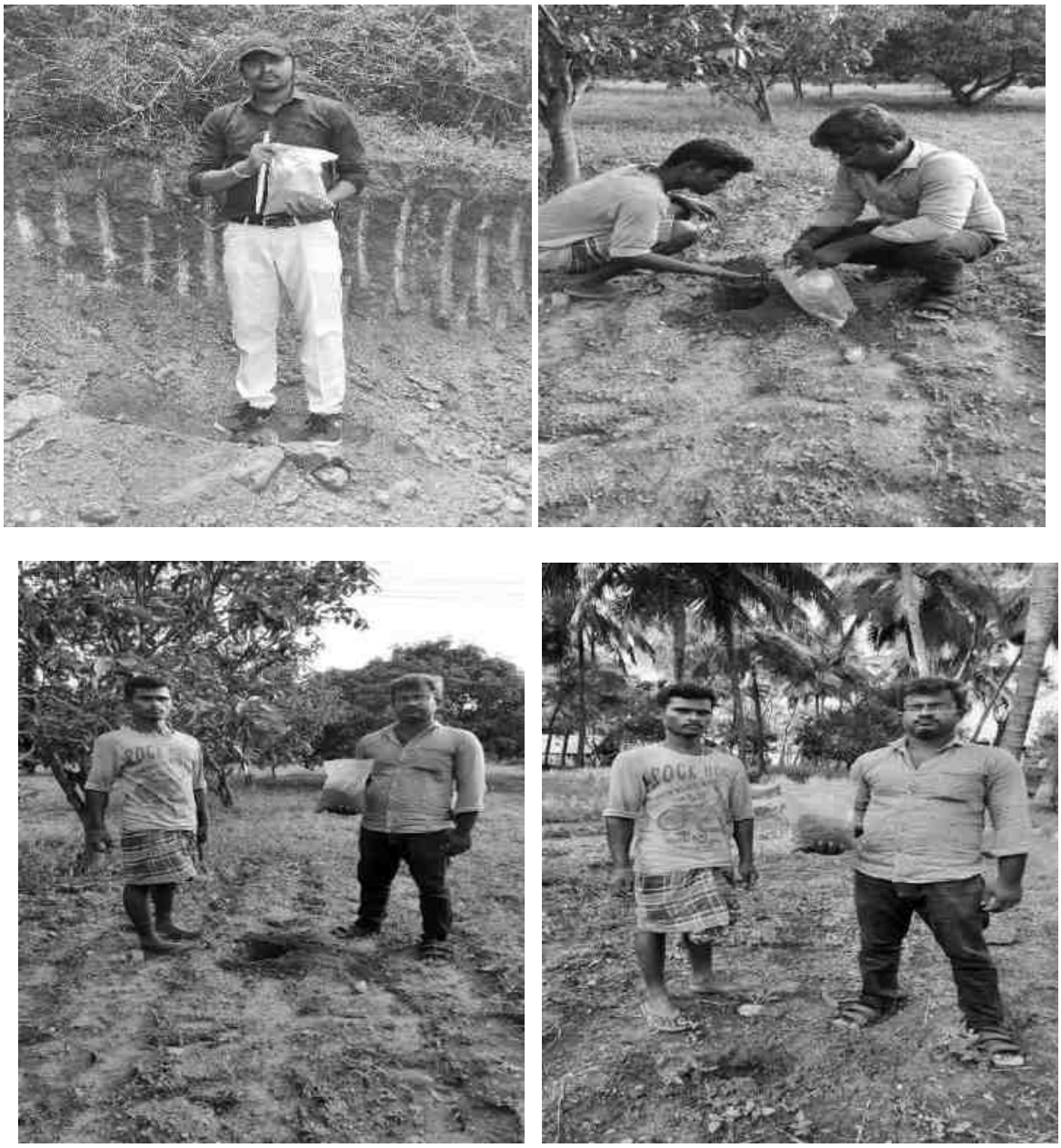


Fig No 3.16 Soil Sampling at Core and Buffer Zone

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** (Meq/l)	**Mg** (Mqe/l)	**Cl** (Meq/l)
							Sand	**Silt**	**Clay**				
Core Zone		6.78	244	2.8	1.38	48	52	26	24	0.4	1.8	1.0	3.6
							Sandy Clay Loam						
Buffer Zone	Sappamuttlu	7.86	275	2.4	1.30	52	46	26	24	0.2	1.6	1.2	4.6
							Sandy Clay Loam						
	Sekilnatham	7.80	282	2.6	1.36	54	54	26	22	0.4	2.6	1.2	3.2
							Sandy Loam						
	Gandhinagar	7.76	248	2.0	1.32	56	42	28	24	0.2	2.2	0.8	5.6
							Sandy Loam						
	MGR Nagar	7.05	284	2.8	1.46	55	46	24	22	0.4	3.2	1.6	4.8
							Sandy Loam						

EC-Electrical Conductivity, **M**- Moisture, **BD**- Bulk Density, **WHC**- Water Holding Capacity, **OM**- Organic Matter, **Ca**- Calcium, **Mg**-Magnesium and **Cl**-Chloride.

BDL = Below the Detectable Limit.

DL = Detection Limit.

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 6.78 to 7.86 in the soil samples.

Electrical conductivity (EC), a measure of soluble salts in the soil was in the range of 244 µS/cm to 284 µS/cm.

Regular cultivation practices increase the **bulk density** of soils thus inducing compaction. This results in reduction in water percolation rate and penetration of roots through soils. The soils with low bulk density have favorable physical conditions whereas those with high bulk density exhibit poor physical conditions for agriculture crops. The bulk density of the soil samples are in the range of 1.30g/cc to 1.46g/cc respectively, which indicate favorable physical condition for plant growth.

Water holding capacity was found to be in the range of 48% 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 0.2- 0.4 %. This shows that soil was deficient in organic matter content.

Available Chlorides content range of between 3.2-5.6 meq/l in both core and buffer villages.

Magnesium level of soil sample in the core zone and buffer zone was found to be 0.8 – 1.6 meq/l in all the soil samples collected.

Calcium content in these soils ranges between 1.6 – 3.2 meq/l thereby indicating that the soils are with low levels of available Calcium content.

3.9 ECOLOGY AND BIOLOGICAL ENVIRONMENT

3.9.1 Description of Krishnagiri District Environment

Krishnagiri district is bounded by Vellore and Thiruvannamalai districts in the East, Karnataka state in the west, Andhra Pradesh in the North, Dharmapuri District in the south. Its area is 5143 Sq. Km. This district is elevated from 300m to 1400m above the mean sea level. It is located between 11º 12'N to 12º 49'N Latitude, 77º 27'E to 78º 38'E Longitude.

Eastern part of the district experiences hot climate and Western part has a contrasting cold climate. The average rainfall is 830 mm per annum. March – June is summer season. July – November is Rainy Season and between December – February winter prevails.

3.9.2 Agriculture activities in Krishnagiri District

Krishnagiri district is one of the potential districts for cultivation of agricultural and horticultural crops. The total normal area cultivated under all crops is 224767 Hectares out of which 73046 Ha is under irrigated and 151720 ha area under rain fed crops. The important crops of Krishnagiri District are Paddy, Maize, Ragi, Banana, Sugarcane, Cotton, Tamarind, Coconut, Mango, Groundnut, Vegetables and Flowers.

Krishnagiri District is more suitable for cultivation of Horticulture crops. Other Plantation crops, medicinal plants, Fruits, Vegetables, Spices and flowers are grown well by way of its moderate climate, high altitude and fertility of the soil.

Table 3.10 Details of Important crops in Krishnagiri District

Sl. No	Common name	Scientific name	Family
1.	Groundnut	Arachis hypogaea	Fabaceae
2.	Paddy	Oryza sativa	Poaceae
3.	Cholam	Sorgham bicolor	Poaceae
4.	Cumbu	Pennisetum glaucum	Poaceae
5.	Ragi	Eleusine coracana	Poaceae
6.	Sugarcane	Saccharum officinarum	Poaceae
7.	Black gram	Vigna mungo	Fabaceae
8.	Cotton	Gossypium herbaceum	Malvaceae
9.	Groundnut	Arachis hypogaea	Fabaceae
10.	Vargu	Paspalums crobiculatum	Poaceae
11.	Gingelly	Sesamum indicum	Pedaliaceae
12.	Maize	Zea mays	Poaceae
13.	Coconut	Cocus nucifera	Arecaceae
14.	Onion	Allium cepa	Amaryllidaceae
15.	Cotton	Gossypium herbaceum	Malvaceae
16.	Green gram	Vigna radiata	Fabaceae

3.9.3 Forest resources

[Krishnagiri is one among the districts of Tamil Nadu, which with natural resources having 2,024 Sq. Kms of forest cover is its unique feature. The hill ranges of this district are

called by the name 'Melagiri'. The major type of forest seen here are Tropical, Deciduous forests, thorny shrubs and bamboo forest. Dense forest cover Denkanikottai region. The other region contains shrubs, hills and hillocks with bushes.

The major wild animals that are found in this district are mainly Elephants, Sambar, Spotted Deer, Gaur, Wild boar and Panther etc. The forest area of Denkanikottai Taluk forms the prime elephant habitat with lot of bamboos. This area also constitutes the Cauvery elephant reserve. This elephant reserve is constituted over and area of about 450 Sq. Kms. The bird population is also attractive at this place with beautiful bird like Paradise flycatcher. Big lakes in Anchetti and Hosur areas also attract large number of migratory birds like Painted storks, Teals etc. Apart from these birds and mammals, there are variety of butterflies, giant spiders etc. Some of these are going to be endangered list and also can be extinct in near future. Migratory butterflies also come to this place. Kodakkarai shoal forest in Denkanikottai Taluk is known for large scale migratory butterflies during a particular season then one can observe thousands of migratory butterflies passing through this forest.

The flora includes variety of timber trees like Rose wood, Teak, Sandal etc. There are hundreds of medicinal herbs, minor forest plants like nelli, kadukkai, cheekai, pungam etc. are also very much present. Another important tree namely pungam trees are found in abundance in this forest.

3.9.4 Water resources

The main rivers that flow across the district are Kaveri and South Pennar Kaveri. This enters the district from South West in Denkanikottai taluk and exists in South West direction. It forms a waterfall at Hogenakkal and joins Mettur Dam. South Pennar originates in Nandidurg of Karnataka and flows through Hosur, Krishnagiri and Uthangari Taluks as well. Vanniyar and Markanda rivers join this South Pennar.

Wells and canals are also the major sources of irrigation contributing to 81.19 and 10.71 per cent of the total area irrigated of the district respectively. Tanks accounted for less than five per cent.

Reservoirs

Krishnagiri Reservoir Project, Shoolagiri-Chinnar Reservoir, Thangaraj Reservoir, Pambar Reservoir, Kelevarapalli Reservoir Project and Baarur Tank are the sources of irrigation for our district. By all these water reservoirs 18,965 Ha of land is irrigated.

3.9.5 Study Area Ecology

A survey was conducted to study the flora around 10 km radius. Some of the information was gathered from the local habitants. All the collected data were classified to

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

3.9.6 Methodology of Sampling

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

The study involved in the collection of primary data by conducting a survey in the field, examination of flora and fauna records in previously published reports and records. Analysis of the information is the view of the possible alteration in the environment of the project site. For the survey of fauna, both direct and indirect observation methods were used

3.9.7 Flora

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

3.9.7.1. Flora in Core Zone

Taxonomically a total of 21 species distributed in 18families have been recorded from the core mining lease area. Based on habitat classification of the enumerated plants the majority of species were tree 15 (60%) followed by shrubs 5 (20%) herbs 5(17%) and 1 (3%) is a creeper. Details of flora with the scientific name were mentioned in Table No. 3.11. No ecologically sensitive plant species has been reported from this area.

3.9.7.2. Flora in Buffer Zone

Taxonomically a total of 50 species distributed among 35 families have been recorded from the buffer area. Based on habitat classification of the enumerated plants the majority of

species were tree 31 (53%) followed by shrubs 15 (25%), herbs 11 (19%) and rest 2 (3%) is a climber. Details of flora with the scientific name were mentioned in Table No. 3.11.

Table 3.11 Floral Diversity in Core and Buffer area

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

21.	Broome rain Tree	Vagai Maram	Fabaceae	*Albizia lebbeck*	-	+
22.	Custard apple	Seethe pazham Maram	Annonaceae	*Annona squamosa*	+	+
23.	Cannonbal tree	Nagalinga Maram	Lecythidaceae	*Couroupita guianensis*	-	+
24.	Tanner's cassia	Avaram poo Maram	Fabaceae	*Senna auriculata*	-	+
25.	Blackboard Tree	Aezhilai Paalai Maram	Apocynaceae	*Alstonia scholaris*	-	+
26.	Drumstick tree	Murungai	Moringaceae	Moringaoleifera	-	+
27.	Banyan	Ala Maram	Moraceae	*Ficus benghalensis*	-	+
28.	Tamarind	Puliya Maram	Fabaceae	*Tamarindus indica*	+	+
SHRUBS						
29.	Pinwheel flower	Nanthiyavattai	Apocynaceae	*Tabernaemontana divaricata*	-	+
30.	Nut grass	Koraikilangu	Cyperaceae	*Cyperus rotundus*	+	+
31.	Peacock flower	Mayirkonrai	Fabaceae	*Caesalpinia pulcherrima*	-	+
32.	Large calotrops	Yanainerunjil	Pedaliaceae	*Pedalium murex*	+	+
33.	Indian red wing	Indumul	Fabaceae	*Pterolabium hexapetalum*	-	+
34.	Coat buttons	Kinatruppasan	Asteraceae	*Tridax porcumbens*	-	+
35.	Marigold	Camanti	Asteraceae	*Tagetes erecta*	-	+
36.	Crown flower	Erukku	Apocynaceae	*Calotropis gigantean*	+	-
37.	Key lime	Arivukalam	Rutaceae	*Citrus aurantifolia*	-	+
38.	Castor bean	Aamanakku	Euphorbiaceae	*Ricinus communis*	-	+
39.	Jimson weed	Ummattangani	Solanaceae	*Datura stramonium*	+	+
40.	Firecracker flower	Kanakambaram	Acanthaceae	*Crossandra infundibuliformis*	-	+
41.	Hibiscus	Cembarutti	Malvaceae	*Hibiscus rosanaceae*	-	+
42.	Blue agave	Agave	Asparagaceae	*Agave tequilana*	-	+
43.	Jasmine	Adukku Malli	Oleaceae	*Jasminum sambac*	+	-
44.	Rose	Rosa	Rosaceae	*Rosa rubiginosa*	-	+
HERBS						

45.	Villosa	Kavali	Fabaceae	*Tephrosia villosa*	-	+
46.	Sickle senna	Thagarai	Fabaceae	*Sennatora*	+	+
47.	Indian doab	Arugampul	Poaceae	*Cynodondactylon*	+	+
48.	Carrot grass	Mookkuthi poo	Asteraceae	*Parthenium hysterophorus*	+	+
49.	European black nightshade	Manathakkali	Solanaceae	*Solanum nigrum*	+	+
50.	Coriander	Kothu Malli	Apiaceae	*Coriandrum sativum*	-	+
51.	Devil bean	Kilukiluppai	Fabaceae	*Crotalaria retusa*	+	+
52.	Indian comet grass	Narival	Poaceae	*Perotis indica*	-	+
CREEPERS/CLIMBERS						
53.	Bitter apple	Pikkumutti	Cucurbitaceae	*Citrullus colocynthis*	+	-
54.	Bitter guard	Pavakkai	Cucurbitaceae	*Momordica charantia*	-	+



Plumbago zeylanica



Borassus flabellifer



Tectona grandis



Ficus religiosa



Albizia amara



Wrightia tinctoria

Fig No 3.17 Photos of Flora in Core and Buffer Area

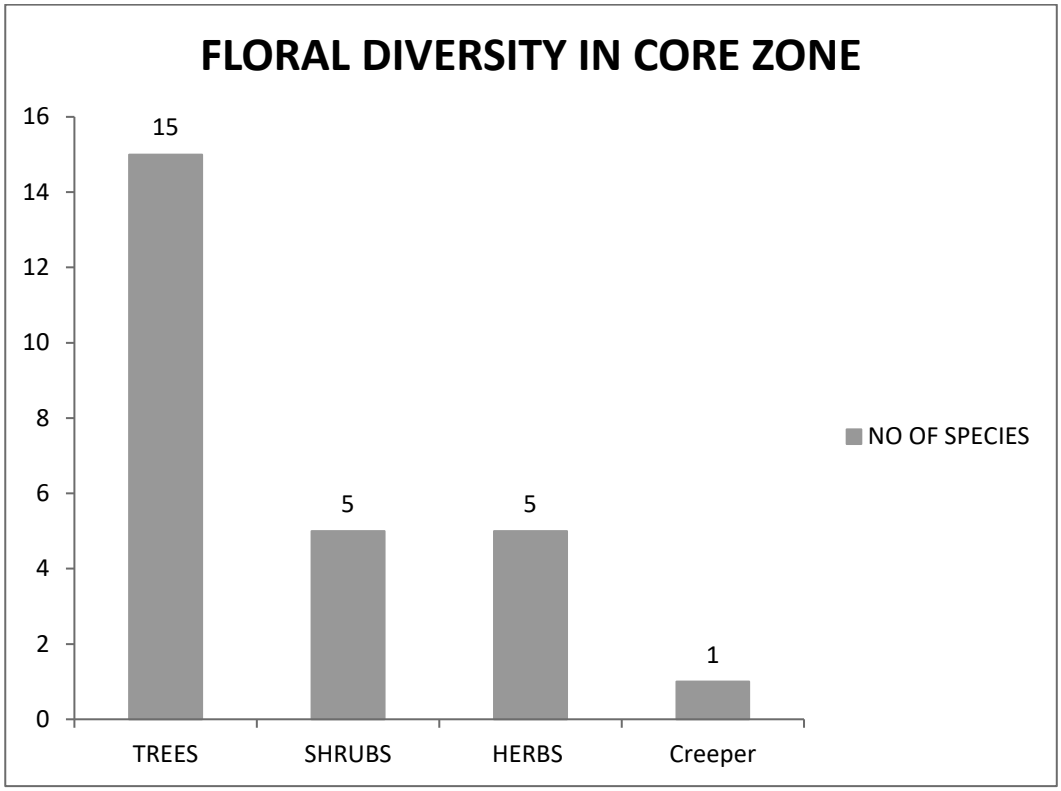


Fig No 3.18 Floral diversity in Core Zone

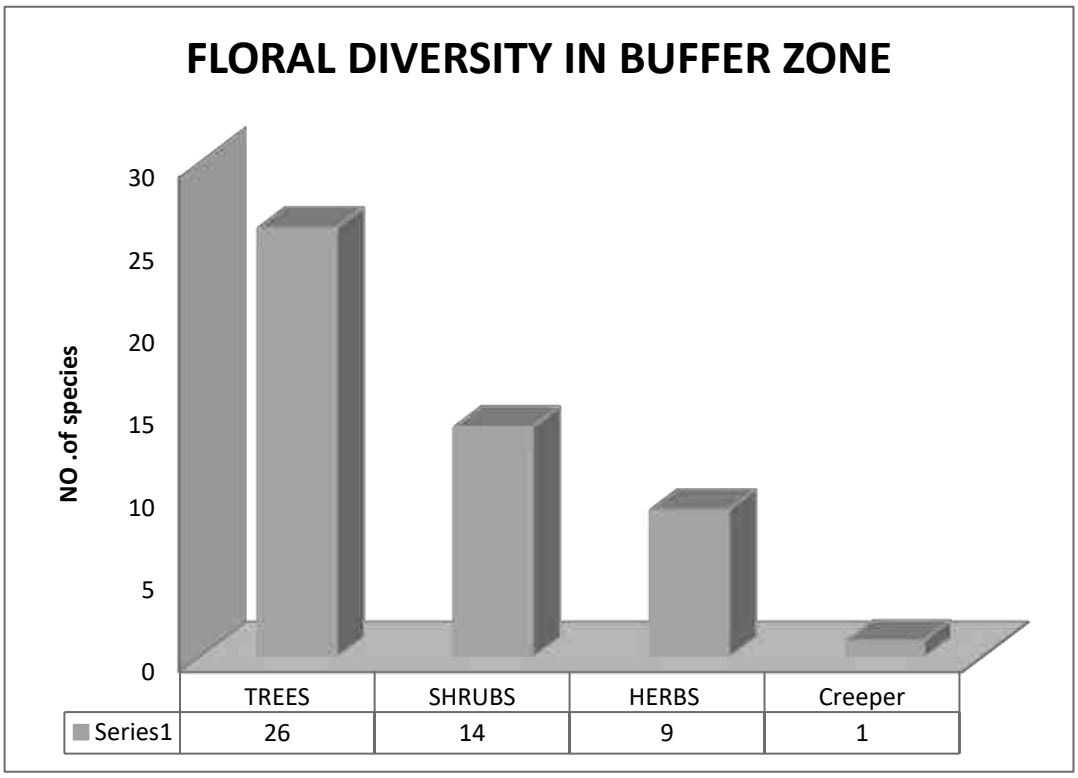


Fig No 3.19 Floral diversity in Buffer Zone

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

Table 3.12 Methodology applied during survey of fauna

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

3.9.8.1. Fauna in Core Zone

Varieties of species were observed in the core zone (0-2km radius) of the Quarry. Number of species decreases towards the mining area this might be due the lack of vegetation and forest cover in mining lease area. None of these species are threatened or endemic. Taxonomically a total of 21 species belonging to 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 30 species belonging to 21 families have been recorded from the buffer mining lease area. Based on habitat classification the majority of species were birds 12(42%) followed by insects 11 (39%), reptiles 3(13.79%) and mammals 5(6%). 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 3.13 Faunal in Diversity in Core and Buffer area

Sl. No	Common Name	Family Name	Scientific Name	Core Area	Buffer Area	Schedule list wildlife protection act 1972	IUCN Red list data
REPTILES							
1.	Common house gecko	Gekkonidae	*Hemidactylus frenatus*	-	+	NL	NL
2.	Garden lizard	Agamidae	*Calotes versicolor*	+	+	NL	NL
3.	Fan-Throated Lizard	Agamidae	*Sitana ponticeriana*	+	+	NL	LC
MAMMALS							
4.	Palm squirrel	Sciuridae	*Funambulus pennantii*	-	+	NL	NL
5.	Rat	Muridae	*Rattus rattus*	+	+	NL	NL
6.	Common mangoose	Herpestidae	*Herestes edwardsii*	-	+	NL	NL
7.	Bat	Pteropodidae	*Pteropus medius*	+	+	NL	NL
8.	Rabbits	Leporidae	*Oryctolagus cuniculus*	-	+	NL	NL
INSECTS							
9.	Banded hairstreak	Lycaenidae	*Satyrium calanus*	-	+	Schedule IV	NE
10.	Baronet	Nymphalidae	*Euthalia nais*	+	+	Schedule IV	NE
	Milkweed butterfly	Nymphalidae	*Danaus plexippus*	+	+	NL	LC
11.	Blue basher	Libellulidae	*Pachydiplax longipennis*	+	+	NL	LC
12.	Red-veined darter	Libellulidae	*Sympetrum fonscolombii*	+	+	NL	LC
13.	Common Tiger	Nymphalidae	*Dananus genutia*	+	+	NL	NE
14.	Plain Tiger	Nymphalidae	*Dananus chrysippus*	+	+	NL	NE
15.	Slaty skimmer	Libellulidae	*Libellula incesta*	-	+	NL	LC

16.	White butterfly	Pieridae	*Pieris rapae*	-	+	Schedule IV	LC
17.	Common grass	Pieridae	*Euremaha cabes sps.*	-	+	Schedule IV	LC
18.	Common grass yellow	Pieridae	*Eurema brigitta*	+	+	Schedule IV	LC
BIRDS							
19.	White throated king fisher	Alcedinidae	*Halcyon smyrnensis*	+	+	Schedule IV	LC
20.	Cattle egret	Ardeidae	*Bubulcus ibis*	-	+	NL	LC
21.	Japanese quail	Phasianidae	*Coturnix japonica*	-	+	NL	LC
22.	House crow	Corvidae	*Corvussplendens*	+	+	NL	LC
23.	White-breasted waterhen	Rallidae	*Amaurornis phoenicurus*	+	+	NL	LC
24.	Common cuckoo	Cucalidae	*Cuculus canorus*	+	+	NL	LC
25.	Common myna	Sturnidae	*Acridotheres tristis*	+	+	NL	LC
26.	Black drongo	Dicruridae	*Dicrurus macrocercus*	+	+	NL	LC
27.	Crow Pheasant	Cucalidae	*Centropus sinensis*	+	+	Schedule IV	LC
28.	Koel	Cucalidae	*Eudynamys scolopaceus*	+	+	Schedule IV	LC
29.	House sparrow	Passeridae	*Passer domesticus*	+	+	Schedule IV	LC
30.	Rose-ringed parkeet	Psittacidae	*Psittacula krameri*	+	+	NL	LC

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

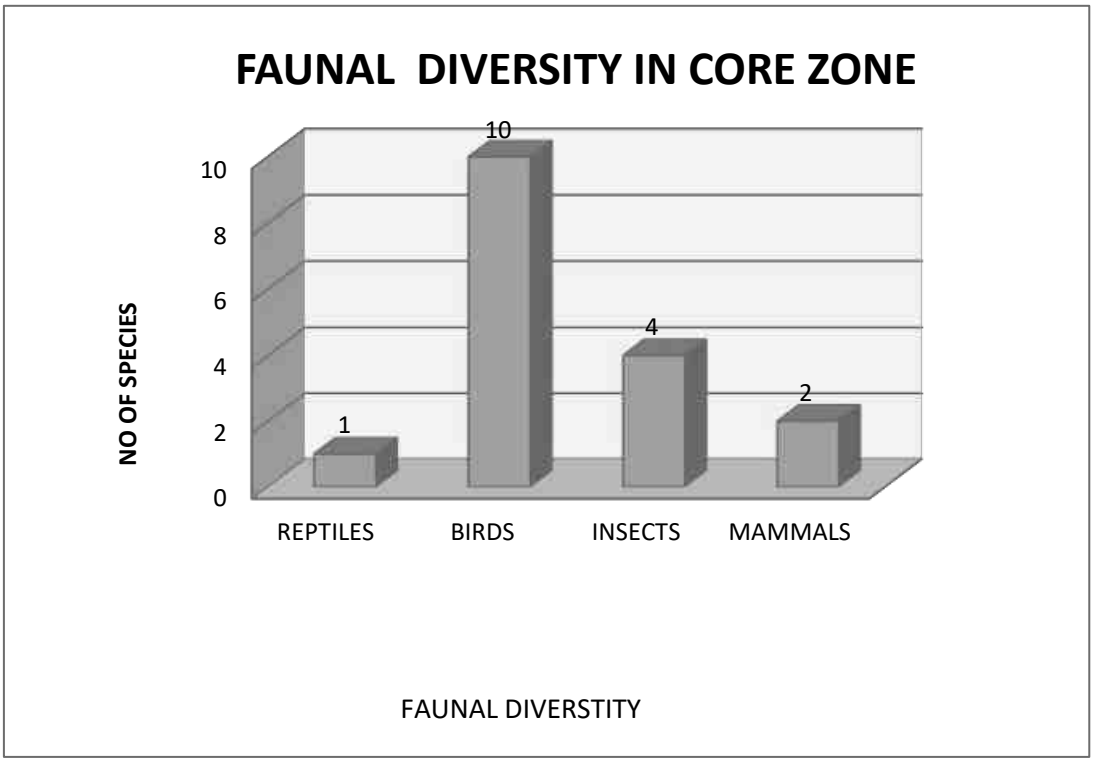


Fig No 3.20 Faunal diversity in Core Zone

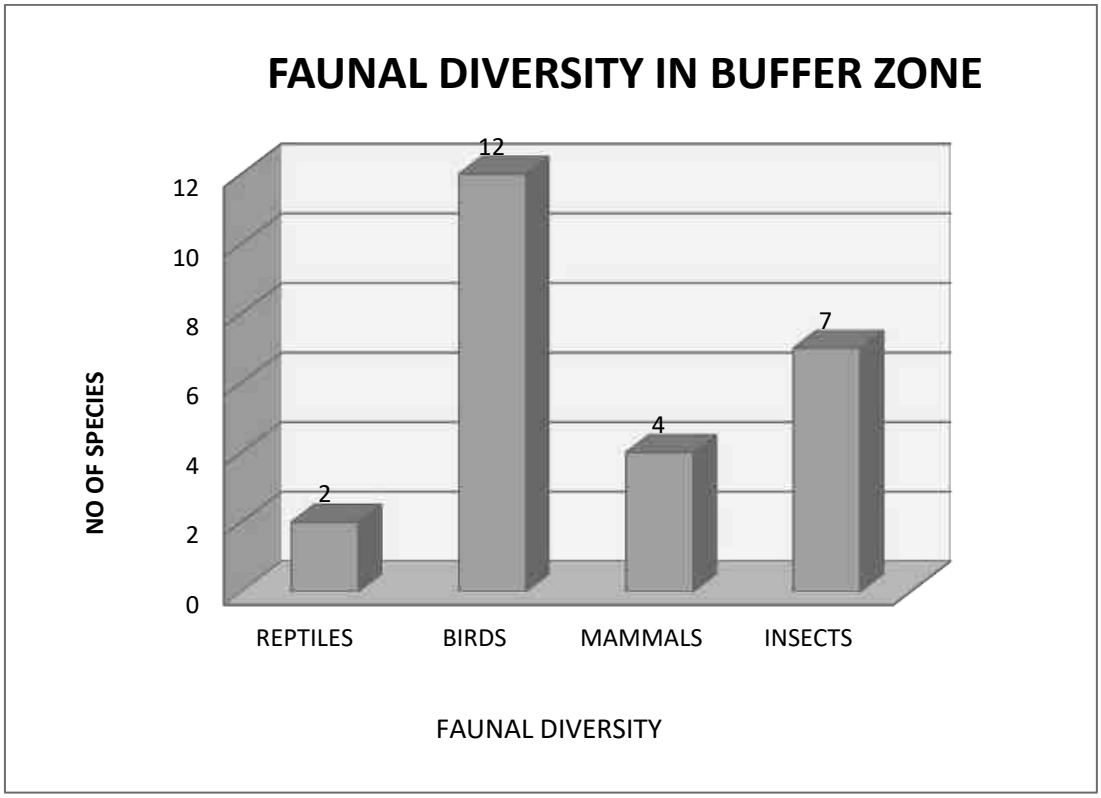


Fig No 3.21 Faunal diversity in Buffer Zone

3.10 SOCIO-ECONOMIC ENVIRONMENT

3.10.1 Introduction

Socio-economic study is an essential part of environmental study. It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project.

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

3.10.2 Objectives of the Study

The report deals with the Socio-Economic Impact Assessment of the multi-colour granite quarry promoted by proponent M/s. M.P Mining and Leasing Company, S.F. Nos 268/1Y, 268/1Z, 268/1AA and 268/2K, located in Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.

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

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

3.10.3 Scope of Work

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

3.10.4 Study Area – Jagadevipalayam village

Gram Panchayat name of the Jagadevipalayam village is Jagadevipalayam. Jagadevipalayam village is located in Bargur taluk of Krishnagiri district in Tamil Nadu, India. It is situated 8km away from sub-district headquarter Bargur (tahsildar office) and 15km away from district headquarter Krishnagiri. As per 2009 stats, Jagadevipalayam village is also a gram panchayat. Pincode of Jagadeviplayam village is 635203

Table 3.14 Jagadevipalayam village Census 2011 Data

S.No	Description	Census 2011 Data
1	Village Name	Jegadevipalayam
2	Tehsil Name	Bargur
3	District Name	Krishnagiri
4	State Name	TamilNadu
5	Total Population	5009
6	Total Area	666.16 (Hectares)

3.10.5 Population Characteristics – Jagadevipalayam Village, Bargur Taluk, Krishnagiri District (2001-2011)

Jagadevipalayam village had a total household 1348 in 2001, which is increased to 1607 in according to census 2011. Village had a total person of 6747 in 2011 census previous census 6257 persons in 2001. There were about 3398 men (50.5%) according to 2011 census and 3158 men (55%) in 2001 census marking decrease of about 240 men over the previous census. During 2001 there were about 3099 women (49.5%), which is an increase to 3349 (49.6%) in 2011 census.

In Jagadevipalayam village had a literate accounted for 3618 persons (57.8%) in 2001 and increased to 4474 persons (66.3%) in 2011. There were about 33.1 percent males in 2001 and 36.5 percent in 2011. There were about 24.7 percent females increased to 29 percent classes as literates in 2011.

Sex composition is the most important demographic characteristics that affect the incidence of birth and death. The average sex ratio in Bargur taluk, Jagadevipalayam village was 981during 2001 and increased to 986 the year of 2011. The highest sex ratio may be either due to the migrants for educational purpose and employment opportunities and due to infant birth of female is very high. The population characteristics of Jagadevipalayam Village (2001-2011) are shown in Table 3.15 and Fig no. 3.20.

Table 3.15 Jagadevipalayam Village Population Facts

S. no	Characteristics	2001	%	2011	%
1	Total Household	1348	21.5	1607	23.8
2	Rural population	6257		6747	
3	Male Population	3158	50.5	3398	50.4
4	Female Population	3099	49.5	3349	49.6

5	Rural Literacy	3618	57.8	4474	66.3
6	Male Literacy	2070	33.1	2464	36.5
7	Female Literacy	1548	24.7	2010	29.8
8	Sex Ratio		981		986

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

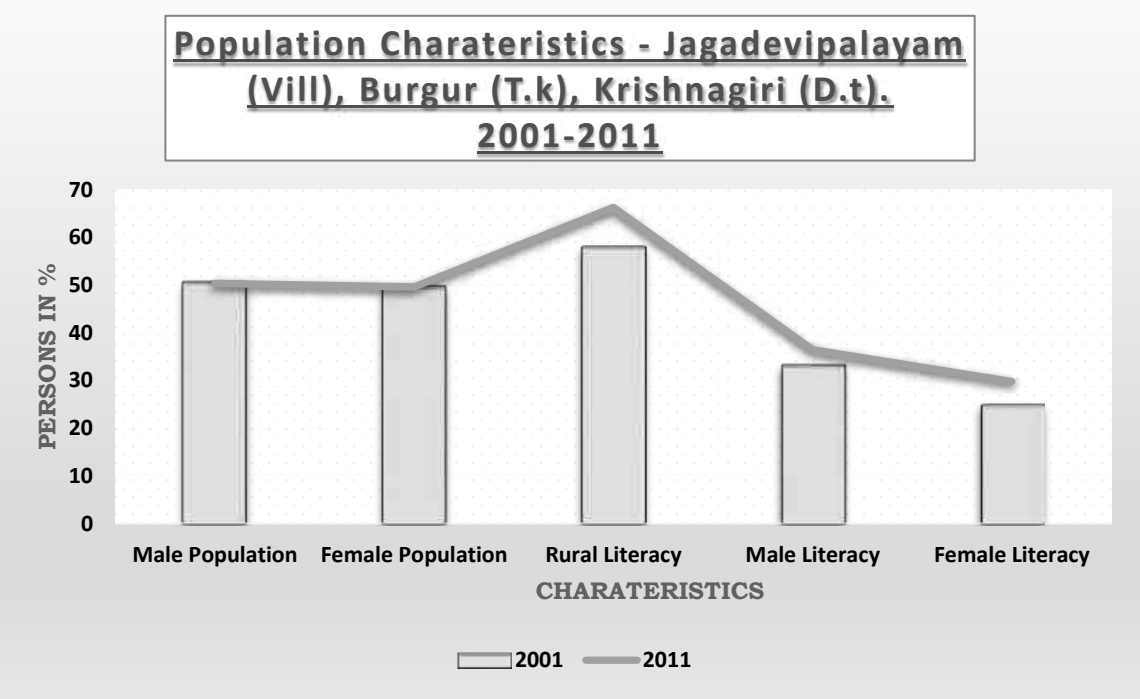


Fig No 3.22 Population Characteristics of Jagadevipalayam village Krishnagiri (2001-2011)

3.10.6 Occupational profile of Jagadevipalayam 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 **Jagadevipalayam Village, Burgur Taluk, Krishnagiri District, Tamil Nadu.**

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

In Jagadevipalayam village had a total main workers accounted of 2167 (34.6%) persons during 2001 census which is an decrease to 2093 (31%) persons during 2011. There were about 746 (11.9%) women in 2001 and 527(7.81) women according to the census 2011 marking a decreases 219 women over the previous census.

The study area has experienced a change in the occupational structure in the form of a decline in the proportion of cultivators, agricultural laborers and an increase in the proportion of Non workers. In Jagadevipalayam village had non workers population accounted of 4027 (59.7% according to census 2011. Which decreased from census 2001 had population 3247 (51.9%). Compare to 2011 census has and increased previous census is 740 persons. Because of more number of people are educated most of people living the village had mining and household industries like tobacco, coolie etc., earn our daily life

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

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

Table 3.16 Jagadevipalayam Working Population-Census 2011

S.No	Census Parameters	2001	%	2011	%
1	Total Population	6257		6747	
2	Total Workers	3010	48.1	2720	40.3
3	Male Workers	1873	29.9	1911	28.3
4	Female Workers	1137	18.2	809	12
5	Total Main workers	2167	34.6	2093	31
6	Male Main workers	1421	22.7	1566	23.2

7	Female Main Workers	746	11.9	527	7.81
8	Total Cultivators	755	12.1	253	3.75
9	Male Cultivators	478	7.64	203	3.01
10	Female Cultivators	277	4.43	50	0.74
11	Total Main Agricultural Labourers	783	12.5	755	11.2
12	Male Agri.Labourers	405	6.47	445	6.6
13	Female Agri.Labourers	378	6.04	310	4.59
14	Total Main HHI	25	0.4	52	0.77
15	Male HHI	15	0.24	37	0.55
16	Female HHI	10	0.16	15	0.22
17	Total Main Other Tertiary workers	604	9.65	1033	15.3
18	Male OT	523	8.36	881	13.1
19	Female OT	81	1.29	152	2.25
20	Total Nonworkers	3247	51.9	4027	59.7
21	Male Nonworkers	1285	20.5	1487	22
22	Female Non workers	1962	31.4	2540	37.6

Source: https://www.census2011.co.in/data/ village-Jagadevipalayam tamil-nadu.html

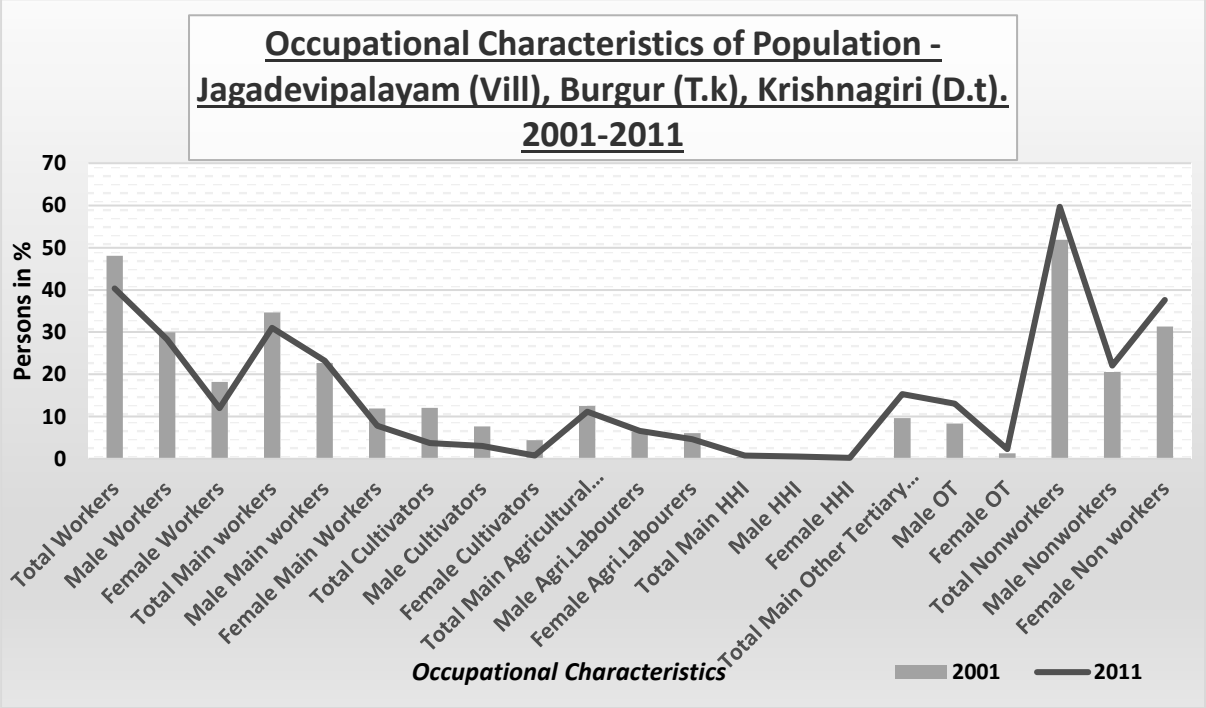


Fig No 3.23 Occupational Characteristics – Jagadevipalayam Village, Krishnagiri District (2001-2011)

3.10.7 Socio economic studies in buffer area

It is mining project covering an extent of 1.84.0 Ha and comes under B2 category. The impact of proposed project will be up to the distance of 10km surrounding the project site. The socio - economic benefits of proposed project is given below.

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

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

Table 3.17 List and Details of Revenue villages within 10km radius

S.No	Village	Population
1.	Chendrapalli	6467
2.	Puligunta	8365
3.	Sigaralapalli	1723
4.	Madepalli	7341
5.	Bargur (TP)	16366
6.	Jagadevipalayam	6747
7.	Kondappanayanapalli	794
8.	Ikondamkothapalli.	3964
9.	Batlapalli	5036
10.	Balinayanapalli	4761
11.	Achamangalam	4179
	Total	**65743**

Source: www.census india.gov.in-Tamilnadu Census of India –2011

Table 3.18 Population Data of Study Area

Village Name	No. of House Holds	Total Population	Male	Female	Total Literate Population	Male Litereate	Female Litereate	Total Illiterate Population	Male Illiterate	Female Illiterate
Chendrapalli	1507	6467	3266	3201	3817	2188	1629	2650	1078	1572
Puligunta	2033	8365	4212	4153	5342	2978	2364	3023	1234	1789
Sigaralapalli	373	1723	914	809	763	472	291	960	442	518
Madepalli	1790	7341	3683	3658	5399	2906	2493	1942	777	1165
Bargur (TP)	3760	16366	8316	8050	11598	6335	5263	4768	1981	2787
Jagadevipalayam	1607	6747	3398	3349	4474	2464	2010	2273	934	1339
Kondappanayanapalli	188	794	409	385	410	240	170	384	169	215
Ikondamkothapalli.	977	3964	1982	1982	2484	1376	1108	1480	606	874
Batlapalli	1199	5036	2625	2411	3156	1797	1359	1880	828	1052
Balinayanapalli	1132	4761	2470	2291	3121	1767	1354	1640	703	937
Achamangalam	974	4179	2150	2029	2821	1634	1187	1358	516	842

Table 3.19 Communication & Transport Facilities in the Study Area

S.No	Village Name	PO	SPO	PTO	T	PCF	BS	PBS	RS	SH	MDR	BTR	GR	FP
1.	Chendrapalli	1	0	0	0	0	1	1	0	0	1	1	1	1
2.	Puligunta	1	0	0	0	0	1	1	0	0	1	1	1	1
3.	Sigaralapalli	0	0	0	0	0	1	1	0	0	1	1	1	1
4.	Madepalli	1	0	0	0	0	1	1	0	0	1	1	1	1
5.	Bargur (TP)	1	1	1	0	6	1	1	0	2	2	1	1	1
6.	Jagadevipalayam	1	0	0	0	1	1	1	0	1	1	1	1	1
7.	Kondappanayanapalli	0	0	0	0	0	1	1	0	0	1	1	1	1
8.	Ikondamkothapalli.	0	0	0	0	0	1	1	0	0	1	1	2	1
9.	Batlapalli	0	0	0	0	0	1	1	0	0	1	1	1	1
10.	Balinayanapalli	1	0	0	0	1	1	1	0	0	1	1	1	1
11.	Achamangalam	0	0	0	0	1	1	1	0	0	1	1	1	1

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

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

Table 3.20 Water & Drainage Facilities in the Study Area

S.No	Village Name	TP	CW	UCW	HP	TW/BH	S	R/C	T/P/L	CD	OD	CT
1.	Chendrapalli	1	1	1	1	1	2	2	1	1	1	2
2.	Puligunta	1	2	1	1	1	2	2	2	1	1	2
3.	Sigaralapalli	1	2	1	1	1	2	2	2	1	1	2
4.	Madepalli	1	1	1	2	1	1	2	2	1	1	2
5.	Bargur (TP)	1	1	1	2	2	2	2	2	1	1	2
6.	Jagadevipalayam	1	1	1	1	1	1	2	1	1	1	2
7.	Kondappanayanapalli	1	1	1	1	1	2	2	2	1	1	1
8.	Ikondamkothapalli.	1	1	1	2	1	1	2	2	1	1	2
9.	Batlapalli	1	1	1	1	1	2	2	2	1	1	2
10.	Balinayanapalli	1	1	1	1	1	2	2	2	1	1	2
11.	Achamangalam	1	1	1	2	1	2	2	2	1	1	2

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

Note– 1-Available within the village;

2-Not available

Table 3.21 Other Facilities in the Study Area

S.No	Village Name	ATM	CB	COB	ACS	SHG	PDS	AMS	NC	NC-AC	CC	SF	PL	NPS	APS	BDRO	PS
1.	Chendrapalli	2	1	1	2	2	1	2	2	1	2	2	1	1	2	1	1
2.	Puligunta	2	2	2	2	2	1	2	2	1	2	1	1	1	1	1	1
3.	Sigaralapalli	2	2	2	2	2	1	2	2	1	1	1	1	1	1	1	1
4.	Madepalli	2	2	2	2	2	1	2	2	1	2	2	1	1	1	1	1
5.	Bargur (TP)	9	8	2	2	2	1	2	2	1	2	2	2	1	1	1	1
6.	Jagadevipalayam	2	1	1	2	2	1	2	2	1	2	2	2	1	1	1	1
7.	Kondappanayanapalli	2	1	2	2	2	1	2	2	1	1	1	1	1	1	1	1
8.	Ikondamkothapalli.	2	2	2	2	2	1	2	2	1	1	1	1	1	1	1	1
9.	Batlapalli	2	2	2	2	2	1	2	2	1	1	1	2	1	1	1	1
10.	Balinayanapalli	2	2	1	2	2	1	2	1	1	1	1	2	1	1	1	1
11.	Achamangalam	2	1	2	2	2	1	2	1	1	1	1	1	1	1	1	1

Abbreviations: ATM - Automatic Teller Machine; PDS - Public Distribution System (Shop); CB - Commercial Bank; COB - Co-operative Bank; AMS - Agricultural Market

Society: ACS –Agricultural Credit Societies; NC- Nutritional Centre; SHG-Self Help Group; NC-AC-Nutritional Centre – Anganwadi Centre; BDRO-Birth & Death Registration Office; PS-Power Supply; CC- Community Centre (without TV); SF – Sports field; PL- Public library, NPS – News paper supply; APS – Assembly polling station.

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

Table 3.22 Educational Facilities in the Study Area

		PPS		PS		MS		SS		SSS		DC		EC		MC		MI		PT		VTS		SSD	
S.No	**Village Name**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**	**G**	**P**
1.	Chendrapalli	1	2	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2.	Puligunta	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3.	Sigaralapalli	1	2	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4.	Madepalli	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5.	Bargur (TP)	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
6.	Jagadevipalayam	1	2	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
7.	Kondappanayanapalli	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8.	Ikondamkothapalli.	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
9.	Batlapalli	1	2	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
10.	Balinayanapalli	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
11.	Achamangalam	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

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

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

Table 3.23 Medical Facilities in the Study Area

Sl.No	Village Name	CHC	PHC	PHSC	MCW	TBC	HA	HAM	D	VH	MHC	FWC	NGM-I/O
1.	Chendrapalli	2	1	1	2	2	2	2	2	1	2	2	a
2.	Puligunta	2	1	1	2	2	2	2	2	1	2	2	b
3.	Sigaralapalli	2	2	1	2	2	2	2	2	2	2	2	b
4.	Madepalli	2	2	1	2	2	2	2	2	1	2	2	b
5.	Bargur (TP)	2	2	1	2	2	2	2	2	1	2	2	b
6.	Jagadevipalayam	2	1	1	2	2	2	2	2	2	2	2	c
7.	Kondappanayanapalli	2	1	1	2	2	2	2	2	1	2	2	b
8.	Ikondamkothapalli.	2	2	1	2	2	2	2	2	2	2	2	a
9.	Batlapalli	2	2	1	2	2	1	2	2	1	2	2	b
10.	Balinayanapalli	2	1	2	2	2	2	2	2	2	2	2	b
11.	Achamangalam	2	1	1	2	2	2	2	2	1	2	2	b

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

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

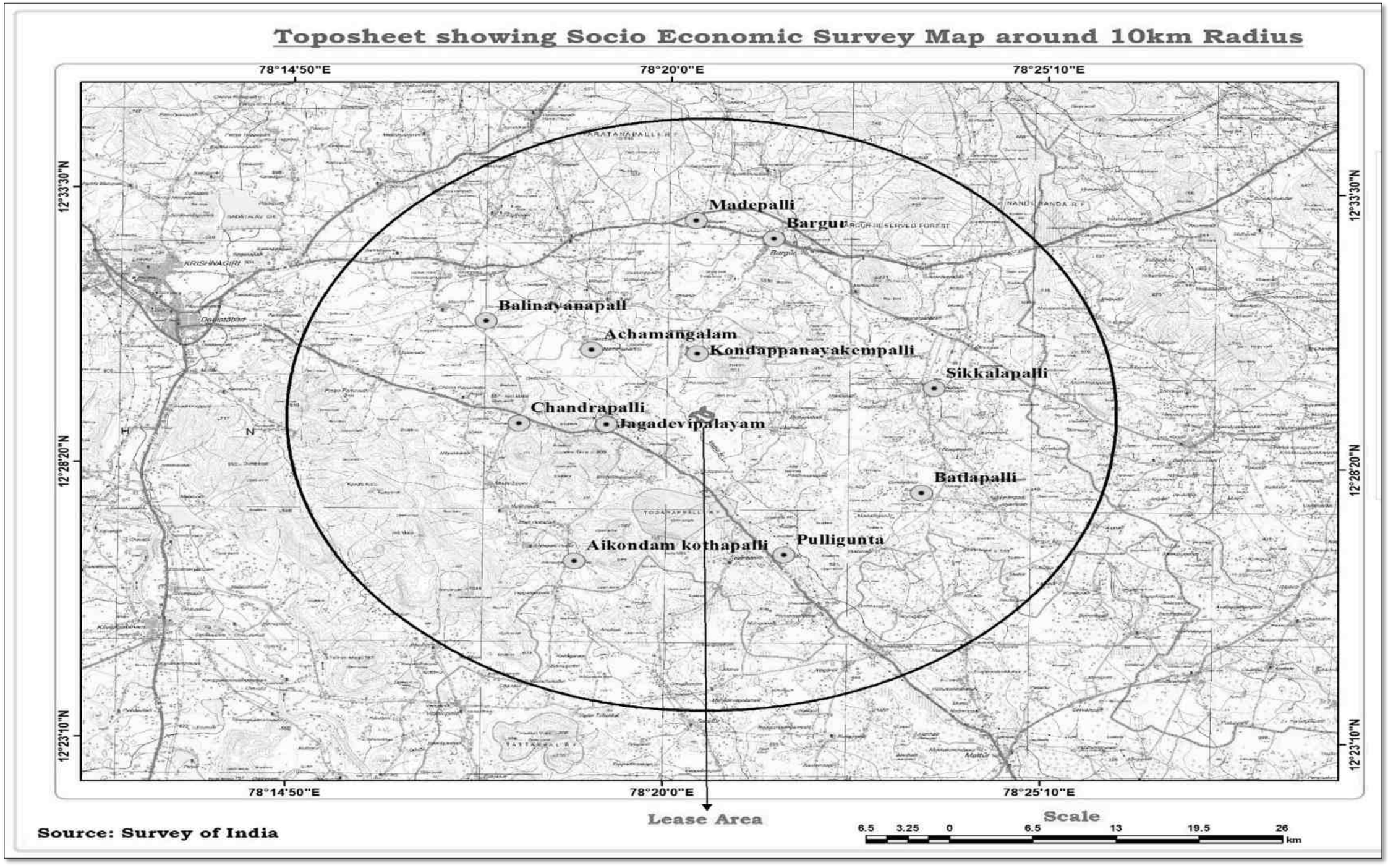


Fig No 3.24 Socioeconomic Survey Location

3.10.8 Primary survey conducted by FAE- SE

Primary survey conducted 10 villages total population is 65743. Jagadevipalayam village has approximately 1 percent of total population of the village area. This calculation is total sample size has 250 around 10km radius core and buffer zone from mine lease boundary.

3.10.8.1 Primary survey methodology

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

3.10.8.2 Data structures

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

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







Fig No 3.25 Primary Survey Photographs of village wise, Krishnagiri District

3.10.9 Summary and Conclusion

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

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

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

3.11 LAND ENVIRONMENT

3.11.1 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. 12°29'8.97"N to 12°29'26.41"N latitude and 78°20'18.72"E to 78°20'38.29"E longitude and elevation 450 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 3.24 Data Specification Used for Present Study

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

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

	Bands	**Wavelength (Micrometers)**	**Resolution**
Landsat8 Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) Launched February 11, 2013	Band 1 - Coastal aerosol	0.43 - 0.45	30
	Band 2 - Blue	0.45 - 0.51	30
	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 L/7 (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 12°29'8.97"N to 12°29'26.41"N latitude and 78°20'18.72"E to 78°20'38.29"E longitude and elevation 450 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 No.3.28). 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 were transferred onto the base maps. The final interpreted and classified thematic map was cartograph. The cartographic map was categorically differentiate 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.

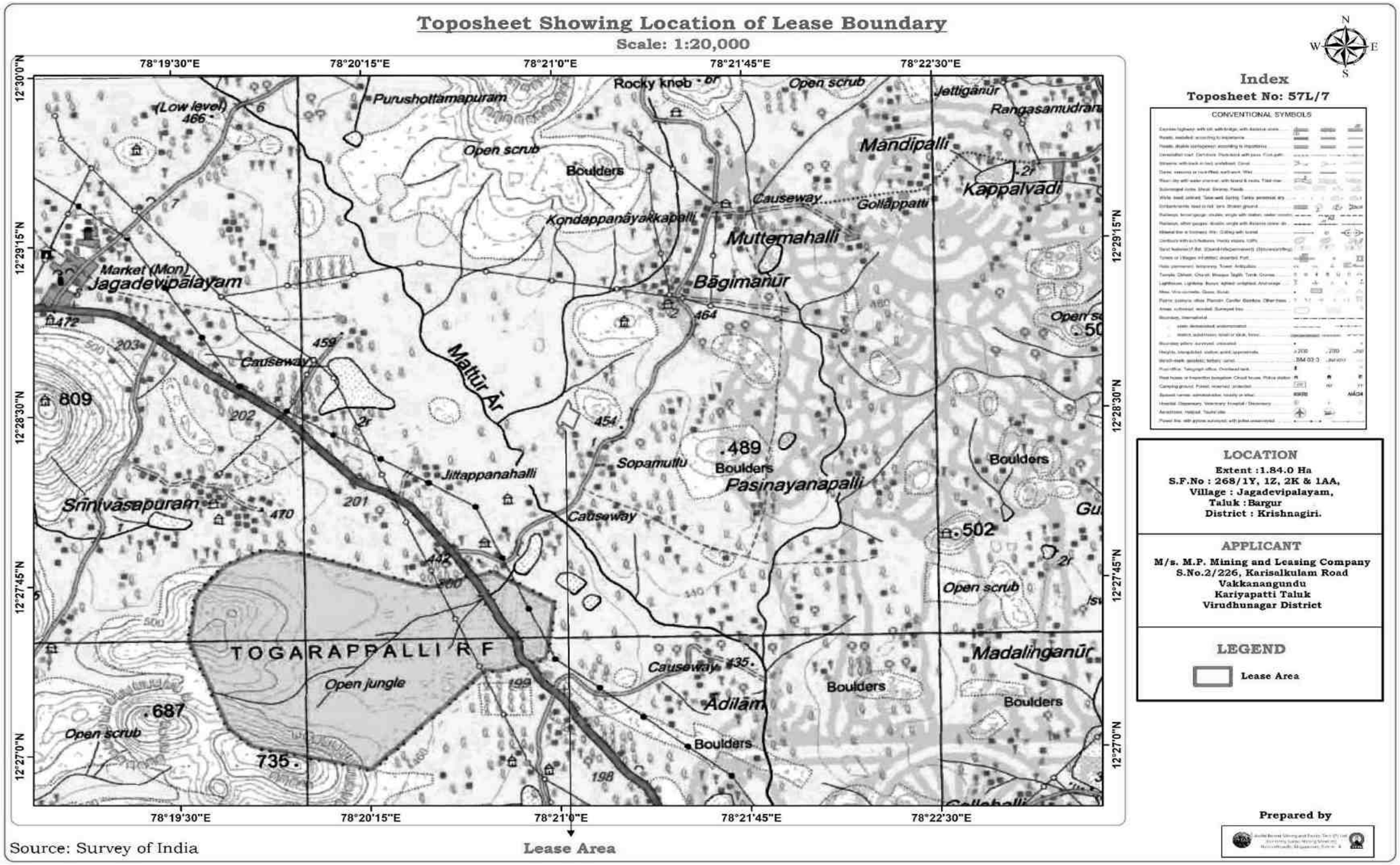


Fig No: 3.26 Toposheet Showing Location Lease Boundary around 10km radius

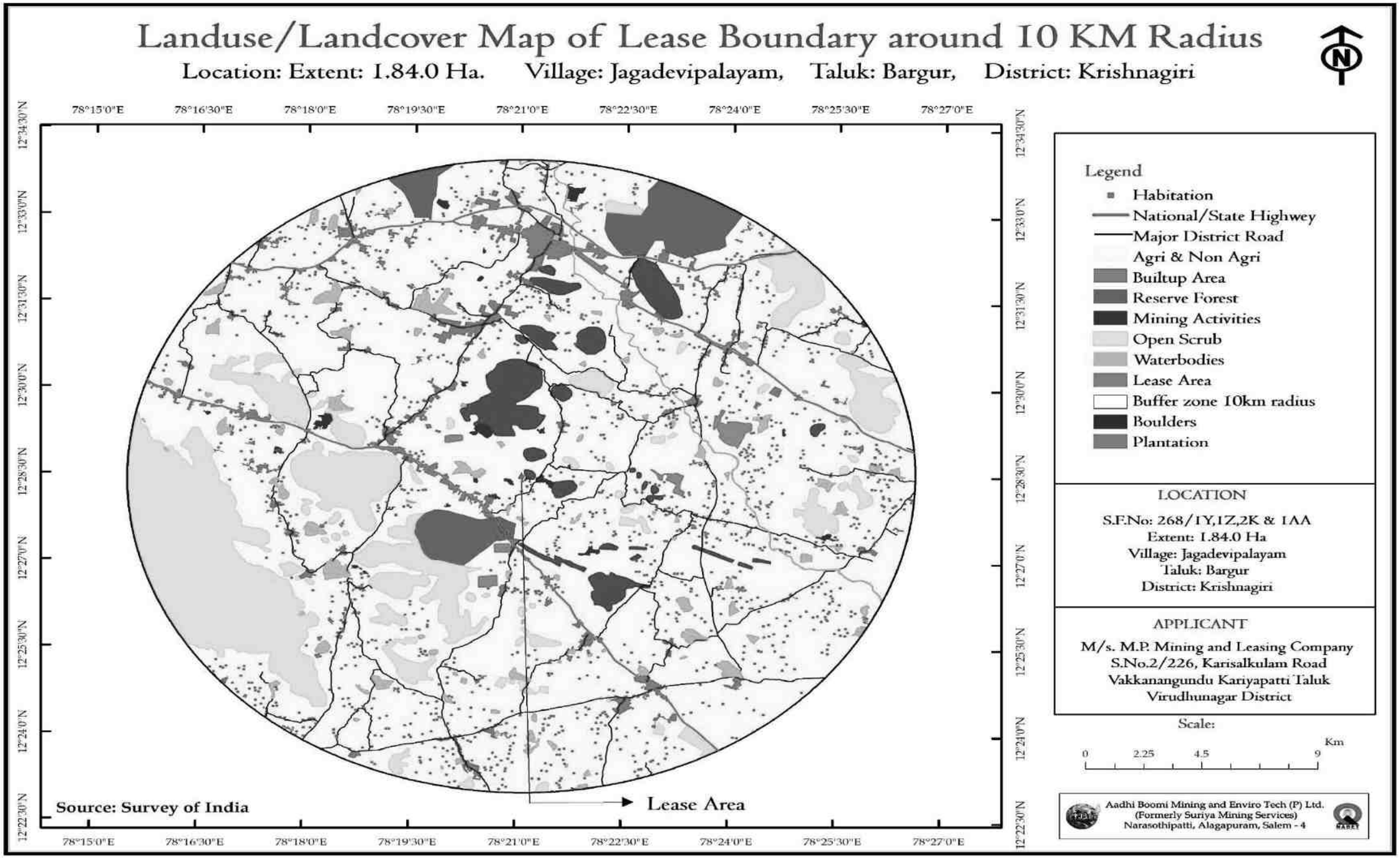


Fig No: 3.27 LANDSAT Image showing Location of Lease area around 10km radius

Table 3.25 Computation of existing and proposed land use pattern

S.No	Names	Area (Ha)	%
1	Built-up Area	1474.01	4.46
3	R.F /Hills	4159.29	25.69
4	Water Bodies	878.23	5.66
5	Agriculture	5987.79	18.13
6	Mining Area	2140.01	3.48
7	Barren Land	1020.17	3.09
8	vegetation	13046.60	39.49
	Total	33035.13	100.00

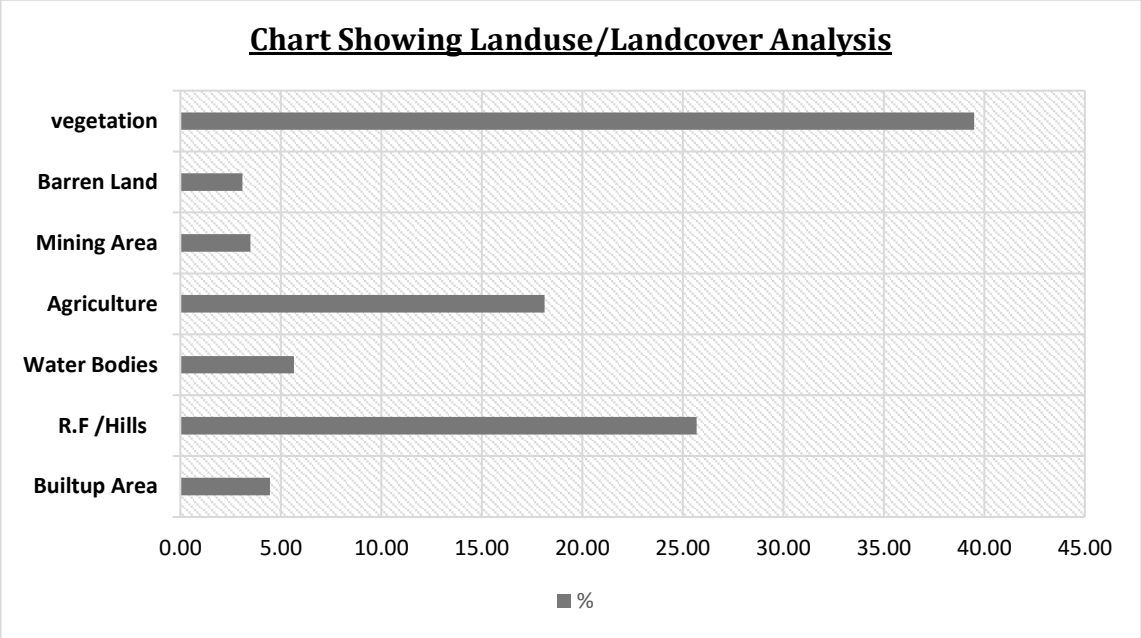


Fig No: 3.28 Land use/Land Cover around 10 km radius

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 10-20º gentler, the same as above, but with a higher magnitude of the area, 20-30º, slightly steep, a lot of ground movement and erosion, especially landslides that area flat. 30-40º and above 40º 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

Charnockite, Pink migmatite, Dharmapuri anorthosite, epidote- hornblende Gneiss is found largely found in Krishnagiri area. Sedimentary rocks namely Charnockite, Granitoid gneiss, feldspar gneiss, calcareous gritty (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 pheratic 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. Krishnagiri district forms part of the upland plateau region with many hill ranges and undulating plains. The western part of the district has hill ranges of Mysore plateau with a chain of undulating hills and deep valleys extending in NNE-SSW direction.

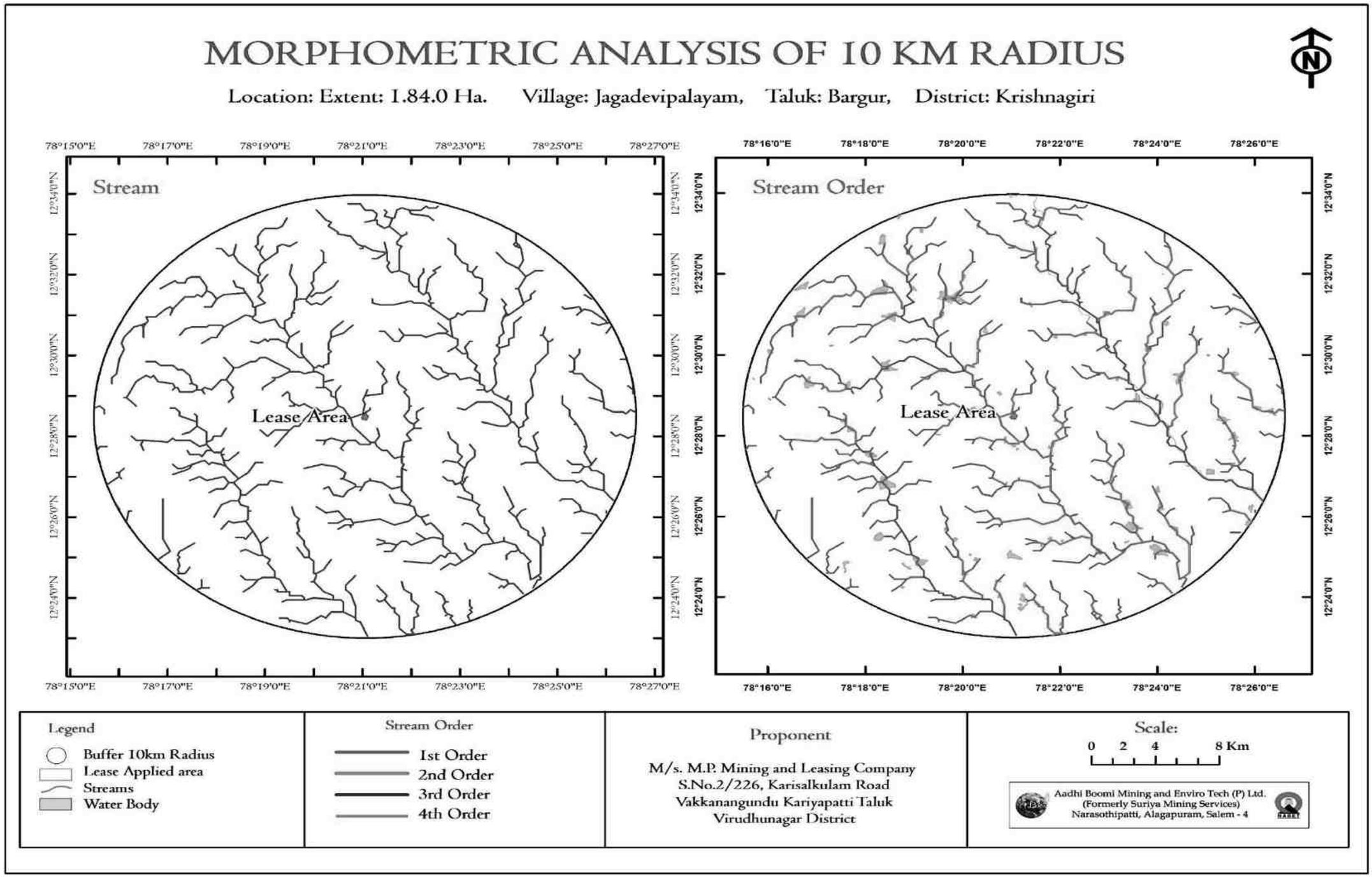


Fig No 3.29 Image Representing the River/Streams (Drainage) of the study area within 10km radius from the project site

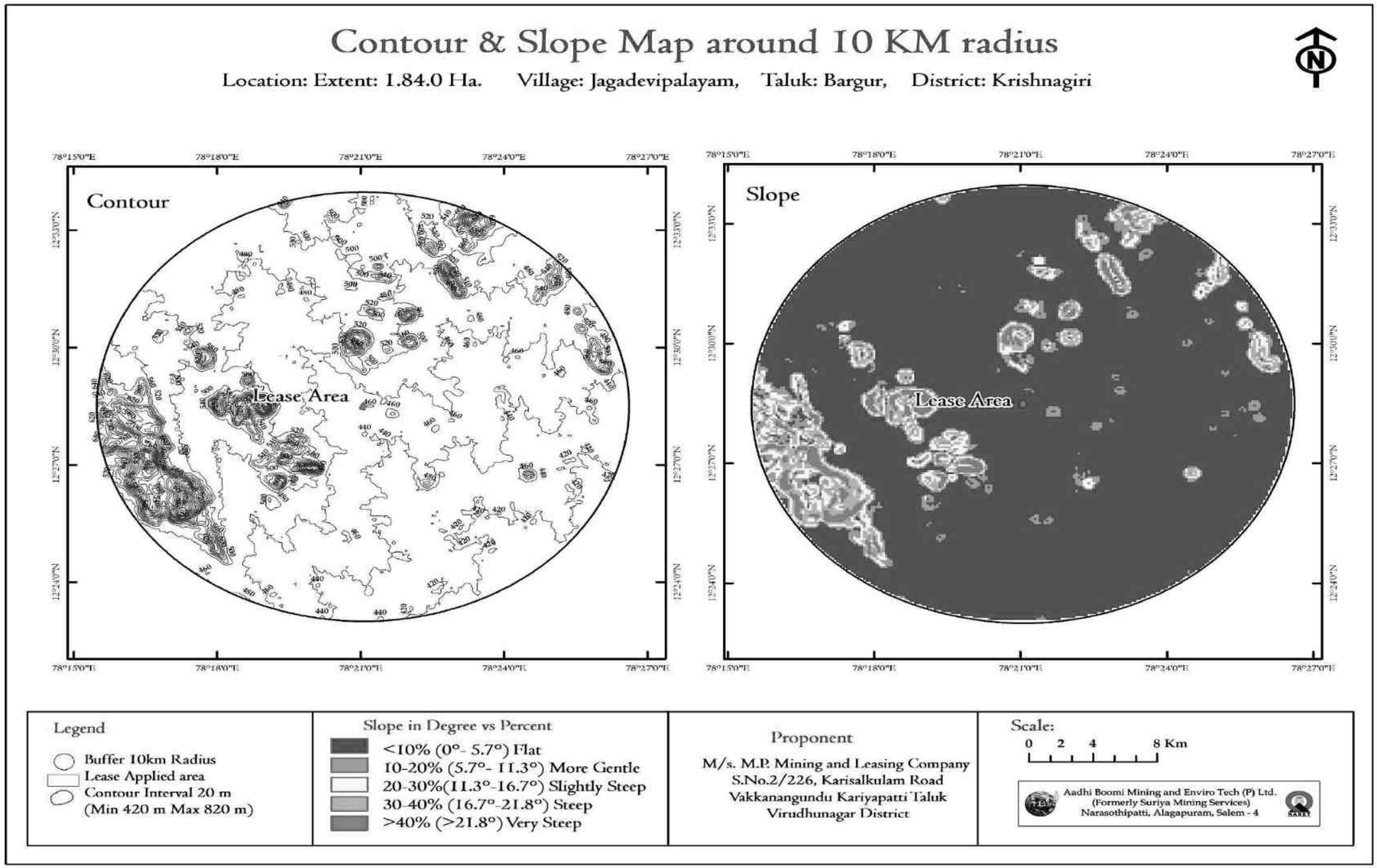


Fig No 3.30 Image Representing Contour and Slope analysis around 10km radius

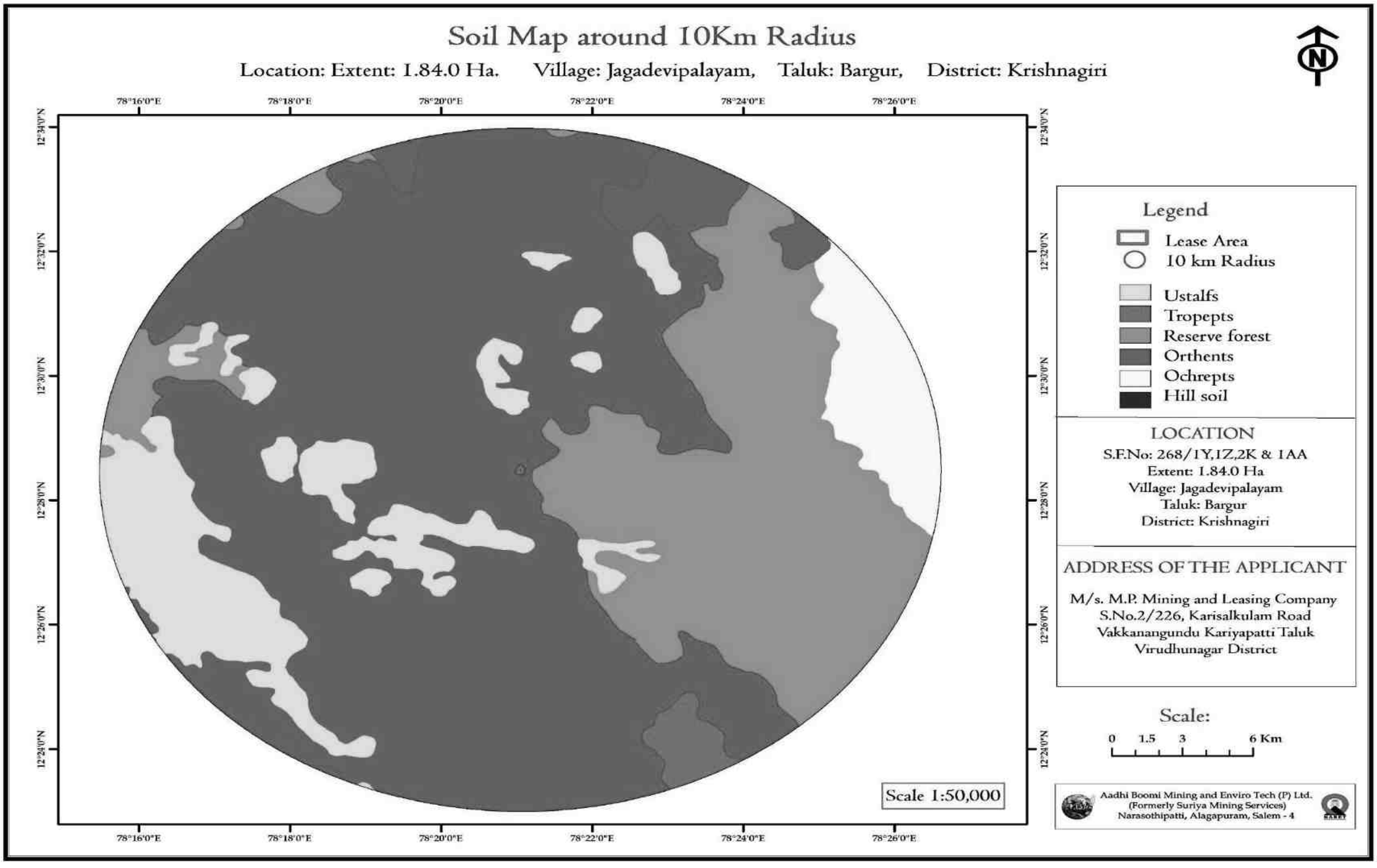


Fig No 3.31 Image Representing the Soil Characteristics around 10km of the Lease area

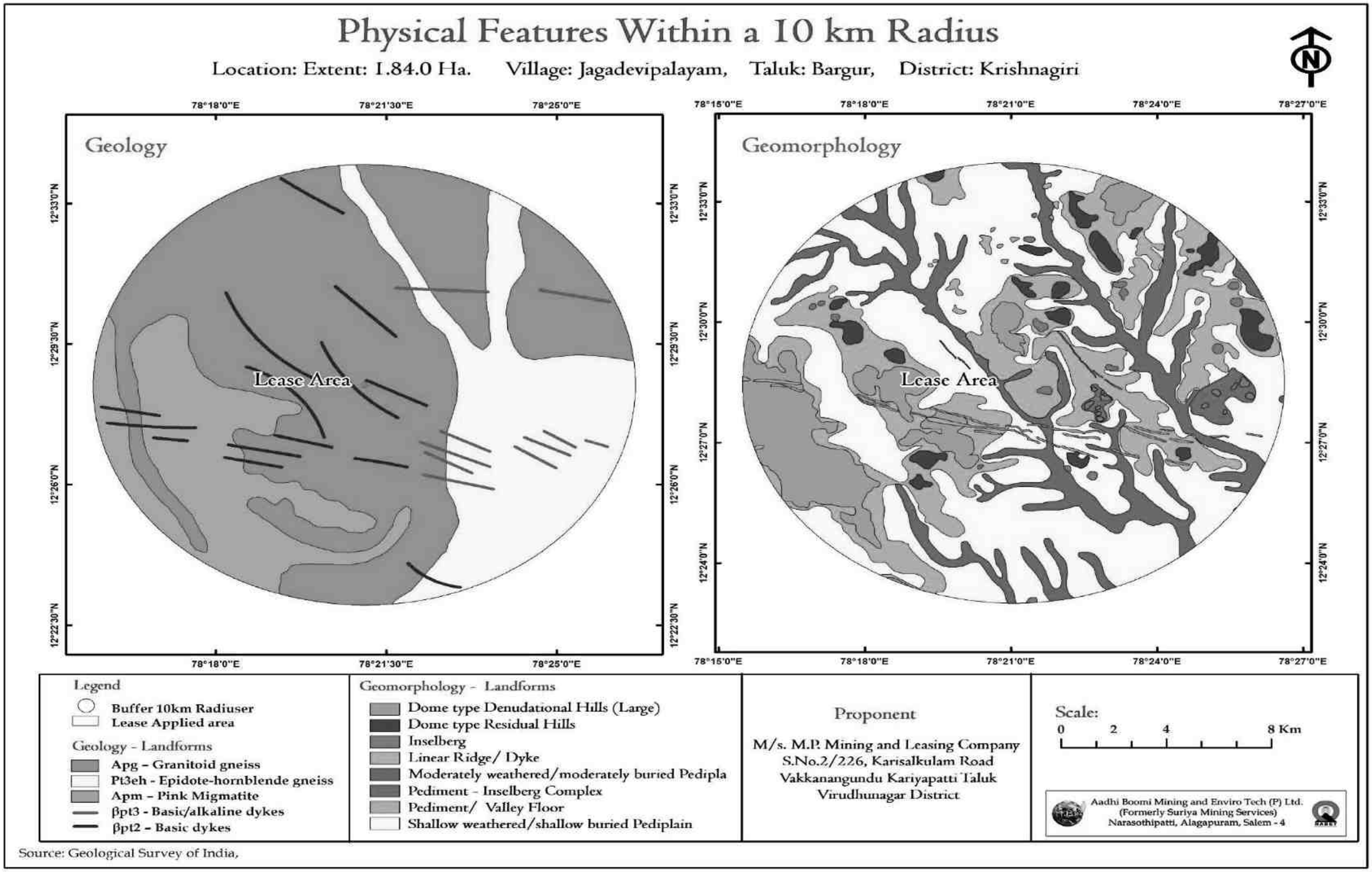


Fig No 3.32 Image Showing Geology and Geomorphology of the lease area

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 3.26 Environmental Sensitiveness

Interstate Boundary	Tamil Nadu –Andhra Pradesh Interstate boundary –16.6km (NE)
Coastal Zone	Bay of Bengal – 172km – Southeast
Reserve Forest	1. Thogarapalli R.F. -1.4km – S 2. Bargur R.F – 7.2km – NE 3. Varatanapalli – 8.0km – NW 4. Nandibanda R.F – 8.2km – NE 5. Neralakotta R.F – 10.4km - N The proposed projects site does not attract Forest Conservation Act, 1980.
Wildlife sanctuary	Nil within 10km radius. Cauvery Wildlife Sanctuary – 41.2km – W The Proposed projects site does not attract the Wildlife (Protection) Act, 1972.
Water bodies	1. Mattur Stream – 780m – SW 2. A lake – 1.5m – SW 3. A lake near Gettur village – 4.8km – NW 4. A lake near Balinayanapalli village – 7.1km – NW 5. A lake near Simanur Village– 5.4km - NW 6. Bargur River – 4.0km - NE
Defense Installations	Nil within 10km radius
Critically Polluted area	Nil within 10km radius

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 Grey 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 Grey Granite are the main air pollutant. The emissions of Sulphur dioxide (SO_2), Oxides of Nitrogen (NOx) 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.

4.1.2 Emissions Details

Drilling, Blasting, Loading, unloading and transportation of Grey 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 & PM2.5) 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 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 grey 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 grey 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 grey 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	2.4
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	4 times
7	Area of Source (m^2)	a	12650
8	Uncontrolled emission rate (g s^{-1})	UE	0.403
9	Control efficiency (%)	c	90
10	Controlled emission rate (g s^{-1})	CE	0.0403

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

Rejects – 81,238m^3 for 5 years or 7 m^3/hr

Weathered rock – 10,636m^3 for 2 years or 2.21 m^3/hr

The generation of rejects and weathered rock per hour for the quarry are calculated as 9.21m^3. The loading capacity of excavator is 2.2m^3.

x = frequency of loading (no. h-1) = 9.21/2.2 = 4 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.

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

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	2.4
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	12650
8	Uncontrolled emission rate (g s^{-1})	UE	0.90
9	Control efficiency (%)	c	90
10	Controlled emission rate (g s^{-1})	CE	0.090

Rejects and weathered rock per hour for grey granite quarry = 9.21 x 2.5 = 23MT;

Capacity of tipper (t) = 20MT

y = frequency of unloading (no.h^{-1}) = 23/20 = 2 times/hr

4.1.2.4 Loading of Overburden

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

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

Table 4.3: Source Parameters (Loading)

S.No	Description	Symbol	Quantity
1	moisture content (%)	m	2.8 (Lab report)
2	silt content (%)	s	24
3	wind speed (m s^{-1})	u	2.4
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	12650
8	Uncontrolled emission rate (g s^{-1})	UE	0.60

9	Control efficiency (%)	c	90
10	Controlled emission rate (g s^{-1})	CE	0.060

Topsoil – 5487m^3 for 2 years or 1.14 m^3/hr

The generations of top soil per hour for quarry are calculated as 1.14m^3. The loading capacity of excavator is 2.20 m^3.

x = frequency of loading (no. h^{-1}) = 1.14/2.20 = 1 time

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.

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

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

S.No	Description	Symbol	Quantity
1	moisture content (%)	m	2.80 (Lab report)
2	silt content (%)	s	24
3	wind speed (m s^{-1})	u	2.4
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	1
7	Area of Source (m^2)	a	12650
8	Uncontrolled emission rate (g s^{-1})	UE	0.45
9	Control efficiency (%)	c	90
10	Controlled emission rate (g s^{-1})	CE	0.045

Generation of top soil per hour for grey granite quarries = 1 x 1.5 = 1.5 MT;

Capacity of tipper (t) = 20MT

y = frequency of unloading (no.h^{-1}) = 1.5/20 = 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.

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

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

S.No	Description	Symbol	Quantity
1	moisture content (%)	m	2.80 (Lab report)

2	silt content (%)	s	24
3	wind speed (ms^{-1})	u	2.4
4	frequency of transporting (no. h^{-1})	f	7 times (maximum)
5	average vehicle speed(ms^{-1})	v	4.1
6	Area of Source (m^2)	a	12650
7	Uncontrolled emission rate (g s^{-1})	UE	0.002
8	Control efficiency (%)	c	80
9	Controlled emission rate (g s^{-1})	CE	0.0002

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 = 4 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 PM_{10} is released during blasting at mining site for very short-term.

$$\mathbf{E = E_f x\ Q}$$

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	21,190
4	Control efficiency (%)	c	30
5	Controlled Particulate matter emissions rate in pounds per year	CE	34

(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 PM_{10}

Source type	Controlled Emission Rate ($g/s/m^2$)
Loading of Granite reject and weathered rock	$3.1x\ 10^{-6}$
Unloading of Granite reject and weathered rock	$7.1\ x\ 10^{-6}$
Over burden loading	$4.7\ x\ 10^{-6}$
Over burden unloading	$3.5\ x\ 10^{-6}$
Haul road	$1.5\ x\ 10^{-8}$
Blasting	$2.6\ x\ 10^{-4}$

Table 4.8: Emissions Rates of SO_2

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

Table 4.9: Emissions Rates of NO_2

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

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 PM_{10}, SO_X and NO_2 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 (March 2026 to May 2026) at project site for executing modeling studies.
2) The emission rates of PM_{10}, SO_x and NO_2 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 PM_{10}, SO_X and NO_2 are identified due to –

1. Scenario 1 – PM_{10}

(i) Loading/unloading of granite rejects and overburden

(ii) Transportation of granite rejects, overburden by trucks on the Haul roads from mining benches.

2. Scenario 2 - PM_{10}

(i) Due to blasting

3. Scenario 3 – SO_x and NO_2

i. From Operation of Excavator and movement of transporting vehicle

Scenario1:

Table 4.10: Total predicted GLC of PM_{10} in core and buffer zone due to combined action of loading, unloading and Transportation of Granite by trucks on the haul road, open pit source of the mining lease area.

Location	Location Code	Background value in µg/m³	Incremental GLC in µg/m³	Total Predicted GLC in µg/m³
Mine site	AQ1 - Centre	46	27.83	73.83
Receptor 01	AQ2 - 410m- SE	46	0.78	46.78
Receptor 02	AQ3 - 710m- SE	46	0.19	46.19
National Ambient Air Quality Standards (NAAQS)				**100**

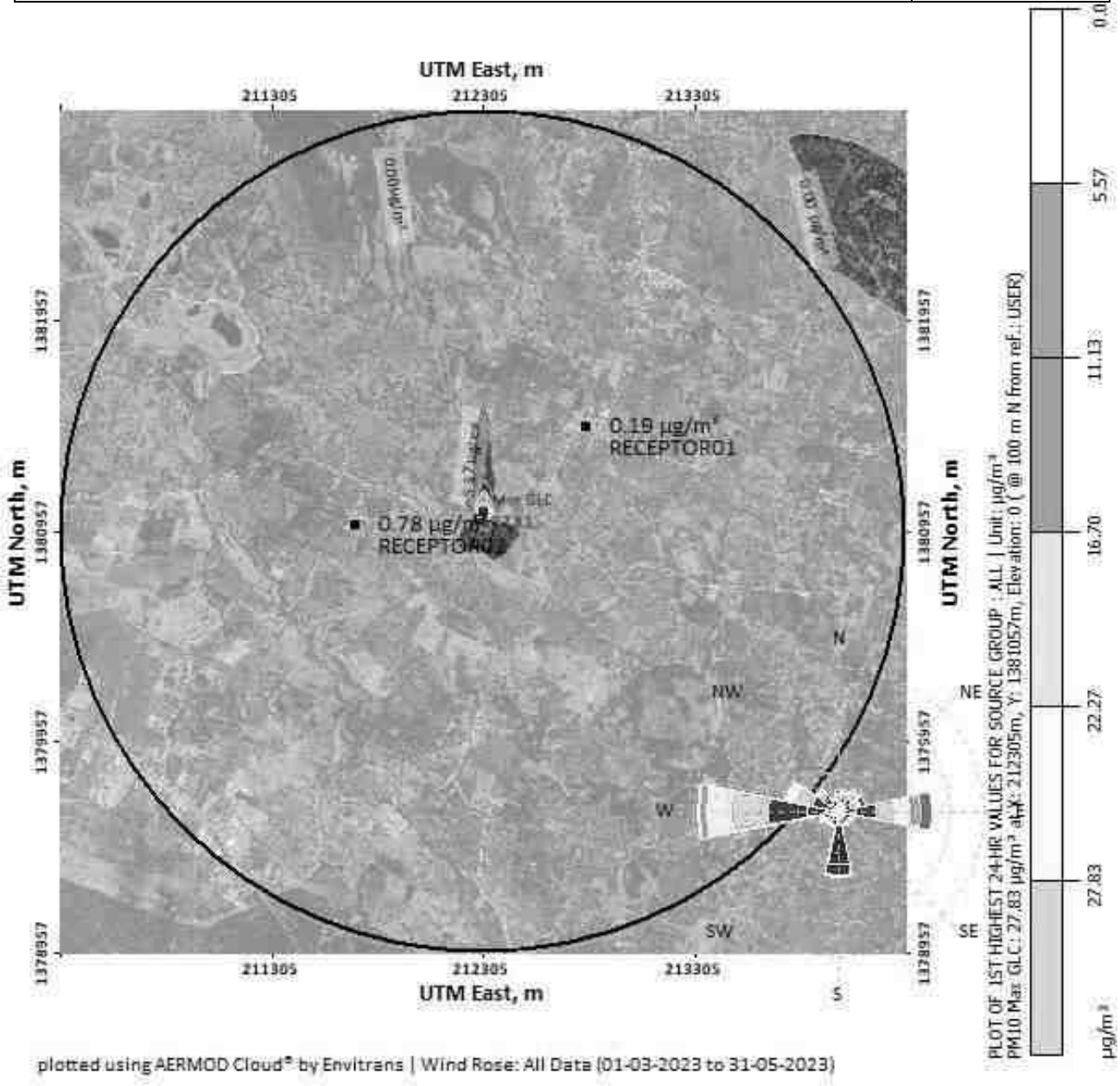


Fig No.4.1 Isopleth indicating Incremental value of PM10 due to combined action of loading, unloading, transportation of granite on haul road

Scenario 2:

Table 4.11: Total predicted GLC of PM_{10} in core and buffer zone due to blasting activity in the mining lease area.

Location	Location Code	Background value in µg/m³	Incremental GLC in µg/m³	Total Predicted GLC in µg/m³
Mine site	AQ1 - Centre	46	9.28	55.28
Receptor 01	AQ2 - 458m- W	46	0.26	46.26
Receptor 02	AQ3 - 452m- NE	46	0.06	46.06
National Ambient Air Quality Standards (NAAQS)				**100**

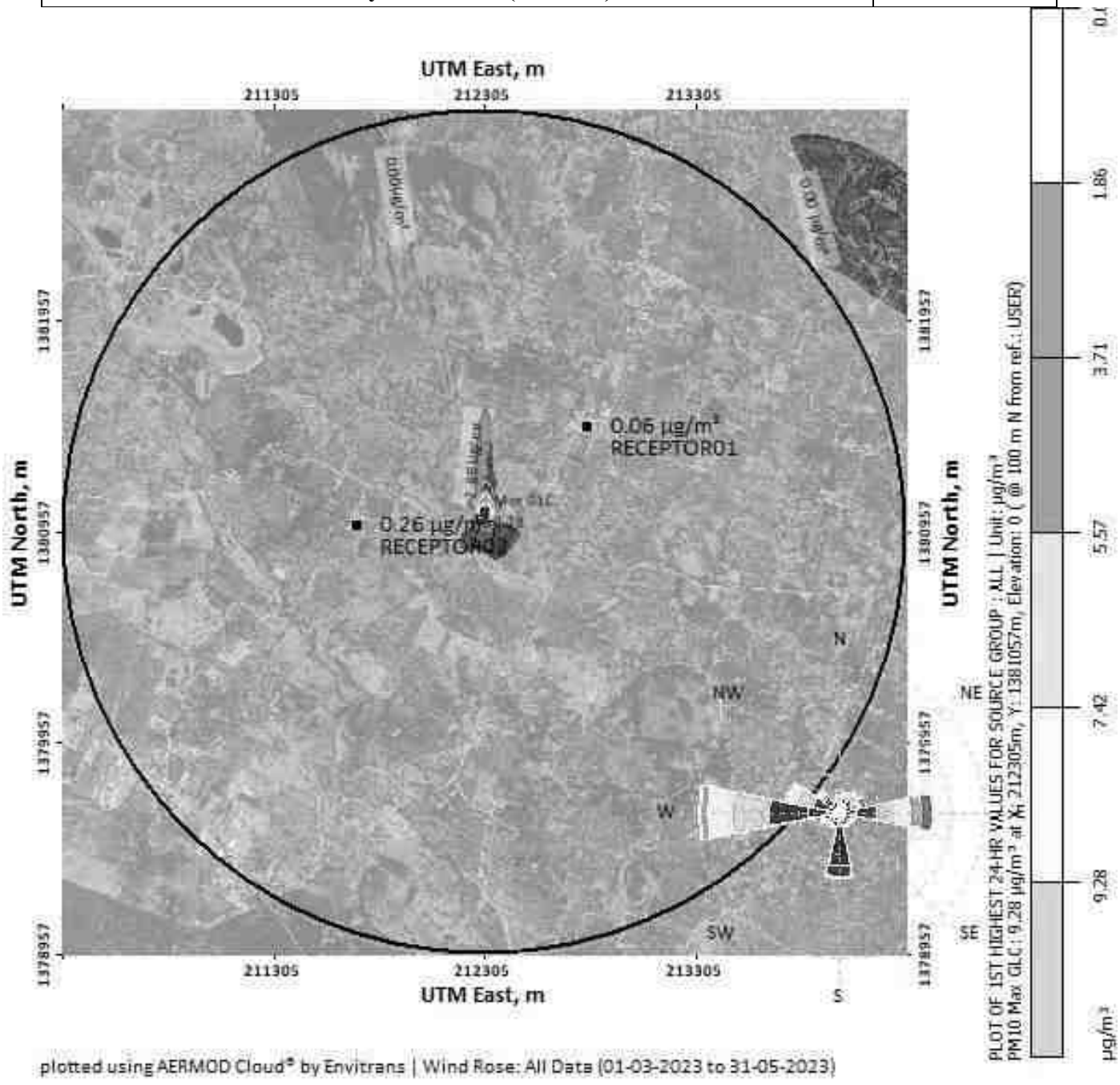


Fig No 4.2 Chart indicating Incremental value of PM10 due to blasting action.

Scenario 3:

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

Location	Location Code	Background value in µg/m³	Incremental GLC in µg/m³	Total Predicted GLC in µg/m³
Mine site	AQ1 - Centre	9	BDL	9
National Ambient Air Quality Standards (NAAQS)				**80**

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

Location	Location Code	Background value in µg/m³	Incremental GLC in µg/m³	Total Predicted GLC in µg/m³
Mine site	AQ1 - Centre	16	BDL	16
National Ambient Air Quality Standards (NAAQS)				**80**

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 73.83µg/m^3 and 55.28 µg/m^3 occurred at the project site after superposition of base-line value 46 µg/m^3 over the incremental value of 27.83µg/m^3 and 9.28µg/m^3 due to combined impact of loading and unloading and transportation over the haul road and due to blasting. Meteorological data under worst case scenario providing 24-h maximum average GLC was discussed above.

4.1.4. Air Quality Index

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

effects of air pollutants, to eliminate or reduce exposure to hazardous air pollutants, and to guide national/ local authorities for pollution control decisions.

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

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

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 seious 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: µg/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)*

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 µg/m³	AQI	Associated Health Impacts
PM_{10}	73.83	Satisfactory (51-100)	May cause minor breathing discomfort to sensitive people
SOx	9	Good (0-50)	Minimal Impact
NO_2	16	Good (0-50)	Minimal Impact

The above table shows the AQI quality due to total predicted GLC of quarry in core area. PM_{10} value is between 51-100 of AQI which is satisfactory and may cause minor breathing discomfort to sensitive people. SO_2 and NO_2 are between 0-40 of AQI which is good and may cause Minimal Impact. When all the quarries in the cluster area are working together the incremental GLC will be high and it may cross the prescribed limits by NAAQS. To overcome such situation, cluster committee should be formed and adopt the environmental management plan effectively as per EIA report.

4.1.5. Mitigation Measures

The pollutants from nearby ongoing mining activities, residential and commercial activities are the primary sources of air pollution. However, in the study area adequate control measures will be implemented in future at the time of mining operation. 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 PM_{10}, the following control measure should be adopted by the project proponent.

- Regular water sprinkling on haul roads, blasted heaps, service roads and overburden dumps at regular intervals will help in reducing considerable dust pollution
- 1.0 KLD of water will be used for dust suppression of two quarries.
- Use of Sharp drill bits for drilling holes and charging the holes by using optimum charge and using time delay detonator.
- Conventional low explosives are being used.

- The scale of blasting is however very less considering the rate of production.
- Covering of material when transport through trucks/dumper
- The drilling and blasting are being carried out as per the proposals laid down in the approved plan.
- Proposed to follow up muffle blasting so as to prevent fly rock fragments
- Avoiding blasting during high windy periods and temperature inversion periods
- Delay blasting under unfavorable wind and atmospheric conditions
- Use of appropriate explosives for blasting and avoiding overcharging of blast holes
- 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.

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 x 2.33 – 17.1014 g/day or 0.0171kg/day

Excavators

Diesel requirement per day – 100 liters

Emission rate by excavators per day – 100 x 7.18 – 718g/ 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 CO_2 is removed from the atmosphere and stored in the soil carbon pool. This process is primarily mediated by plants through photosynthesis, with carbon stored in the form of SOC. Carbon is the main component of soil organic matter and helps give soil its water-retention capacity, its structure, and its fertility. The dense carbon stocks below and above the soil are mostly seen in dense forest where more process of photosynthesis takes place and tons of leaves, branches gets decomposed. The agricultural activity in field can degrade and deplete the SOC levels during the process of tillage in paddy, sugarcane turmeric crop field.

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

1. Thogarapalli R.F. -1.4km – S
2. Bargur R.F – 7.2km – NE
3. Varatanapalli – 8.0km – NW
4. Nandibanda R.F – 8.2km – NE
5. Neralakotta R.F – 10.4km - 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.

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

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_1dB (A) = Noise level at a distance R_1 (m)

L_2dB (A) = Noise level at a distance R_2 (m) &

$L = 10 \log_{10} (10^{L_1/10} + 10^{L_2/10} + \text{----------} + 10^{Ln/10})$

Where L_1, L_2 and Ln 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	36.7	36.1	100	100	36.1
Lease boundary Pillar (North)	0.075	100	37.8	37.5	70	70	37.5
Lease boundary Pillar (West)	0.075	100	41.3	40.9	70	70	40.9
Lease boundary Pillar (East)	0.075	100	39.5	39.4	70	70	39.4
Lease boundary Pillar (South)	0.075	100	36.2	35.5	70	70	35.5
Sappamuttlu (SE)	0.41	100	43.2	34.5	36.6	45.1	43.2
Sekilnatham (NE)	4.2	100	41.9	37.2	39.5	44.3	41.9
Gandhinagar (S)	2.5	100	42.4	39.1	35.0	42.7	42.4
MGR Nagar (N)	5.7	100	46.4	41.2	32.4	47.5	46.4

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. **When all the quarries in the cluster work together in same time, the resultant noise level may increase up to 5 decibel.**

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

4.4.2 Mitigation measures for Control of Noise

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

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

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, Bagimanur 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
410m – SE	12	1.0
330m – SE	12	1.31

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 12kg is above the Peak Particle Velocity of 5mm/s for the habitation located at the distance of 330m and 410m. So, the project proponent 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.
- 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.

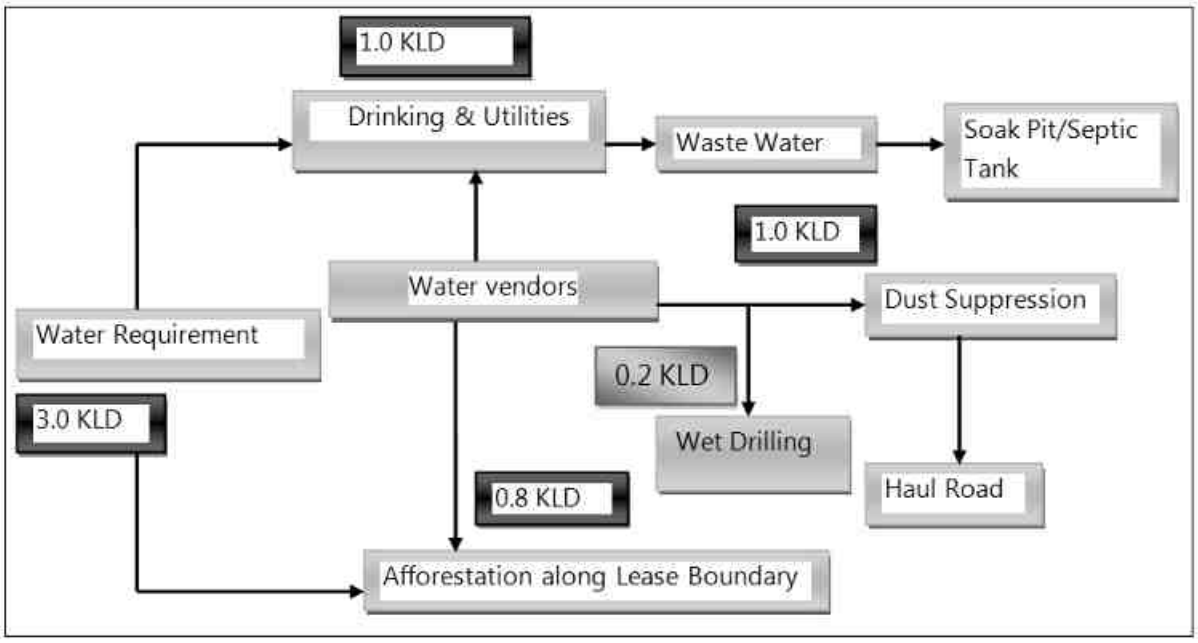


Fig. 4.4 Water Balance chart for each quarry

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.

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

There is one stream located within 1 km radius of mining lease area. The details of river body are given below.

1. Mattur Stream – 400m – SW

From the Drainage Pattern Map, it is found that the 1st order stream connect the lease area of M/s. M.P Mining and Leasing Company with Mattur Stream in located in south side. So, the probability of silitation 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.

4.6.2 Anticipated Impact on Ground water due to proposed project

The water table in this region is about 64m bgl. The proposed depth of mining is 25. 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.

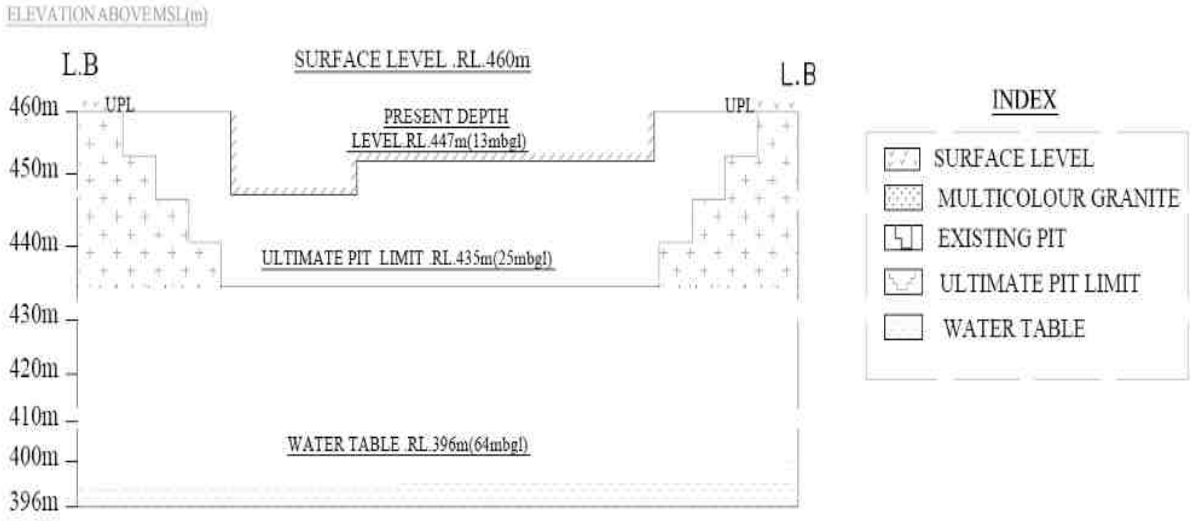


Fig.4.6 Schematic representation of depth of mining and water level

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.

Water Quality Index = Σ qn Wn / Σ Wn

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

qn = 100*[Vn – Vio] / [Sn – Vio]

Where,

qn = Quality rating for the nth water quality parameter.

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

Sn = Standard permissible value of the nth parameter.

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

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

Vio for PH = 7 and Vio for DO = 14.6

Wn = Unit weight for the nth parameter.

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

Table 4.24: 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 (µS/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: Analyses of water quality using Water Quality Index

Sampling Site Name	Water Quality Index Value	Water Quality Index Status
Cluster Core	51.6	**Good**
Sappamuttlu	68.4	**Poor water quality**
Sekilnatham	76.9	
Gandhinagar	142.6	**Very Poor water quality**
MGR Nagar	164.2	

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

Table No. 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 WQI of the samples collected from the study area are given in table 4.25. It can be seen that the study area has water quality index value ranging from 51.6 to 164.2 mg/l which reflects the Good water quality to Very poor water quality status of the groundwater quality. The findings demonstrate the varying consistency of groundwater at different locations. All the groundwater samples under Good water quality to Very poor water quality; it may be due to the absorption of fertilisers, geological condition, channel water, solid waste, sewer drainage, septic tanks, and agricultural waste. The water should be treated by reverse osmosis to reduce dissolved solids and total hardness to the required rate.

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 67m bgl there is an indication of fractures where the seepage of ground water may occur.

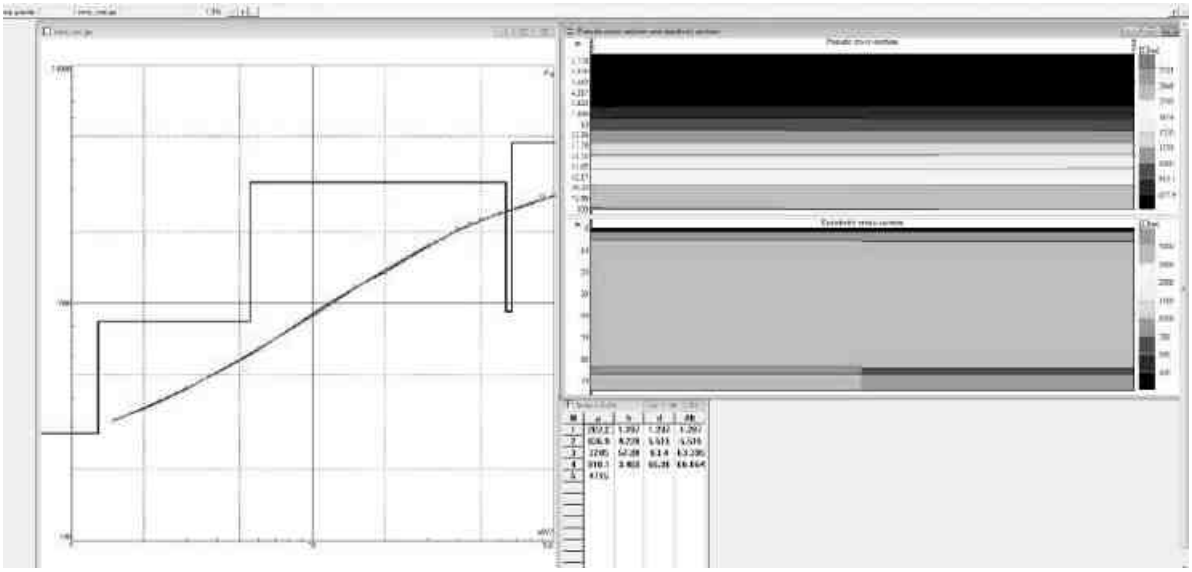


Fig No. 4.7 Interpreted resistivity curve of the study area

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

Table 4.27: Resistivity Survey

Layer	Depth (m)	Nature of formation	Resistivity Value
h1	0-1.28m	Top soil & Gravel	286 Ω m
h2	1.35-5.5	Weathered rock formation	836.9 Ω m
h3	5.97-63.4m	Massive Charnockite formation	3205 Ω m
h4	63.4-66.86m	Jointed and fractured rock	918 Ω m
h5	Above 66.8m	hard massive formation	4715 Ω m

From the results of Resistivity Survey, it is understood that the study area is composed of granite deposit, with little geological disturbances by folding. It is grey in color. Seepage of Ground water is reported at 64m bgl.

4.7 Soil Environment

4.7.1 Impact on Soil Environment

For the plan period 2022-2027, the generation of top soil is estimated as 5487 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.

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 Grey granite for five years is about 16,952m^3 at the rate of 40% recovery up to permissible depth. The 70% reject of 25,429 m^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.

4.8.2 Mitigation measures

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

- The rejects\ waste dump shall be properly terraced in to 1.5m benches with proper repose angle and then the top soil shall be spread over the dumps and slope to make them humus for some time, after the soil suitable for water retention, trees will be planted at the top, slope and toe of the stabilized dumps to form vegetation.
- Gradation of dump shall be done automatically as coarser materials go to the bottom and finer at the top and therefore drain of rain water flow freely to the bottom without endangering the stability of dump,

- More over the dump height shall be less than 6m with natural repose angle and hence dump will be more stable.
- Garland drainage around dump shall prevent under wash of dump by hydrostatic pressure to be developed by surface water and control wash outs and collapse.
- The runoff from the slopes of dump will be collected by garland drainage around the dump and it will be taken up to settling tank to settle down the suspended solids. After that the water will be used for greenbelt development and dust suppression purposes.

4.9 Municipal solid waste management

The human waste shall be treated by temporarily built septic tank and soak pit within the mine lease area. The municipal solid waste generated by workers will be properly segregated into biodegradable and non-biodegradable and disposed through garbage collector of particular location in Krishnagiri 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 4.28 & 4.29.

Table 4.28: 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: 1. Thogarapalli R.F -1.4km – S 2. Bargur R.F – 7.1km – NE 3. Varatanapalli – 8.0km – NW 4. Nandibanda R.F – 8.2km – NE 5. Neralakotta R.F – 10.4km - 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. Cauvery Wildlife Sanctuary – 41.2km – W Quarry area is 172km (SE) away from the Bay of Bengal.	-

		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 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	As the proposed project is mining activity there will be no	Nil

	supplies water to a wildlife	possibilities of release of effluents. Also, no Wild life sanctuary located within 10km radius.	
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)

Table 4.29: 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 quarries is located in Jagadevipalayam 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,	No Impact		-	-	No Impact

		the approach road is already available which connect the lease area to nearest Bagimanur 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 collector of Krishnagiri 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 control the noise generations.	No Impact
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. 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.	No Impact	Nil	--	--	No Impact

Table 4.30: 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 as business, contract works and development work like roads, etc. and other welfare amenities such as Sanitary facilities, Solar Lighting to Govt school, Health Care to the villages in buffer zone, Maintenance of village road or Providing funds to local body or Prime minister's fund on Socio economic Development and relief measures. The job/ business opportunities will improve the economic condition of the persons. They are in a position to utilize this money for purchase of tractors, trucks, etc. which may be put into use for business purposes. Many **positive impacts** can be resulted from a long-term mine unit. In this context, provision of job opportunities, business, transport and communication, laborer etc., are the major ones. Thus, this unit is highly favorable to poor and landless people.

4.11.2 Mitigation Measures

- Good maintenance practices will be adopted for plant machinery and equipment, which will help to avert potential noise problems.
- Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.
- Drilling, blasting etc., at specified location will be followed with proper schedule.
- Appropriate air pollution control measure will be taken so as to minimize the environmental impact within the core zone.
- For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices has been provided which meet 'BIS' (Bureau of Indian Standards).

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

4.12 Land Environment

4.12.1 Anticipated Impact on Land Use / Land Cover

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

anticipated on land use of buffer zone associated due to the mining activity, as all the activities will be confined within the project site. The mining operations will impact the land usage and land aesthetics of quarry lease area.

The land use analyses show that the mango plantation was done around the mining lease area of M.P Mining and Leasing Company. 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.

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

4.13.3 Anticipated health impacts on people in nearby villages

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

4.13.4 Mitigation measures

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

- Excavators, dumpers, drills other automated equipments will be enclosed
- Use of personal breathing protection will be made compulsory
- Spraying with water on all working faces & haul roads, by water–sprinkler
- Regular health monitoring of workers once in 6months for silicosis
- Random health check up village people around the lease area for identify diseases if any due to mining activity
- No employee will be exposed to a noise level greater than 75 dB(A) for a duration of more than 8 hours per day without hearing protection
- Ear muffs provided will be capable of reducing sound levels at the ear to at least 75 dB(A).
- During mining operations, all the statutory provisions of the Indian Electricity Rules 1956, and Indian Standards for installation and maintenance of electrical equipment etc. will be observed.
- Care will be taken to evacuate the mining area completely at the time of blasting operations.
- A blasting SIREN will be used at the time of blasting for audio signal
- Before Blasting and after blasting, red and green flags will be displayed as visual signals.
- Warning notice boards indicating the time of blasting and NOT TO TRESSPASS are displayed prominently.
- First-aid facilities as per provisions under Rule (44) of Mines Rules 1955
- Initial and Periodical medical examination shall be conducted for the employees under Rule 29B & 45 (A).
- Insurance will be taken in the name of the labourers working in the mines.

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.

- 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.

Krishnagiri District is comprised of Archaen peninsular gneisses such as Charnockites, Hornblende gneisses, Biotite gneisses, and dolerites migmatites are intruded by younger formations like pegmatite and quartz veins. The dolerite dyke is intruded into the pre-existing country rock namely Biotitic Gneisses and Schist and trending 1-2kms from West to East direction and dipping almost vertical. The width of dyke is about 30m.

The order of superposition of geological sequence are given as under,

Description		**Age**
Top soil – Morum (2m Thick)	-	Recent age
Dolerite dyke	-	Recent age
Peninsular gneisses	-	Archaen age
Biotite gneisses	-	Archaen complex

The Biotite gneisses are oldest rock into which the younger dolerite dykes intruded later.

The quarry site is dependent on the geology and grey granite mineral deposition of the area. This project is mineral and site specific, hence no alternative site or technology is considered for this project.

CHAPTER – 6: ENVIRONMENTAL MONITORING PROGRAMME

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

6.1 Measurement methodologies

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

Table No: 6.1 Instruments used for Monitoring

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	5 locations (One station in the core zone and at least one in nearby residential, area, one in the upwind, one 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 areas within the lease and at the nearest residential area	24 hours	Monthly Once	Sound level meter
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting operation	Digital Seismograph

7	Soil	Core Zone and Buffer zone (Grab samples)	–	Once in six months	Physical and Chemical characteristics

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, Krishnagiri on regular basis.

6.4 Emergency procedures

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

6.5 Detailed Budget

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

Table No 6.3 Environment monitoring budget

S. No	Environmental Monitoring Program	No. of samples per year	Cost per sample	Cost per year
1	Ambient Air Quality monitoring	5	Rs 4000	Rs. 20,000
2	Water quality	2	Rs 2500	Rs 5,000
3	Soil quality	2	Rs 2500	Rs 5,000
4	Noise monitoring	10	Rs 1000	Rs 10,000
5	Hydro geology	5	Rs 1000	Rs 5,000
			Total	**Rs 45,000**

CHAPTER – 7: ADDITIONAL STUDIES

7.1. Public Consultation

The Public hearing meeting yet to be conducted.

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	M/s. M.P. Mining and Leasing Company, No.2/226, Karisalkulam Road, Vakkanangundu Kariyapatti Taluk, Virudhunagar District - 626104, Tamil Nadu.

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,
iv. Safety and Environmental aspects.

Table 7.2 Risk Assessment and Disaster Management Plan

S. No	Hazards	Mitigation measures
1	Surface Fire	➢ Fire Extinguishers ➢ Sand Buckets
2	Explosives/Blasting	➢ 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. ➢ Only mild blasting will be carried out to affect a perfect pre-determined crack to release the block from the parent rock.
3	Flooding of Rain water	➢ 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	➢ 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	➢ 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	➢ Periodical wetting of land by spraying $MgCl_2$ 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	➢ Rotation of workers to minimize exposure time of noise ➢ The equipments and machineries shall be maintained properly ➢ Provision of earmuffs to workers
9	Transportation	➢ 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	➢ 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 tiles industries.

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

Total of 35 Persons get employment from the existing quarry. Most of labors are Agriculturist. In case of closure of mine, they may continue their own work or join in the neighbor mines as there are few granite quarries around this area within 500m. Since the quarry is deposited with high resources immediate retrenchment may not arise.

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 5 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 Grey Granite quarry project of M/s. M.P. Mining and Leasing Company 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

7.4.1 Rain water harvesting after the completion of proposed project

I.	Total Pit Area	= 8850m^2
II.	Annual rainfall of the area	= 0.75 m
III.	Total rainwater available to store in pit area	= 6637 m^3
IV.	Total volume of quarried pit	= 2,65,500 m^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 from 30m 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)

$$E_L = K_M (e_w - e_a) (1 + u9/16)$$

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 9 m above ground
- K_M = coefficient accounting for various other factors with a value of 0.36for large deep and 0.50 for small shallow waters.

Here,

e_w = 26.75 mm of Hg (considered average temperature, 27°C(Summer Season) in Krishnagiri district)

e_a= 0.65 x 26.75 = 17.4 mm of Hg.

u_1 = 7.92 km/hr

u_9= 10.84 km/hr

Substitute the above parameters in Meyer's equation,

E_L=0.36(26.75-17.4) (1+ 10.84/16)

E_L = 5.6 mm/day

Evaporated Volume per day = 8850 x 0.0056 = 50m^3/day or 50 KLD

The total quantity of rain water to be stored in quarried pit is 6637m^3. The evaporation rate of water per day is 50 m^3 based on the average temperature during May month in Krishnagiri district. It takes nearly 4 to 6 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 this existing 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 Grey Granite quarry.

7.5 Plastic/Micro plastic waste Management Plan

This is Grey 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.

Micro plastics are small pieces of plastics less than 5mm. As usage of plastics is totally devoid in the quarry premise, the chance of Micro plastic 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 Grey Granite project located in Jagadevipalayam Village of Krishnagiri 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, Krishnagiri 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 quarry proponent employed about 35 persons for carrying out the mining operations of which 1 are skilled, 4 semi-skilled, 20 unskilled workers and 4 Management and supervisory staff 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 Grey Granites 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.

8.4.3 Corporate Environment Responsibility (CER) for proposed project

CER Activity	Project Cost (Rs. In Lakhs)	CER Cost (Rs in Lakhs)
Developing Sanitary facilities and Library Facilities, RO Water supply system, tree plantation and environmental awareness sign Boards to Government Boys High School, Jagadevipalayam Village.	295	6.0
Total Cost Allocation	**295**	**6.0**

CHAPTER – 9: ENVIRONMENTAL COST BENEFIT ANALYSIS

9.0 PROJECT COST

After making exhaustive study, it is considered that the mining project may be implemented.

Project cost for the existing Grey Granite Quarry over an area of 1.84.0 Ha falling in Village Jagadevipalayam, District Krishnagiri is Rs. 304 lakhs/- and EMP Cost is Rs. 3.80/- This project provides direct employment to 35 people and indirect employment to nearly 20 people. In a family 4 persons, totally 176 persons will get benefit because of the project.

The quarrying activity will definitely benefit the people (directly as well as indirectly) as follows

- Granite is used as construction material. So, surrounding dealer and building contractor get granite easily 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.

Table 10.1 Environmental Management Plan			
S.No	**Parameters**	**Mining Activity**	**Mitigation measures**
1	Air Environment	Drilling	o Dust extractor or wet drilling to be followed to control dust at source of emission o Use of Sharp drill bits for drilling holes and charging the holes by using optimum charge and using time delay detonator
		Blasting	o Regular water sprinkling on blasted heaps at regular intervals will help in reducing considerable dust pollution
		Loading	o Water sprinkling be done before loading by making it moist
		Transportation	o Water sprinklers along the sides of haul road shall be fixed to control fly of dust while transporting minerals and waste o Overloading will be prevented o Trucks/Dumpers covered by tarpaulin covers
		DG Sets	o DG sets will be used only during power failure o Adequate stack height for DG sets will be provided as per CPCB norms
		General measures	o Avenue trees along roads around ML boundary shall be planted as per the norms of MoEF to control fly of dust. o 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. o 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 o Ambient Air Quality Monitoring will be conducted on regular basis to assess the quality of ambient air.
2	Water Environment	Surface water	o Wastewater discharge from mine if any will be treated in settling tanks before using for dust suppression and tree plantation purposes.
		Ground water	o The mining activity will not intersect the ground water table o De silting will be carried out before and immediately after the monsoon season
		Stormwater	o Pit will be used for Storage of rainwater o 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. o The proponent will collect and judicially utilize the rainwater as part of rain water harvesting
		General measures	o Regular monitoring and analyzing the quality of water
3	Noise Environment	Drilling	o Limiting time exposure of workers to excessive noise
		Blasting	o Carrying out blasting only during day time and not on cloudy days o Noise levels will be controlled by using optimum explosive charge,

			proper delay detonators and proper stemming to prevent blow out of holes. o Providing proper noise proof enclosure for the workers separated from the noise source and noise prone equipment
		Transportation	o Proper and regular maintenance of vehicles, machinery and other equipments. o The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments. o Speed of trucks entering or leaving the mine will be limited to moderate speed to prevent undue noise from empty vehicles. o Adequate silencers will be provided in all the diesel engines of vehicles. o Minimum use of horns and speed limit of 10 km/hr in the village area. o It will be ensured that all transportation vehicles carry a valid PUC Certificates
		General measures	o Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas o Provision of Quiet areas, where employees can get relief from workplace noise. o The development of green belts around the periphery of the mine to attenuate noise. o Regular medical check–up and proper training to personnel to create

			awareness about adverse noise level effects.
4	Vibration	Blasting	o No deep holes blasting envisaged. o Small dia shot holes are used for breaking boulders. o Specific charge pattern has to be designed by proper trial vibration studies with varying charge ratios. o 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 o 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	o Humus top soil shall be preserved for reuse in afforestation and agriculture o Top soil should not be mixed with other waste or reject materials. It should be conserved by judicious utilization in the mine premises o 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	o 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. o 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 o Dump should be terraced for every 5m height and stabilized
7	Plantation	Mine lease boundary and waste dump	o Provision of green belt all along the periphery of the lease area for control of dust and to attenuate noise o Stabilization of Dump with plantation o It is strongly recommended that the loss of plant in each year will be counted and again planted in subsequent plantation. o The plant should be planted taken from nursery, where the survival rate is high.
8	Land Environment		o The restoration of the degraded land would cover backfilling and terracing with the overburden / wastes and surfacing the same with top soil. o Provision of Garland drainage around the dumps o Fast growing trees and other native shrubs would be planted to stabilize the reclaimed land o Appropriate measures will be taken for Green belt development.

		o 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	o 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 activities will be undertaken by the proponent which leads to socio economic development
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…

10.1 Description of the administrative aspects

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 2,00,000
2.	Environmental Monitoring	Rs 2,25,000
3.	Occupation Health	Rs 2,00,000
4.	Green Belt & Dust suppression	Rs 1,00,000
	Total	**Rs 7.25 lakhs**

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 4.5 lakhs**

Apart from the afforestation plan given in Mining plan, the above table depicts the budget allocated for additional green belt development as specified by ToR.

CHAPTER – 11: SUMMARY AND CONCLUSIONS

11.0 Introduction

The applicant, M/s. M.P Mining and Leasing Company, No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhungar District – 626104 has applied for grant of Granite quarry lease to the secretary to Government, Industries Dept, Fort St. George, Chennai-9 through District Collector, Krishnagiri District and Commissioner of Geology and Mining, Chennai for quarrying Grey Granite from a patta land over an extent of 1.84.00 Hectares in S.F. Nos: 268/1Y, 268/1Z, 268/1AA and 268/2K, Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.

The principal secretary, Govt. of Tamil Nadu directed the applicant M/s. M.P Mining and Leasing Company, through his precise area communication letter No. 1298/MME-2/2016-1, Dated 04.07.2016 to get approved mining plan and obtain Environmental clearance from the Environment Impact Assessment Authority (SEIAA) as per the EIA Notification, 2006 and its amendments for grant of quarrying for Grey Granite over an extent of 1.84.00 hectares of patta land in S.F. No's: 268/1Y, 268/1Z, 268/1AA and 268/2K, Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu for a period of 20 years under Rule 19A of Tamil Nadu Minor Mineral Concession Rules, 1959.

Accordingly, Mining Plan is prepared under Rule 12 & 13 of Granite conservation and development Rules, 1999 for quarrying Grey Granite with due consideration of environmental parameters so as to obtain Environmental clearance (EC) from Environment Impact Assessment Authority (SEIAA) vide MoEF&CC Notification S.O 141(E) dated 15th January, 2016. The mining plan was approved by Department of Geology and Mining, Guindy, Chennai vide his letter Roc No. 330/MM5/2016 Dated: 24.08.2016 for the period of 5 years. The Mining plan was completed. Now the applicant prepared 1st Scheme of Mining Plan and same was approved by Department of Geology and Mining, Guindy, Chennai vide letter Roc No. 8035/MM4/2022, Dated: 30.12.2022 for five years.

The proposal was placed in 82nd SEAC meeting held on 21, 22.10.2016 and SEIAA meeting held on 18.11.2016 and EC was granted vide Lr. No. SEIAA-TN/F.No.5764/1(a)/EC. No: 3904/2016 dated: 18.11.2016 for a period of 5 years from the date of execution of the mining lease period. The mining lease was executed on

10.02.2017 for the period of 20 years up to 09.02.2037. The Environmental Clearance expired on 09.02.2022.

The cluster letter issued by Deputy Director, Department of Geology and Mining, Kaishnagiri vide No. 435/2015/Mines/ Dated 16.04.2026 for M/s. M.P. Mining and Leasing Company, (1.84.0 Ha) the lease area of above said there is 3 existing quarries comes under the cluster of 500m radius. Namely M/s. M.P. Granites an extent of 1.80.0 Ha, Thiru.S.S. Jamaludeen an extent of 1.25.0 Ha and Thiru. E. Jagadeesan an extent of 1.56.5 Ha respectively the total area of cluster is 6.51.0 Ha. Which is above 5 hectares 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. 2.95 crores and EMP cost is Rs. 3.80 lakhs.

Based on MoEF&CC OM vide F.No.IA3-22/11/2023-IA.III (E-208230) dated 28.04.2023 and cluster letter issued by Assistant Director, Department of Geology and Mining, Krishnagiri, the lessee made TOR application through PARIVESH website to carry out EIA Studies for obtaining Environmental clearance. The details are given in below Table 11.1.

Table 11.1 Details on Terms of Reference

S. No	Name of Applicant	ToR Application No	SEAC and SEIAA Meeting No	TOR Letter No
1	M/s. M.P Mining and Leasing Company	SIA/TN/MIN/577692/ 2026 dated 06.05.2026	718th SEAC Meeting, dated 20.05.2026 and 1017th SEIAA Meeting dated 17.06.2026	TO26B0108TN51555 08N Dated: 25.06.2026

11.1 Details of Project and Project Proponent

Table No 11. 2 Details on Project and Project Proponent

Particulars	Details
Address of the Project Proponent	**M/s. M.P. Mining and Leasing Company,** No.2/226, Karisalkulam Road, Vakkanangundu Kariyapatti Taluk, Virudhunagar District - 626104, Tamil Nadu.

Lease Area	1.84.0 Hectares (Patta Land)
Site Location	S. F. No: 268/1Y, 268/1Z, 268/2K and 268/1AA, Jagadevipalayam village, Bargur Taluk, Krishnagiri District, Tamil Nadu
Geographical Co-ordinates	Latitude: 12°28'25.42"N to 12°28'33.04"N Longitude: 78°21'00.16"E to 78°21'05.59"E
Toposheet No.	57L/7
Elevation	Elevation of the area is 451m above MSL
Government Order	G.O.(3D). No. 72 Industries (MME.2) Dept. dated 01.12.2016.
Precise Area	letter No. 1298/MME.2/2016-1, dated 04.07.2016
Mining Plan Approval Details	Rc. No: 330/MM5/2016 Dated 24.08.2016
EC letter from SEIAA	Lr. No: SEIAA-TN/F.No.5764/1(a)/EC. No: 3904/2016 dated: 18.11.2016
Period of Lease	20 years (10.02.2017 to 09.02.2037)
Approval of Scheme of mining	Rc. No. 8035/MM4/2022, Dated: 30.12.2022
AD Cluster letter	Rc. No. 435/2015/Mines/ Dated 16.04.2026.

11.2 SCOPE OF THEPROJECT

The proposal for Environmental Clearance of existing Grey Granite quarry of **M/s. M.P Mining and Leasing Company** 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

FEATURE	DETAILS
Name of the Proponent and address	**M/s. M.P. Mining and Leasing Company,** No.2/226, Karisalkulam Road, Vakkanangundu Kariyapatti Taluk, Virudhunagar District - 626104, Tamil Nadu.
Existing/New Quarry	Existing
Survey number	268/1Y, 268/1Z, 268/2K and 268/1AA
Geographical features	Latitude: 12°28'25.42"N to 12°28'33.04"N Longitude: 78°21'00.16"E to 78°21'05.59"E Toposheet No: 57L/07
Site Location	Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.

Type of Project	Grey Granite
Category	B1
Mining lease area	1.84.0 Hectares
Geological Resources (RoM)	3,69,160 m^3
Mineable Reserves (RoM)	1,35,396 m^3
Production (RoM)	42,381 m^3 (16,952 m^3 of Granite @ 40% of recovery and 25,429 m^3 of Granite @ 60% of waste) up to a depth of 25m during the 1st Scheme of Mining plan period of five years
Depth of Mining	25 m bgl
Water Table	64 m bgl
Method of Mining	Open cast - mechanized mining
Blasting Pattern	Chemical rock blasting, also known as non-explosive rock blasting, uses a chemical agent that expands when mixed with water, creating pressure that fractures the rock.
Types of Explosives	Chemical explosive is not proposed chemical powder called as Rock breaking powder Ca $(OH)_2$ are also used for granite splitting.
Measures proposed to minimize ground vibrations due to blasting	It is an Eco-friendly quarry operation; diamond wire saw cutting method shall be practiced to this quarrying operation. Chemical rock blasting, also known as non-explosive rock blasting No impact on surroundings due to blasting.
Storage of Explosive	Not Applicable
Category	B1
Scheme of Mining approval	Commissioner of Geology and Mining, Chennai vide Rc. No: 8035/MM4/2022 Dated 30.12.2022
Period of Lease	20 years.
Does it attract any general conditions specified in the EIA notification, 2006?	Not applicable
Man Power	35 persons
Water requirement	Total water requirement – 5.0 KLD Drinking water – 1.0 KLD Domestic purposes – 1.0 KLD Water sprinkling – 1.0 KLD, Wet drilling and Green Belt 2.0 KLD. Source: Mineral water supply and nearby bore wells
EMP Cost	Rs. 3.80 Lakhs
Project Cost	Rs. 2,95,16,000/-
Nearest habitation	0.40 km-South East
Nearest Village	Sappamuttlu - 0.40 km- South East
PMHC	Bargur –8 km –North
Nearest Town	Bargur –8 km –North
Nearest Road	NH -77 –1.35 km- South

<table>
<tr><td></td><td>MDR – 3.24 km - West
Approach road for the Transportation is located at the eastern side.</td></tr>
<tr><td>Nearest Railway station</td><td>Tirupattur – 23 km – East</td></tr>
<tr><td>Nearest Airport</td><td>Bengaluru – 100 km –North West</td></tr>
<tr><td>Water bodies</td><td>Mattur River- 0.40 km – South West
A small Lake – 1.40 km - East
A small Lake – 1.16 km - West
A small Lake – 1.7 km – North East</td></tr>
<tr><td>Interstate Boundary</td><td>Tamil Nadu -Andhra Pradesh Interstate Boundary –18km -North</td></tr>
<tr><td>Coastal Zone</td><td>Bay of Bengal – 183km - East</td></tr>
<tr><td>Reserve Forest</td><td>Reserve forest around 10km radius from the periphery of the lease applied area.
Thogarapalli R.F. – 1.70 km – South
Bargur R.F. – 7.62 km – North East
Varatanapalli R.F – 8.50 km – North West
Nandibenda R.F – 8.78 km - North East</td></tr>
<tr><td>Wildlife Sanctuary</td><td>There is no wild life sanctuary or National Park found within 10km radius
Cauvery North Wildlife Sanctuary – 52 km – South West
Cauvery South Wildlife Sanctuary – 92 km – South West</td></tr>
<tr><td>Land use pattern</td><td>
<table>
<tr><th>S. No</th><th>Description</th><th>Present Area (Ha)</th><th>Area utilized in %</th></tr>
<tr><td>1</td><td>Area Under Quarry</td><td>0.71.5</td><td>38.9</td></tr>
<tr><td>2</td><td>Waste Dump</td><td>0.48.65</td><td>26.4</td></tr>
<tr><td>3</td><td>Infrastructure</td><td>Nil</td><td>-</td></tr>
<tr><td>4</td><td>Roads</td><td>0.01.0</td><td>0.5</td></tr>
<tr><td>5</td><td>Green Belt</td><td>0.03.0</td><td>1.6</td></tr>
<tr><td>6</td><td>Stocking Blocks</td><td>0.59.85</td><td>32.5</td></tr>
<tr><td colspan="2">Total</td><td>1.84.0</td><td>100 %</td></tr>
</table>
</td></tr>
</table>

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 March 2026 – May 2026 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		
Rainfall (Avg.)	45 mm	--
Temperature (Avg.)	22-39°C	--
Wind speed	2.4 m/s	--
Wind Direction	From west to east directions	
Ambient Air Quality (NAAQS)		
PM_{10}	39-58 µg/m^3	100 µg/m^3
$PM_{2.5}$	17 – 33 µg/m^3	60 µg/m^3
SO_2	6 - 21 µg/m^3	80 µg/m^3
NO_x	13 -27 µg /m^3	80 µg/m^3
Noise Level (CPCB Standards)		
Day time (6:00 am - 10:00 pm)	Core zone – 40.2 to 41.9 dB (A) Buffer zone – 36.2 to 46.4 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 – 32.5 to 37.9 dB (A) Buffer zone – 34.5 to 41.2 dB(A)	**Industrial Area** Night Time – 70 dB(A) **Residential Area** Night Time – 45 dB (A)
Water Quality IS 10500:2012 (Desirable limits)		
pH	6.98-7.60	6.5 to 8.5
TDS	292-794 mg/l	500 mg/l
Electrical conductivity at 25˚C	780 to 1925 micromhos/cm	
Total Hardness as $CaCO_3$	126-640 mg/l	200 mg/l
Total suspended solids	2-12 mg/l	IS 3025:P.17: 1984: R.2017
Chlorides Cl	28-260mg/l	250
Total iron Fe	0.012 – 0.04	0.3mg/l
Sulfates SO_4	20-40mg/l	200 mg/l
Soil Quality		
pH	6.78 to 7.86	Neutral to slightly alkaline
Bulk density	1.30-1.46 g/cc	Favorable physical condition for plant growth.
Hydro Geology		
Mining Depth	25m bgl	
Water Table	64 m bgl	

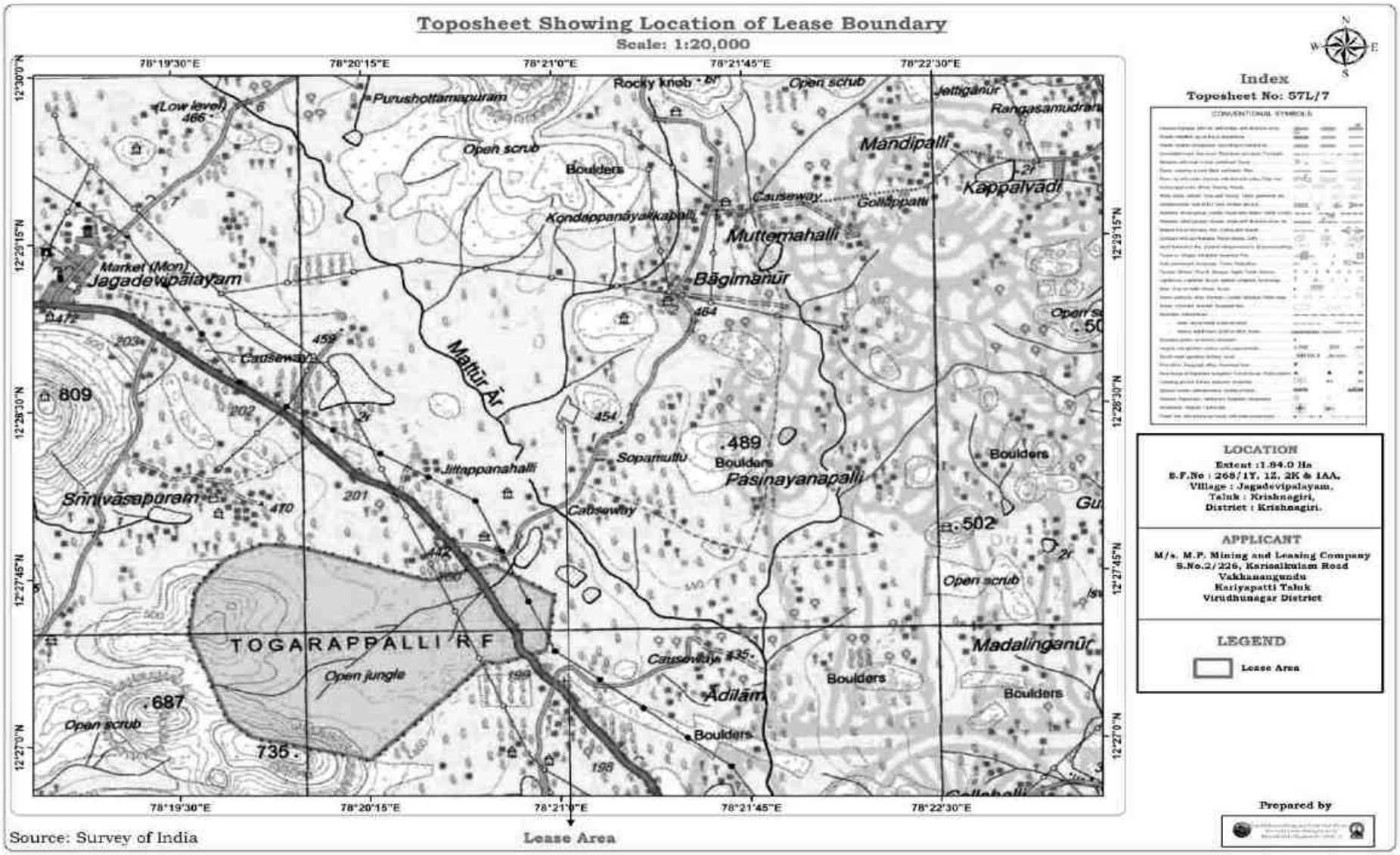


Fig No 11.1 Toposheet showing location of the lease area

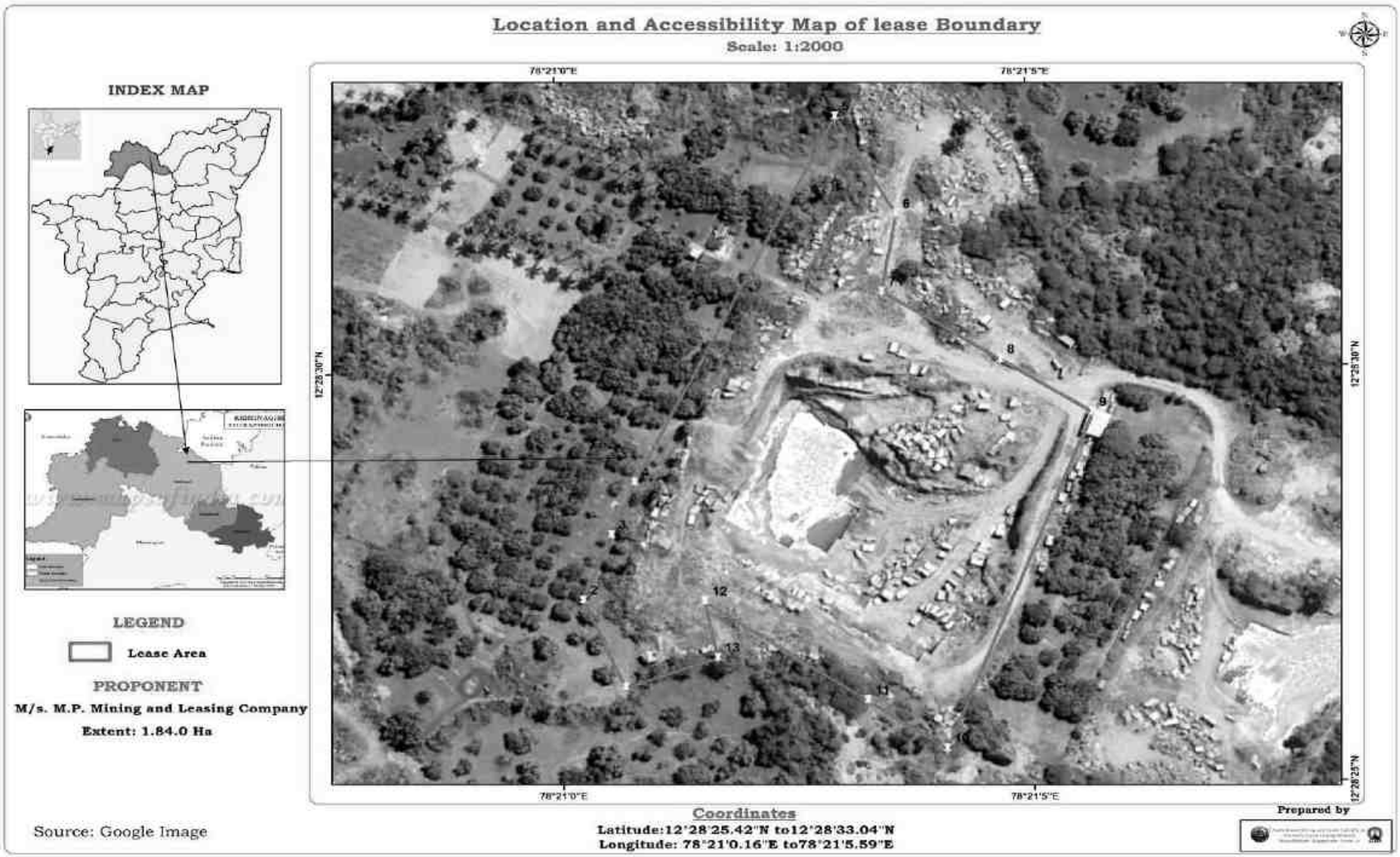


Fig No 11.2 Map Showing the Location and Accessibility of Quarry Lease Boundary

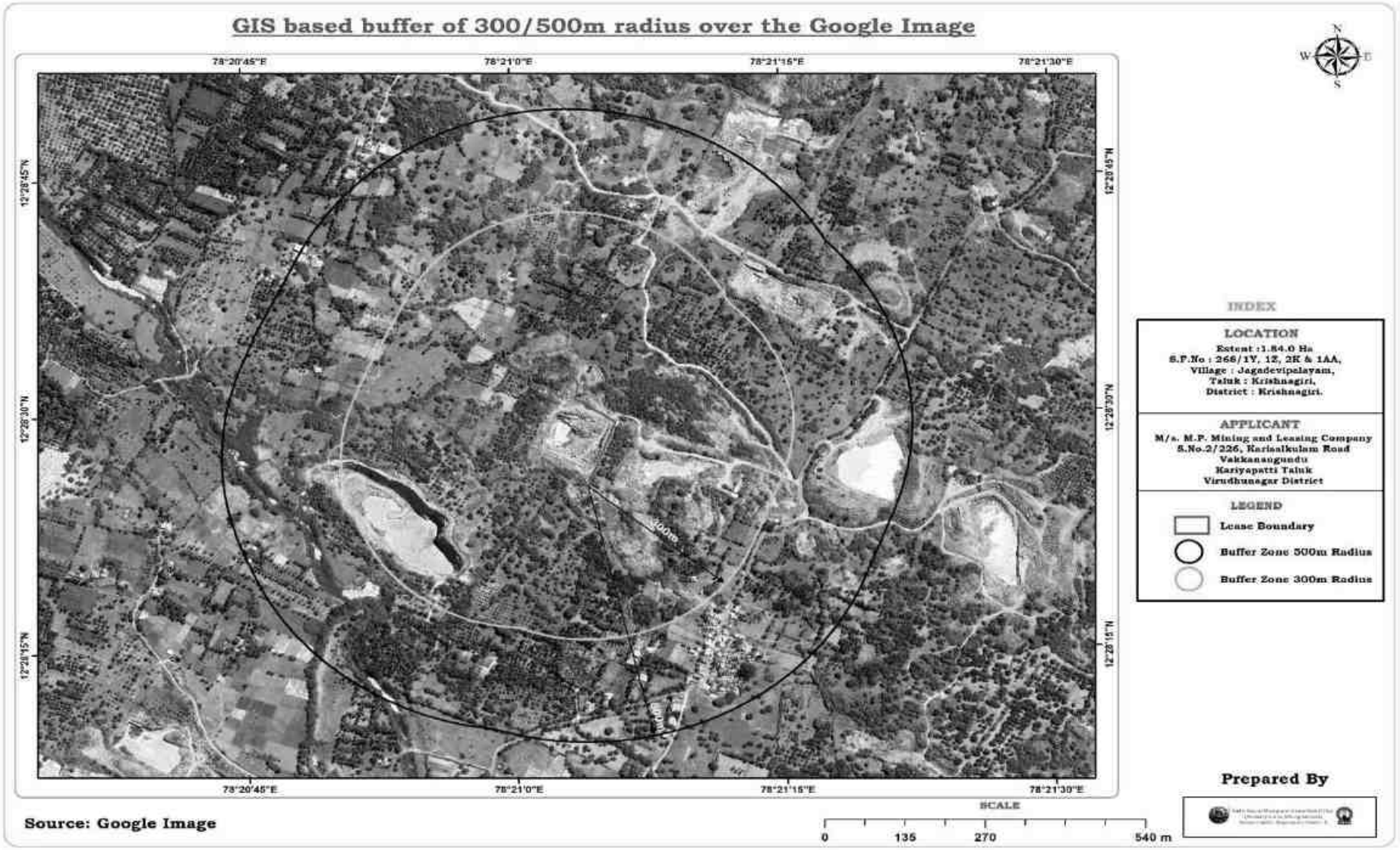


Fig No 11.3 Google Earth Image showing 300m and 500m radius around lease area

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 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 73.83µg/m^3 and 55.28 µg/m^3 occurred at the project site after superposition of base-line value 46 µg/m^3 over the incremental value of 27.83µg/m^3 and 9.28µg/m^3 due to combined impact of loading and unloading and transportation over the haul road and due to blasting.

When all the quarries in the cluster area are working together the incremental GLC will be high and it may cross the prescribed limits by NAAQS. To overcome such situation, cluster committee should be formed and adopt the environmental management plan effectively as per EIA report.

11.5.2 Noise Environment

Noise pollution poses a major health risk to the mine workers. The sources of noise in the proposed 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 (Table 4.22), it can be seen that the charge per blast of 12kg is above the Peak Particle Velocity of 5mm/s for the habitation located at the distance of 330m and 410m. So, the project proponent 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 in grey granite quarry mine is devoid of any such impacts.

The impact due to mining on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during mining process. The depths of mining of existing grey granite quarries are above the ground water table and it will not intersect ground water table. The WQI of the samples collected from the study area are given in table 4.25. It can be seen that the study area has water quality index value ranging from 51.6 to 164.2 mg/l which reflects the Good water quality to Very poor water quality status of the groundwater quality. The findings demonstrate the varying consistency of groundwater at different locations. All the groundwater samples under Good water quality to Very poor water quality; it may be due to the absorption of fertilisers, geological condition, channel water, solid waste, sewer drainage, septic tanks, and agricultural waste. The water should be treated by reverse osmosis to reduce dissolved solids and total hardness to the required rate.

11.5.5 Soil Environment

For the plan period 2022-2027, the generation of top soil is estimated as 11,829 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.

11.5.6 Waste Dump

The proposed rate of production of Grey granite for five years is about 16,952 m^3 at the rate of 40% recovery up to permissible depth. The 60% reject of 25,429 m^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.

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

Grey granite Quarry project will result in disturbance of the land use pattern of the mine lease area. The impact on the topography in the form of changed landscape is unavoidable during mining activities like excavation, overburden dumping, soil extraction etc. Land requirement for the project has been assessed considering functional needs. So, reclamation of mined out land will be given due importance as a step for sound land resource management. There is no release of toxic elements into the ground. No adverse impact is anticipated on land use of buffer zone associated due to the mining activity, as all the activities will be confined within the project site. The mining operations will impact the land usage and land aesthetics of quarry lease area. The land use analyses show that the mango plantation was done around the mining lease area. The rate of plantation increases over a period of time due to quarry activity. At the end of the project, the quarried pit will be act as water storage pond. The stored water will 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 – 35 persons

Indirect Employment - 20 persons

Table 11.7 Environmental Management Plan			
S. No	**Parameters**	**Mining Activity**	**Mitigation measures**
1	Air Environment	Drilling	o Dust extractor or wet drilling to be followed to control dust at source of emission o Use of Sharp drill bits for drilling holes and charging the holes by using optimum charge and using time delay detonator
		Blasting	o Regular water sprinkling on blasted heaps at regular intervals will help in reducing considerable dust pollution
		Loading	o Water sprinkling be done before loading by making it moist
		Transportation	o Water sprinklers along the sides of haul road shall be fixed to control fly of dust while transporting minerals and waste o Overloading will be prevented o Trucks/Dumpers covered by tarpaulin covers
		DG Sets	o DG sets will be used only during power failure o Adequate stack height for DG sets will be provided as per CPCB norms
		General measures	o Avenue trees along roads around ML boundary shall be planted as per the norms of MoEF to control fly of dust. o 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. o 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 o Ambient Air Quality Monitoring will be conducted on regular basis to assess the quality of ambient air.
2	Water Environment	Surface water	o Wastewater discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
		Ground water	o The mining activity will not intersect the ground water table o Desilting will be carried out before and immediately after the monsoon season
		Storm water	o Pit will be used for Storage of rainwater o 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. o The proponent will collect and judicially utilize the rainwater as part of rain water harvesting
		General measures	o Regular monitoring and analyzing the quality of water
3	Noise Environment	Drilling	o Limiting time exposure of workers to excessive noise
		Blasting	o Carrying out blasting only during day time and not on cloudy days o Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes. o Providing proper noise proof enclosure for the workers separated from the noise

			source and noise prone equipment
		Transportation	o Proper and regular maintenance of vehicles, machinery and other equipments. o The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipments. o Speed of trucks entering or leaving the mine will be limited to moderate speed to prevent undue noise from empty vehicles. o Adequate silencers will be provided in all the diesel engines of vehicles. o Minimum use of horns and speed limit of 10 km/hr in the village area. o It will be ensured that all transportation vehicles carry a valid PUC Certificates
		General measures	o Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas o Provision of Quiet areas, where employees can get relief from workplace noise. o The development of green belts around the periphery of the mine to attenuate noise. o Regular medical check–up and proper training to personnel to create awareness about adverse noise level effects.
4	Vibration	Blasting	o Specific charge pattern has to be designed by proper trial vibration studies with varying charge ratios. o Milli second detonators shall be used preferably 25–50ms per delay to control vibrations o 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 o 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	o Humus top soil shall be preserved for reuse in afforestation and agriculture o Top soil should not be mixed with other waste or reject materials. It should be conserved by judicious utilization in the mine premises o 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	o 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 o 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	o Provision of green belt all along the periphery of the lease area for control of dust and to attenuate noise o Stabilization of Dump with plantation o It is strongly recommended that the loss of plant in each year will be counted and

			again planted in subsequent plantation. o The plant should be planted taken from nursery, where the survival rate is high.
8	Land Environment		o The restoration of the degraded land would cover backfilling and terracing with the overburden / wastes and surfacing the same with top soil. o Provision of Garland drainage around the dumps o Fast growing trees and other native shrubs would be planted to stabilize the reclaimed land o Appropriate measures will be taken for Green belt development. o 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		o 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…

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 areas within the lease and at the nearest residential area	24 hours	Monthly Once	Sound level meter
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting operation	Digital Seismograph
7	Soil	Core Zone and Buffer zone (Grab samples)	–	Once in six months	Physical and Chemical characteristics

11.8 Project Benefits

The proponent, **M/s. M.P. Mining and Leasing Company** is very much conscious of his obligations to society at large. Under plantation programme, it is suggested to develop green belt 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 it's 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 EAC/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, **M/s. M.P. Mining and Leasing Company** 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 own Laboratory named **ABM Enviro Lab, accredited by NABL** for sampling and testing of air, water, noise and soil samples.

S. No.	Study	Consultants/LAB
1	Generation of Base Line Data	ABM Enviro Lab, 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.

Declaration by Experts Contributing to the EIA/EMP

Declaration by experts contributing to the EIA/EMP for Grey Granite Quarry M/s. M.P. Mining and Leasing Company over an extent of 1.84.0 Ha in Jagadevipalayam Village, Bargur Taluk, Krishnagiri District of Tamil Nadu. It is also certified that information furnished in the above EIA study are true and correct to the best of our knowledge. I, hereby, certify that I was a part of the EIA team in the following capacity that developed the EIA/EMP Report.

Name : Dr.S.Suriyakumar

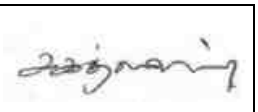
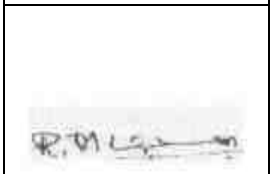
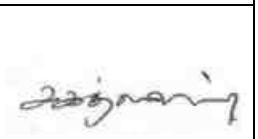
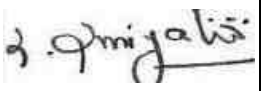
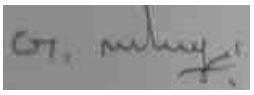
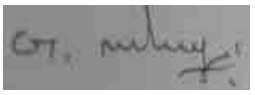
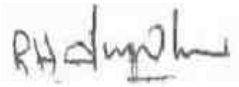
Designation : EIA Coordinator

Signature : For Aadhi Boomi Mining And Enviro Tech (P) Ltd., Director

Period of Involvement : March, 2026 to till date

Functional Area Experts Engaged in this Project

S. No	Name of the Expert	Cat.	Functional Areas	Involvement	Signature
1	Dr.S.Suriyakumar	A	SC	• Study of soil profile. • Assessing the impact on soil environment and proposed mitigation measures for soil conservation.	
			SHW	• Waste disposal method evaluation • Providing dump management plan	
			RH	• Management plan for safety	
2	Mrs. S. Santhi	B	LU	• Collection of Remote sensing satellite data to study the land use pattern. • Construction of Land use Map. • Impact of project on surrounding land use.	
			SE	• Identification of villages in the study area and finalization of demographic profile of the villages within the study area • Revision in secondary data as per Census of India, 2011.	
3	R.R Prakash Babu	B	AP	• Identification of different sources of air pollution due to the proposed mine activity. • Identification of Impacts & suggestion of mitigation measures.	
4	S. Sagath	B	WP	• Study of the monitored data with	

	Srikrishnan			respect to the applicable standards. • Identification of Water requirement & Source. • Preparation of water balance diagram. • Impact of the project on the water quality, both surface and groundwater. • Suggestion of Mitigation measures to control water pollution.	
	Dr.R.Manivannan				
5	S. Sagath Srikrishnan	B	AQ	• Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. • Recommending mitigations measures for EMP.	
6	Dr.S.Suriyakumar	B	NV	• Predict the noise level and vibration level due to proposed mining operation based on scientific evaluation. • Suggesting the Mitigation measures to control noise pollution, Suggesting the Mitigation measures to control ground vibration.	
	R.R Prakash Babu				
7	Dr. Nallathambi Varadarajan	B	HG	• Interpretation of ground water table and predict impact and propose mitigation measures. • Analysis and description of aquifer Characteristics. • Study about impact on the hydrology due to mining operation	
	Mr.G.Moorthy				
8	Mr. K. Velmurugan	B	Geo	• Field Survey for assessing the regional and local geology of the area. • Study of geology of the ML area and the surrounding areas. • Provide details about Mineral composition	
	Mr.G.Moorthy				
9	Gyaneswar Bhuyan	B	EB	• Collection the primary data from project site and compare the secondary data from local DFO office.	
	Mrs. Sudha Vijay Anand				

List of Team Members Engaged in this Project

S. No	Name of the Expert	Cat.	Functional Areas	Involvement	Signature
1	Mrs. S. Sri Vidhya	B	WP, AQ	• Site Visit with FAE. • Analyse & provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures	
2	Dr.M.Selvakumar	B	AP, WP	• Site Visit with FAE. • Assisting FAE on sources of Air and Water pollution, its impacts and suggest control measures.	

Annexure-I

File No: 13702

State Environment Impact Assessment Authority (SEIAA), Tamil Nadu

(Constituted as per the provision of EIA Notification, 2006, as amended by the Ministry of Environment, Forest and Climate Change, Government of India)

Dated: **25/06/2026**

To,

Thiru. G.P. PANNEER
M/s. MP Mining and Leasing Company
No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District - 626104.
TAMIL NADU.
mpminingandleasingcompany@gmail.com

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

Sir/Madam,

Sub: SEIAA, TN - Existing Grey Granite quarry over an area of 1.84.00 ha, S.F. No: 268/1Y, 268/1Z, 268/1AA, 268/2K, Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu by M/s. MP Mining and Leasing Company- under project category – "B1" of Item 1(a) "Mining of Minerals" of the Schedule to the EIA Notification, 2006– **ToR issued along with Public Hearing**- preparation of EIA report – Regarding.

Ref: 1. EC issued by SEIAA-TN vide Lr. No. SEIAA-TN/F.No.5764/1(a)/EC.No.3904/2016 Dated: 18.11.2016
2. Online proposal No. SIA/TN/MIN/577692/2026, Dated: 06/05/2026.
3. Minutes of the 718th meeting of SEAC-I held on 20.05.2026.
4. Minutes of the 1017th meeting of SEIAA held on 17.06.2026.

2. The particulars of the proposal are as below:

(i) TOR Identification No.	TO26B0108TN5155508N
(ii) File No.	13702
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vi) Name of Project	Jagadevipalayam Village Grey Granite Quarry (Extent: 1.84.0 Ha)
(vii) Name of Company/Organization	MP Mining and Leasing Company
(viii) Location of Project (District, State)	KRISHNAGIRI, TAMIL NADU

(ix) Issuing Authority	SEIAA
(x) Applicability of General Conditions	no
(xi) 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 in the meeting held on 17.06.2026. 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 recommended the proposal for grant of Terms of Reference with public hearing 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 issue the following Terms of Reference with public hearing for instant proposal of **M/s. MP Mining and Leasing Company** 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 with public hearing 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 OM No.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

Copy To

N/A

Annexure 1

Specific Terms of Reference s for (Mining Of Minerals)

1. Seac Conditions - Site Specific

S. No	Terms of Reference
1.1	1. The pp shall obtain certified compliance report for the project from the concerned Regional Office of the Ministry and action taken report for all the non-compliances in the CCR, if any. 2. 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 required statutory personnel, appropriate environmental management, system of maintaining the haul roads and village/panchayat roads, authorized blasting operation, Monitoring system of the environmental & other statutory compliances & its reporting status, 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 Organisation chart of the Committee with defining the role of the members (iii)The 'Standard Operating Procedures' (SoP) executing the planned activities. 3. The PP shall ensure the installation of CCTV at the proposed quarry site and ensure its inclusion

S. No	Terms of Reference
	during the EIA presentation.

2. Seiaa Specific Conditions :

S. No	Terms of Reference
2.1	After detailed discussions, the Authority accepts the recommendation of SEAC-I and decided to grant **Terms of Reference (ToR) along with Public Hearing for the quantity of ROM- 42,381m^3 of Grey Granite which includes 16,952m^3 of Grey Granite Recovery @40% and 25,429m^3 of Granite waste @60% up to the depth of 25m BGL (including the existing pit depth of 13m BGL) and annual peak production shall not exceed 3,603m^3 of Grey Granite Recovery @40%** per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions & the SEIAA Specific & Standard conditions. 1. The PP shall obtain and submit a revised Scheme of Mining Plan from the competent Authority, as the one already submitted is for the period 2022-2023 to 2026-2027.

3. Seiaa Standard Conditions :

S. No	Terms of Reference
3.1	**<u>Cluster Management Committee</u>** 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. **<u>Agriculture & Agro-Biodiversity</u>** 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

S. No	Terms of Reference
	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. **Forests** 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. **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 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. 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. 22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. 23. The project proponent shall study and furnish the details on potential fragmentation impact on natural Environment, by the activities. 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. 25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components. 26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites. 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. **Energy** 28. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished. **Climate Change** 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. 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 &

S. No	Terms of Reference
	biological soil features. 31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood. **Mine Closure Plan** 32. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued. **EMP** 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. 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. **Risk Assessment** 35. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining. **Disaster Management Plan** 36. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued. **Others** 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. 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. 39. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the Environment. The ecological risks and impacts of plastic & microplastics on aquatic Environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	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
1.2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given
1.3	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

S. No	Terms of Reference
1.4	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the areashould 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)
1.5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics
1.6	Details about the land proposed for mining activities should be givenwith 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
1.7	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
1.8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided
1.9	The study rea 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
1.10	Land use of the study rea 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
1.11	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
1.12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees
1.13	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

S. No	Terms of Reference
1.14	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
1.15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given
1.16	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
1.17	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 Wildlifeand copy furnished
1.18	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 alongwith 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
1.19	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 Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered
1.20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)
1.21	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
1.22	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-

S. No	Terms of Reference
	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
1.23	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
1.24	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
1.25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided
1.26	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
1.27	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
1.28	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
1.29	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
1.30	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
1.31	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
1.32	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

S. No	Terms of Reference
	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
1.33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report
1.34	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
1.35	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
1.36	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
1.37	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
1.38	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
1.39	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
1.40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given
1.41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out
1.42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report
1.43	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
1.44	Besides the above, the below mentioned general points are also to be followed:- a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) 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. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for

S. No	Terms of Reference
	environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF 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. g) 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. h) 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. i) 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

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e-Compliance
e-Payments
e-Processing
DSS

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 benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.
2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.
3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.
4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the water bodies like lake, water tanks, etc are located within 1 km of the proposed quarry.
5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.
6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.
7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-

Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.

8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.
9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.
10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.
11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.
12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
14. Quantity of minerals mined out.
    - Highest production achieved in any one year
    - Detail of approved depth of mining.
    - Actual depth of the mining achieved earlier.
    - Name of the person already mined in that leases area.
    - If EC and CTO already obtained, the copy of the same shall be submitted.
    - Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the

mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).

16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,
17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.
19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
20. The Project Proponent shall conduct t he 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.
21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.

24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
28. Impact on local transport infrastructure due to the Project should be indicated.
29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with

GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner

34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detail ed.
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.
38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this

Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

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 cle arly 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.

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

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

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

that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.

10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.

29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
b. All documents may be properly referenced with index, page numbers and continuous page numbering.
c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF& CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -l1013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website http://www.moef.nic.in/ may be referred.
    - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent willtake further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.

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

Annexure-II

ANNEXURE 1

COMMISSIONER OF GEOLOGY AND MINING * GUINDY, CHENNAI-600 032 *

ABSTRACT

Industries - Mines and Quarries – Minor Minerals – Krishnagiri District and Taluk, Jagadevipalayam Village - Grant of quarry lease to quarry Grey Granite - Over an extent of 1.84.0 hectares of patta lands in S.F. Nos.268/1Y (0.46.0 hects), 268/1Z (0.84.0 hects.), 268/2K (0.12.0 hects), 268/1AA (0.42.0 hects.) - Quarry lease application of M/s. M.P. Mining and Leasing Company, Virudhunagar - Sanctioned - Orders – Issued.

Industries (MME.2) Department

G.O. (3D) No.72 **Dated: 01.12.2016**
துன்முகி, கார்த்திகை, 16
திருவள்ளுவர் ஆண்டு 2047

Read :

1. Quarry lease application preferred by M/s. M.P. Mining and Leasing Company, Virudhunagar, Dated: 24.04.2015.
2. From the District Collector, Krishnagiri, Letter Roc.435/2015/ Mines-1, Dated: 16.11.2015.
3. From the Commissioner of Geology and Mining, File No. 330 / MM5 / 2016, Dated: 29.01.2016.
4. Government Letter No.1298/MME.2/2016-1, Dated: 04.07.2016.
5. From the Commissioner of Geology and Mining, Letter No. 330 / MM5 / 2016, Dated: 24.08.2016.
6. From the Chairman, State Level Environment Impact Assessment Authority, Chennai-15, Letter No. SEIAA-TN/F.No.5764/1(a) / EC.No.3904/2016, Dated: 18.11.2016.

******

ORDER:

M/s. M.P. Mining and Leasing Company, Virudhunagar have applied for grant of lease to quarry Grey Granite Over an extent of 1.84.0 hectares of patta lands in S.F. Nos.268/1Y (0.46.0 hects), 268/1Z (0.84.0 hects.), 268/2K (0.12.0 hects), 268/1AA (0.42.0 hects.) of Jagadevipalayam Village, Krishnagiri Taluk and District for a period of 20 years under rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959.

2. The District Collector, Krishnagiri has recommended and forwarded the application of M/s. M.P. Mining and Leasing Company, Virudhunagar to the Government for passing orders.

(v) The applicant firm should fence the lease granted area with barbed wire before the execution of lease deed as follows:-

- The pillar post shall be firmly grounded with concrete foundation of height not less than 2 meters with a distance between two pillars shall not be more than 3 meters.
- The applicant firm shall incorporate the DGPS readings for the entire boundary Pillars of the area and the same should be clearly shown in the mining plan.

(vi) Environment Clearance should be obtained from the State Level Environment Impact Assessment Authority in respect of the subject area as per the orders of the Hon'ble Supreme Court of India dated 27.02.2012 in IA No.12-13/2011 in SLP(C) No.19629/2009 and Office Memorandum No. L.11011 / 47 / 2011-1A II (M) dated 18.05.2012 of the Ministry of Environment and Forests, Government of India.

(vii) The applicant should submit latest Mining due Clearance Certificate, Income Tax Clearance Certificate and Solvency Certificate before the execution of lease deed.

(viii) The lessee shall strictly adhere to the statutory and safety requirements.

(ix) The waste materials should not be dumped in the river and no hindrance should be caused to the flow of water in the river.

(x) 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.

(xi) The lease grantee shall submit scheme of mining; mine closure plan and other statutory requirements within the time stipulated for submission of the above, as per rules.

(xii) The District Collector, Krishnagiri shall obtain a sworn-in-affidavit from the applicant containing the above conditions before execution of lease deed and also ensure that the instructions issued in Government Letter No.12789/MMB2/2002-7, Industries Department, dated 09.01.2003 are complied with.

7. The Collector of Krishnagiri District 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 Commissioner of Geology and Mining.

8. The District Collector, Krishnagiri is also directed to verify and to furnish a certificate to the effect that all lease deed conditions and other conditions mentioned in paragraph 6 above have been compiled with and

duly incorporated in the lease agreement and send it to the Government. The District Collector, Krishnagiri is also instructed to include all the conditions imposed by State Level Environment Impact Assessment Authority, Chennai-15, Letter No.SEIAA-TN/F.No.5764/1(a)/EC.No.3904/2016, dated 18.11.2016.

(BY ORDER OF THE GOVERNOR)

VIKRAM KAPUR
PRINCIPAL SECRETARY TO GOVERNMENT

To
M/s. M.P. Mining and Leasing Company,
No.2/226, Karisalkulam Road,
Vakkanangundu, Kariyapatti Taluk,
Virudhunagar District.

The Commissioner of Geology and Mining, Guindy, Chennai – 600 032.

√ The District Collector, Krishnagiri District.

Copy to:
The Special Personal Assistant to
Hon'ble Minister (Industries),
Chennai - 600 009.
The Industries (OP.II) Department, Chennai – 600 009.
Stock File / Spare Copy.

// FORWARDED BY ORDER //

SECTION OFFICER

01/12/16

COMMISSIONER OF GEOLOGY AND MINING * GUINDY CHENNAI-600 032 *

Annexure

G.O (3D) No.72 , Industries (MME.2) Department, Dated: 1.12.2016

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 seignior age or dead rent whichever is more in respect of the actual quantity of granite removed at the rate prescribed from time to time in Appendix-II of the Tamil Nadu Minor Mineral Concession Rules, 1959.

4. The applicant should keep correct accounts showing the quantities and other particulars of all minerals obtained from the lands permitted to quarry.

5. The applicant should also allow any officer authorized by the District Collector or any other officer authorized by the State Government in this behalf to inspect the area and verify records and accounts and furnish such information under the terms as may be required by them.

6. The applicant shall carry out the quarrying operations in skilful, scientific systematic manner keeping in view the proper safety of the labour conservation of minerals and preservation of environment ecology.

7. The applicant shall allow any officer authorized by the District Collector and Director of Geology and Mining to enter upon the area and inspect for the purpose mentioned in conditions 4 and 6 above and also carry out the directions issued to the satisfaction of the above said authorities.

8. No quarrying activities connected there to shall be done before the execution of the agreement and registration is at the cost of the applicant.

9. No hindrance shall be caused to the adjoining pattadars or public.

10. The applicant should restrict his mining operation strictly within the permitted area as defined in the sketch.

11. The terms and conditions are also subject to such further modifications, deletion and additions alternation as may be ordered by the Government to be included in the agreement to be executed for this purpose.

The applicant should maintain at his cost proper signboards indicating the survey numbers, years of the lease, name of the lease holder and the lease period to the satisfaction of the District Collector, Director of Geology and Mining and maintain it all time at the quarry site.

13. No quarrying shall be done within a distance of 7.5 metres of the boundaries of the permitted area.

14. The applicant should make his own arrangements to form the approach road from the public road to the place of his quarry.

15. The lessee shall strictly adhere to the statutory and safety requirements.

16. The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.

17. That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.

18. That the approval of the mining plan does not in any way imply the approval of the Government in terms of any other provision, Mines and Minerals (Development and Regulation) Act, 1957, or any other connected Laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act 1884, (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Minerals Concession Rules,1959.

19. That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.

VIKRAM KAPUR
PRINCIPAL SECRETARY TO GOVERNMENT

// True copy //

10.2.2017
9.2.2037

SECTION OFFICER

01/12/16

Annexure-III

COMMISSIONERATE OF GEOLOGY AND MINING

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

To
M/s. M.P. Mining and Leasing Company,
No.2/226, Karisalkulam Road,
Vakkanangundu,
Kariyapatti Taluk,
Virudhunagar District – 626 104.

Rc.No.8035/MM4/2022, dated: 30.12.2022

Sir,

Sub: Mines and Minerals – Minor mineral – Grey Granite – Krishnagiri District - Bargur taluk– Jegadevipalayam village – over an extent of 1.84.0 ha of Patta land- S.F.Nos.268/1Y, 268/1Z, 268/2K & 268/1AA – Quarry lease granted to M/s M.P Mining and Leasing Company - Submission of 1st Scheme of Mining for the period 2022-23 to 2026-27 – Recommended and forwarded – approval accorded - regarding.

Ref:
1. Mining plan approved by the Commissioner of Geology and Mining in letter No.330/MM5/2016 dated: 24.08.2016.
2. G.O. (3D) No.72, Industrics (MME.2) Department, dated. 01.12.2016.
3. First Scheme of mining for the period from 2022-23 to 2026-27 submitted by the lessee at district office on 09.10.2021 and 08.03.2022.
4. Deputy Director, (G&M) in Rc.No. 1294/2021/Mines dated 25.11.2022.

*****

Kind attention is invited to the references cited.

2) In the reference 4th cited, M/s M.P Mining and Leasing Company has submitted First Scheme of Mining for approval for the quarry lease granted in G.O. (3D) No.72, Industries (MME.2) Department, dated. 01.12.2016 for quarrying Grey Granite over an extent of 1.84.0 ha of Patta land in S.F.Nos. 268/1Y, 268/1Z, 268/2K & 268/1AA in Jegadevipalam village, Bargur taluk, Krishnagiri District. The period of quarry lease is from 10.02.2017 to 09.02.2037.

3) In the letter reference 4th cited, the Deputy Director (G&M), Krishnaigi district has forwarded the First Scheme of Mining of M/s M.P Mining and Leasing Company., and reported as follows: -

i. The mining plan for the subject lease was approved by the Commissioner of Geology and Mining in letter No.330/MM5/2016 dated 24.08.2016, which came into effect from the date of execution i.e from 10.02.2017.

ii. The lessee has obtained Environment Clearance from SEIAA vide Lr.No.SEIAA/TN/F.No.5764/1(a) /Ec.No 3904 / 2016, dated 18.11.2016.

iii. The lessee had obtained transport permits of 1735.936 cbm (upto 08.04.2021) as against the proposed production of 25440 cbm (for the mining plan period from 2017-18 to 2021-22).

iv. The proposed production is detailed as follows:-

Year	ROM (cbm)	Proposed production @ 40% recovery in cbm
2022-23	8249	3300
2023-24	8249	3299
2024-25	8625	3450
2025-26	8251	3300
2026-27	9007	3603
Total	**42381**	**16952**

v) It is reported that, as per the 1st scheme of mining plan period from 2022-23 to 2026-27 submitted for approval, it is mentioned that the total mineable reserves @ 40 % recovery is about 54158 cbm for a maximum depth of 25 mts and the proposed recoverable reserves @ 40 % during the plan period for five years production of about 16592 cbm is acceptable.

vi) Further it is reported that there is no litigation in the subject area and there is no archaeological monuments situated within the radial distance of 500m and no Reserve Forest situated within the radial distance of 1 km from the subject area and satisfies Rule 36 (1-A) (d) (e) of amended TamilNadu Minor Mineral Concession Rules, 1959.

Finally, the Deputy Director, Geology and Mining, Krishnagiri District has recommended the first scheme of mining for approval.

4) Based on the recommendation of the Deputy Director, Geology and Mining, Krishnagiri District and in exercise of the powers conferred under Rule 18(4) of Granite Conservation and Development Rules, 1999 read with G.O. (Ms) No.87, Industries (MMC.1) Department dated 22.02.2001, the first Scheme of Mining submitted for the period 2022-23 to 2026-27 by M/s M.P. Mining and Leasing Company., is approved for the period from 2022-23 to 2026-27 as detailed below:-

This approval of the First Scheme of Mining is subject to the following conditions in addition to the conditions stipulated in Government Order under reference 2nd cited:

i. This First Scheme of Mining is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.

ii. The approval of the First Scheme of Mining does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act 1957, or any other law including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1986, Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.

iii. This First Scheme of Mining is approved without prejudice to any other order or direction from any court of competent jurisdiction.

iv. Provisions of the Mines Act, 1952 and the Rules and Regulations made there under including submission of notice of opening, appointment of manager and other statutory officials as required under Mines Act, 1952 shall be complied with.

v. Provisions made under Mines and Minerals (Development & Regulation) Act, 1957, MMDR Amendment Act, 2015 and Granite Conservation and Development Rules, 1999 made there under shall be complied with.

vi. This approval of First Scheme of Mining is restricted to the mining lease area only. The mining lease area is as shown on the statutory plan under Granite Conservation and Development Rules, 1999. The Commissionerate of Geology and Mining does not take any responsibility regarding correctness of the boundaries of the lease shown on the ground with reference to the lease map and other plans furnished by the lessee.

vii. If anything is found to be concealed as required by the Granite Conservation and Development Rules, 1999 and Tamil Nadu Minor Mineral Concession Rules, 1959 and proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.

viii. No blasting and transportation of materials in vehicles should be carried out from 6.00 PM to 6.00AM.

ix. A green belt should be constructed to prevent sound and air pollution due to the proposed quarrying activity over an

extent of 1.84.0 ha in S.F.Nos 268/1Y, 268/1Z, 268/2K & 268/1AA in Jegadevipalam village, Bargur taluk, Krishnagiri District by planting at least 250 seedlings all along the boundary the area.

x. The applicant firm should carry out DGPS survey and erection of RCC boundary pillars as per the norms stipulated in the EOI notification in Rc.No.2921/MM4/2019 dated.01.02.2018 and subsequent corrigendum dated 13.08.2019 through empanelled agencies.

xi. No hindrance shall be caused to the adjacent patta and Government poramboke lands if any while quarrying and transportation of granite.

xii. The applicant firm shall strictly adhere to the statutory and safety requirements and the applicant firm should ensure the periodical medical checkup to the quarry workers to safeguard them from quarry related diseases.

xiii. 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.

xiv. The applicant firm shall submit Scheme of Mining, mine closure plan and other statutory requirements within the time stipulated for submission of the above as per rules.

xv. The applicant firm should fence the lease granted area with barbed wire before the execution of lease deed as follows.

- The pillar post shall be firmly grounded with concrete foundation of height not less than 2 mts with a distance between two pillars shall not be more than 3mts.

- The applicant firm shall incorporate the DGPS readings for the entire boundary pillars of the area and the same should be clearly shown in the mining plan.
- A soft copy of the digitized map with DGPS readings should be submitted in the CD to the Deputy Director (G&M), Krishnagiri.

xvi. The boundary stone 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.

xvii. Environment Clearance should be obtained from the competent 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.

xviii. As per rule 12 (v) of Mineral (other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016, the applicant firm shall at their own expense, erect, maintain and keep in repair all boundary pillars.

xix. The conditions mentioned in G.O No. 79 Industries Department dated 06.04.2015 should be complied with.

xx. The applicant firm may use mild explosives during quarrying, and storing of explosives if required, by obtaining valid licence under explosive Acts and Rules.

xxi. If required, the applicant firm should obtain exemption from Director General of Mines Safety if any under rule 106 (2)(b) of Metallurgical Mines Regulations, 1961.

xxii. 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.

xxiii. Child labour should not be engaged in the quarry works and the quarry workers should be enrolled in the insurance scheme through the Labour Department.

xxiv. The lessee should remit the Stamp Duty as per the approved 1st Scheme of Mining plan during the currency of the lease period.

xxv. The earlier instances of irregular / illegal quarrying, if any, shall not be regularized through the approval of this document.

xxvi. The lessee shall remit the penalty / cost of mineral / other dues if any as arrived by the District Collector / Deputy Director (G&M), Krishnagiri district.

xxvii. Non adherence to any condition set-out above, the approval shall be deemed to have been withdrawn with immediate effect.

Encl: Approved First Scheme of Mining.

Commissioner of Geology and Mining

Copy to:

1. The Additional Chief Secretary
   to Government,
   Industries, Investment Promotion
   and Commerce Department, Secretariat, Chennai-9.
2. The Director of Mines Safety,
   3rd Floor, Left wing,
   New Additional Building,
   CGO Complex, Shastri Bhavan,
   Nungambakkam, Chennai-06.
3. The District Collector,
   Krishnagiri District.

Annexure-IV

From

Dr. R. Elangovan, M.Sc., Ph.D.,
Assistant Director,
Dept. of Geology and Mining,
Krishnagiri.

To

M/s. M.P.Mining and Leasing Company,
No.2/226, Karisalkulam Road,
Vakkanangundu, Kariyapatti Taluk, Virudhunagar District.

Roc.No. 435 / 2015/Mines **dated . 16 .04.2026**

Sir,

Sub: Mines and Minerals – Minor Mineral – Grey Granite - Krishnagiri District – Bargur Taluk– Jagadevipalayam Village – Patta land - S.F.Nos.268/1Y (0.46.0), 268/1Z(0.84.0), 268/2K(0.12.0), 268/1AA(0.42.0) - Over an extent of 1.84.0 ha – Quarry lease granted to M/s. M.P.Mining and Leasing Company for a period of 20 years from 10.02.2017 to 09.12.2037 - Details of quarries situated within 500m radial distance requested – Quarry details furnished- Reg.

Ref:
1. G.O.(3D) No.15, Industries (MME-2) Department, dated: 26.05.2014 (Grant of Lease).
2. The Commissioner of Geology and Mining in letter No. 8035/MM4/2022, dated 30.12.2022 (1st Scheme of Mining approval)
3. Representation of M/s. M.P.Mining and Leasing Company, dated 16.04.2026.

****

Kind attention is invited to the references cited above.

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2. A quarry lease has been granted in favour of M/s. M.P.Mining and Leasing Company for quarrying Multi Colour Granite over an extent of 1.84.0 hectares of Patta land in S.F.Nos.268/1Y (0.46.0), 268/1Z(0.84.0), 268/2K(0.12.0), 268/1AA(0.42.0) of Jagadevipalayam Village, Bargur Taluk, Krishnagiri District vide G.O.(3D).No.72, Industries (MME-2) Department, dated 01.12.2016 under Rule 19A of the Tamil Nadu Minor Mineral Concession Rules, 1959 for a period of 20 years from 10.02.2017 to 09.12.2037.

3. 1st Scheme of Mining has been approved by the Commissioner of Geology and Mining, Chennai, vide Rc. No. 8035/MM4/2022, dated 30.12.2022.

4. At this juncture, the lessee, M/s. M.P.Mining and Leasing Company has requested details of granite quarries situated within 500 m radial distance from the subject lease vide letter dated 16.04.2026.

5. As requested by the lessee, details of the quarries situated within 500 m radial distance from the subject lease area is furnished as follows:

I) Details of Existing Quarries

S. No.	Name of the Lessee and address	Village & Taluk	S.F.No.	GO No. & Date	Extent in ha	Period of lease	Remarks
1.	Thiru. S.S.Jamaludeen	Jagadevipalayam & Bargur	372/3A	G.O.3D.No.17 Ind. (MME2) Dept., dated 08.04.2008	1.25.0	22.12.2008 to 21.12.2028	Non-Operation
2.	Thiru.E.Jagadeesan	Jagadevipalayam & Bargur	353/2A1B	G.O.3D.No.42 Ind. (MME2) Dept., dated 20.09.2018	1.56.5	09.11.2018 to 08.11.2038	Operation

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3.	M.P.Granites	Jagadevipalayam & Bargur	266/1, 268/1AC & 268/1AD	G.O.(3D). No .07 Ind. (MME1) Dept., dated 18.01.2016	1.85.5	03.02.2016 to 02.02.2036	Last Permit taken on 08.12.2017
4.	M/s. M.P.Mining and Leasing Company	Jagadevipalayam & Bargur	268/1Y, 268/1Z, 268/2K, 268/1AA	G.O.(3D) No.15, Ind. (MME-2) Dep., dated: 26.05.2014	1.84.0	10.02.2017 to 09.12.2037	1st Scheme of Mining approved
Total					**6.51.0**		

ii) Details of Expired/ Abandoned quarries

S. No.	Name of the Lessee and address	Village & Taluk	S.F.No.	GO No. & Date	Extent in ha	Period of lease
Nil						

iii) Details of other proposal / Applied quarries

S. No.	Name of the Lessee and address	Village & Taluk	S.F.No.	GO No. & Date	Extent in ha	Period of lease
Nil						

Assistant Director,
Dept. of Geology and Mining,
Krishnagiri.

16.04.26

Copy to:

The Chairman,

Tamil Nadu State Environment Impact Assessment Authority,

3rd Floor, Panakal Maligai,

No. 1 Jeenes Road,

Saidapet, Chennai -15.

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Annexure-V ANNEXURE V

தமிழக அரசு

வருவாய்த் துறை

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

COMMISSIONER OF GEOLOGY AND MINING * GUINDY, CHENNAI-600 032 *

மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : பர்கூர்

வருவாய் கிராமம் : ஜெகதேவிபாளையம்

பட்டா எண் : 558

உரிமையாளர்கள் பெயர்

1. பழனிசாமி மகன் ஜி.பி.பன்னீர்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
268	1A	0 - 39.00	1.30	--	--	--	--	619/13-14---- 12-05-2013
268	1AD	0 - 64.00	2.15	--	--	--	--	STR8910/07---- 16-04-2007
268	1S	0 - 4.00	0.15	--	--	--	--	STR8910/07---- 16-04-2007
268	1Z	0 - 84.00	2.85	--	--	--	--	STR8910/07---- 16-04-2007
268	2G	0 - 24.00	0.80	--	--	--	--	STR8910/07---- 16-04-2007
		2 - 15.00	7.25					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் https://eservices.tn.gov.in என்ற இணைய தளத்தில் 31/06/138/00558 /60848 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 01-09-2021 அன்று 04:13:49 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : பர்கூர்

வருவாய் கிராமம் : ஜெகதேவிபாளையம்

பட்டா எண் : **1072**

உரிமையாளர்கள் பெயர்

1. பழனிசாமி மகன் ஜி.பி.பன்னீர்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
268	1AA	0 - 42.00	1.40	--	--	--	--	619/13-14--- -- 12-05-2013
		0 - 42.00	1.40					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **31/06/138/01072/20880** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 01-09-2021 அன்று 04:12:14 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்





தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : பர்கூர்

வருவாய் கிராமம் : ஜெகதேவிபாவையம்

பட்டா எண் : **1212**

உரிமையாளர்கள் பெயர்

1. பழனிசாமி மகன் ஜி.பி.பன்னீர்

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
268	1AC	0 - 46.00	1.55	--	--	--	--	619/13-14--- -- 12-05-2013
268	1Y	0 - 46.00	1.55	--	--	--	--	RTR375/07B--- -- 23-04-2007
268	2K	0 - 12.00	0.40	--	--	--	--	RTR375/07B--- -- 23-04-2007
		1 - 4.00	3.50					

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் **31/06/138/01212/20886** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 01-09-2021 அன்று 04:10:15 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

Annexure-VI

அ-பதிவேடு விவரங்கள்



மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : பர்கூர்

கிராமம் : ஜெகதேவிபாளையம்

1. புல எண்	268	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	1AA	10. மண் தரம்	3
3. பழைய புல உட்பிரிவு எண்.	-1	11. தீர்வை (ரூ - ஹெ)	3.38
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 42.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.40
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1072
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஜி.பி.பன்னீர்

குறிப்பு 1:

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **http://eservices.tn.gov.in** என்ற இணைய தளத்தில் **30880** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்

மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : பர்கூர்

கிராமம் : ஜெகதேவிபாளையம்

1. புல எண்	268	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	1Y	10. மண் தரம்	3
3. பழைய புல உட்பிரிவு எண்	-1	11. தீர்வை (ரூ - ஹெ)	3.38
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 46.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.55
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1212
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஜி.பி.பன்னீர்

குறிப்பு 1:

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **http://eservices.tn.gov.in** என்ற இணைய தளத்தில் **30886** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்

மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : பர்கூர்

கிராமம் : ஜெகதேவிபாளையம்

1. புல எண்	268	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	2K	10. மண் தரம்	3
3. பழைய புல உட்பிரிவு எண்	-2	11. தீர்வை (ரூ - ஹெ)	3.38
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 12.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.40
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1212
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஜி.பி.பன்னீர்

குறிப்பு 1:

1. மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் http://eservices.tn.gov.in என்ற இணைய தளத்தில் 30886 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்



மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : பர்கூர்

கிராமம் : ஜெகதேவிபாளையம்

1. புல எண்	268	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	1Z	10. மன் தரம்	3
3. பழைய புல உட்பிரிவு எண்	-1	11. தீர்வை (ரூ - ஹெ)	3.38
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 84.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	2.85
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	558
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ஜி.பி.பன்னீர்

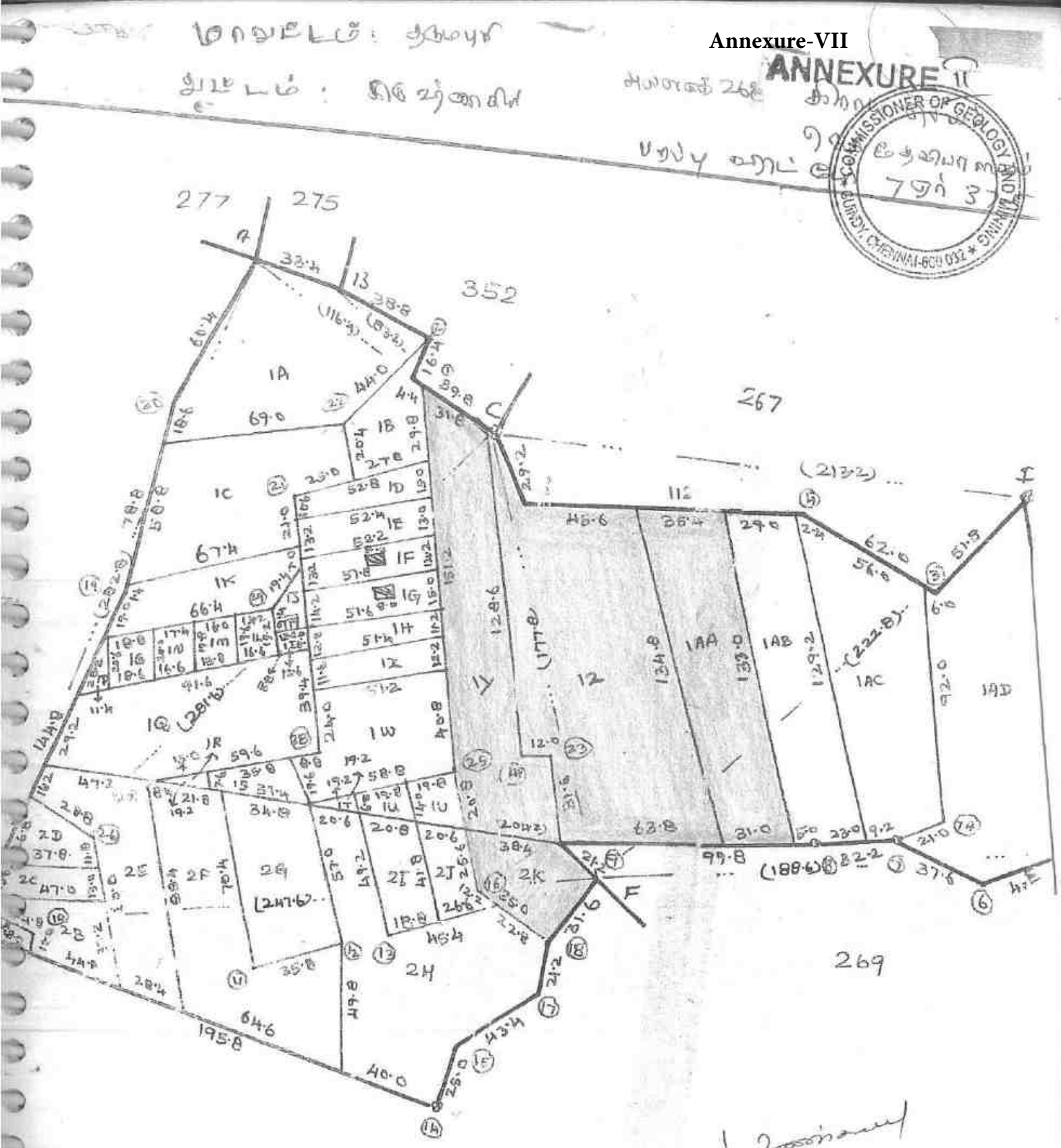
குறிப்பு 1:

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **http://eservices.tn.gov.in** என்ற இணைய தளத்தில் **30848** என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

Annexure-VII

ANNEXURE II

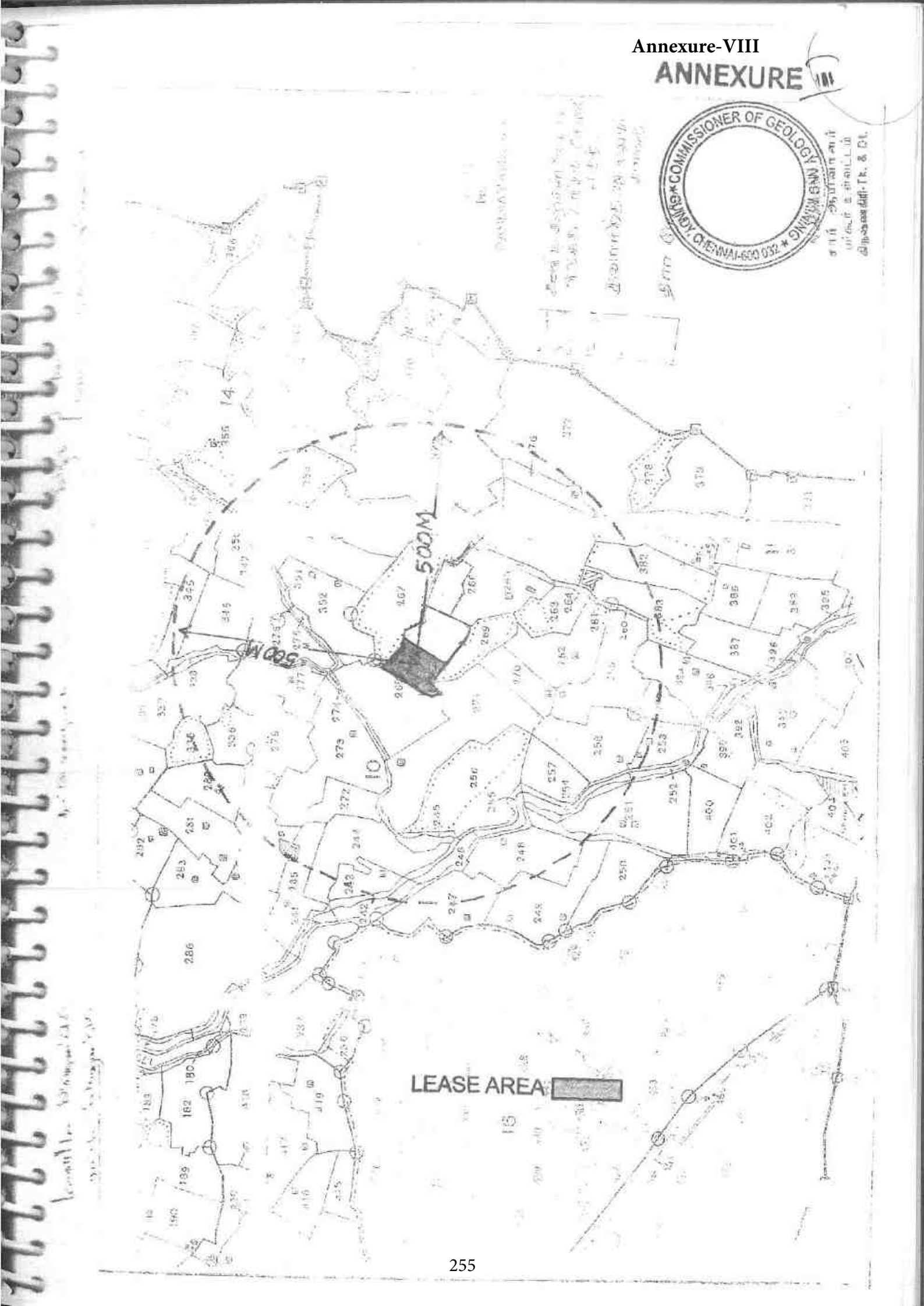
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GUINDY, CHENNAI-600 032



Village Administrative Officer
17, JAGADEVI PALAYAM
Bargur - Tk, Krishnagiri - Dt

Annexure-VIII

ANNEXURE III



ANNEXURE



தமிழ்நாடு தமிழ்நாடு TAMILNADU

₹5000/ T 417726

35061 M.P. mining and leasing Company

26.12.2016 Kariyapatti

B.N. MUNIRAA.
S.V.Lc: 7353/83
Krishnagiri, Tamilnad

APPENDIX V

FORM OF JOINT AGREEMENT FOR QUARRYING AND CARRYING AWAY MINOR MINERALS BY LESSEES IN RYOTWARI LANDS IN WHICH THE MINERALS BELONG TO GOVERNMENT.

G.O (3D) No 72 Industries (MME.2) Department Dated 01.22.2016

THIS AGREEMENT MADE THIS 10th day of February 2017 between Thiru G.P.Panneer, S/o Palanisamy, No. 31, Elango Adigal Street, K.K. Nagar, Madurai -20 Madurai District (hereinafter referred to as "the registered holder" which expression shall where the context so admits include also his heirs, executors, administrators, legal representatives and assigns) of the first part and M/s. M.P. Mining and leasing Company, having its administrative office at. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virdhunagar District. Represented by its Authorised signatory/Partner Thiru G.P. Panneer, S/o Palanisamy, rsiding at No. 31 Elango adigal Street, K.K. Nagar Madurai District (hereinafter refereed to as "the lessee" which expression shall where the context so admits shall include heirs, executors,

Registered holder

DISTRICT COLLECTOR,
KRISHNAGIRI.

FOR M.P. MINING AND LEASING COMPANY

MANAGING PARTNER

LESSEE

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administrators, legal representatives and assigns) of the second part and the Governor of Tamil Nadu (hereinafter referred to as the Government which expression shall where the context so admits shall include his successors in office and assigns) of the third part.

WHEREAS the registered holder holds the lands described in the schedule hereto and intended to leased out to the lessee of the said lands for the purpose of quarrying GREY GRANITE in the said lands and to deposit mining waste in the said lands and has lodged with Collector the lease and accurate map or sketch of the said lands.

AND WHEREAS the lessee or tenant of the registered holder has made application to the Government through the Collector of the district of Krishnagiri (hereinafter referred to as "the Collector") seeking grant of quarrying lease for quarrying GREY 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 WHEREAS, the Government have granted a quarrying lease to the lessee allowed him to commence quarrying operations for GREY GRANITE in the said lands and to deposit mining waste thereon by the lessee in the G.O (3D) No. 72 Industries (MME.2) Department dated 01.12.2016.

AND WHEREAS, the Collector, is prepared to allow the said registered holder or lessee to commence mining operations and to deposit mining waste in or on the said lands described in the schedule for a term of 20 years beginning on 10th day of February 2017 and ending on

the 09th day of February 2037 upon the registered holder and the lessee entering into the agreement here in contained.

AND WHEREAS the lessee has deposited with the collector, the sum of Rs. 20,000/- (Rupees twenty thousand only) vide challan No. Nil dated 26.12.2016 remitted at state bank of India, Krishnagiri as security for the due performace of the covenants, agreements and provisos or damage which may be incurred to the Government by reason of any of the said lands described in the schedule hereto being rendered unfit for cultivation by the mining operations therein or by the deposit of mining waste thereon by either the registered holders or the lessee.

AND WHEREAS, the lessee has at the request of the registered holder and in consideration of such approval by the Collector of the mining operations as herein before recited agreed to join in these presents for the purpose of entering into covenants, agreements and provisos hereinafter contained as surety for the registered holder.

NOW THESE PRESENTS WITNESS and registered holder and the lessee do hereby jointly and severally and each of them both individually hereby covenant and agree with the Government as follows:-

Registered holder

FOR M.P. MINING AND LEASING COMPANY

LESSEE
MANAGING PARTNER
LESSEE

DISTRICT COLLECTOR,
KRISHNAGIRI.

3/18

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.. To carry on mining operations during the said term in a proper and ...man like manner and to deposit mining waste on the lands described in ... schedule hereto and to answer and to account at all reasonable times to ...overnment for all acts and defaults committed by any servants, agents or workmen employed by the registered holders or lessee in carrying on such operations or in making such deposits.

2. To pay on the 09th day of May 2018 next and 09th day on the February day of every succeeding year so long as the operations aforesaid are carried on, upto the Treasury/ State Bank of India at Krishnagiri to the credit of the Government in addition to the land assessment for the time being payable in respect of the said lands, seigniorage on the minerals mined or dead rent which ever is higher for every year at the rates prescribed by the Government from time to time in the Appendix II of the TamilNadu Minor Mineral Concession Rules 1959.

3. To abide by the rules prescribed by the Government from time to time regarding quarrying of minor minerals.

4. To keep correct accounts in such form as the collector shall from time to time required and direct showing the quantities and other particulars of all minerals obtained by the registered holders or the lessee from the said lands and also the number of persons employed in carrying on the said mining operations therein and to prepare and maintain from time to time when so directed by the said collector complete and correct plans of all mines and working in the said lands and to allow any officer thereunto authorised by the Commissioner/ Director of Geology and Mining, Tamil Nadu, from time to time and at all times to examine such accounts and any such plans and to supply and furnish when so required all such information and returns regarding all or any of the matters aforesaid as the Government may from time to time required and direct.

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

6. To forthwith send to the Collector a report of any accident which may occur at or in the said land and also of the discovery therein of any minerals other than GREY GRANITE.

7. Not to claim any remission of assessment in respect of any of the said lands which shall be rendered unfit for surface cultivation by carrying on of any mining operations or by the deposit of mining waste unless thirty times of the assessment thereon has been deducted under proviso 2 here under.

PROVIDED ALWAYS and it is hereby further agreed by and between the parties as follows:-.

1. That it shall be lawful for the registered holder or lessee as the case may be at any time to cease mining operations under these presents provided the registered holder or lessee shall pay to the Government or the Collector the land assessment, cess and seigniorage payable by the registered holder or the lessee under these presents upto to the end of the year in which the registered holder

Registered holder

FOR M.P. MINING AND LEASING COMPANY

LESSEE
MANAGING PARTNER

LESSEE

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DISTRICT COLLECTOR,
KRISHNAGIRI.

4/18

COMMISSIONER OF GEOLOGY AND MINING * ...ADU, CHENNAI-600 032 *

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or the lessee shall cease such mining operations and shall restore the said lands fence or fill in abandoned pits and excavations therein if required by the collector as next hereinafter provided and upon, the registered holder or the lessee so doing these presents shall cease and determine.

2. That in case the registered holder shall relinquish the whole or part of the said lands in case of the expiry or sooner determination of this agreement then and in any such case, the registered holder in the case of relinquishment and the registered holder and the lessee in other cases shall restore said lands or the area relinquished or so much thereof as the collector shall required to be restored to a state fit for cultivation and shall securely and permanently fence or fill in all abondoned pits and excavation therein as the Collector shall require to be so fenced or filled in and incase the registered holder or the lessee shall fail, or neglect any such lands with the registered holder or the lessee be required to restore to a state fit for cultivation or to so fence or fill in any such abandoned pit or excavation which the registered holders or the lessee shall be required to so fence or fill them and in any such case it shall be lawful for the collector to so restore any such lands or as the case may be so fence or fill in any pit or excavation at the expense of the registered holders or lessee and to apply the said sum of Rs 20,000/- (Rupees twenty thousand only) so deposited in or towards the cost of so doing and to deduct from the amount of the said deposit and retain on behalf of the Government a sum equal to thirty times the assessment of the said lands which shall have been rendered unfit for cultivation. If, however the amount of deposit is not sufficient to cover the cost of such restoration or fencing or filling as the case may be or to meet thirty times the assessment of the area rendered uncultivable, it shall be lawful for the Government to recover the balance by resort to Civil Court.

3. That all land assessment, cess and seigniorage fee or dead rent payable under these presents shall be recoverable under the provisions of the Tamil nadu Revenue Recovery Act, 1864, or any subsisting statutory modification thereof, as if the same were arrear of land revenue.

4. That in the event of any breach of the registered holder/ lessee of any of the conditions of these presents, it shall be lawful for the Government to levy enhanced seigniorage subject to the maximum of five times the normal rate or for the collector to give notice in writing to the registered holder/lessee of his intention to cancel these presents whereupon the same shall stand cancelled but without prejudice to any rights which the Government may have against the registered holder/ lessee in respect of any antecedent claim or breach of covenant or condition.

5. That any notice to be given to registered holder/ lessee may be addressed to his last known place of abode and where a notice has been so addressed it shall be deemed to have been duly served for the purpose of these presents.

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

Registered holder

FOR M.P. MINING AND LEASING COMPANY

LESSEE
MANAGING PARTNER

DISTRICT COLLECTOR,
KRISHNAGIRI.

-5/18

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7.The registered holder/lessee shall abide by the conditions laid down in the payment of wages Act, 1936 (central Act Iv of 1936), Minimum Wages Act 1948 and Rules 1950, the Mines Act, 1952 (Central XXX V of 1952) the Indian Explosive Act, 1884. (Central Act IV) and Mines and Mineral (Development and Regulation) Act 1957 and the rules and regulations made thereunder.

8. 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 authority.

9. To put up boundary pillars and to effectively fence off the same demised pieces of land from the adjoining lands and to keep the fences in good repairs and conditions during the period of lease.

10. The 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.

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

12. That this lease may be terminated in respect of whole or any part of the promises by six months notice in writing on either side.

13. The lessee shall erecte fence at his own cost in between the adjacent poramboke lands and the leased out area and if any fault occur the lessee must held responsible for that ant abide by the action taken by the Government.

14. Anticipated seigniorage for the minerals to be quarried from the demised land is Rs. 22,48,89,600/- (Rupees twenty two crores seventy eight lakshs eighty nine thousand and six hundred only) area assessment of Rs. 7,360/- (Rupees seven thousand and three hundred sixty only) and security deposit amount of Rs. 20,000/- were taken into account for the purpose of calculation of stamp duty.

15.The lease period starts from the 10th day of February 2017 and ends on the 9th day of February 2037.

16.The registered holder/ lessee shall put up boundary pillars and to 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.

17. 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 Conditions:

(i) A safety distance of 7.5 meters should be left out for the adjacent patta lands.

(ii) A safety distance of 10 metres should be left out for the adjacent parai poramboke land S.F No. 267/1 lying on the Northern side of the area and for the UAW parai poramboke land in S.F NO. 269 lying on the southern side of the applied area.

Registered holder
FOR M.P. MINING AND LEASING COMPANY
LESSEE
MANAGING PARTNER

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DISTRICT COLLECTOR, KRISHNAGIRI.

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(iii) A safety distance of 50 meters should be left out for the thatched farm house located in S.F No. 269 at a distance of 10 mtrs, on the south eastern side of the applied area.

(iv) No hindrance shall be caused to the adjacent pattadars lands and to the Government parai poramboke lands while quarrying and transportation of granaite.

(v) The lessee shall strictly adhere to the statutory and safety requirements.

(vi) The waste materials should not be demped in the river and no hindrance should be casued to the flow of water in the river.

(vii). 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.

(Viii).The lessee 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.

(ix). The lessee should comply the instructions issued in Government letter No. 12789/MMB2/2002-7 Industries Department dated 9.1.2003.

(8). The lessee should strictly adhere all the conditions imposed by State Level Environment Impact Assessment Authority in their Letter No. SEIAA, TN/F. No.5764/EC/1 (a) 3904/2016, dated 18.11.2015 during the entire lease period without any violations.

22. Conditions:

(1). The date of commencement of the period of lease shall by the date on which the agreement is executed.

(2). The lessee 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 lessee should keep correct accounts showing the quantities and other particulars of all minerals obtained from the lands permitted to quarry.

(4).The lessee should also allow any officer authroized by the District Collector or any officer authorised by him in this behalf or any other officer authorised 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.

Registered holder

DISTRICT COLLECTOR,
KRISHNAGIRI.

7/18

FOR M.P. MINING AND LEASING COMPANY

MANAGING PARTNER

LESSEE

LESSEE

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(5). The lessee shall carry out the quarrying operations in a skilful, scientific systematic manner keeping in view the proper safety of the labour conservation of minerals and preservation of enviornment ecology.

(6). The lessee shall allow any officer authorised by the District Collector and Director of Geology and Mining to enter upon the area and inspect for the purpose mentioned in conditions 3 and 5 above and also carry out the directions issued to the satisfaction of the above said authorities.

(7). No quarrying activites 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 lessee should restrict his mining operations strictly within the permitted area as defined in the sketch.

(10). The lessee should maintain, at his cost proper signboards indicating the survey numbers, years of lease, name of the lesseholder and 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.

(11). No quarrying shall be made within a distance of 7.5 mts of the boundaries of the permitted area.

(12). The lessee should make his own arrangement to form the approach road from the public road to the place of his quarry.

(13). The lessee shall strictly adhere to the statutory and, safety requirements.

(14). The waste materials generated during quarrying operation shall be dumped only in the area granted under lease.

(15). That the mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws or made by the Central Government, State Government or any other authority.

(16). 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.

(17). 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.

Registered holder

R M.P. MINING AND LEASING COMPANY

LESSEE
MANAGING PARTNER

LESSEE

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DISTRICT COLLECTOR,
KRISHNAGIRI.

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COMMISSIONER OF GEOLOGY AND MINING * GUINDY, CHENNAI-600 032 *

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I. i) The Environmental Clearance is granted to mining of grey granite for the production quantity of 25440 Cu.m of Grey Granite for the period of 5 years from the date of execution of the minintg lease period.

ii) The approved quantity of Grey Granite to be quarries = 23440 cbm
iii) Depth of mining permitted = 13 mts.

II. A. Conditions to be complied before commencing quarrying operations:-

(1). The lessee has to obtain land use classification as industrial use before issue/ renewal of mining lease.

(2). NOC from the Standing committee of NBWL shall be obtained, ifprotected areas are located within 10km from the proposed project site.

(3). The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.

(4). A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.

(5)Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.

(6). The proponent shall ensure that First Aid Box is available at site.

(7). The excavation activity shall not alter the natural drainage pattern of the area.

(8). The excavated pit shall be restored by the project proponent for useful purposes.

(9). The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.

(10). The quarrying operation shall be restricted between 7AM and 5 PM.

(11). The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.

(12). A minimum distance of 15 mts. From any civil structure shall be kept from the periphery of any excavation area.

(13). Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.

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LESSEE

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(14). The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.

(15). 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.

(16). Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.

(17). The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.

(18). Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.

(19). A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.

(20). The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.

(21). The following measures are to be implemented to reduce Air Pollution during transportation of mineral

(i). Roads shall be graded to mitigate the dust emission.

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

(22). The following measures are to be implemented to reduce Noise Pollution

(i). Proper and regular maintenance of vehicles and other equipment.

(ii). Limiting time exposure of workers to excessive noise.

(iii). The workers employed shall be provided with protection equipment and earmuffs etc.

(iv). Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.

(23). Measures should be taken to comply with the 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.

(24). Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.

Registered holder

FOR M.P. MINING AND LEASING COMPANY

LESSEE/MANAGING PARTNER

LESSEE

DISTRICT COLLECTOR,
KRISHNAGIRI.

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

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

(27). The following measures are to be adopted to control erosion of dumps:-

i. Retention/ toe walls shall be provided at the foot of the dumps.

ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.

(28). Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.

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

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

(31). Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be letinto 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 beof 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.

(32). 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.

(33). No tree-felling shall be done in the leased area, except only with the permission from competent Authority.

(34). To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.

(35). It shall be ensured that the total extent of nearby quarries located within 500 meter radius from the periphery of this quarry is not exceeding 25 hectares within the mining lease period of this application.

Registered holder
FOR M.P. MINING AND LEASING COMPANY
MANAGING PARTNER

LESSEE

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(36). It shall be ensured that there is no habitation is located within 500 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site

(37). Ground water quality monitoring should be conducted once in 3 Months.

(38). Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.

(39). Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF,GOI.

(40). Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF , GOI.

(41). Bunds to be provided at the boundary of the project site.

(42). The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.

(43). At least 10 Neem trees should be planted around the boundary of the quarry site.

(44). Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.

(45). The Project Proponent shall ensure a minimum of 2.5 of the annual turnover will be utilized for the CSR Activity

(46). The Project Proponent shall provide solar lighting system to the nearby villages

(47). The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.

(48). Rainwater shall be pumped out Via Settling Tank only

(49). Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.

(50). As per MoEF & CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry &Wild Life angle including clearance from obtaining committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.

(51). The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.

COMMISSIONER OF GEOLOGY AND MINING * GUINDY, CHENNAI-600 032 *

Registered holder
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(52) Safety requipments to be provided to all the employees.

(53) Safty distance of 50 mts has to be provided incase of railway reservoier canal/ Odai.

(54) The Assistant / Deputy Director Department of Geology and Mining shall ensure that the proponent has engaged the blaster with valid Blasting license / certificate obtained from the competent authority before execution of mining lease.

(55) The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.

(56) The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.

(57) The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh case before execution of mining lease.

(58) The proponent has to display the name board at the quarry site showing the details of proponent, leased period, extent etc., with respect to the existing activity before execution of mining.

(59) Heavy earth machinery equipments if utilized, after getting approval from the competent authority.

(60) The Proponent has to carry out the Resistivity survey through aytgirused 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.

B. 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.

Registered holder
FOR M.P. MINING AND LEASING COMPANY

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(5). Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.

(6). Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.

(7). A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.Registered holders.

(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.

Registered holder
FOR M.P. MINING AND LEASING COMPANY
MANAGING PARTNER

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(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.

24. The conditions imposed by the TNPCB in the consent order should be adhered without any ommission.

25. The Environmental clearance and the consent of the TNPCB should be renewed periodically without any lapse.

26. If any illicit quarrying is found in the area Overn an extent of 1.84.0 Hecters in S.F. Nos. 268/14, 17, 2K and 1AA of Dasadevi Palayam Village, Bargur Taluk, Krishnagiri District before the date of execution of lease deed, this lease deed is liable to be cancelled and criminal action will be initiated.

Registered holder
FOR M.P. MINING AND LEASING COMPANY
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LESSEE

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27. If the quarry area is situated within 10 km distance from any protected areas NOC from the Standing committee of NBWL should be obtained before commencing the quarry operation.

28. If the lease holder wants to quarry more than the quantity permitted in the environmental clearance within the lease period, modified mining plan / scheme and Environment Clearance for the additional quantity should be submitted.

THE SCHEDULE

TALUK : BARGUR
VILLAGE : JAGADEVIPALAYAM

Sl. No.	Survey Field number	Extent Leased out in Hectares	Boundary			
			North S.F No.	East S.F No.	South S.F No.	West S.F No.
1.	268/1Y	0.46.0	352/6D	352/6 (p), 268/1z	268/2K	268/1B, 1D,1E, 1F, 1G, 1H, 1X, 1W, 1U, 2J, 2K
2.	268/1Z	0.84.0	267/1	268/1AA	269	268/1Y
3.	268/2K	0.12.0	268/1Y	269,271/4A1	268/2H	268/2J,2H
4.	268/1AA	0.42.0	267/1	268/1AB	269	268/1Z
	Total	1.84.0				

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COMMISSIONER OF GEOLOGY AND MINING CHENNAI-600 032

IN WITNESS where of Thiru G.P.Panneer, S/o Palanisamy, No. 31, Elango Adigal Street, K.K. Nagar, Madurai -20 Madurai District. "the registered holders", M/s. M.P. Mining and leasing Company, having its administrative office at. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virdhunagar District. Represented by its Authorised signatory/Partner Thiru G.P. Panneer, S/o Palanisamy, rsiding at No. 31 Elango adigal Street, K.K. Nagar Madurai District "the Lessee" and Thiru **C. KATHIRAVAN**, I.A.S the Collector of Krishnagiri District acting for and on behalf of and by the order and direction of the Governor of Tamil Nadu have hereunto set their hands.



17/12

Registered holder

FOR M.P. MINING AND LEASING COMPANY

MANAGING PARTNER

LESSEE

DISTRICT COLLECTOR,
KRISHNAGIRI.

Signed by the above named

in the presence of

1) R. Sundaramoorthi
13/1 K.K. Complex,
Kallapatti, Aruppukottai Tk.
Virudhunagar Dt.
Tamilnadu.

2. S.N. Chaithanya
17.55-TNHB
Phase-II
Krishnagiri-635001

Signed by the above named

in the presece of

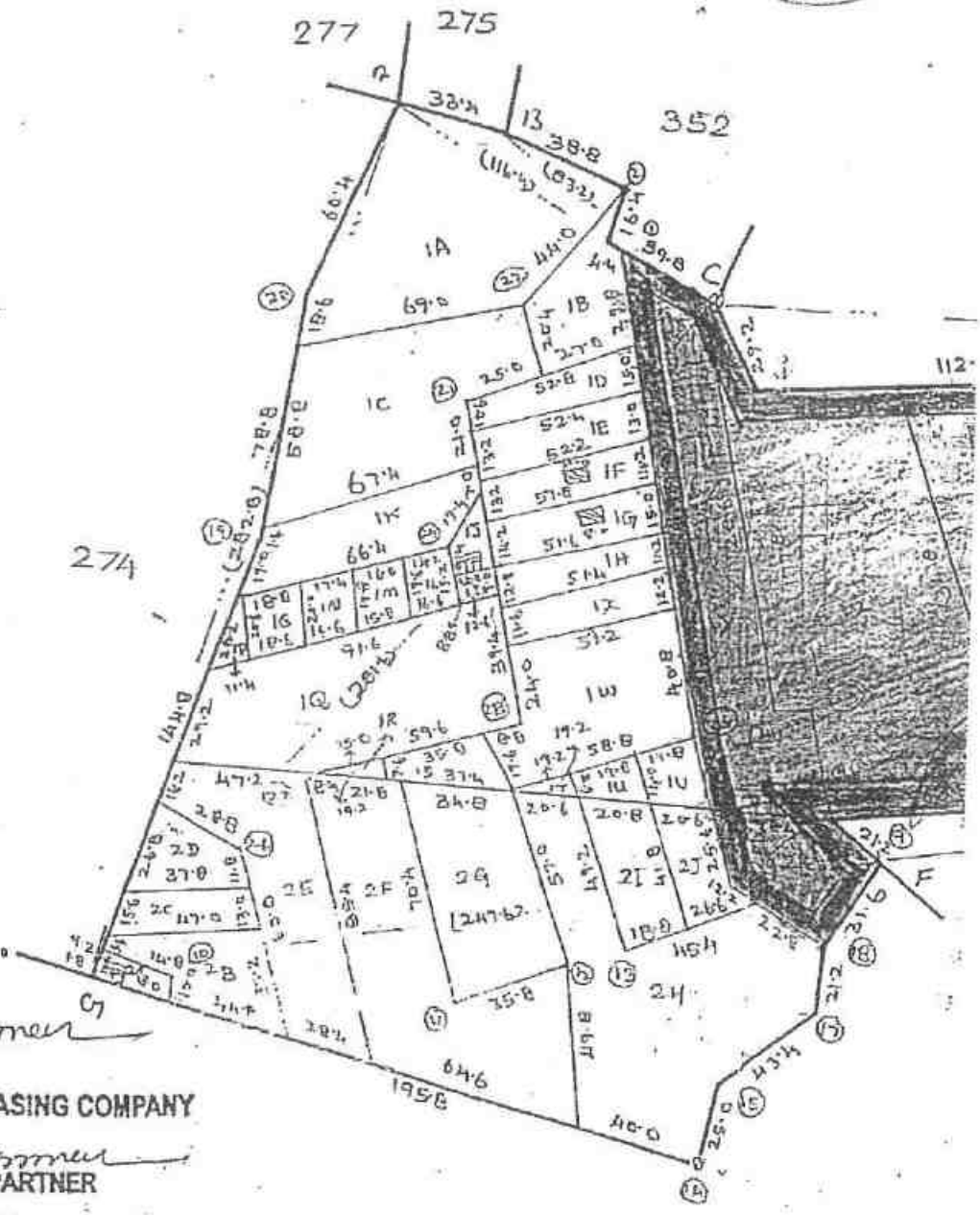
DEPUTY DIRECTOR
Department of Geology and Mining
Collectorate, Krishnagiri.

(S. Rajakumaran)
ASSISTANT GEOLOGIST
O/o. the Dept. of Geology and Mining,
Collectorate, Krishnagiri.

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COMMISSIONER OF GEOLOGY AND MINING
CHENNAI-600 032

FOR M.P. MINING AND LEASING COMPANY

MANAGING PARTNER

LESSEE

Village Administrative Officer,
138, Jagadevi Palayam,
Krishnagiri - (Tk & Dt)

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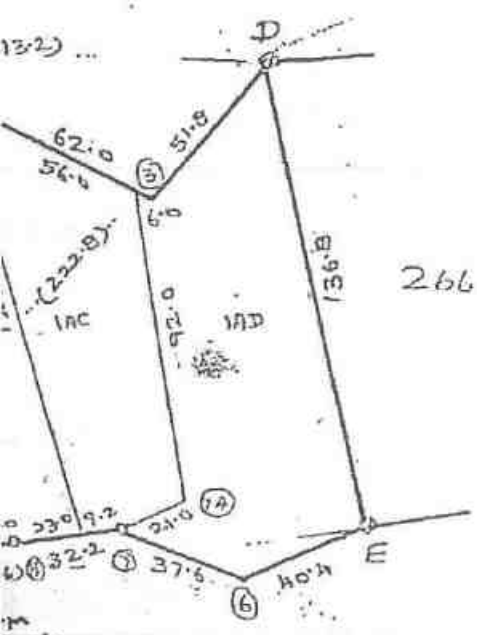
C. Radhakrishnan

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Area Lying out of Survey Sum

Area Available for Granting



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CERTICATE UNCER SECTION 42 OF STAMP ACT

S.No. 64 of 2017

I hereby certify that a sum of Rs 22,500/- (Rupees Twenty two Thousand Five Hundred only) on account of proper / deficit stamp duty has been levied under section 41 of the Stamp Act in respect of this instrument from PANNEER residing at K.K. Nagar Madurai

Bargur
Date:17/02/2017

Signature of Sub Registar & Collecto
Under Section 41 of the Indian Stamp Act.

COMMISSIONER OF GEOLOGY AND MINING * GUINDY, CHENNAI-600 032 *

Presented in the Office of Sub Registar of Bargur and fee of Rs. 20300 paid between hours of 9- and 3 on 17/02/2017 by

1 Left Thumb





M.P. MINING AND LEASING COMPANY
Partner

Additions As per the recitals of the document

Execution Admitted by

1 Left Thumb





M.P. MINING AND LEASING COMPANY
Partner

Additions As per the recitals of the document

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Endorsement Sheet no. 1 of 2

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n Admitted by

I have satisfied my self as to the execution of the Instrument by Thiru KATHIRAVAN, I.A.S who is exempted from Personal Appearance under Section 88(1) of the Registration Act.

S/o

DISTRICT COLLECTOR KRISHNGIRI

Identified by

1 [signature] Name : 1 P. RAJENDRAN S/o L. Perumal, Kamaraj nagar, Kgi.

2 [signature] Name : 2 R. Senthil Kumar S/o Ramathan Pachiammal

17th day of February 2017

Sub Registar
Bargur

Registered as No 295 of 2017 of Book I

Date : 17/02/2017 Sub Registar
Bargur

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Endorsement Sheet no. 2 of 2

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From

Thiru. C. Kathiravan, I.A.S.,
District Collector,
Krishnagiri.

To

The Sub Registrar,
Bargur.

COMMISSIONER OF GEOLOGY AND MINING SURVEY CHENNAI-600 032

Roc.No.435/2015/Mines-1 Dated: 14.02.2017

Sir,

Sub : Mines and Minerals – Minor Mineral – Krishnagiri District - Bargur Taluk - Jagadevipalayam Village – patta land - quarry lease for Grey granite granted in SF.No.268/1y etc., over an extent of 1.84.0 Hect. to M/s.M.P.Mining and Leasing Company, No.2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District - Lease agreement sent for registration – regarding.

Ref : G.O.3(D) No.72 Ind. (MME2) Department dated 1.12.2016

-o0o-

In the order cited, the Government have granted a quarry lease for Grey Granite over an extent of 1.84.0 Hect. in S.F.Nos.268/1Y (0.46.0), 268/1Z (0.84.0), 268/2K (0.12.0), 268/1AA (0.42.0) in Jagadevipalayam village, Bargur Taluk Krishnagiri District for a period of Twenty year from the date of execution of lease deed under Rule 19-A of the Tamil Nadu Minor Mineral Concession Rules, 1959 to M/s.M.P.Mining and Leasing Company, No.2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District. The lease agreement was executed on 10.02.2017 and the lease period is twenty years from 10.02.2017 09.02.2037.

The lessee M/s.M.P.Mining and Leasing Company, No.2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District has been instructed to register the lease agreement at the Sub-Registrar, Office at Bargur.

In this connection, I am to inform you that the stamp duty worked out on the basis of the average seigniorage fee calculated on the average production of 5,480 CBM of Grey granite during the entire lease period of twenty years and security deposit remitted by the lessee is as detailed below :

Seigniorage fee for 5,088 CBM of Grey granite @ Rs.2210/- per CBM of Grey granite	:	Rs.22,48,89,600 /-
Security Deposit	:	Rs. 20,000/-
Area Assessment	:	Rs. 7,360/-
Total	:	Rs. 22,49,11,810/-
Stamp duty at the rate of 1%	:	Rs. 22,49,170/- or 22,50,000
Value of Stamp papers.	:	Rs. 5,000/-
Demand draft Nos.069386, 069385 and 069384 drawn in favour of Sub-Registrar, Bargur towards remaining portion of the stamp duty		Rs. 22,45,000/-

The lease deed had been executed in the stamp paper for the value of Rs.5,000/-. The executed lease deed along with three demand drafts for the value of Rs.22,45,000/- (Demand draft No.890693868 for Rs.4,45,000 drawn at Indian

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Overseas Bank, Madurai on 09.02.2017, D.D.No.890593850 for Rs.9,00,000 drawn at Indian Overseas Bank, Madurai on 09.02.2017 and 890693843 for Rs.9,00,000/- drawn at Indian Overseas Bank, Madurai on 09.02.2017) in favour of the Sub-Registrar, Bargur is herewith enclosed towards difference in stamp duty. I request you to register it at the cost of the lessee and to send the registered lease deed through the lessee.

I wish to inform that the District Collector is exempted from personal appearance for the Registration under section 88(1) of the Indian Registration Act, 1908.

Encl : Executed lease deed.

For Collector
Krishnagiri.

Copy to
M/s.M.P.Mining and Leasing Company,
No.2/226, Karisalkulam Road,
Vakkanangundu,
Kariyapatti Taluk,
Virudhunagar District

DOCUMENT
No. 805/2017
Par ... 28.....
Tot. ... 25.
Sub Registrar

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COMMISSIONER OF GEOLOGY AND MINING * GUINDY, CHENNAI-600 032 *

M.P. MINING AND LEASING COMPANY

Partner

DOCUMENT
No: 295/2017
Sub-Registrar

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India Driving Licence(Tamilnadu)
Form 7
TN24 20120004909
RAJENDRAN P
PERUMAL
2416 A/1 PUTHUKKUTTAI VILL
DODDAKOVATHI PO
KRISHNAGIRI TK&DT
15/06/1975




ELECTION COMMISSION OF INDIA
IDENTITY CARD
YQY1034248
Elector's Name : Sri Karthikeyan
Father's Name : Ramanathan
Sex : Male
Date of Birth : 12/11/1994


YQY1034248
Address : 3-54A/-
Rest Nagar
Pochampalli
Facsimile Signature of
Electoral Registration Officer

P.Sri

DOCUMENT
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Page No:.....2.....
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Sub-Registrar

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Government of Tamil Nadu

Registration Department

Acknowledgement

COMMISSIONER OF GEOLOGY AND MINING * GUINDY, CHENNAI-600 032 *

Reference Details	
SRO Name	Bargur
Application No.	S01GPP1AA201702170000478
Transaction No.	REG20170217000621
Transaction Date	17/02/2017

Application Details	
Applicant Name	G P PANNEER
Service Type	Document Registration (New) in SRO
Registration Fee	20100.00
IP Camera Fee	50.00

Payment Details	
Name Of the Bank	SBI
Bank Ref. No.	IK00CITQN9
Payment Mode	Online
Amount Paid	Rs.20150.00
Payment Date	17/02/2017

Printed On :17/02/2017 10.56 AM

DOCUMENT
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Pages:.....25.....
Fees:.....25.
Sub-Registrar

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ANNEXURE

COMMISSIONER OF GEOLOGY AND MINING



தமிழ்நாடு தமிலனாடு TAMILNADU

AB 842237

M/s. MP MINERALS AND LEASING COMPANY,
VAKKANAKUNDU, KARIYAPATTI TALUK.

RECONSTITUTED PARTNERSHIP DEED

This Deed of Partnership Reconstitution is made on 12th Day of December, 2013 between:-

1. Mr.G.P.PANNEER Son of Mr.M.Palanisamy aged about 49 years, residing at No.31, Elangovadigal Street, K.K.Nagar,Madurai – 625 020, Tamilnadu, hereinafter called as the Continuing Partner;

2. Mrs.N.MADHAVI Wife of Mr.G.P.Panneer, aged about 40 years, residing at No.31, Elangovadigal Street, K.K.Nagar, Madurai - 625020, Tamilnadu hereinafter called as the Continuing Partner; (Hereinafter collectively known as the parties of the FIRST PART) AND

Parties of the First Part	Parties of the Second Part
1) G.P.Panneer	3)
2) N. Madhavi	



COMMISSIONER OF GEOLOGY AND MINING

தமிழ்நாடு தமிலநாடு TAMILNADU

AB 842238

3 Miss.P.YOGADHARSHNI, Daughter of Sri.G.P.Panneer, aged about 19 years, residing at No.31,Elangovadigal Street, K.K.Nagar, Madurai – 625 020, Tamilnadu hereinafter called as the Incoming Partner:

Parties of the First Part

1)

2)

Parties of the Second Part

3)

17



COMMISSIONER OF GEOLOGY AND MINING

தமிழ்நாடு तमिलनाडु TAMILNADU

X 645263

WHEREAS the parties of the FIRST PART were carrying on the partnership business of manufacture / trade by cutting / purchase and sale of rough dimensional blocks of granite and other line or lines under the name and style of "M/s. MP MINING AND LEASING COMPANY" according to a duly executed Deed of Partnership dated 18th Day of January, 2013.

AND WHEREAS the parties of the FIRST PART herein are desirous of admitting the parties of the SECOND PART herein as Incoming partners of this firm.

Parties of the First Part

1)

2)

Parties of the Second Part

3)



COMMISSIONER OF GEOLOGY AND MINING

தமிழ்நாடு तमिलनाडु TAMILNADU

X 645264

AND WHEREAS the above parties of the FIRST PART & SECOND PART are desirous of modifying, incorporating and amending certain clauses of the Deed of Partnership and in order to put them in writing this new instrument of Partnership Deed is executed incorporating the changes in terms and conditions mentioned below:-

NOW THIS DEED OF RECONSTITUTED PARTNERSHIP WITNESSETH AS FOLLOWS:-

1. It is agreed that this Deed of Reconstitution shall become effective as and from 12th Day of December, 2013.

Parties of the First Part

1)

2)

Parties of the Second Part

3)



2. It is agreed between the parties that the business shall be continued by the Continuing Partners & Incoming Partners under the name and style of "M/s. MP MINING AND LEASING COMPANY" according to the wishes of the Continuing Partners' & Incoming Partner and/or such other name or names as the parties may mutually agree from time to time.

3. The Registered Office of the firm shall continue to be situated at 2/229 Vakkanakottai, Kariapatty Taluk, Virudhunagar District – 626 106. However with the mutual consent of the partners herein this may be shifted to any other place. As and when necessary

4. The main business of the firm shall continue to be Manufacture / Trade by cutting / purchase and sale of Rough dimensional blocks of granites in and outside India. The firm shall carry on the execution of raising contracts for excavation of granite stones and civil contract work or labour etc., for Central and State Government Department and others. The firm can also carry on any business as its subsidiary or ancillary business to the attainment of its main business or businesses as may be mutually decided by the parties from time to time.

The firm can acquire obtain on lease under licence or assignment or otherwise secure lands of every description and mines and running rights quarries, and to mine, win, exercise, undertake and carry on the business of mining in all its branches, if any. To carry on the work of raising agent for a fixed sum agreed by an written agreement from time to time. To manufacture polished, semi-polished products and to do purchase and sale of mining lands and also install polishing unit for processing.

5. The duration of the partnership shall be at WILL.

6. The parties of the SECOND PART, i.e. the Incoming Partner shall contribute Rs. 50,000/- each towards their Capital Contribution as on the date of this agreement. The amount standing to the credit of the capital / current accounts of the respective partners as at beginning of the every accounting year shall be treated as the capital balance of the respective partners. The interest on capital shall be calculated on this balance in accordance with clause no.7.

Parties of the First Part

1)

2)

Parties of the Second Part

3)



13. The firm has power to borrow monies from the banks and other financial institutions or from private parties at such rates of interest as may be agreed upon by the parties for the proper conduct of the firm.

14. All assets purchased out of the funds of the firm are treated as the assets of the firm in its accounts and shall belong to the firm irrespective of the fact that such assets stand in the individual names of any one of the partners. Contracts taken in the individual names of the parties referred to above shall also be the business of the firm.

12. The partners shall also have the right to convert or bring in the assets standing in their individual names into the business of the firm as their initial or additional capital contribution, as may be agreed by the parties.

13. Licenses and permits necessary for carrying on the business of the firm may stand either in the name of the firm or in the name of any one of the partners.

14. Proper books of accounts shall be maintained and the books so maintained shall be closed on 31st March of every year to ascertain the profit or loss of the firm. The profit or loss arrived after considering all the expenses including interest on capital of partners and remuneration payable if any to partner, shall be divided by the following proportion:-

FIRST PART	Mr.G.P.Panneer	-	55%
	Mrs.N.Madhavi	-	25%
SECOND PART	Miss.P.Yogadharshni	-	20%
	Total	-	100%

15. No partner shall under any circumstances transfer or encumber his share in the firm without the previous consent of the other partners in writing.

16. All the parties herein can carry on any business anywhere and this firm shall not have any right or liability on such other business.

Parties of the First Part

1)

2)

Parties of the Second Part

3)

27

17. All disputes which may arise during the continuance of the [illegible] or afterwards between the partners shall be referred to one or more arbitrators to be selected by the parties themselves whose decision shall be final and binding on the parties.



18. Any of the clauses may be altered, modified, substituted or new clauses added to this partnership deed with the consent of all the partners and such clauses though may not be embodied in the deed it shall have the same effect as if it were contained as a clause of this deed and the provisions of the Indian Partnership Act, 1932 shall apply in all matters not provided herein.

IN WITNESS WHEREOF the parties hereto have signed this deed in token of their acceptance of the above terms and conditions.

I) PARTIES OF THE FIRST PART
(Continuing Partners)

1. [illegible]
(G.P Parthiban)

2. [illegible]
(N.Madhavi)

II) PARTIES OF THE SECOND PART
(Incoming Partner)

3. [illegible]
(P.Yogadharshni)

WITNESSES:

1. S. A. NAGARAJAN.
S Nagaraj
3.97, 8th East Street
K. K. Nagar Madurai

2. G. VELLAICHAMY
Veera
3/421 Thathampatti
Kattangudi Post
Arappukottai (Tk)
Virudhunagar (Dt)

ANNEXURE XA

COMMISSIONER OF GEOLOGY AND MINING * GUINDY, CHENNAI-600 032 *

FORM C (See Rule 9 (a)
GOVERNMENT OF TAMILNADU
ACKNOWLEDGEMENT OF REGISTRATION OF - FIRM

The Registrar of Firms Virudhunagar hereby acknowledges Receipt of the statement prescribed by section 58(1) of the Indian partnership Act1932
The statement has been filed and the name of the firm.

"MP MINING AND LEASING COMPANY"

Has been entered in the Register of Firms as

No.196 of 2014

Dated the 26th day of May 2014.

THE SEAL OF THE REGISTRAR OF FIRMS

26/5/14

Registrar of Firms
VIRUDHUNAGAR

26/5/14

ANNEXURE XI

COMMISSIONER OF GEOLOGY AND MINING * GUINDY, CHENNAI-32 *

NON JUDICIAL

TAMIL NADU

M.

JOAB 316195

96 MINES

3 JAN 2014

CODICIL

Further to our Partnership deed dated 12th December 2013, entered between Mr.G.P.PANNEER, Mrs.N.MADHAVI and Miss.P.YOGADHARSHNI it is further resolved to authorize Mr. G.P.PANNEER to open and operate current Account in M/s. INDIAN OVERSEAS BANK or Any other bank in favour of the firm. The account will be solemnly operated by Mr. G.P.PANNEER in his capacity as Partner.

And also authorized Mr.G.P.PANNEER to sign all GOVERNMENT DOCUMENTS LIKE DIRECTOR OF MINES AND GEOLOGY, SALES TAX, INCOME TAX, CENTRAL EXCISE, AND ETC in favour of the firm.

1. (N.MADHAVI)

2. (G.P PANNEER)

3. (P.YOGADHARSHNI)

ANNEXURE XII

COMMISSIONER OF GEOLOGY AND MINING * GUINDY, CHENNAI-600 032 *

இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India

பதிவு அடையாளம் / Enrollment No : 2193/11107/32684

To
பன்னீர் பழனிசாமி
Panneer Palanisamy
S/O: Palanisamy
NO 31 B,NAGO ADIKAL STREET
K K NAGAR
Alanandur
Gandhi Nagar (po)
Melavasi North Madura
Tamil Nadu 625020
9791696994

ME1703165B0FH

உங்கள் ஆதார் எண் / Your Aadhaar No. :

6881 6133 0075

எனது ஆதார், எனது அடையாளம்

இந்திய அரசாங்கம்
Government of India
பன்னீர் பழனிசாமி
Panneer Palanisamy
தந்தை பழனிசாமி
Father : Palanisamy
பிறந்த நாள் / DOB : 21/06/1963
ஆண்கள் / Male

6881 6133 0075

எனது ஆதார், எனது அடையாளம்

.10.2021

OMPANY,

TALUK,

1AA,

17

28' 33.04"N

21' 05.59"E

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TION IN THIS
) THE
THE LEASEMAP

ON

சான்று

Annexure-XI

கிருஷ்ணகிரி மாவட்டம் பர்கூர் வட்டம் பர்கூர் உள்வட்டம் 17 ஜெகதேவி பாளையம் கிராம ஜெகதேவி கிராம ச. எண் 268/1Y 268/1Z, 268/1AA, 268/2K வரை படி ச. எண்களில் மு பட்டா எண் 1212, 558 அதில் பட்டா எண்களில் 300 சி தொகுதிக்கு தேவையான புகைபட சின்னம், மாடம், கோவில், இரும்பு பாதை ஆறு எதுவும் இல்லை மற்றும் உயர் மின் அழுத்தம் மின் கம்பம் எதுவும் இல்லை என சான்று அளிக்கிறேன்

11/5/2016

Birth & Death Registrar and
Village Administrative Officer,
17, JAGADEVI PALAYAM,
Bargur-Tk, Krishnagiri-Dist.

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M/s. M.P. Mining and Leasing Company, Grey Granite Quarry over an extent of 1.84.0 Ha in S.F. No: 268/1Y, 268/1Z, 268/1AA and 268/2K, Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.



General View of the Proposed Area

11/5/2026
Birth & Death Registrar and
Village Administrative Officer,
17, JAGADEVI PALAYAM,
Bargur-Tk, Krishnagiri-Dist.

Scanned with OKEN Scanner

Dr. S. KALYANASUNDARAM ,I.F.S.(Retd.)
CHAIRMAN

STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY – TAMIL NADU
3rd Floor, Panagal Maaligai,
No.1 Jeenis Road, Saidapet,
Chennai-15.
Phone No.044-24359974
Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/F.No.5764/1(a)/ EC.No: 3904/2016 dated: 18.11.2016

To
M/s. M.P. Mining and Leasing Company
S.No.2/226, Karisalkulam Road
Vakkanangundu
Kariyapatti Taluk
Virudhunagar District

Sir,

Sub: SEIAA-TN – Proposed **Grey Granite** quarry located at S.F.No 268/1Y, 1Z, 2K & 1AA, Jagadevipalayam Village,Krishnagiri Taluk, Krishnagiri District- issue of Environmental Clearance – Reg.

Ref: 1. Your Application for Environmental Clearance dt: 26.09.2016
2. Minutes of the 82th SEAC held on 21.10.2016 & 22.10.2016
3. Minutes of the SEIAA meeting held on 18.11.2016

Details of Minor Mineral Activity:-

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

1	**Name of Project Proponent and address**	M/s. M.P. Mining and Leasing Company S.No.2/226, Karisalkulam Road Vakkanangundu Kariyapatti Taluk Virudhunagar District
2	**Location of the Proposed Activity**	
	Survey Number	268/1Y, 1Z, 2K & 1AA
	Latitude and Longitude	12°28'25.42"N to 12°28'33.04"N 78°21'00.16"E to 78°21'05.59"E
	Village	Jagadevipalayam
	Taluk	Krishnagiri

CHAIRMAN
SEIAA-TN

	District	Krishnagiri
3	**Proposed Activity**	
	i. Minor mineral	Grey Granite
	ii. Mining Lease Area	1.84.0 Ha
	iii. Approved quantity	25440 cu.m of Grey Granite
	iv. Depth of Mining	13m (1m Gravelly soil + 2m Weathered rock+10m Grey Granite)
	v. Type of mining	Opencast Semi Mechanized Method
	vi. Category(B1/B2)	B2
	vii. Precise area communication	Lr.No. 1298/MME.2/2016-1 dated: 04.07.2016 by the Additional Chief Secretary, industries (MME.2) Department, Chennai
	viii. Mining plan approval	Commissioner of Geology & Mining Lr.No. 330/MM5/2016 dated: 24.08.2016
	ix. Mining lease period	5 Years
4	**Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:-**	Not attracted. Affidavit furnished
5	**Man Power requirement per day:**	45 Employees
6	**Utilities**	
	i. Source of Water :	Water vendors/Borehole
	ii. Quantity of Water Requirement in KLD:	
	a. Domestic b. Industrial c. Green Belt & Dust Suppression	0.3KLD } 0.7KLD
	iii. Power Requirement: a. Domestic Purpose b. Industrial Purpose	 TNEB 67480 Litres of HSD
7	**Cost** i. Project Cost ii. EMP Cost	 Rs.51.50 Lakhs Rs.2.75 Lakhs
8	**Public Consultation:-**	Not required as per O.M. dated 24.12.2013 of MoEF, GoI.
9	**Date of Appraisal by SEAC:-** **Agenda No:**	21.10.2016 & 22.10.2016 82-02
10	**Date of Review/Discussion by SEIAA and the Remarks:-** The proposal was placed before the SEIAA in its **201st** Meeting held on **18.11.2016** and the Authority after careful consideration, decided to grant environmental clearance to the said project Mining of Grey 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 Grey Granite for the production quantity of 25440 cu.m of Grey Granite for the period of 5 Years from the date of execution of the Mining Lease period.**	

CHAIRMAN
SEIAA-TN

Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
   I. The project has been accorded Environmental Clearance.
   II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
   III. Environmental Clearance may also be seen on the website of the SEIAA.
   IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 15 mts. From any civil structure shall be kept from the periphery of any excavation area.
14. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.

CHAIRMAN
SEIAA-TN

15. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
16. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
17. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
18. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
19. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
20. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
21. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
22. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
    i. Roads shall be graded to mitigate the dust emission.
    ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
23. The following measures are to be implemented to reduce Noise Pollution
    i. Proper and regular maintenance of vehicles and other equipment
    ii. Limiting time exposure of workers to excessive noise.
    iii. The workers employed shall be provided with protection equipment and earmuffs etc.
    iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
24. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoE&F, GoI to control noise to the prescribed levels.
25. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
26. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
27. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
28. The following measures are to be adopted to control erosion of dumps:-
    i. Retention/ toe walls shall be provided at the foot of the dumps.
    ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.

CHAIRMAN
SEIAA-TN

29. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
32. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
33. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
35. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
36. It shall be ensured that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 25 hectares within the mining lease period of this application.
37. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site
38. Ground water quality monitoring should be conducted once in 3 Months
39. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
40. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF , GOI.
41. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF , GOI..
42. Bunds to be provided at the boundary of the project site.
43. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.

CHAIRMAN
SEIAA-TN

44. At least 10 Neem trees should be planted around the boundary of the quarry site.
45. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
46. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
47. The Project Proponent shall provide solar lighting system to the nearby villages
48. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
49. Rainwater shall be pumped out Via Settling Tank only
50. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
51. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild Life angle including clearance from standing committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
52. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
53. Safety equipments to be provided to all the employees.
54. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
55. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
56. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
57. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
58. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
59. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
60. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
61. The 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.
62. The Proponent shall remit Rs. 2 Lakh per annum to the Manonmaniyam sundharanar university towards afforestation.

CHAIRMAN
SEIAA-TN

General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
8. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
11. All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.

CHAIRMAN
SEIAA-TN

16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA,TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957,National Commission for protection of Child Right Rules,2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied
23. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

CHAIRMAN
SEIAA-TN

Copy to:

1. The Secretary, Ministry of Mines, Government of India, ShastriBhawan, 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, PariveshBhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai,Guindy, Chennai-32
7. The District Collector, Krishnagiri District
8. The Commissioner of Geology and Mines,Guindy,Chennai-32
9. EI Division, Ministry of Environment & Forests, ParyavaranBhawan, New Delhi.
10. Spare.



தமிழ்நாடு तमिलनाडु TAMILNADU 30 APR 2026 FN 853321

MP MINING AND LEASING COMPANY
KRISHNAGIRI

R. RAMASAMY,
STAMP VENDOR
L.NO:3861/83
D.M.COURT, KARUR.

AFFIDAVIT TO SEIAA, TAMIL NADU

I, M/s. **M.P. Mining and Leasing Company,** having an address No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu state do here by solemnly declare and sincerely affirm that,

I have applied for getting environmental clearance to SEIAA Tamil Nadu for quarry lease for Grey Granite quarry in S.F. Nos: 268/1Y, 268/1Z, 268/2K, and 268/1AA, Jagadevipalayam Village, Bargur Taluk, Krishnagiri District, Tamil Nadu.

1. I swear to state that within 10kms radius of the mines which I have applied for environmental clearance, none of the followings are situated as per the General Conditions of EIA Notification, 2006.

30/4/2026

Deponent

R.KUDIYARASU, B.Sc., B.L.,
ADVOCATE & NOTARY PUBLIC,
Reg.No: 9283, Govt. of India,
No: 40, Bharathi Nagar,
THANTHONIMALAI, KARUR

NOTARY AREA Karur District R.Kudiyarasu, B.Sc., B.L., Reg.No: 9283 GOVT. OF INDIA

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- Protected areas notified under the Wildlife (Protection) Act, 1972
- Critically polluted area as identified by CPCB constituted under Water (Prevention and Control of Pollution) Act, 1974
- Eco Sensitive areas identified by the Forest Dept/State Govt
- Interstate boundaries and International boundaries

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 Crore)**	**CER Cost 2% of Project Cost (Rs in Lakh)**
Developing Sanitary and Library Facilities, Tree plantation and environmental awareness sign boards to Government High school in Jagadevipalayam Village.	2.95	6.0
Total Cost Allocation	**2.95**	**6.0**

3. There are Quarries located within 500m radius from the periphery of our quarry.

Proposed Quarries

S. No	**Name of the owner**	**Village & S.F. No**	**Extent (in Ha.)**	**Lease status**
-	-	-	-	-

NOTARY
AREA
Karur District
R.Kudiyarasu,
B.Sc.,B.L.,
Reg. No: 9283
GOVT. OF INDIA

20/09/2026

R.KUDIYARASU, B.Sc.,B.L.,
ADVOCATE & NOTARY PUBLIC,
Reg.No: 9283, Govt. of India,
No: 40, Bharathi Nagar,
THANTHONIMALAI, KARUR.

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Existing Quarries

S. No	Name of the owner	Village, Taluk & S.F. No's	Extent (in Ha.)	GO. No & date	Lease status	Remarks
1.	Thiru.S.S.Jamaludeen	Jagadevipalayam, Bargur & 372/3A	1.25.0	G.O.3D. No.17 Ind. (MME2) Dept. Dated: 08.04.2008	22.12.2008 to 21.12.2028	Non-Operation
2.	Thiru.E.Jagadeesan	Jagadevipalayam, Bargur & 353/2A1B	1.56.5	G.O.3D. No.42 Ind. (MME2) Dept. Dated: 20.09.2018	09.11.2018 to 08.11.2038	Operation
3.	M.P. Granites	Jagadevipalayam, Bargur & 266/1, 268/1AC, 268/1AD	1.85.5	G.O.3D. No.07 Ind. (MME1) Dept. Dated: 18.01.2016	03.02.2016 to 02.02.2036	Last Permit taken on 08.12.2017

30/4/2024

NOTARY AREA Karur District R.Kudiyarasu, B.Sc.,B.L., Reg. No: 9283 GOVT. OF INDIA

R.KUDIYARASU, B.Sc.,B.L.,
ADVOCATE & NOTARY PUBLIC,
Reg.No: 9283, Govt. of India,
No: 40, Bharathi Nagar,
THANTHONIMALAI, KARUR.

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4	M/s. M.P. Mining and Leasing Company	Jagadevipalayam, Bargur & 268/1Y, 268/1Z, 268/2K, 268/1AA	1.84.0	G.O.3D. No.15 Ind. (MME2) Dept. Dated: 26.05.2014	10.02.2017 to 09.12.2037	1st Scheme of Mining approved
		Total Extent	**6.51.0**			

Abandoned or Expired Quarries

Sl. No	Name of the owner	Village & S.F. No	Extent (in Ha.)	Lease status
-	-	-	-	-

4. There will not be any hindrance or disturbance to the people living on enroute / nearby my quarry site while transporting the mined out materials and due to quarrying activities.

5. There are no habitations / villages located within 300 meters radius from the periphery of my quarry.

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

7. The required insurance will be taken in the name of the labourers working in my proposed quarry.

8. The existing road from the main road to the quarry is in good condition and the same will be maintained and utilized for transportation of materials.

NOTARY AREA Karur District R.Kudiyarasu, B.Sc.,B.L., Reg.No:9283 GOVT.OF INDIA

30/4/2014

R.KUDIYARASU, B.Sc.,B.L.,
ADVOCATE & NOTARY PUBLIC,
Reg.No: 9283, Govt. of India,
No: 40, Bharathi Nagar,
THANTHONIMALAI. KARUR.

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9. I will not engaging any child labour at my mines and I aware that engaging child labour is punishable under the Law.

10. All types of safety/protective equipments will be provided to all the laborers working in my quarry.

11. No permanent structures, temples etc are located within 500m from the periphery of my quarry.

12. The quarrying activity has not yet commenced and it will be carried out only after obtaining environmental clearance.

Deponent

Solemnly and sincerely affirmed and
Signed before the Notary Public on
the day of 30/4/2026

(M/s. M.P. Mining and Leasing Company)

NOTARY AREA Karur District R.Kudiyarasu, Reg.No:9283 NOTARIAL GOVT. OF INDIA

30/4/2026

R.KUDIYARASU, B.Sc.,B.L.,
ADVOCATE & NOTARY PUBLIC,
Reg.No: 9283, Govt. of India,
No: 40, Bharathi Nagar,
THANTHONIMALAI, KARUR.

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ABM ENVIRO LAB

(A Unit of Aadhi Boomi Mining and Enviro Tech (P) Ltd.,)

NIPBASS PLAZA

4/77-L, Indrani Nagar, Santhai Road

Narasothipatti, Salem - 636004, Tamil Nadu

Mob: 9842729655, 9443290855

suriyakumarsemban@gmail.com / abmenvirotech@gmail.com

TC-15822

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date:11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Core Zone	**Sample Code**	ABMEL/W/36(a)
Date of Sampling	06.06.2026	**Sample Description**	Colourless liquid
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Liter

Discipline		**Chemical Testing**		
Product Name		**Bore Water**		
S.no	**Parameters**	**Protocol**	**Unit**	**Result**
1	pH	IS 3025 (Part 11): 2022	-	7.05
2	Electrical Conductivity (EC)	IS 3025(Part 14):2013	µs/cm	780
3	Turbidity	IS 3025 (Part 10): 2023	NTU	BDL(DL:0.1)
4	Temperature	IS3025(Part9): 2023	^{0}C	25.2
5	Total Suspended Solids (TSS)	IS 3025 (Part17):2022	mg/l	<2
6	Total Dissolved Solids (TDS)	IS 3025 (Part16): 2023	mg/l	292
7	Total Hardness as $CaCO_3$	IS 3025 (Part21): 2009	mg/l	126
8	Calcium as Ca	IS 3025 (Part 40): 2024	mg/l	38
9	Magnesium as Mg	IS 3025 (Part 46):2023	mg/l	12
10	Chloride as Cl^-	IS 3025 (Part 32): 1988	mg/l	28
11	Total Alkalinity as $CaCO_3$	IS 3025 (Part 23):2023	mg/l	116
12	Carbonate	IS 3025 (Part 51): 2023	mg/l	BDL(DL:1.0)
13	Bicarbonate	IS 3025 (Part 51): 2023	mg/l	116
14	Sulfate	IS 3025 (Part 24): 1986	mg/l	20
15	Iron	IS 3025 (Part 53): 2024	mg/l	0.012

BDL = Below Detectable Limit; DL = Detection Limit

For ABM ENVIRO LAB

Verified BY

ABM ENVIRO LAB SALEM

Authorized Signatory

End of the Report

Reviewed & Authorized by
Mr. S. SURIYA KUMAR
Quality Manager
Authorized Signatory

Note: 1. Test Results Shown in this test report only to the items tested
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NIPBASS PLAZA

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Narasothipatti, Salem - 636004, Tamil Nadu

Mob: 9842729655, 9443290855

suriyakumarsemban@gmail.com / abmenvirotech@gmail.com

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		Report Date:11.06.2026	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-1	Sample Code	ABMEL/W/37(a)
Date of Sampling	06.06.2026	Sample Description	Colorless liquid
Sample Received on	06.06.2026	Sampling Method	ABMEL/QSP/20
Test Commenced on	06.06.2026	Sample BY	Customer
Test Completed on	11.06.2026	Sample Quantity	1Liter

Discipline		Chemical Testing		
Product Name		Bore Water		
S.no	Parameters	Protocol	Unit	Result
1	pH	IS 3025 (Part 11): 2022	-	6.98
2	Electrical Conductivity (EC)	IS 3025(Part 14):2013	µs/cm	1925
3	Turbidity	IS 3025 (Part 10): 2023	NTU	BDL(DL:0.1)
4	Temperature	IS3025(Part9): 2023	^{0}C	25.2
5	Total Suspended Solids (TSS)	IS 3025 (Part17):2022	mg/l	8
6	Total Dissolved Solids (TDS)	IS 3025 (Part16): 2023	mg/l	724
7	Total Hardness as $CaCO_3$	IS 3025 (Part21): 2009	mg/l	524
8	Calcium as Ca	IS 3025 (Part 40): 2024	mg/l	140
9	Magnesium as Mg	IS 3025 (Part 46):2023	mg/l	78
10	Chloride as Cl^-	IS 3025 (Part 32): 1988	mg/l	180
11	Total Alkalinity as $CaCO_3$	IS 3025 (Part 23):2023	mg/l	160
12	Carbonate	IS 3025 (Part 51): 2023	mg/l	BDL(DL:1.0)
13	Bicarbonate	IS 3025 (Part 51): 2023	mg/l	160
14	Sulfate	IS 3025 (Part 24): 1986	mg/l	40
15	Iron	IS 3025 (Part 53): 2024	mg/l	0.04

BDL = Below Detectable Limit; DL = Detection Limit

Verified BY

ABM ENVIRO LAB * SALEM *

End of the Report

For ABM ENVIRO LAB

Authorized Signatory

Reviewed & Authorized by

Mr. S. SURIYA KUMAR

Quality Manager

Authorized Signatory

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suriyakumarsemban@gmail.com / abmenvirotech@gmail.com

TC-15823

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date:11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-II	**Sample Code**	ABMEL/W/38(a)
Date of Sampling	06.06.2026	**Sample Description**	Colourless liquid
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Liter

Discipline		**Chemical Testing**		
Product Name		**Bore Water**		
S.no	**Parameters**	**Protocol**	**Unit**	**Result**
1	pH	IS 3025 (Part 11): 2022	-	7.60
2	Electrical Conductivity (EC)	IS 3025(Part 14):2013	µs/cm	1425
3	Turbidity	IS 3025 (Part 10): 2023	NTU	BDL(DL:0.1)
4	Temperature	IS3025(Part9): 2023	°C	25.1
5	Total Suspended Solids (TSS)	IS 3025 (Part17):2022	mg/l	4
6	Total Dissolved Solids (TDS)	IS 3025 (Part16): 2023	mg/l	580
7	Total Hardness as $CaCO_3$	IS 3025 (Part21): 2009	mg/l	480
8	Calcium as Ca	IS 3025 (Part 40): 2024	mg/l	130
9	Magnesium as Mg	IS 3025 (Part 46):2023	mg/l	38
10	Chloride as Cl^-	IS 3025 (Part 32): 1988	mg/l	260
11	Total Alkalinity as $CaCO_3$	IS 3025 (Part 23):2023	mg/l	280
12	Carbonate	IS 3025 (Part 51): 2023	mg/l	BDL(DL:1.0)
13	Bicarbonate	IS 3025 (Part 51): 2023	mg/l	280
14	Sulfate	IS 3025 (Part 24): 1986	mg/l	30
15	Iron	IS 3025 (Part 53): 2024	mg/l	0.04

BDL = Below Detectable Limit; DL = Detection Limit

Verified BY

ABM ENVIRO LAB * SALEM *

End of the Report

For ABM ENVIRO LAB

Authorized Signatory

Reviewed & Authorized by
Mr. S. SURIYA KUMAR
Quality Manager
Authorized Signatory

Note: 1. Test Results Shown in this test report only to the items tested
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suriyakumarsemban@gmail.com / abmenvirotech@gmail.com

TC-15822

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date:11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-III	**Sample Code**	ABMEL/W/39(a)
Date of Sampling	06.06.2026	**Sample Description**	Colourless liquid
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Liter

Discipline		**Chemical Testing**		
Product Name		**Bore Water**		
S.no	**Parameters**	**Protocol**	**Unit**	**Result**
1	pH	IS 3025 (Part 11): 2022	-	6.98
2	Electrical Conductivity (EC)	IS 3025(Part 14):2013	µs/cm	1554
3	Turbidity	IS 3025 (Part 10): 2023	NTU	BDL(DL:0.1)
4	Temperature	IS3025(Part9): 2023	°C	25.4
5	Total Suspended Solids (TSS)	IS 3025 (Part17):2022	mg/l	12
6	Total Dissolved Solids (TDS)	IS 3025 (Part16): 2023	mg/l	794
7	Total Hardness as $CaCO_3$	IS 3025 (Part21): 2009	mg/l	640
8	Calcium as Ca	IS 3025 (Part 40): 2024	mg/l	180
9	Magnesium as Mg	IS 3025 (Part 46):2023	mg/l	114
10	Chloride as Cl^-	IS 3025 (Part 32): 1988	mg/l	140
11	Total Alkalinity as $CaCO_3$	IS 3025 (Part 23):2023	mg/l	184
12	Carbonate	IS 3025 (Part 51): 2023	mg/l	BDL(DL:1.0)
13	Bicarbonate	IS 3025 (Part 51): 2023	mg/l	184
14	Sulfate	IS 3025 (Part 24): 1986	mg/l	32
15	Iron	IS 3025 (Part 53): 2024	mg/l	0.016

BDL = Below Detectable Limit; DL = Detection Limit

Verified BY

ABM ENVIRO LAB SALEM

End of the Report

For ABM ENVIRO LAB

Authorized Signatory

Reviewed & Authorized by
Mr. S. SURIYA KUMAR
Quality Manager
Authorized Signatory

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TC-15822

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date:11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-IV	**Sample Code**	ABMEL/W/40(a)
Date of Sampling	06.06.2026	**Sample Description**	Colourless liquid
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Liter

Discipline		**Chemical Testing**		
Product Name		**Bore Water**		
S.no	**Parameters**	**Protocol**	**Unit**	**Result**
1	pH	IS 3025 (Part 11): 2022	-	7.10
2	Electrical Conductivity (EC)	IS 3025(Part 14):2013	µs/cm	860
3	Turbidity	IS 3025 (Part 10): 2023	NTU	BDL(DL:0.1)
4	Temperature	IS3025(Part9): 2023	°C	25.3
5	Total Suspended Solids (TSS)	IS 3025 (Part17):2022	mg/l	12
6	Total Dissolved Solids (TDS)	IS 3025 (Part16): 2023	mg/l	784
7	Total Hardness as $CaCO_3$	IS 3025 (Part21): 2009	mg/l	432
8	Calcium as Ca	IS 3025 (Part 40): 2024	mg/l	124
9	Magnesium as Mg	IS 3025 (Part 46):2023	mg/l	30
10	Chloride as Cl^-	IS 3025 (Part 32): 1988	mg/l	180
11	Total Alkalinity as $CaCO_3$	IS 3025 (Part 23):2023	mg/l	120
12	Carbonate	IS 3025 (Part 51): 2023	mg/l	BDL(DL:1.0)
13	Bicarbonate	IS 3025 (Part 51): 2023	mg/l	120
14	Sulfate	IS 3025 (Part 24): 1986	mg/l	36
15	Iron	IS 3025 (Part 53): 2024	mg/l	0.014
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For ABM ENVIRO LAB

Authorized Signatory

Reviewed & Authorized by
Mr. S. SURIYA KUMAR
Quality Manager
Authorized Signatory

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NIPBASS PLAZA
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Narasothipatti, Salem - 636004, Tamil Nadu
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suriyakumarsemban@gmail.com / abmenvirotech@gmail.com

TC-15822

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date: 11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Compnay		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Core Zone-I	**Sample Code**	ABMEL/S/32(b)
Date of Sampling	06.06.2026	**Sample Description**	Brown Colour
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Kg

DISCIPLINE		**CHEMICAL TESTING**		
PRODUCT NAME		**SOIL**		
S.NO	**PARAMETERS**	**PROTOCOL**	**UNIT**	**RESULT**
1	Water Content (Moisture)	IS 2720 (Part 2): 1973	%	2.8
2	pH	IS 2720 (Part 26): 1987	----	6.78
3	Electrical Conductivity	IS14767: 2000	µS/cm	244
4	Bulk Density	ABMEL/CH/S/SOP/04: (Issue No: 01, Issue Date: 03.06.2024)	g/cc	1.38
5	Water Holding capacity	ABMEL/CH/S/SOP/05:(Issue No: 01, Issue Date: 03.06.2024)	%	48
6	Calcium	ABMEL/CH/S/SOP/07: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	1.8
7	Magnesium	ABMEL/CH/S/SOP/08: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	1
8	Chloride	ABMEL/CH/S/SOP/09: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	3.6
9	Organic Matter	IS 2720 (Part 22): 1972	%	0.4

BDL = Below Detectable Limit ; DL = Detection Limit

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ABM ENVIRO LAB

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TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		Report Date: 11.06.2026	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Core Zone-I	**Sample Code**	ABMEL/S/32(b)
Date of Sampling	06.06.2026	**Sample Description**	Brown Colour
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Kg

DISCIPLINE			CHEMICAL TESTING		
PRODUCT NAME			SOIL		
S.NO	**PARAMETERS**		**PROTOCOL**	**UNIT**	**RESULT**
1	Texture	Sand	IS 10317: 2024	%	52
		Silt		%	26
		Clay		%	24
					Sandy Clay Loam
BDL = Below Detectable Limit ; DL = Detection Limit					

ABM ENVIRO LAB SALEM

For ABM ENVIRO LAB

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TECHNICAL MANAGER

ABM ENVIRO LAB

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Mr. S. SURIYA KUMAR

Quality Manager

Authorized Signatory

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TC-16822

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date: 11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-I	**Sample Code**	ABMEL/S/33(b)
Date of Sampling	06.06.2026	**Sample Description**	Red Colour
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Kg

DISCIPLINE		**CHEMICAL TESTING**		
PRODUCT NAME		**SOIL**		
S.NO	**PARAMETERS**	**PROTOCOL**	**UNIT**	**RESULT**
1	Water Content (Moisture)	IS 2720 (Part 2): 1973	%	2.4
2	pH	IS 2720 (Part 26): 1987	----	7.86
3	Electrical Conductivity	IS14767: 2000	µS/cm	275
4	Bulk Density	ABMEL/CH/S/SOP/04: (Issue No: 01, Issue Date: 03.06.2024)	g/cc	1.30
5	Water Holding capacity	ABMEL/CH/S/SOP/05:(Issue No: 01, Issue Date: 03.06.2024)	%	52
6	Calcium	ABMEL/CH/S/SOP/07: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	1.6
7	Magnesium	ABMEL/CH/S/SOP/08: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	1.2
8	Chloride	ABMEL/CH/S/SOP/09: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	4.6
9	Organic Matter	IS 2720 (Part 22): 1972	%	0.2

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For ABM ENVIRO LAB

Authorized Signatory

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TECHNICAL MANAGER
ABM ENVIRO LAB

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TEST REPORT

Sample ID: ABMEL/TR-32/2026-27		**Report Date: 11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-I	**Sample Code**	ABMEL/S/33(b)
Date of Sampling	06.06.2026	**Sample Description**	Brown Colour
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Kg

DISCIPLINE			**CHEMICAL TESTING**		
PRODUCT NAME			**SOIL**		
S.NO	**PARAMETERS**		**PROTOCOL**	**UNIT**	**RESULT**
1	Texture	Sand	IS 10317: 2024	%	46
		Silt		%	26
		Clay		%	24
					Sandy Clay Loam
BDL = Below Detectable Limit ; DL = Detection Limit					

ABM ENVIRO LAB SALEM

For ABM ENVIRO LAB

Verified BY
TECHNICAL MANAGER
ABM ENVIRO LAB

Authorized Signatory

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TC-15822

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date: 11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-II	**Sample Code**	ABMEL/S/34(b)
Date of Sampling	06.06.2026	**Sample Description**	Brown Colour
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Kg

DISCIPLINE		**CHEMICAL TESTING**		
PRODUCT NAME		**SOIL**		
S.NO	**PARAMETERS**	**PROTOCOL**	**UNIT**	**RESULT**
1	Water Content (Moisture)	IS 2720 (Part 2): 1973	%	2.6
2	pH	IS 2720 (Part 26): 1987	----	7.80
3	Electrical Conductivity	IS14767: 2000	µS/cm	282
4	Bulk Density	ABMEL/CH/S/SOP/04: (Issue No: 01, Issue Date: 03.06.2024)	g/cc	1.36
5	Water Holding capacity	ABMEL/CH/S/SOP/05:(Issue No: 01, Issue Date: 03.06.2024)	%	54
6	Calcium	ABMEL/CH/S/SOP/07: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	2.6
7	Magnesium	ABMEL/CH/S/SOP/08: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	1.2
8	Chloride	ABMEL/CH/S/SOP/09: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	3.2
9	Organic Matter	IS 2720 (Part 22): 1972	%	0.4

BDL = Below Detectable Limit ; DL = Detection Limit

ABM ENVIRO LAB SALEM

For ABM ENVIRO LAB

Verified BY
TECHNICAL MANAGER
ABM ENVIRO LAB

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TEST REPORT

Sample ID: ABMEL/TR-32/2026-27		**Report Date:11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-II	**Sample Code**	ABMEL/S/34(b)
Date of Sampling	06.06.2026	**Sample Description**	Brown Colour
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Kg

DISCIPLINE			**CHEMICAL TESTING**		
PRODUCT NAME			**SOIL**		
S.NO	**PARAMETERS**		**PROTOCOL**	**UNIT**	**RESULT**
1	Texture	Sand	IS 10317: 2024	%	54
		Silt		%	26
		Clay		%	22
					Sandy Loam
BDL = Below Detectable Limit ; DL = Detection Limit					

ABM ENVIRO LAB * SALEM *

For ABM ENVIRO LAB

Verified BY
TECHNICAL MANAGER
ABM ENVIRO LAB

Authorized Signatory
Reviewed & Authorized by
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Quality Manager
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TC-15822

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date: 11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-III	**Sample Code**	ABMEL/S/35(b)
Date of Sampling	06.06.2026	**Sample Description**	Brown Colour
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Kg

DISCIPLINE		**CHEMICAL TESTING**		
PRODUCT NAME		**SOIL**		
S.NO	**PARAMETERS**	**PROTOCOL**	**UNIT**	**RESULT**
1	Water Content (Moisture)	IS 2720 (Part 2): 1973	%	2.0
2	pH	IS 2720 (Part 26): 1987	----	7.76
3	Electrical Conductivity	IS14767: 2000	µS/cm	248
4	Bulk Density	ABMEL/CH/S/SOP/04: (Issue No: 01, Issue Date: 03.06.2024)	g/cc	1.32
5	Water Holding capacity	ABMEL/CH/S/SOP/05:(Issue No: 01, Issue Date: 03.06.2024)	%	56
6	Calcium	ABMEL/CH/S/SOP/07: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	2.2
7	Magnesium	ABMEL/CH/S/SOP/08: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	0.8
8	Chloride	ABMEL/CH/S/SOP/09: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	5.6
9	Organic Matter	IS 2720 (Part 22): 1972	%	0.2

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End of the Report

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For ABM ENVIRO LAB

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TEST REPORT

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Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-III	**Sample Code**	ABMEL/S/34(b)
Date of Sampling	06.06.2026	**Sample Description**	Brown Colour
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Kg

DISCIPLINE			**CHEMICAL TESTING**		
PRODUCT NAME			**SOIL**		
S.NO	**PARAMETERS**		**PROTOCOL**	**UNIT**	**RESULT**
1	Texture	Sand	IS 10317: 2024	%	42
		Silt		%	28
		Clay		%	24
					Sandy Loam
BDL = Below Detectable Limit ; DL = Detection Limit					

ABM ENVIRO LAB SALEM

For ABM ENVIRO LAB

Authorized Signatory

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TC-15822

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date: 11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-IV	**Sample Code**	ABMEL/S/36(b)
Date of Sampling	06.06.2026	**Sample Description**	Brown Colour
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Kg

DISCIPLINE		**CHEMICAL TESTING**		
PRODUCT NAME		**SOIL**		
S.NO	**PARAMETERS**	**PROTOCOL**	**UNIT**	**RESULT**
1	Water Content (Moisture)	IS 2720 (Part 2): 1973	%	2.8
2	pH	IS 2720 (Part 26): 1987	----	7.05
3	Electrical Conductivity	IS14767: 2000	µS/cm	284
4	Bulk Density	ABMEL/CH/S/SOP/04: (Issue No: 01, Issue Date: 03.06.2024)	g/cc	1.46
5	Water Holding capacity	ABMEL/CH/S/SOP/05:(Issue No: 01, Issue Date: 03.06.2024)	%	55
6	Calcium	ABMEL/CH/S/SOP/07: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	3.2
7	Magnesium	ABMEL/CH/S/SOP/08: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	1.6
8	Chloride	ABMEL/CH/S/SOP/09: (Issue No: 01, Issue Date: 03.06.2024)	meq/l	4.8
9	Organic Matter	IS 2720 (Part 22): 1972	%	0.4
BDL = Below Detectable Limit ; DL = Detection Limit				

ABM ENVIRO LAB SALEM

Verified BY
TECHNICAL MANAGER
ABM ENVIRO LAB

For ABM ENVIRO LAB

Authorized Signatory
Reviewed & Authorized by
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Quality Manager
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TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date: 11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-IV	**Sample Code**	ABMEL/S/36(b)
Date of Sampling	06.06.2026	**Sample Description**	Brown Colour
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	1Kg

DISCIPLINE			**CHEMICAL TESTING**		
PRODUCT NAME			**SOIL**		
S.NO	**PARAMETERS**		**PROTOCOL**	**UNIT**	**RESULT**
1	Texture	Sand	IS 10317: 2024	%	46
		Silt		%	24
		Clay		%	22
					Sandy Loam
BDL = Below Detectable Limit ; DL = Detection Limit					

Verified BY

TECHNICAL MANAGER

ABM ENVIRO LAB

ABM ENVIRO LAB SALEM

For ABM ENVIRO LAB

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Quality Manager

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ABM ENVIRO LAB

(A Unit of Aadhi Boomi Mining and Enviro Tech (P) Ltd.,)

NIPBASS PLAZA

4/77-L, Indrani Nagar, Santhai Road

Narasothipatti, Salem - 636004, Tamil Nadu

Mob: 9842729655, 9443290855

suriyakumarsemban@gmail.com / abmenvirotech@gmail.com

TC-15822

TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date: 11.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Core Zone-I	**Sample Code**	ABMEL/A/32(c)
Date of Sampling	06.06.2026	**Sample Description**	Ambient Air
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	Filter Paper, 25ml Absorbing Solution

Discipline		**Chemical Testing**		
Product Name		**Atmospheric Pollution**		
S.no	**Parameters**	**Protocol**	**Unit**	**Result**
1	Particulate Matter (less than 2.5-micron size particles as $PM_{2.5}$)	IS 5182 (Part 24): 2019	$\mu g/m^3$	26
2	Respirable Particulate Matter (less than 10-micron size particles as PM_{10})	IS 5182 (Part 23): 2006	$\mu g/m^3$	46
3	Sulphur dioxide(SO_2)	IS 5182 (Part 2): 2001	$\mu g/m^3$	9
4	Oxides of Nitrogen (NO_2)	IS 5182 Part 6: 2006	$\mu g/m^3$	16
5	Ozone (O_3)	IS 5182(Part 9): 1974	$\mu g/m^3$	28
6	Ammonia (NH_3)	IS 5182 (Part 25): 2018	$\mu g/m^3$	24
7	Lead	IS 5182 (Part 22): 2004	$\mu g/m^3$	BDL(DL:0.1)
8	Nickel	IS 5182 (Part -26): 2020	ng/m^3	BDL(DL:0.1)
BDL = Below Detectable Limit; DL = Detection Limit				

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For ABM ENVIRO LAB

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Mr. S. SURIYA KUMAR
Quality Manager
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Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-I	**Sample Code**	ABMEL/A/33(c)
Date of Sampling	06.06.2026	**Sample Description**	Ambient Air
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	Filter Paper, 25ml Absorbing Solution

Discipline		**Chemical Testing**		
Product Name		**Atmospheric Pollution**		
S.no	**Parameters**	**Protocol**	**Unit**	**Result**
1	Particulate Matter (less than 2.5-micron size particles as $PM_{2.5}$)	IS 5182 (Part 24): 2019	$\mu g/m^3$	24
2	Respirable Particulate Matter (less than 10-micron size particles as PM_{10})	IS 5182 (Part 23): 2006	$\mu g/m^3$	44.5
3	Sulphur dioxide(SO_2)	IS 5182 (Part 2): 2001	$\mu g/m^3$	14
4	Oxides of Nitrogen (NO_2)	IS 5182 Part 6: 2006	$\mu g/m^3$	22
5	Ozone (O_3)	IS 5182(Part 9): 1974	$\mu g/m^3$	25
6	Ammonia (NH_3)	IS 5182 (Part 25): 2018	$\mu g/m^3$	18
7	Lead	IS 5182 (Part 22): 2004	$\mu g/m^3$	BDL(DL:0.1)
8	Nickel	IS 5182 (Part -26): 2020	ng/m^3	BDL(DL:0.1)

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Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-II	**Sample Code**	ABMEL/A/34(c)
Date of Sampling	06.06.2026	**Sample Description**	Ambient Air
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	Filter Paper, 25ml Absorbing Solution

Discipline		**Chemical Testing**		
Product Name		**Atmospheric Pollution**		
S.no	**Parameters**	**Protocol**	**Unit**	**Result**
1	Particulate Matter (less than 2.5-micron size particles as $PM_{2.5}$)	IS 5182 (Part 24): 2019	$\mu g/m^3$	25
2	Respirable Particulate Matter (less than 10-micron size particles as PM_{10})	IS 5182 (Part 23): 2006	$\mu g/m^3$	47
3	Sulphur dioxide(SO_2)	IS 5182 (Part 2): 2001	$\mu g/m^3$	16
4	Oxides of Nitrogen (NO_2)	IS 5182 Part 6: 2006	$\mu g/m^3$	22
5	Ozone (O_3)	IS 5182(Part 9): 1974	$\mu g/m^3$	30
6	Ammonia (NH_3)	IS 5182 (Part 25): 2018	$\mu g/m^3$	24
7	Lead	IS 5182 (Part 22): 2004	$\mu g/m^3$	BDL(DL:0.1)
8	Nickel	IS 5182 (Part -26): 2020	ng/m^3	BDL(DL:0.1)
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Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-III	**Sample Code**	ABMEL/A/35(c)
Date of Sampling	06.06.2026	**Sample Description**	Ambient Air
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	Filter Paper, 25ml Absorbing Solution

Discipline		**Chemical Testing**		
Product Name		**Atmospheric Pollution**		
S.no	**Parameters**	**Protocol**	**Unit**	**Result**
1	Particulate Matter (less than 2.5-micron size particles as $PM_{2.5}$)	IS 5182 (Part 24): 2019	$\mu g/m^3$	28
2	Respirable Particulate Matter (less than 10-micron size particles as PM_{10})	IS 5182 (Part 23): 2006	$\mu g/m^3$	44
3	Sulphur dioxide(SO_2)	IS 5182 (Part 2): 2001	$\mu g/m^3$	16
4	Oxides of Nitrogen (NO_2)	IS 5182 Part 6: 2006	$\mu g/m^3$	23
5	Ozone (O_3)	IS 5182(Part 9): 1974	$\mu g/m^3$	28
6	Ammonia (NH_3)	IS 5182 (Part 25): 2018	$\mu g/m^3$	25
7	Lead	IS 5182 (Part 22): 2004	$\mu g/m^3$	BDL(DL:0.1)
8	Nickel	IS 5182 (Part -26): 2020	ng/m^3	BDL(DL:0.1)
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Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunarag District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-IV	**Sample Code**	ABMEL/A/36(c)
Date of Sampling	06.06.2026	**Sample Description**	Ambient Air
Sample Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20
Test Commenced on	06.06.2026	**Sample BY**	Customer
Test Completed on	11.06.2026	**Sample Quantity**	Filter Paper, 25ml Absorbing Solution

Discipline		**Chemical Testing**		
Product Name		**Atmospheric Pollution**		
S.no	**Parameters**	**Protocol**	**Unit**	**Result**
1	Particulate Matter (less than 2.5-micron size particles as $PM_{2.5}$)	IS 5182 (Part 24): 2019	$\mu g/m^3$	27
2	Respirable Particulate Matter (less than 10-micron size particles as PM_{10})	IS 5182 (Part 23): 2006	$\mu g/m^3$	51
3	Sulphur dioxide(SO_2)	IS 5182 (Part 2): 2001	$\mu g/m^3$	17
4	Oxides of Nitrogen (NO_2)	IS 5182 Part 6: 2006	$\mu g/m^3$	21
5	Ozone (O_3)	IS 5182(Part 9): 1974	$\mu g/m^3$	25
6	Ammonia (NH_3)	IS 5182 (Part 25): 2018	$\mu g/m^3$	24
7	Lead	IS 5182 (Part 22): 2004	$\mu g/m^3$	BDL(DL:0.1)
8	Nickel	IS 5182 (Part -26): 2020	ng/m^3	BDL(DL:0.1)
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TEST REPORT

Sample ID: ABMEL/TR-32/2026-2027		**Report Date: 07.06.2026**	
Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Core Zone-I	**Sample Code**	ABMEL/N/32(d)
Date of Sampling	06.06.2026	**Sample Description**	Sound Level
Data Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20

DISCIPLINE		**CHEMICAL TESTING**			
PRODUCT NAME		**NOISE**			
S.NO	**PARAMETERS**	**PROTOCOL**	**UNIT**	**LOCATION**	**RESULT**
1	Sound Level	IS 9989: 2023	dB(A)	N	36.4
2				W	38.4
3				E	38.6
4				S	39.2
5				Core Zone	40.2
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Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-I	**Sample Code**	ABMEL/N/33(d)
Date of Sampling	06.06.2026	**Sample Description**	Sound Level
Data Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20

DISCIPLINE		**CHEMICAL TESTING**			
PRODUCT NAME		**NOISE**			
S.NO	**PARAMETERS**	**PROTOCOL**	**UNIT**	**LOCATION**	**RESULT**
1	Sound Level	IS 9989: 2023	dB(A)	Buffer Zone-I	43.2
BDL = Below Detectable Limit; DL = Detection Limit					

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Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-II	**Sample Code**	ABMEL/N/34(d)
Date of Sampling	06.06.2026	**Sample Description**	Sound Level
Data Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20

DISCIPLINE		**CHEMICAL TESTING**			
PRODUCT NAME		**NOISE**			
S.NO	**PARAMETERS**	**PROTOCOL**	**UNIT**	**LOCATION**	**RESULT**
1	Sound Level	IS 9989: 2023	dB(A)	Buffer Zone-II	41.9
BDL = Below Detectable Limit; DL = Detection Limit					

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Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-III	**Sample Code**	ABMEL/N/35(d)
Date of Sampling	06.06.2026	**Sample Description**	Sound Level
Data Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20

DISCIPLINE		**CHEMICAL TESTING**			
PRODUCT NAME		**NOISE**			
S.NO	**PARAMETERS**	**PROTOCOL**	**UNIT**	**LOCATION**	**RESULT**
1	Sound Level	IS 9989: 2023	dB(A)	Buffer Zone-III	42.4
BDL = Below Detectable Limit; DL = Detection Limit					

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Customer Name	M/s. M.P. Mining and Leasing Company		
Address	No. 2/226, Karisalkulam Road, Vakkanangundu, Kariyapatti Taluk, Virudhunagar District, Tamil Nadu – 626 104		
Sample Mark	Buffer Zone-IV	**Sample Code**	ABMEL/N/36(d)
Date of Sampling	06.06.2026	**Sample Description**	Sound Level
Data Received on	06.06.2026	**Sampling Method**	ABMEL/QSP/20

DISCIPLINE		**CHEMICAL TESTING**			
PRODUCT NAME		**NOISE**			
S.NO	**PARAMETERS**	**PROTOCOL**	**UNIT**	**LOCATION**	**RESULT**
1	Sound Level	IS 9989: 2023	dB(A)	Buffer Zone-IV	46.4
BDL = Below Detectable Limit; DL = Detection Limit					

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