

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

FOR OBTAINING

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

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

CLUSTER EXTENT = 7.53.5 ha

**M/s.B.M.MINES ROUGH STONE & GRAVEL QUARRY
At**

Alur Village, Hosur Taluk, Krishnagiri District

ToR obtained vide

Lr No. SEIAA-TN/F.No.9897/ TOR-1442/2023 Dated: 09.05.2023

Project Details

Name and Address of the proponent	Project site Details	Project Details
M/s. B.M. Mines, C/o. C.N. Kaarthy, Villa No.23, Vakil Hosur Hills, Off Rayakottai Road, Chennathur Pos Hosur, Krishnagiri District, Tamil Nadu State – 635 109.	S.F.No: 207/1A1, 207/1A2A 208/3 (Part), Extent : 4.50.0 Ha Alur Village, Hosur Taluk, Krishnagiri District	Proposed Production 7,19,435 m ³ of Rough stone,1,41,800 Gravel, 36,032 Topsoil Depth - 40m BGL

Environmental Consultant

GEO EXPLORATION AND MINING SOLUTIONS



Old No. 260-B, New No. 17,
Advaitha Ashram Road, Alagapuram,
Salem – 636 004, Tamil Nadu, India



Accredited for sector 1 Category ‘A’, 31 & 38 Category ‘B’

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ENVIRONMENTAL LAB

CHENNAI METTEX LAB PRIVATE LIMITED

Approved by AAI, AGMARK, APEDA, BIS, EIC FSSAI, GAFTA,
IOPEPC, MOEF & TEA BOARD),

Jothi Complex, M.K.N Road, Guindy, Chennai -600 032.

Baseline Monitoring Season – March to May 2023

SEPTEMBER 2023

Details of the quarries within 500m radius from the proposed project

PROPOSED QUARRY				
CODE	Name of the Owner	S.F. Nos ,Village & Taluk	Extent in ha	Status
P1	M/s. B.M. Mines, C/o. C.N. Kaarathi, Villa No.23, Vakil Hosur Hills, Off Rayakottai Road, Chennathur Post, Hosur, Krishnagiri District, Tamil Nadu State – 635 109.	207/1A1, 207/1A2A and 208/3 (Part), Alur Village, Hosur Taluk	4.50.0	Received for TOR Vide Lr No. SEIAA- TN/F.No.9897/ TOR- 1442/2023 Dated: 09.05.2023
EXISTING QUARRY				
E1	B.G.Manjula, W/o. Late Baskar, 77-D, Indira Nagar, Bagalur, Hosur.	208/1, Alur Village, Hosur Taluk	3.03.5	19.06.2019 to 18.06.2024
EXPIRED QUARRIES				
EX1	P.Baskar, S/o.Paapiiah, 77-D, Indira Nagar, Bagalur, Hosur.	209, Alur Village, Hosur Taluk	4.21.5	07.04.2003 to 06.04.2008
EX2	P.Baskar, Sri venkateshwara Blue Metals, 77-D, Indira Nagar, Bagalur, Hosur.	319/2B, 2C, 2D, Alur Village, Hosur Taluk	0.85.00	20.03.2015 to 19.03.2020
EX3	M.Durai, S/o M.Malla Gounder, No.13/47,12B,Shanthi nagar,Opp Ragavendra Theatre, Hosur.	207/1, Alur Village, Hosur Taluk	0.63.0	28.12.2002 to 27.12.2007
EX4	Chennai Mines, Ramesh Nagar, Thiruneemalai road,West thambaram,Chennai.	211, Alur Village, Hosur Taluk	3.46.5	20.03.2015 to 19.03.2020
TOTAL CLUSTER EXTENT			7.53.50 ha	

Note: -

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

TERMS OF REFERENCE (ToR) COMPLIANCE

M/s. B.M.Mines Rough Stone & Gravel Quarry

“ToR issued vide Lr No. SEIAA-TN/F.No.9798/ TOR-1442/2023 Dated: 09.05.2023”

Specific Conditions		
1	The PP shall submit cumulative EIA impact study considering Crushers 500m radius around the vicinity of the proposed mining area.	Noted and agreed
2	The PP shall submit photographs of fencing, greenbelt and garland drain.	Noted and agreed
3	The structures within the radius of (i) 50 m. (ii) 100 m. (iii) 200 m and (iv) 300 m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc.	No permanent structures within 300m radius. Only crusher shed in 300m radius.
4	The study on impact of the dust & other environmental impacts due to proposed quarrying operations on the Rose flowers being cultivated through greenhouse nearby.	Noted and agreed
5	The Proponent shall furnish photographs of greenbelt, fencing and garland drain around the boundary of the proposed quarry.	Noted and agreed
6	The proponent shall furnish a revised EMP budget for entire life of proposed mining.	It is explained in chapter 10
7	The revised and corrected version of the Production & Development Plan shall be produced with showing the safety berm width of 2m is maintained for the bench height of 2m distinctly in the gravel formation and it shall be duly signed by the concerned QP & approved by the concerned AD (Geology & Mining).	Noted and agreed
8	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 prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease during the time of appraisal for obtaining the EC.	It is a Fresh Lease
9	The Proponent shall submit a conceptual 'Slope Stability Plan' indicating the mitigating measures for the proposed quarry during the appraisal while obtaining the EC, as the depth of the proposed quarry working is extended beyond 30 m below ground level.	Noted and agreed
10	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/1 Class mines manager appointed by the proponent.	Noted and agreed
11	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.	Noted and agreed
12	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in	Noted and agreed

	the past, either in the same location or elsewhere in the State with video and photographic evidences.	
13	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, a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines? b. Quantity of minerals mined out. c. Highest production achieved in any one year d. Detail of approved depth of mining. e. Actual depth of the mining achieved earlier. f. Name of the person already' mined in that leases area. g. If EC and CTO already obtained, the copy of the same shall be submitted. h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	It is a Fresh Lease
14	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).	Satellite imagery of the project area along with boundary co ordinates is given in the Chapter No 1 Figure No .1.1 Geomorphology of the area is given in Chapter No 2 Figure No 2.10. Land use pattern of the project area is tabulated in the Chapter No.2. Table No.2.3 Land use pattern of the Study area is tabulated in the Chapter No.3 Table No 3.2
15	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,	Drone videograph will be taken for this cluster.
16	The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the prosed quarry based on the volume of rock handled & area of excavation.	Noted and agreed
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.	Noted and agreed
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.	Total Mineable Reserves, Proposed production and working methodology given in the Chapter No.2
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Organization chart indicating Proposal for the appointment of Statutory officials is given in the Chapter No.7 Figure No. 7.1
20	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water	The hydro-geological study was conducted to evaluate the possible impact on the ground water table. No significant impacts are anticipated on the

	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.	water bodies around the project area. Details are discussed under Chapter No. 3. No of Ground water pumping wells, Open wells within radius of 1km along with Contour map is given in the Chapter No.3.
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	Baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality, & flora/fauna including traffic/vehicular movement study to assess the cumulative impact of the proposed project on the environment is prepared and submitted as Draft EIA/ EMP Report.
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.	It is explained in Chapter -4
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	It is explained in Chapter -4
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.	It is a Patta Land. Land and Land classification in chapter- 3
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. No waste is anticipated in the quarry area.
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for milling 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.	Not Applicable.
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.	Rainwater harvesting structure will be constructed near the mine office after commencement of mining operation. The water will be collected in the lower part of the pit and it will be utilized for dust suppression and greenbelt development
28	Impact on local transport infrastructure due to the Project should be indicated.	Transportation details mentioned in Chapter -2

29	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	Greenbelt details in Chapter-4. It is proposed to plant 2700 trees along boundary and panchayat roads.
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Mine Closure in Chapter -2
31	Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan 'vith budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.	Noted & agreed
32	The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.	Noted & agreed
33	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.	Noted & agreed
34	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.	Noted & agreed.
35	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 and local school/college authorities. 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.	Species are proposed to plant in the safety barrier as mentioned in the ToR appendix. Proposed species are given in the Chapter No 4
36	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site-specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.	Noted & agreed.
37	A Disaster Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Disaster management Plan details in Chapter-7
38	A Risk Assessment and Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A Risk Assessment and management Plan Chapter-7
39	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	Occupational Health impacts chapter- 4

	project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	
40	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.	No Public Health Implications anticipated due to this project. Details of CER and CSR are discussed under Chapter 8, EIA Report
41	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.	It is explained in Chapter -3
42	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 project
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.	It is explained in Chapter -8
44	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.	It is a fresh Lease.
45	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.	It is explained in Chapter -10
46	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted & agreed.
Additional Condition		
Cluster Management Committee		
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Cluster management committee has been formed with mutual agreement with the proponents including Existing and Proposed quarry at present are framed.
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,	As per the committee agreement proponents will coordinate for the Greenbelt development, Water sprinkling and tree plantation activities combinedly
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	The formation of committee with list of members has been submitted to the AD mines office, Krishnagiri and the same will be update in every year
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul	As per the committee agreement the blasting frequency will be discussed and carryout by the Mines Manager appointed by the proponents and the same will be updated in the committee minutes

	roads by the individual quarry in the form of route map and network.	
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	Details discussed in chapter 7 of Draft EIA report
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.	Details discussed in chapter 6 of Draft EIA report
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Noted & agreed.
8	The committee shall furnish the Emergency Management plan within the cluster.	Details discussed in chapter 7 of Draft EIA report
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Details discussed in chapter 10 of Draft EIA report
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety	Noted & agreed.
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Details discussed in chapter 7 of Draft EIA report
Impact study of mining		
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following a) Soil health & soil biological, physical land chemical features . b) Climate change leading to Droughts, Floods etc. c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people. d) Possibilities of water contamination and impact on aquatic ecosystem health. e) Agriculture, Forestry & Traditional practices. f) Hydrothermal/Geothermal effect due to destruction in the Environment. g) Bio-geochemical processes and its foot prints including environmental stress. h) Sediment geochemistry in the surface streams.	Details of Soil health is given in Chapter No 3 and biodiversity is given in Chapter No 3. The project will not cause any significant changes in the climate Climatic changes and GHG are described in Chapter No 4. Details of water contamination and impact on aquatic ecosystem is given in Chapter No 4. Hydrothermal/ Geothermal effects due to destruction in the environment, Bio geochemical process and sediment geo chemistry given in the Chapter No 7.
Agriculture & Agro-Biodiversity		
13	Impact on surrounding agricultural fields around the proposed mining Area.	Details discussed in chapter 4 of Draft EIA report
14	Impact on soil flora & vegetation around the project site.	Details discussed in chapter 4 of Draft EIA report
15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	The area is fresh Lease & Few trees present with in lease.

16	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem	Noted & agreed.
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted & agreed.
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The project area is bounded by Crusher & Existing quarries on the East side of the area is dry barren land no agriculture activities carried out.
Forests		
19	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	Nearest Reserve Forest is Sanamavu R.F. – 700m – South
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The area is surrounded by quarried land and Barren land. Details of flora and fauna studies given in the Chapter No.3.
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	No major trees within the project area
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	Noted & agreed.
Water Environment		
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	The hydro-geological study was conducted to evaluate the possible impact on the ground water table. No significant impacts are anticipated on the water bodies around the project area. Details are discussed under Chapter No. 3.
24	Erosion Control measures.	Noted & agreed
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies! Rivers, & any ecological fragile areas.	Noted & agreed
26	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	Noted & agreed
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	Noted & agreed
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	No Archaeological site near the project area, no proposal for the disposal of mine pit water in the nearby water bodies
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	There is Topsoil in the project site with 1m Depth.
30	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	Discussed in the Draft EIA/EMP Report in Chapter No.3

Energy		
31	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	It is explained in Chapter 4
Climate Change		
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Noted and Agreed
33	The Environmental Impact Assessment should study impact on climate change. temperature rise, pollution and above soil & below soil carbon stock.	Discussed in the Draft EIA/EMP Report in Chapter No.3.
Mine Closure Plan		
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	It is explained in Chapter 2
EMP		
35	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	It is explained in Chapter 10
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	Project Cost = Rs 1,19,60,000/- CER Cost = Rs 5,00,000/ Disaster Management plan & mine closure plan is discussed in chapter no.4 & 7
Risk Assessment		
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Risk assessment plan is discussed in chapter no. 7
Disaster Management Plan		
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	Disaster Management plan is discussed in chapter no. 7
Others		
39	The project proponent shall furnish VA() certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites. Structures, railway lines. roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.	VAO certificate is attached as Annexure
40	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.	Noted and Agreed
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	It is explained in Chapter 7

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.	Not applicable. This is Not a violation category project. This proposal falls under B1 Category (Cluster Condition).
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given	The applied land for quarrying is a Own Patta Land. Document is enclosed along with Approved Mining Plan as Annexure Volume 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	Noted & agreed.
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)	Map showing – Project area is superimposed on Satellite imagery is enclosed in Figure No. 2.7 Project area boundary coordinates superimposed on Toposheet – Figure No. 1.3, Surface Features around the project area covering 10km radius – Figure No. 2.8, Geology map of the project area covering 10km radius - Figure No. 2.11, Geomorphology Map of the Study Area covering 10 km radius – Figure No. 2.12,
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	Map showing – Geology map of the project area covering 10km radius - Figure No. 2.11, Geomorphology Map of the Study Area covering 10 km radius – Figure No. 2.12,
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 applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
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	The proponent has framed their Environmental Policy and the same is discussed in the Chapter No 10.1A,

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	It is an opencast quarrying operation proposed to operate in Mechanized method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90 ⁰ bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.
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.	Noted & agreed. The study area considered for this study is 10 km radius and all data contained in the EIA report such as waste generation etc., is 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.	Land use and land cover of the study area is discussed in Chapter No. 3, Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2, Table No 2.4,
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.	Not Applicable. There is no waste anticipated during this quarry operation. The entire quarried out rough stone will be transported to the needy customers. No Dumps is proposed outside the lease area. No need R&R plan
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. There is no Forest Land involved in the proposed project area. The proposed project area is a patta land. Approved Mining Plan is enclosed as Annexure Volume 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.	Not Applicable. The proposed project area does not involve any Forest Land.
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. The project doesn't attract Recognition of Forest Rights Act, 2006.
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given	No Reserve Forest within the Study Area.
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details	Not Applicable.

	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	There are No National Parks, Biosphere Reserves, Wildlife Corridors and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
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.	Not Applicable. There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
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.	Detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] was carried out and discussed under Chapter No. 3 There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.
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.	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.
20	Similarly. for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable. The project doesn't attract The C. R. Z. Notification, 2018.
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	Not Applicable. There are no approved habitations within a radius of 300 meters. Therefore, R&R Plan / Compensation details for the Project Affected People (PAP) is not anticipated and Not Applicable for this project.

	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 socioeconomic 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 predominant downwind direction. The mineralogical composition of PM ₁₀ , particularly for free silica, should be given.	Baseline Data were collected for One Season (March to May 2023) as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.
23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly, indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Air Quality Modelling for prediction of incremental GLC's of pollutant was carried out using AERMOD view 9.6.1 Model. Details in Chapter No. 4.
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.	Total Water Requirement: 2.3 KLD Discussed under Chapter 2, Table No 2.15
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project, should be provided.	Not Applicable. Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis. Drinking water will be sourced from the approved water vendors.
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.	Part of the working pit will be allowed to collect rain water during the spell of rain will be used for greenbelt development and dust suppression. The Mine Closure Plan is prepared for converting the excavated pit into rain water harvesting structure and serve as water reservoir for the project village during draught season.
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.	Impact Studies and Mitigation Measures of Water Environment including Surface Water and Ground Water are discussed in Chapter 4.

28	Based on actual monitored data, it may clearly be shown whether working will intersect. Ground water. 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 fbr pumping of ground water should also be obtained and copy furnished.	Not Applicable. The ground water table inferred 63-68m below ground level. The ultimate depth of quarry is 40m bgl. This proposal of 40 m below ground level will not intersect the ground water table, which is inferred from the hydro-geological studies carried out at the project site. Discussed under Chapter 3.
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.	Not Applicable. There is no stream, seasonal or other water bodies passing within the project area. Therefore, no modification/ diversion of water bodies is anticipated.
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.	Highest elevation of the project area is 842m AMSL. Ultimate depth of the mine is 40m BGL Water level of the area is 68-63 m BGL
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.	Greenbelt Development Plan is discussed under Chapter 4.
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.	Traffic density survey was carried out to analyse the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details in Chapter 2.
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No. 2.
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	Discussed under Chapter 2, Mine Closure Plan is a part of Approved Mining Plan enclosed as Annexure Volume – 1.
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures	Occupational Health Impacts of the project and preventive measures are detailed under Chapter 4.

	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.	No Public Health Implications anticipated due to this project. Details of CER and CSR are discussed under Chapter 8.
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.	No Negative Impact on Socio Economic Environment on the Study Area is anticipated and this project shall benefit the Socio-Economic Environment by ways of employment for 42 people directly and 28 people indirectly. Details in Chapter 4.
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.	Detailed Environment Management Plan for the project to mitigate the anticipated impacts described under Chapter 4 is discussed under Chapter 10.
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.	The outcome of public hearing will be updated in the final EIA/AMP report.
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 is pending in any court against this 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 is Rs. 1,19,60,000/- CER Cost is Rs.5,00,000/- In order to implement the environmental protection measures, an amount of Rs.38.41 lakhs as capital cost and recurring cost as Rs.31.81 lakhs as recurring cost is proposed considering present market price considering present market scenario for the proposed project.
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Details in Chapter 7.3.
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.	Details in Chapter 8.
44	Besides the above, the below mentioned general points	are also to be followed: -
a	Executive Summary of the EIA/EMP Report	Enclosed as separate booklet.
b	All documents to be properly referenced with index and continuous page numbering.	All the documents are properly referenced with index and continuous page numbering.
c	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	List of Tables and source of the data collected are 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	Baseline monitoring reports are enclosed with This report in Chapter 3. Original Baseline monitoring reports will be submitted in the final EIA report during appraisal.

e	Where the documents provided are in a language other than English, an English translation should be provided.	Not Applicable.
f	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Will be enclosed along with Final EIA/ EMP Report.
g	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) Dated: 4th August, 2009, which are available on the website of this Ministry, should be followed.	Noted & Agreed. Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA.II (I) Dated: 4th August, 2009 are 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	Noted & Agreed.
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.	Not 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.	Surface Plan – Figure No. 2.4 Working Plan – Figure No 2.13 Closure Plan – Figure No.2.16

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1. INTRODUCTION

1.0 PREAMBLE

Environmental Impact Assessment (EIA) is the management tool to ensure the sustainable development and it is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision-making tool, which guides the decision makers in taking appropriate decisions for any project. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these impacts are taken into account during the project designing. It also reduces conflicts by promoting community participation, information, decision makers, and helps in developing the base for environmentally sound project.

Rough Stone is the major requirements for construction of industry. This EIA report is prepared by considering the load of proposed and Existing quarries within the cluster over an extent of 7.53.5 ha in Alur Village, Hosur Taluk, Krishnagiri District and Tamil Nadu State, cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016.

Baseline monitoring study was carried out during the period March – May 2023 in compliance with ToR obtained vide. This EIA Report is prepared in compliance with ToR obtained vide Lr No. SEIAA-TN/F.No.9897/TOR-1442/2023 Dated 09.05.2023.

The baseline monitoring study has been carried out during the period of March – May 2023 and this EIA and EMP report is prepared for considering cumulative impacts arising out of this project. The Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) individually to minimize those adverse impacts.

1.1 PURPOSE OF THE REPORT

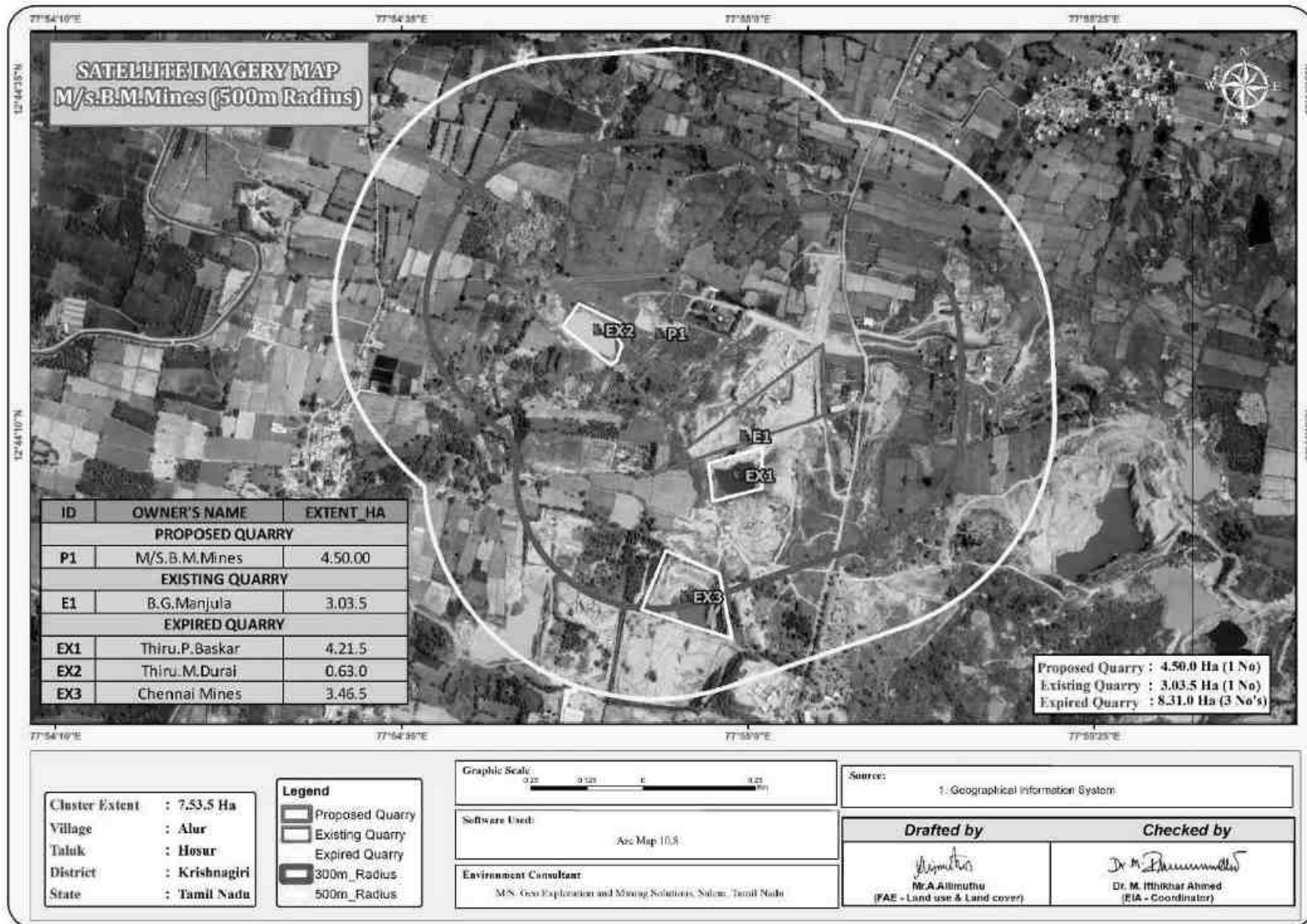
The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14thSeptember 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14thAugust 2018, Mining Projects are classified under two categories i.e., A (> 100 Ha) and B (\leq 100 Ha), and Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation in Appendix–XI.

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B-1 and appraised by SEAC/ SEIAA as well as for cluster situation.

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

“Draft EIA report prepared on the basis of ToR Issued for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu”

FIGURE1.1: SATELLITE IMAGERY CLUSTER QUARRIES



1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

1.2.1 Identification of Project

TABLE 1.1: IDENTIFICATION OF PROPOSED PROJECT

Name of the Project	M/s.B.M.Mines Rough Stone & Gravel Quarry
S.F. No.	207/1A1, 207/1A2A and 208/3 (Part)
Extent	4.50.0 ha
Land Type	Patta Land classified as punjai
Village, Taluk and District	Alur Village, Hosur Taluk, Krishnagiri District

Source: Approved Mining Plan

1.2.2 Identification of Project Proponent

TABLE 1.2: DETAILS OF PROJECT PROPONENT

Name of the Project Proponent	C.N.Kaarthi - Authorised Signatory
Communication Address	M/s.B.M.Mines, Villa No.23, Vakil Hosur Hills, Off Rayakottai Road, Chennathur Post, Hosur, Krishnagiri District, Tamil Nadu State – 635 109.
Status	Company
Cell	73810 15095
Mail	B.M.Mines@outlook.com

Source: Approved Mining Plan

1.3 BRIEF DESCRIPTION OF THE PROJECT

1.3.1 Nature and Size of the Project

The Nature of the project is Opencast Rough stone quarrying operation. The same method of mining will be followed by deploying Heavy Earth Moving Machineries without deep hole drilling. Blasting carried out in controlled blasting method using Slurry Explosive. The project area is Plain topography with altitude from 842m above Mean sea level.

TABLE 1.3: BRIEF DESCRIPTION OF THE PROPOSED PROJECT

Name of the Quarry	M/s. B.M.Mines Rough Stone & Gravel Quarry		
Toposheet No	57-H/14		
Latitude between	12°44'11.7824"N to 12°44'21.6581"N		
Longitude between	77°54'46.9577"E to 77°54'58.7361"E		
Highest Elevation	842 m AMSL		
Proposed Depth of Mining	40m bgl (1m Topsoil + 4m Gravel + 35m Rough Stone)		
Geological Resources	Rough Stone in m ³	Gravel in m ³	Topsoil in m ³
	15,75,000	1,80,000	45,000
Mineable Reserves	Rough Stone in m ³	Gravel m ³	Topsoil m ³
	7,19,435	1,41,800	36,032
Year-wise Production for 10 years	Rough Stone in m ³	Gravel m ³	Topsoil m ³
	7,19,435	1,41,800	36,032
Ultimate Pit Dimension	275m (L) * 130m (W) * 40m (D)		
Water Level in the surrounding area	68-63m bgl		
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting		
Topography	The lease area is a plain topography. The area has gentle slope towards Southwestern side. The altitude of the area is 842m (max) above mean sea level.		
Machinery proposal for this scheme period	Hand Jack Hammer	10 Nos	
	Compressor	3 Nos	
	Excavator with Bucket & Rock Breaker	2 Nos	
	Tippers	5 Nos	

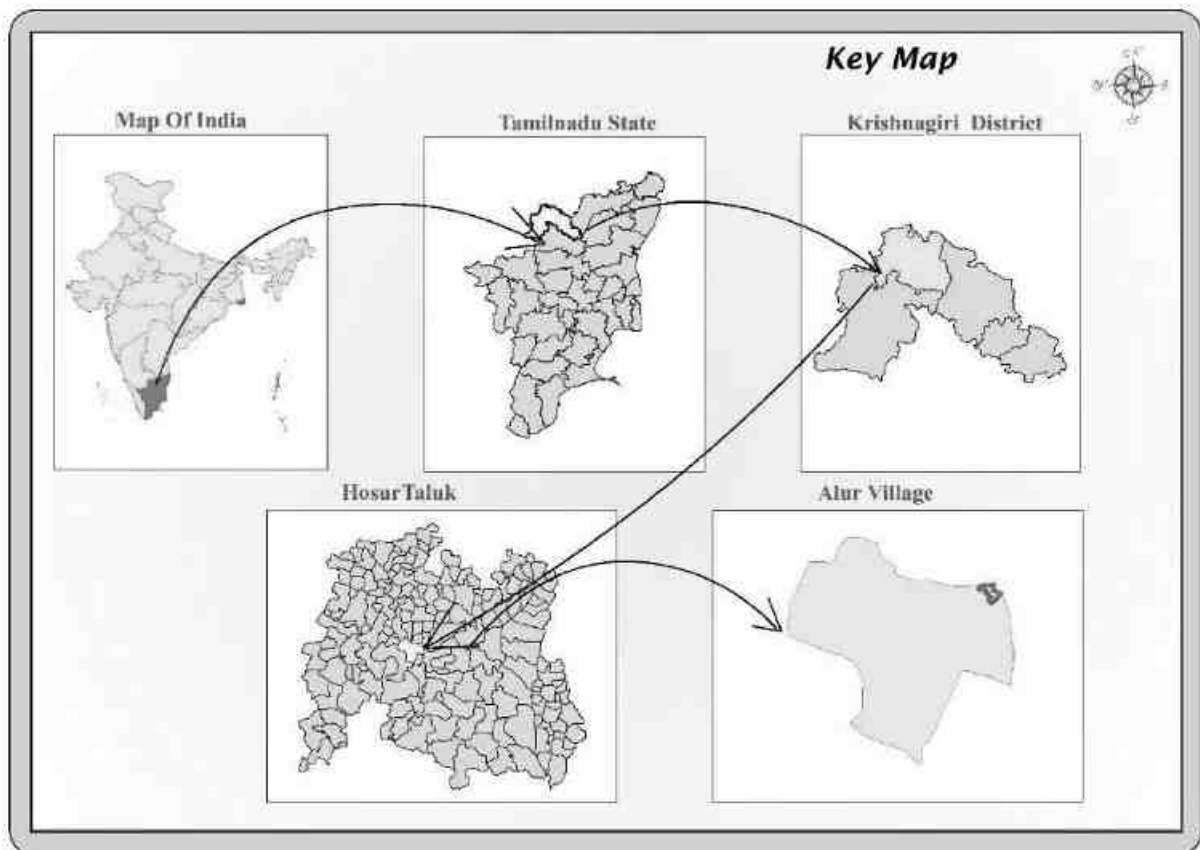
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	39 Nos	
Total Project Cost	Rs.1,19,60,000/-	
Proposed CER Cost	Rs.5,00,000/-	
Nearby Water Bodies	Odoi	220m S
	Tank	650 NW
	Canal	670m W
	Tank	680m SW
	Ponnaiyal River	1.3Km W
	Kelavarapali Reservoir	5.3Km NW
	Kammandoddi Lake	7Km SE
Greenbelt Development Plan	Proposed to plant about 2700 Nos of trees in the safety barrier and village roads considering 500 Nos of Trees per hectare.	
Proposed Water Requirement	2.3 KLD	
Nearest Habitation	370m South west	

Source: Approved Mining Plan

1.3.2 Location of the Project

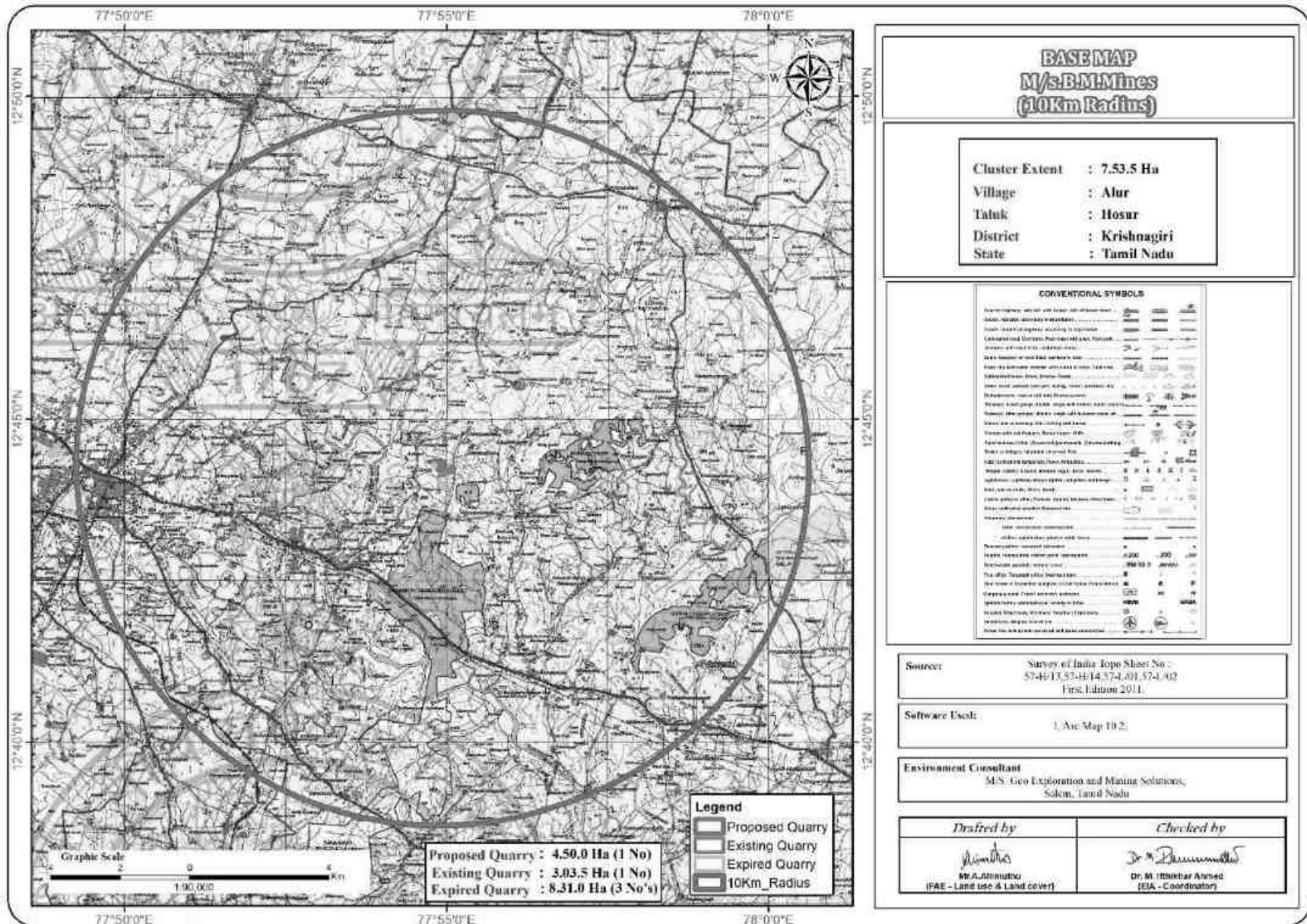
- The Lease area located about 3 km North east side of Alur village, Alur village is located 8km from Hosur Taluk, Hosur situated 48km West from Krishnagiri District.

FIGURE1.2: KEY MAP SHOWING THE LOCATION OF THE PROJECT SITE



Source: Survey of India Toposheet 57-H/14

FIGURE 1.3: TOPOSHEET MAP OF THE STUDY AREA 10 KM RADIUS



1.4 ENVIRONMENTAL CLEARANCE

The Environmental Clearance process for the proposed project will comprise of four stages. These stages in sequential order are given below -

1. Screening
2. Scoping
3. Public Consultation &
4. Appraisal

SCREENING –

- The project proponent applied for Rough Stone Quarry Lease Dated: 26.04.2022.
- Precise Area Communication Letter was issued by the District Collector of Krishnagiri Vide Rc.No.738/2022/Mines dated 19.01.2023.
- Mining Plan approved by Assistant Director, Krishnagiri Roc.No. 738/2022/Mines Dated: 17.02.2023.
- The proposed project falls under “B1” Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/421183/07.03.2023.

SCOPING –

- The proposal was placed in 368th SEAC meeting held on 19.04.2023 and the committee recommended for issue of ToR.
- The proposal was considered in 615th SEIAA meeting held on 08.05.2023 & 09.05.2023 and issued ToR vide Letter No SEIAA-TN/F.No.9897/ ToR-1442/2023 Dated 09.05.2023.

PUBLIC CONSULTATION –

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the District is submitted along with this Draft EIA/ EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

APPRAISAL –

Appraisal is the detailed scrutiny by the State Expert Appraisal Committee (SEAC) of the application and other documents like the final EIA & EMP Report, outcome of the Public Consultations including Public Hearing Proceedings, submitted by the proponent to the regulatory authority concerned for grant of environmental clearance. The report has been prepared using the following references:

- Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, February, 2010.
- EIA Notification, 14thSeptember, 2006.
- ToR Lr.No. SEIAA-TN/F.No.9897/ ToR-1442/2023 Dated 09.05.2023.
- Approved Mining Plan of the Proposed Project.

1.5 TERMS OF REFERENCE (ToR)

Compliance to ToR issued vide

Lr.No. SEIAA-TN/F.No.9897/ ToR-1442/2023 Dated 09.05.2023.

1.6 POST ENVIRONMENT CLEARANCE MONITORING

The project proponent shall submit a half-yearly compliance report in respect of stipulated Environmental Clearance terms and conditions to MoEF & CC Regional Office & SEIAA after grant of EC on 1st June and 1st December of each calendar year as per MoEF & CC Notification S.O. 5845 (E) Dated: 26.11.2018.

1.7 GENERIC STRUCTURE OF EIA DOCUMENT

The overall contents of the EIA report follow the list of contents prescribed in the EIA Notification 2006 and the “Environmental Impact Assessment Guidance Manual for Mining of Minerals” published by MoEF & CC.

1.8 THE SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for this applied project area. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the Summer season (March to May 2023) for various environmental components so as to assess the anticipated impacts due the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to this proposed project.

TABLE 1.4: ENVIRONMENT ATTRIBUTES

Sl.No.	Attributes	Parameters	Source and Frequency
1	Ambient Air Quality	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂	Continuous 24-hourly samples twice a week for three months at 8 locations (1 Core & 7 Buffer)
2	Meteorology	Wind speed and direction, temperature, relative humidity and rainfall	Near project site continuous for three months with hourly recording and from secondary sources of IMD station
3	Water quality	Physical, Chemical and Bacteriological parameters	Grab samples were collected at 6 locations – 4 ground water and 2 surface water samples; once during study period.
4	Ecology	Existing terrestrial and aquatic flora and fauna within 10 km radius circle.	Limited primary survey and secondary data was collected from the Forest department.
5	Noise levels	Noise levels in dB(A)	8 locations – data monitored once for 24 hours during EIA study (1 Core & 7 Buffer)
6	Soil Characteristics	Physical and Chemical Parameters	Once at 6 locations during study period
7	Land use	Existing land use for different categories	Based on Survey of India topographical sheet and satellite imagery and primary survey.
8	Socio-Economic Aspects	Socio-economic and demographic characteristics, worker characteristics	Based on primary survey and secondary sources data like census of India 2011.
9	Hydrology	Drainage pattern of the area, nature of streams, aquifer characteristics, recharge and discharge areas	Based on data collected from secondary sources as well as hydro-geology study report prepared.
10	Risk assessment and Disaster Management Plan	Identify areas where disaster can occur by fires and explosions and release of toxic substances	Based on the findings of Risk analysis done for the risk associated with mining.

Source: Onsite Monitoring Data/Sampling by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories

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

1.8.1 Regulatory Compliance & Applicable Laws/Regulations

- Application for Quarrying Lease as per Tamil Nadu Minor Mineral Concession Rules, 1959.
- Obtained Precise Area Communication Letter as per Tamil Nadu Minor Mineral Concession Rules, 1959 for Preparation of Mining Plan and obtaining Environmental Clearance.
- The Scheme of Mining Plan has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959.
- Obtained Terms of Reference vide Lr. No. SEIAA-TN/F.No.9897/ ToR-1442/2023 Dated 09.05.2023.

2. PROJECT DESCRIPTION

2.0 GENERAL

The M/s. B.M.Mines Rough Stone & Gravel quarry in Alur Village falls in the cluster situation, (cluster extent of 7.53.50 ha) requires Environmental Clearance. The total cluster extent is calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016.

As the extent of cluster are more than 5 ha, the proposal falls under B1 Category as per the Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018, and requirement for EIA, EMP and Public Consultation for obtaining Environmental Clearance.

2.1 DESCRIPTION OF THE PROJECT

The proposed project is site specific and there is no additional area required for this project. There is no effluent generation/discharge from the project site.

Rough Stone is proposed to be excavated by opencast mechanized method involving splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers and rock breakers to avoid secondary blasting.

2.2 LOCATION OF THE PROJECT

- The Lease area located about 3 km Northeast side of Alur village, Alur village is located 8km from Hosur Taluk, Hosur situated 48km West from Krishnagiri District.
- The project does not fall within 10 km radius of any Eco – sensitive zone, National Park, Tiger Reserve, Elephant Corridor and Biosphere Reserves.

TABLE 2.1: SITE CONNECTIVITY

Nearest Roadway	NH – 44 - Salem - Bangalore– 4.0km - SE SH - 85 - Hosur – Rayakottai – 11.0Km SE
Nearest Village	Attur –1.87Km - West
Nearest Town	Hosur – 10.0Km- West
Nearest Railway Station	Hosur – 10.0Km- West
Nearest Airport	Bengaluru Airport - 55.0Kms- NW
Seaport	Chennai – 266.0 km – Northeast

Source: Survey of India Toposheet.

TABLE 2.2: BOUNDARY CO-ORDINATES OF PROJECT AREA

Boundary Pillar No.	Latitude	Longitude
1	12°44'16.9049"N	77°54'58.7361"E
2	12°44'11.7824"N	77°54'53.6406"E
3	12°44'13.7174"N	77°54'51.9809"E
4	12°44'15.1228"N	77°54'53.3592"E
5	12°44'16.9144"N	77°54'51.1550"E
6	12°44'17.9496"N	77°54'51.0488"E
7	12°44'19.4431"N	77°54'48.8229"E
8	12°44'19.4937"N	77°54'48.0761"E
9	12°44'19.2096"N	77°54'47.4074"E
10	12°44'19.7220"N	77°54'46.9577"E
11	12°44'21.3693"N	77°54'47.6318"E
12	12°44'21.6581"N	77°54'55.0255"E
13	12°44'18.5981"N	77°54'54.5964"E

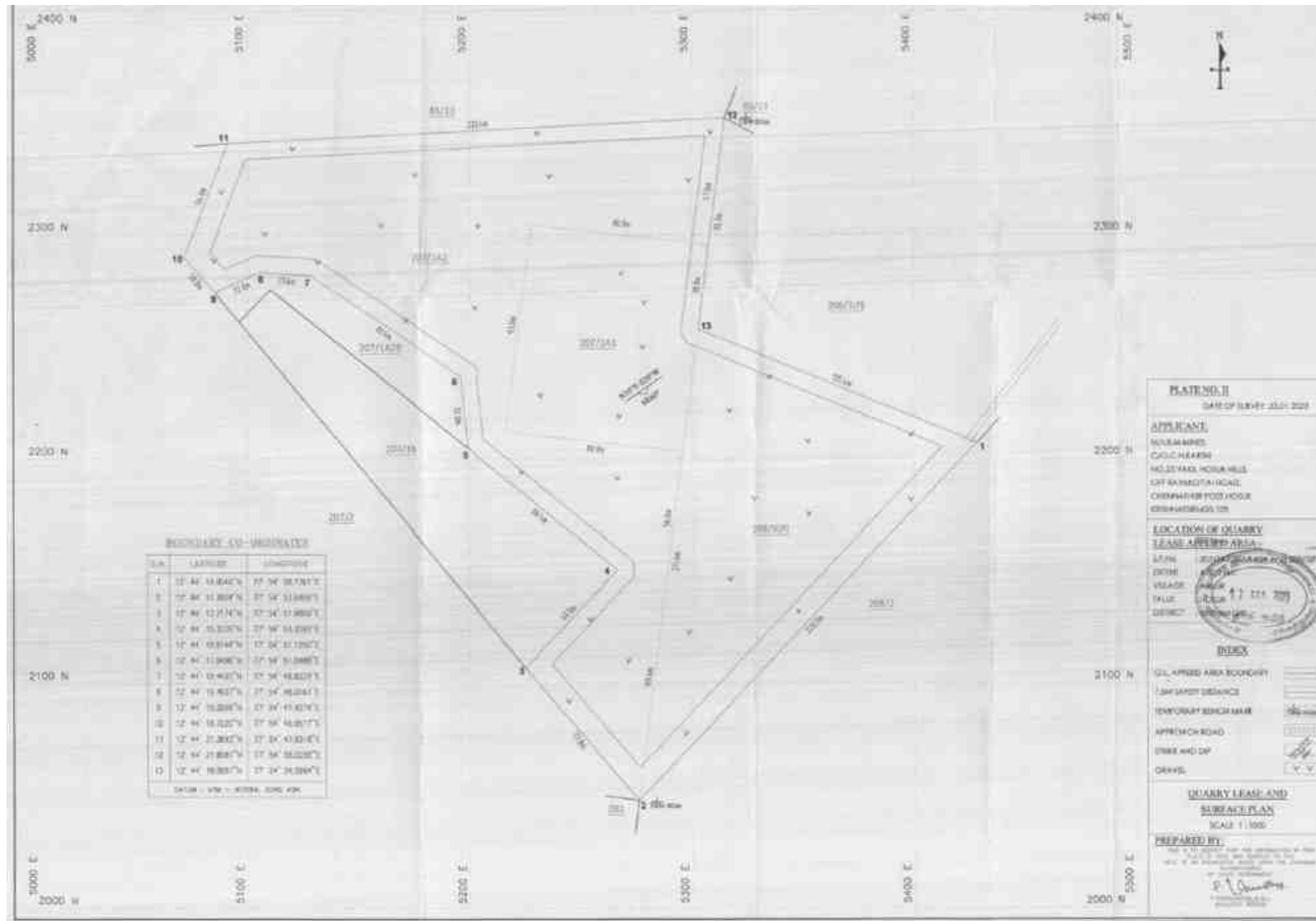
Source: Approved Mining Plan

FIGURE 2.1: GOOGLE IMAGE OF THE PROJECT AREA



Source: Google Earth Imagery

FIGURE 2.2: QUARRY LEASE PLAN / SURFACE PLAN



Source: Approved Mining Plan

FIGURE 2.3: IMAGE SHOWING SURFACE FEATURES AROUND 10 KM RADIUS

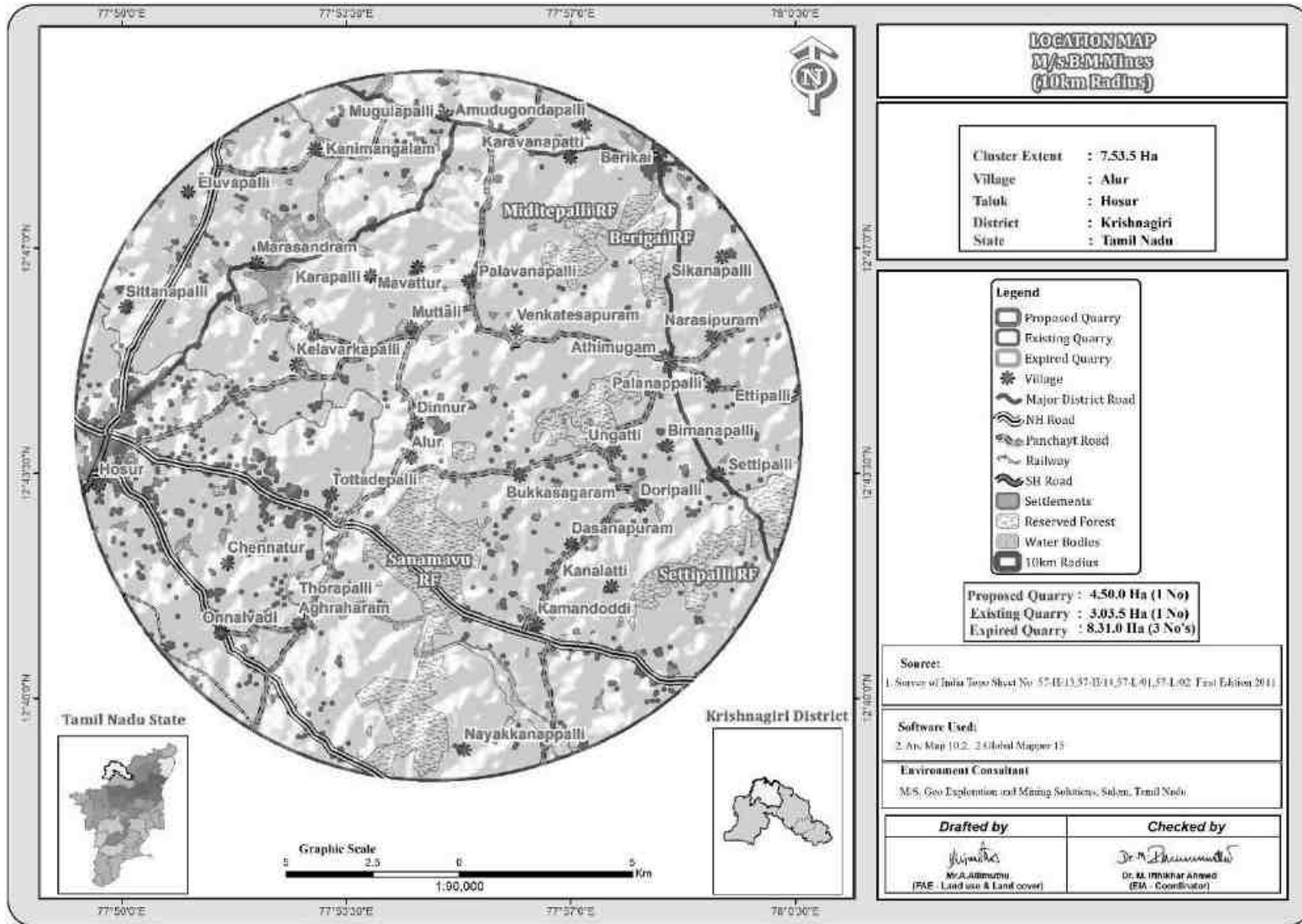


FIGURE 2.4: IMAGE SHOWING SURFACE FEATURES AROUND 5KM RADIUS

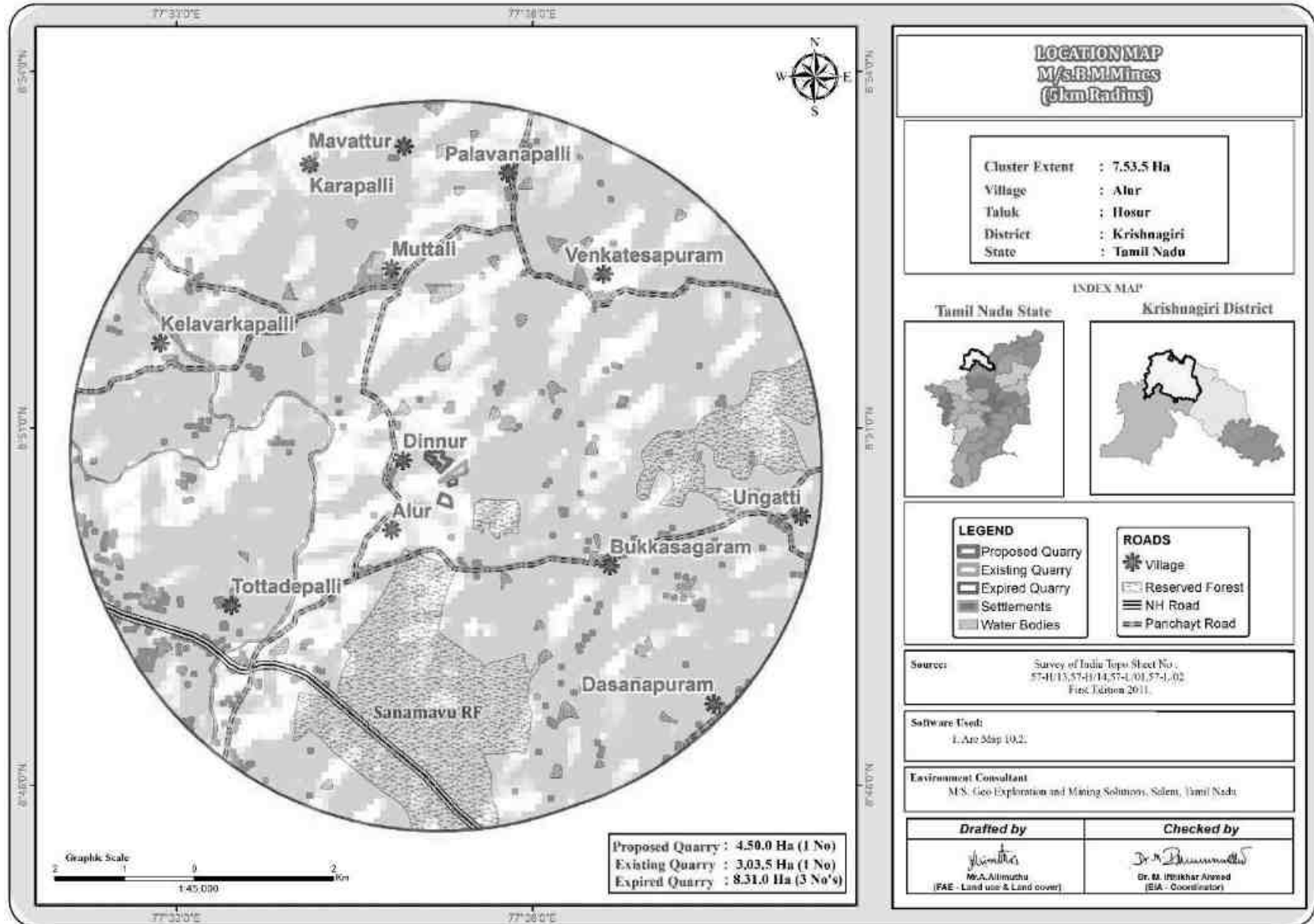
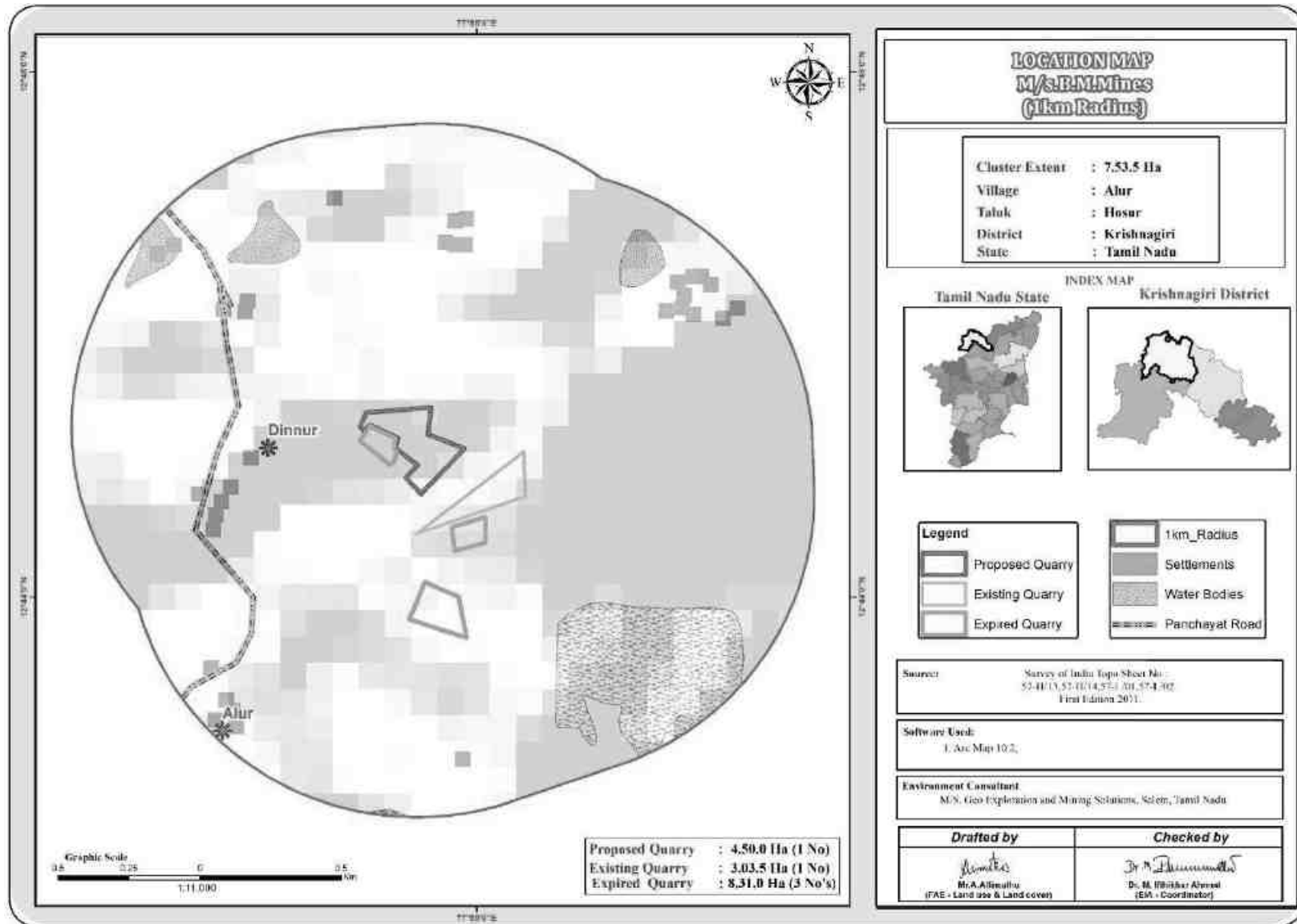


FIGURE 2.5: IMAGE SHOWING SURFACE FEATURES AROUND 1 KM RADIUS



2.2.1 Project Area

- The Projects is site specific
- There is No beneficiation or processing proposed inside the project area.
- There is no forest land involved in the project area and is devoid of major vegetation and trees.

TABLE 2.3: LAND USE PATTERN OF THE LEASE AREA

DESCRIPTION	PRESENT AREA IN (HA)	AREA REQUIRED DURING THE FIRST FIVE YEARS PLAN PERIOD (HA)	AREA AT THE END OF THIS QUARRYING PERIOD (HA)
Area under quarry	Nil	3.59.0	3.59.0
Infrastructure	Nil	0.02.00	0.02.0
Roads	Nil	0.01.00	0.03.0
Green Belt	Nil	0.35.50	0.83.0
Un – utilized area	4.50.0	1.23.50	0.03.0
TOTAL	4.50.0	4.50.0	4.50.0

Source: Approved Mining Plan

2.2.2 Size or Magnitude of Operation

TABLE 2.4: OPERATIONAL DETAILS OF LEASE AREA

PARTICULARS	DETAILS		
	Rough Stone	Gravel (3 years)	Topsoil (3 years)
Geological Resources in m ³	15,75,000	1,80,000	45,000
Mineable Reserves in m ³	7,19,435	1,41,800	36,032
Year-wise production for 10 years	7,19,435	1,41,800	36,032
Mining plan period	10 Years		
Number of Working Days	300 Days		
Production per day in m ³	240	157	24
No of Lorry loads (12m ³ per load)	20	13	2
Total Depth of Mining	40m (1m Topsoil + 4m Gravel + 35m Rough Stone)		

Source: Approved Mining Plan.

2.3 GEOLOGY

2.3.1 Regional Geology

There are no major minerals observed in the vicinity of the project site. A brief description of the regional Geology is discussed below.

The peninsular gneiss is the widest spread group of rocks in many parts of Tamil Nadu. The southern domain of Tamil Nadu is characterized by the khondalite group of rocks (with subordinate amount of Charnockite) and marked by the absence of BMQ and Dolerite dyke systems.

The geological formations of the district belong mainly to Archaean age along with rock of Proterozoic age. The former is represented by Khondalite Group of rocks, Charnockite Group of rocks, Migmatites Complex, Sathyamangalam Group of rocks, while the latter is represented by alkaline rocks. The Khondalite Group includes garnet sillimanite gneiss and quartzite which occur as small patches. The migmatite complex includes garnetiferous quartzo feldspathic gneiss and hornblends biotite gneiss, the former exposed on the western part of the district. The Sathyamangalam Group includes fuchsite quartzite, sillimanite mica schist and amphibolites. The Bhavani Group in this area includes fissile hornblende-biotite gneiss, granitoid gneiss and pink migmatite. Amphibolites with barbed ferruginous quartzite and associated quartzo-feldspathic rocks (Champion Gneiss) represent the Kolar group and are found west and southwest of Veppanapalli. Following this there are basic intrusions occurring as dykes. The

Charnockite Group occupies a major part of the south-west portion of this district with small bands of garnetiferous quartzo-feldspathic gneiss, Granite gneiss and dolerite dykes.

The North-East and Northern part of the district mainly consist of granite gneiss with small patches of Pink Migmatite, hornblende-biotite gneiss and dolerite dykes. The Eastern part of the district consists of Epidote-Hornblende Gneiss, Ultra Mafics, Syenite and Carbonatite.

The Alkaline Complex is represented by epidote-hornblende gneiss, ultramafics, syenite and carbonatite and these are distributed in the eastern part of the district. Innumerable basic dykes and felsites, quartz, barites and pegmatite veins form part of the Alkali Complex.

2.3.2 Structural Settings of Krishnagiri: –

The general geological sequence of the rock types in the area is: -

Order of super position: -		AGE
ROCK TYPE		
Topsoil		Pleistocene to Recent
	----- Unconformity -----	-----
Quartz and Pegmatite vein		
Dolerite dykes		
Migmatite Complex		
Granite Gneiss		Archaean to Proterozoic
Charnockite group		
Peninsular Gneissic Complex		

2.3.3. Geology of the lease area

The study area follows the regional trend and mainly comprises of Hard Rock Formation as a homogeneous formation / Batholith formation of Charnockite. The project area is plain terrain, sloping toward Southern with an altitude of 842m AMSL. The project area is covered with topsoil formation of 1m thickness; Massive Charnockite formation is found after 1m topsoil formation which is clearly inferred from the existing nearby quarry pit.

Physical attitude of the Charnockite deposit of this area is given below:-

Strike Direction	-	N35 ⁰ E – S35 ⁰ W
Dip direction	-	SE60 ⁰

2.3.4 Hydrogeology

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. It is inferred that the entire cluster area is a Hard rock terrain and the low -resistance encountered at the depth between 65-80 m bgl, hence it is assumed that the possibility of Ground water occurrence will be below this level and it also proved that this hard batholith above 60 m will not encounter any subsurface water. The thickness of weathered zones in the district ranges from less than a meter to more than 15 m (Source Central Ground Water Board – Krishnagiri).

In the geophysical study it has been clearly inferred that the depth of the quarrying operation will not intersect the ground water table

Hard Rock Formations

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

Granitic Gneiss

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

Charnockite

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

Aquifer Parameters

The thickness of aquifer in this district is highly erratic and varies between 15 m to 40 m below ground level. The inter granular Porosity is essentially dependent on the intensity and degree of weathering and fracture development in the bed rock. As discussed earlier deep weathering has developed in Gneissic formations and moderate weathering in Charnockite formations. The range of aquifer parameters in hard rock and sedimentary formations are given below:

TABLE 2.5: RANGE OF AQUIFER PARAMETERS

Aquifer paramters	Water Table conditions in hard rock areas
Well yield	36 to 1125 lpm
Transmissivity (T) (m ² /day)	8 to 73 m ² /day
Permeability (K) (m/day)	0.78 to 23 m/day
Depth of water level in open well	8m to 25m

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

FIGURE 2.6: REGIONAL GEOLOGY MAP

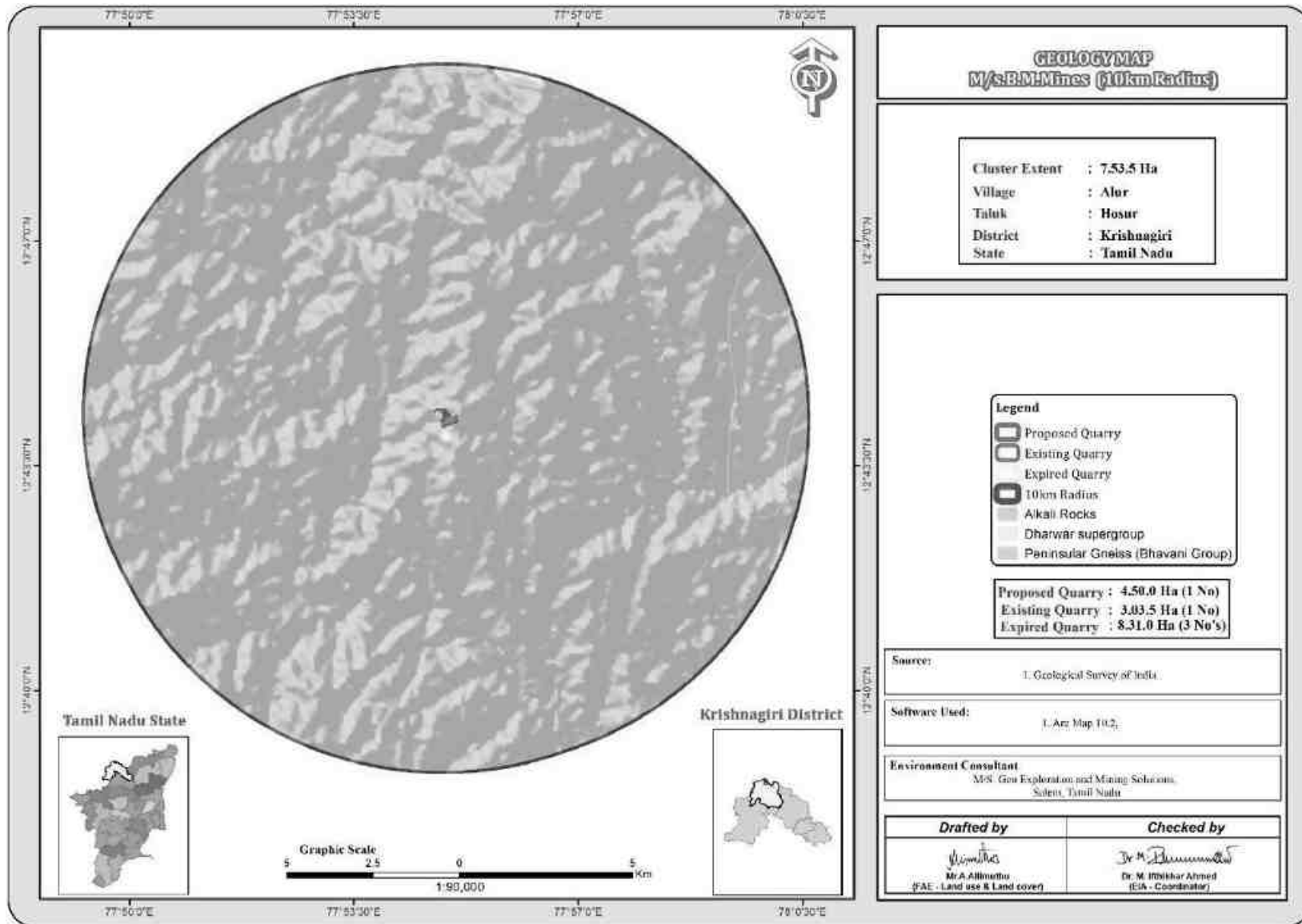


FIGURE 2.7: GEOMORPHOLOGY MAP

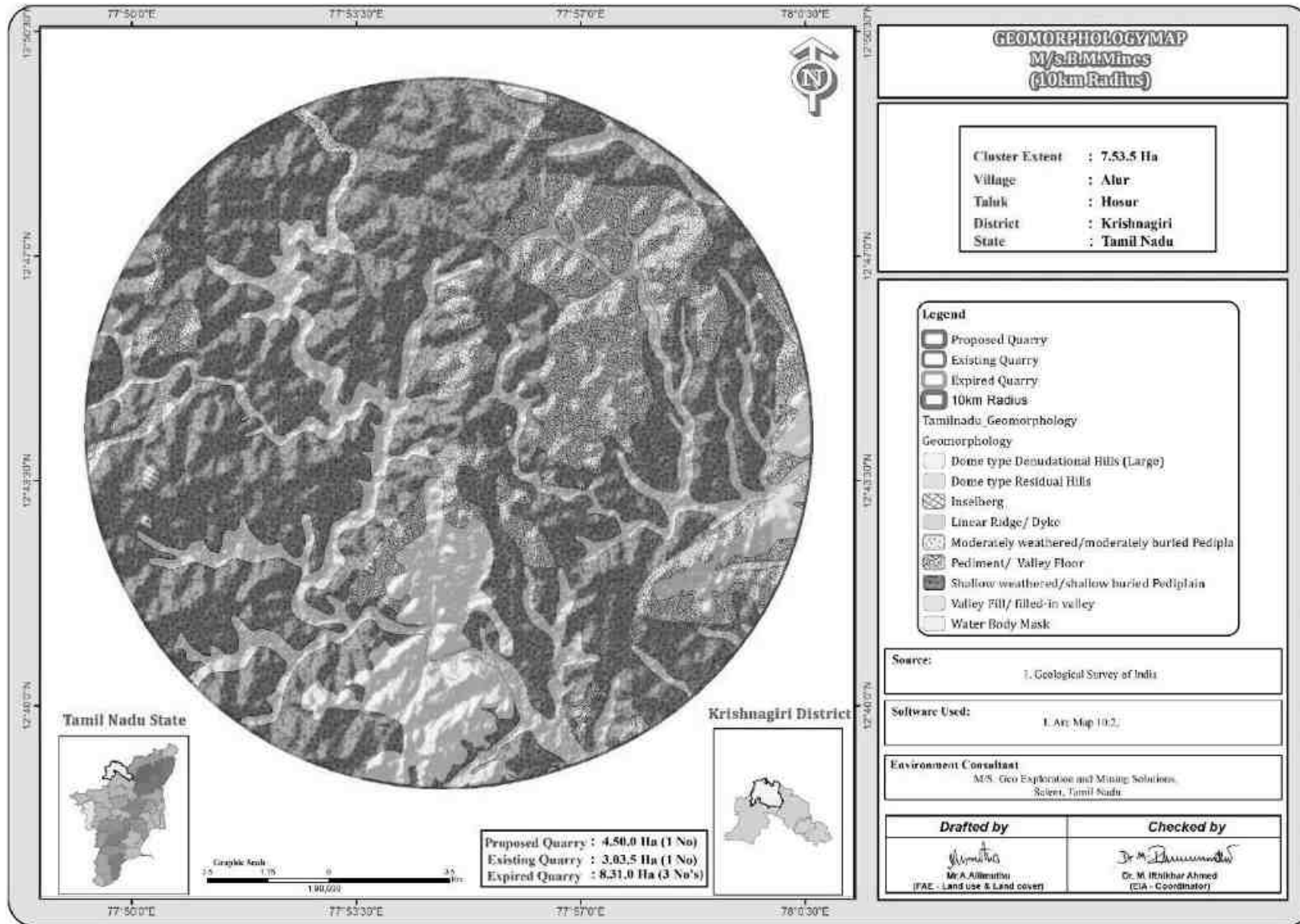


FIGURE 2.8A: GEOLOGICAL, YEAR-WISE DEVELOPMENT PRODUCTION PLAN AND SECTIONS FOR SECOND FIVE YEARS

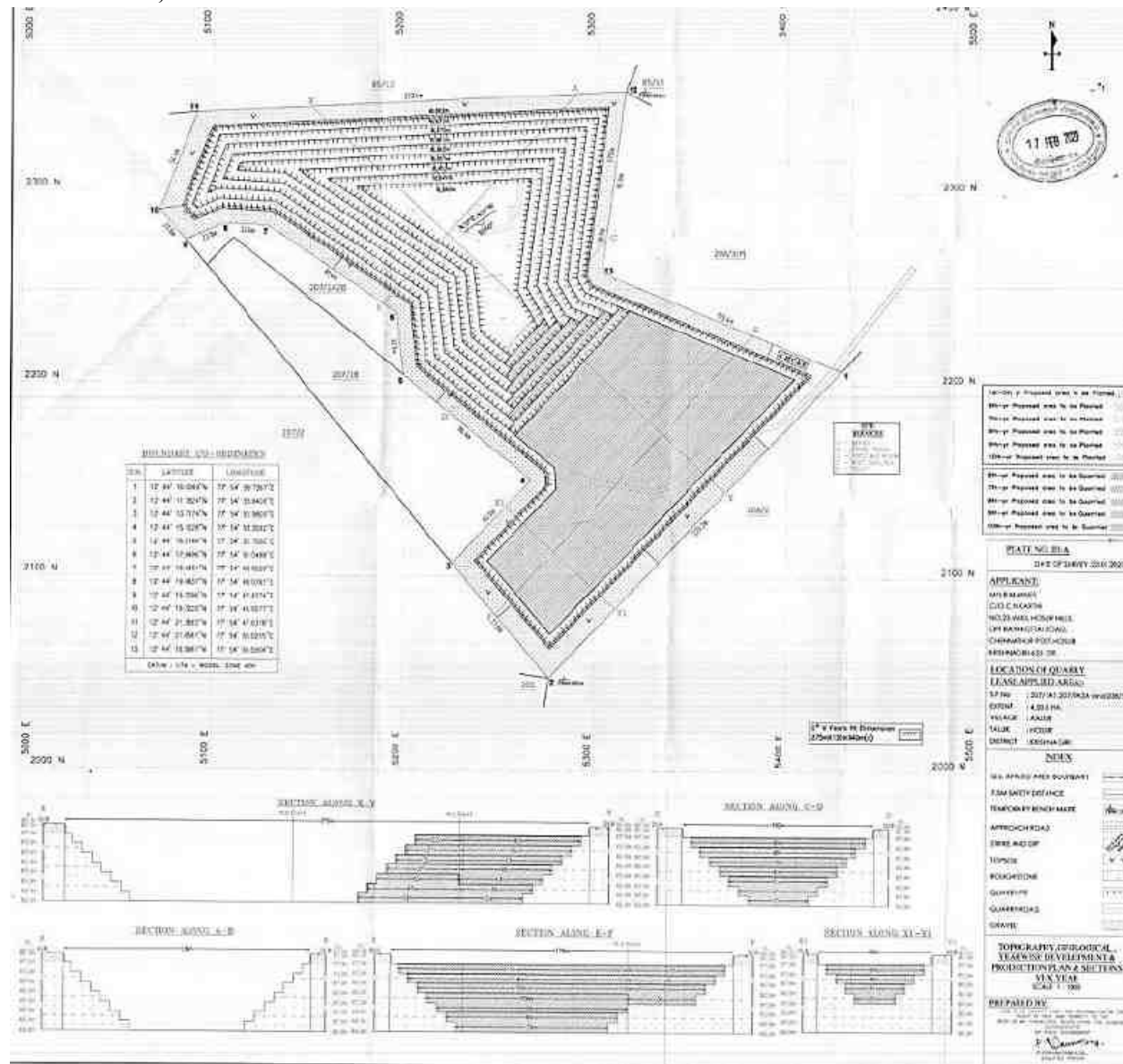
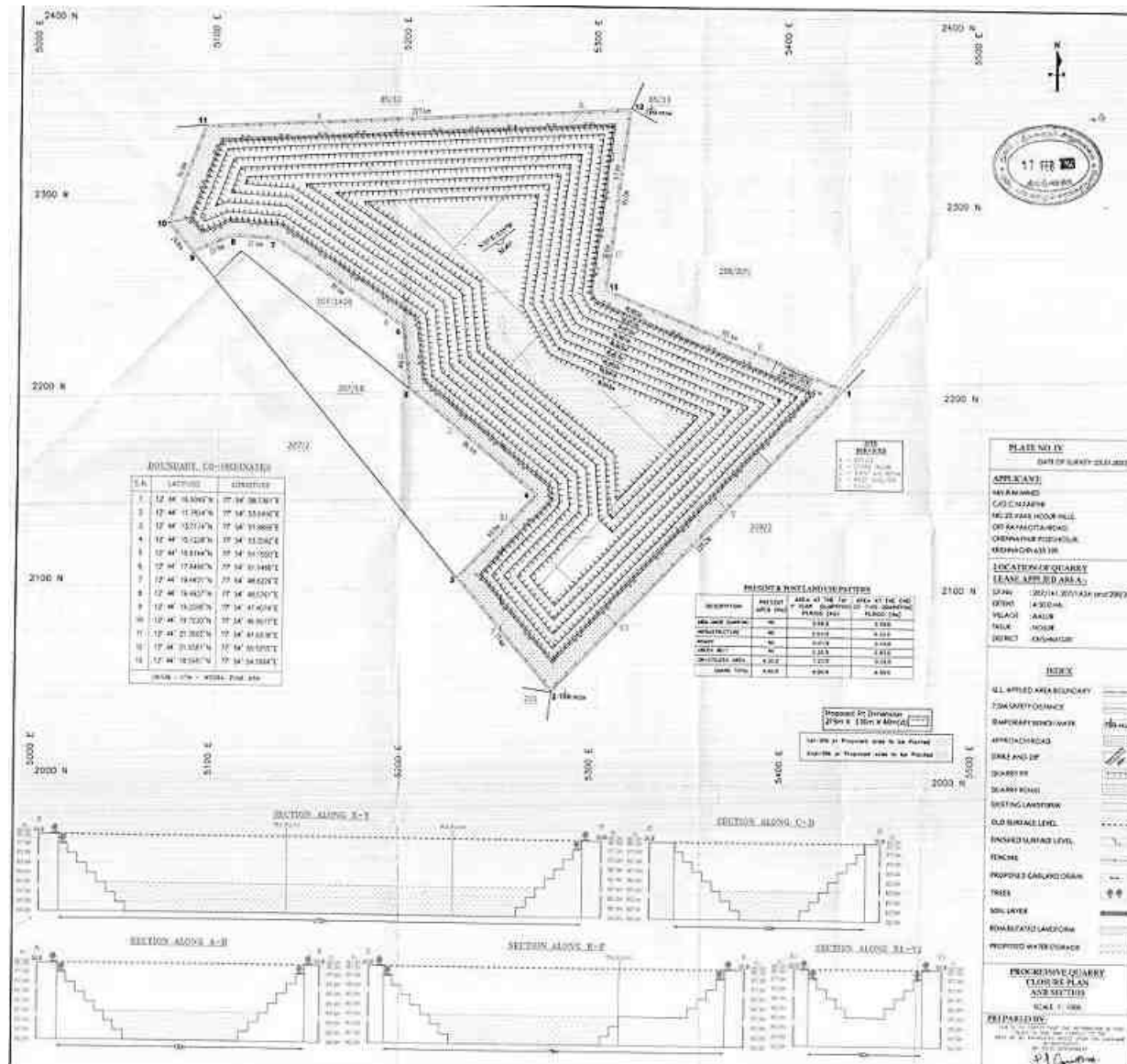


FIGURE 2.9: CLOSURE PLAN AND SECTIONS



2.4 RESOURCES AND RESERVES

The Resources and Reserves of Rough Stone were calculated based on Cross-Section Method by plotting sections to cover the maximum lease area.

Based on the availability of Geological Resources the Mineable Reserves are calculated by considering excavation system of bench formation and leaving essential safety distance of 10 m (Safety Barrier all around the lease area) and safety distance as per precise area communication letter and deducting the locked up reserves during bench formation (Also called as Bench Loss) and the Mineable Reserves is calculated considering there is no waste / overburden / side burden (100% Recovery Anticipated) for this project.

Reserves calculated upto a depth of 40m.

TABLE 2.6: RESOURCES AND RESERVES

	Rough Stone	Gravel (3 years)	Top Soil (3 years)
Geological Resource in m ³	15,75,000	1,80,000	45,000
Mineable Resource in m ³	7,19,435	1,41,800	36,032
Proposed production of Rough stone for 10 years in m ³	7,19,435	1,41,800	36,032

Source: Approved Mining Plan

Disposal of Waste

There is no waste anticipated in these Rough Stone quarrying operation. The entire quarried out materials will be utilized (100%). Top layer of Topsoil formation will be used for green belt development.

Conceptual Mining Plan/ Final Mine Closure Plan

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

TABLE 2.7: ULTIMATE PIT DIMENSION

Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	275	130	40

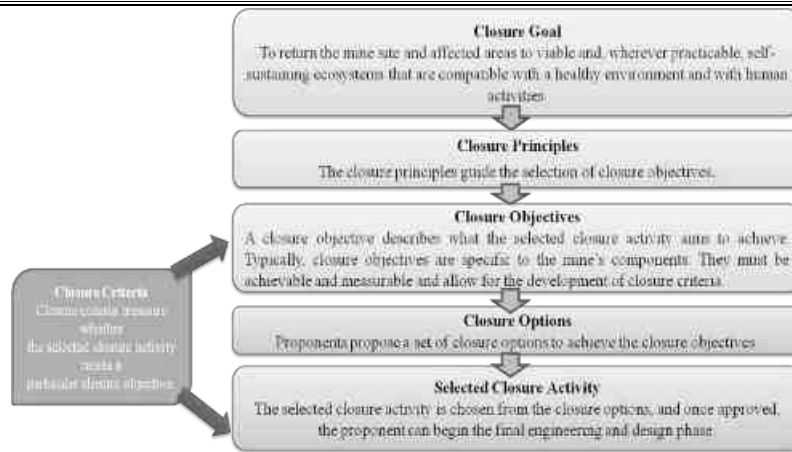
Source: Approved Mining Plans

At the end of life of mine, the excavated mine pit / void will act as artificial reservoir for collecting rain water and helps to meet out the demand or crises during drought season.

- After mine closure the greenbelt developed along the safety barrier and top benches and temporary water reservoir will enhance the ecosystem
- Mine Closure is a process of returning a disturbed site to its natural state or which prepares it for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.
- The principal closure objectives are for rehabilitated mines to be physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/ non-contaminating, and capable of sustaining an agreed post-mining land use.

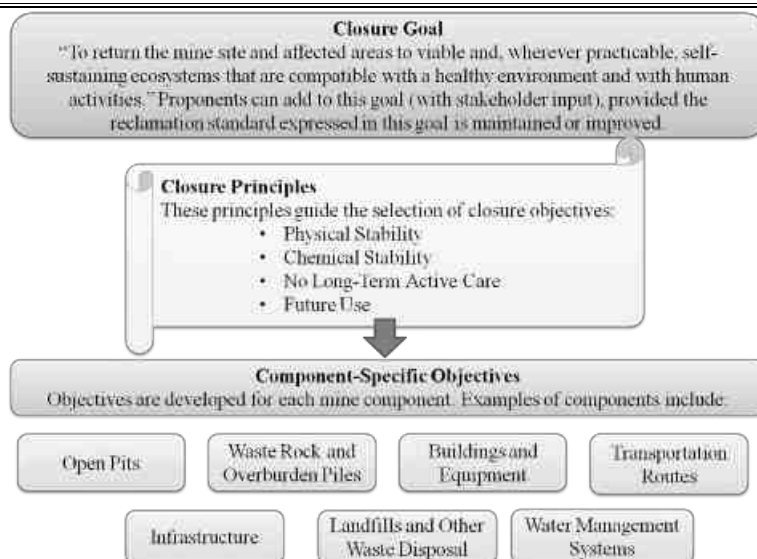
Closure Objectives –

- Access to be limited, for the safety of humans and wildlife.
- The open pit mine workings and pit boundary are physically and geo-technically stable.
- Water quality in mine pits is safe for aquatic life.
- Discharge of contaminated drainage has been minimized and controlled.
- Original or desired new surface drainage patterns have been established.
- Emergency access and escape routes from flooded pits for humans and wildlife are in place.
- Dust levels are safe for people, vegetation, aquatic life, and wildlife.



Closure Planning & Options Considerations in Mine Design –

- The closure of mine is well planned at the initial stage of planning & design consideration by the internal and external stake holders
- Construction of 2m height bund all along the mine pit boundary and ensure its stability all time & construction of garland drain along the natural slope to avoid sliding and collection of soil to the pit & surface runoff during rainfall
- After complete exploitation of mineral, the lowest bench foot wall side will be maintained as plain surface without any sump pits to avoid any accidents
- All the sharp edges will be dressed to smoother face before the closure of mine and ensure no loose debris on hanging wall side
- The project proponent as a part of social responsibilities assures to supply the stored mine pit water to the nearby villages after effective treatment process as per the standards of TNPCB & TWAD
- Native species will be planted in 3 row patterns on the boundary barriers and 1st bench, a full-time sentry will be appointed at the gate to prevent inherent entry of public & cattle.
- The access road to the quarry will be cut-off immediately after the closure
- The layout design shall be prepared and get approved from Department of Geology and Mining.
- Physical and chemical stability of structures left in place at the site, the natural rehabilitation of a biologically diverse, stable environment, the ultimate land use is optimized and is compatible with the surrounding area and the requirements of the local community, and taking the needs of the local community into account and minimizing the socio-economic impact of closure
- There will be a positive change in the environmental and ecology due to the mine closure.



Post-Closure Monitoring –

The purpose of post-closure monitoring with respect to open pit mine workings is to ensure the attainment of closure objectives.

- Monitor physical and geotechnical stability of remnant pit walls.
- Monitor the ground regime in pit walls to confirm achievement of design objectives.
- Monitor water level in pit to confirm closure objectives regarding fish, fish habitat is being achieved.
- Sample water quality and quantity at controlled pit discharge points.
- Identify and test unanticipated areas where water management is an issue.
- Inspect integrity of barriers such as berms & fences.
- Monitor wildlife interactions with barriers to determine effectiveness.
- Inspect aquatic habitat in flooded pits where applicable.
- Monitor dust levels.

TABLE 2.8: MINE CLOSURE BUDGET

Activity	Year	Cost	Total Cost
	I		
Plantation in Nos	2,700		
Plantation & Maintenance cost	2,70,000	@ 100 Rs/ Saplings	Rs.2,70,000
Wire Fencing (1120m)	3,36,000	@ 300Rs per meter	Rs.3,36,000
Garland Drain (1050m)	3,15,000	@ 300Rs per meter	Rs.3,15,000
TOTAL			Rs.9,21,000/-

Source: Proposed by FAE's and EC

2.5 METHOD OF MINING

The method of mining is Opencast Mechanized Mining Method is being proposed by formation of 5.0-meter height bench with a bench width not less than the bench height. However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act – 1952.

The Rough Stone is a batholith formation, the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling, and Slurry Explosives will be used for blasting.

Hydraulic Excavators attached with Rock Breakers unit will be deployed for breaking large boulders to required fragmented sizes to avoid secondary blasting, hydraulic excavators attached with bucket unit will be deployed for loading the Rough Stone into the tippers, and then the stone is transported from pithead to the nearby crushers.

2.5.1 Drilling & Blasting Parameters

Drilling & Blasting will be carried out as per parameters given below: -

Spacing	–	1.2m
Burden	–	1.0 m
Depth of hole	–	1.5 m
Charge per hole	–	0.50 – 0.75kg
Powder factor	–	6.0 tonnes/kg
Diameter of hole	–	32 mm

Type of Explosives to be used –

Slurry explosives (An explosive material containing substantial portions of a liquid, oxidizers, and fuel, plus a thickener), NONEL / Electric Detonator & Detonating Fuse

Storage of Explosives –

No proposal for storage of explosives within the project area, the project proponent has made agreement with authorized explosives agencies for carrying out blasting activities and competent person as per DGMS guidelines will be employed for safety and supervision of overall quarrying activities.

The explosives will be sourced from the blasting agency on daily basis and the blasting will be carried out under the supervision of competent qualified Blaster and it will be ensured that there shall be no balance of explosive stock; any balance stock will be taken back by the supplier.

2.5.2 Extent of Mechanization

TABLE 2.9 PROPOSED MACHINERY DEPLOYMENT

S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	10	1.2m to 2.0m	Compressed air
2	Compressor	3	400psi	Diesel Drive
3	Excavator with Bucket / Rock Breaker Unit 4	2	300 HP	Diesel Drive
4	Tippers / Dumpers	5	20 Tonnes	Diesel Drive

Source: Approved Mining Plans

2.6 GENERAL FEATURES

2.6.1 Existing Infrastructures

Infrastructures like Mine office, Temporary Rest shelters for workers, Latrine and Urinal Facilities already provided in the project area the same will be maintained in good condition.

2.6.2 Drainage Pattern

Drainage pattern are created by stream erosion over time that reveals characteristics of the kind of rocks and geological structures in a landscape region drained by streams. Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin. They are governed by the topography of the land, whether a particular region is dominated by hard or soft rocks, and the gradient of the land.

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.

There are no streams, canals or water bodies crossing within the project area. The drainage pattern of the area is dendritic – sub dendritic.

2.6.3 Traffic Density

Approach road to the project site is located East side of the area, this road connecting in the Sukkasagaram-Bagalur Panchayat Road at a distance of 430m.

This road again connecting in the Alur to Sukkasagaram Road Panchayat Road at a distance of 1.10 km. The traffic survey conducted based on the transportation route of material, the Rough Stone is proposed to be transported mainly through Alur to Sukkasagaram Panchayat Road on the South side. There are no villages or settlements along the route of mineral transport.

Traffic density measurements were performed at two locations

1. Sukkasagaram-Bagalur Panchayat Road at a distance of 430m
2. Alur to Sukkasagaram Panchayat Road at a distance of 1.10 km

Traffic density measurement were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., Heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift-one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

TABLE.2.10: TRAFFIC SURVEY LOCATIONS

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Alur to Sukkasagaram	1.10km South	Panchayat Road
TS2	Sukkasagaram-Bagalur	430m East	Panchayat Road

Source: On-site monitoring by GEMS FAE & TM

TABLE 2.11: EXISTING TRAFFIC VOLUME

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	160	480	210	210	460	230	920
TS2	120	360	170	170	320	160	690

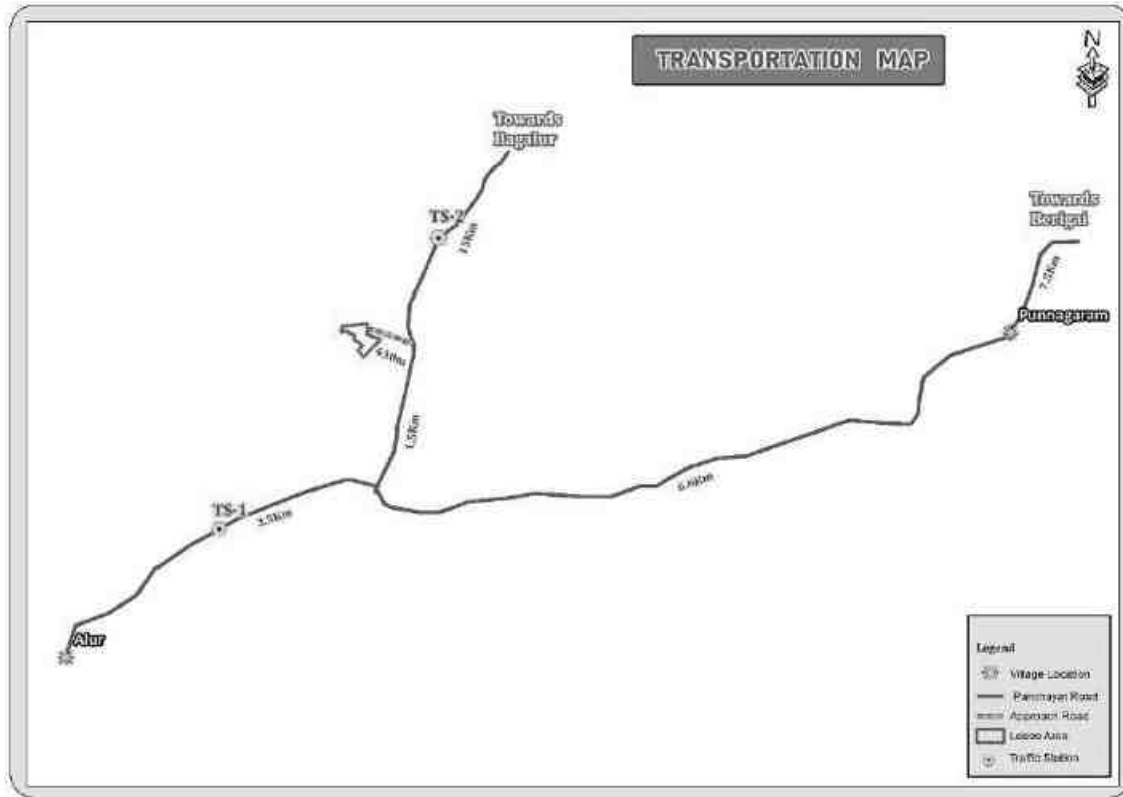
Source: On-site monitoring by GEMS FAE & TM

* PCU conversion factor: HMV (Trucks and Bus) = 3, LMV (Car, Jeep and Auto) = 1 and 2/3 Wheelers = 0.5

TABLE 2.12: ROUGH STONE HOURLY TRANSPORTATION REQUIREMENT

Transportation of Rough Stone per day		
Capacity of trucks	No. of Trips per day Cumulatively	Volume in PCU
12 tonnes	20	60

Source: Data analysed from Approved Mining Plan and as per recommendations given in TOR letter (Point -1).

FIGURE.2.10: MINERAL TRANSPORTATION ROUTE MAP**TABLE 2.13: SUMMARY OF TRAFFIC VOLUME**

Route	Existing Traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960 guidelines
Alur to Sukkasagaram	920	60	980	1200
Sukkasagaram-Bagalur	690	60	750	1200

Source: On-site monitoring analysis summary by GEMS FAE & TM

- Due to these projects the existing traffic volume will not exceed
- As per the IRC 1960 this existing village road can handle 1,200 PCU in hour and Major district road can handle 1500 PCU in hour hence there will not be any conjunction due to this proposed transportation.

2.6.4 Mineral Beneficiation and Processing

There is no proposal for the mineral processing or ore beneficiation in any of the proposed project.

2.7 PROJECT REQUIREMENT

2.7.1 Water Source & Requirement

Detail of water requirements in KLD as given below:

TABLE 2.14: WATER REQUIREMENT FOR THE PROJECT

*Purpose	Quantity	Source
Dust Suppression	0.9 KLD	Rainwater accumulated in Mine Pit/ Water Tanker
Green Belt development	0.8 KLD	Rainwater accumulated in Mine Pit/ Water Tanker
Domestic purpose	0.6 KLD	Water Tankers
Total	2.3 KLD	

Source: Prefeasibility Report

* Drinking water will be sourced from Approved Water Vendors

2.7.2 Power and Other Infrastructure Requirement

The proposed project requires power supply for the mining operations. The quarrying activity is proposed during day time only (General Shift 8 AM – 5 PM, Lunch Break 1 PM – 2 PM). Electricity for use in office and other internal infrastructure will be obtained from TNEB by project proponent.

No workshops inside the project area hence there will not be any process effluent generation from the project area. Domestic effluent from the mine office will be discharged to septic tank and soak pit. There is no toxic effluent expected to generate in the form of solid, liquid or gaseous form hence there is no requirement of waste treatment plant.

2.7.3 Fuel Requirement

High speed Diesel (HSD) will be used for mining machineries. Diesel will be brought from nearby Fuel Stations.

Topsoil:

Per hour Diesel consumption of excavator = 10 litres / hour
Per hour Average excavation of Topsoil = 60m³

TABLE 2.15: FUEL REQUIREMENT FOR TOPSOIL EXCAVATION

Topsoil reserves (m ³)	Per hour excavation (Topsoil reserve / 60)	Diesel Consumption (in Liters) (No. of hours x 10 litres)
36,032	600	6,000

Gravel

Per hour Diesel consumption of excavator = 10 litres / hour
Per hour Average excavation of Roughstone = 60m³

TABLE 2.16: FUEL REQUIREMENT FOR ROUGHSTONE EXCAVATION

Rough stone reserves (m ³)	Per hour excavation (Rough stone reserve /60)	Diesel Consumption (in Liters) (No. of hours x 16 litres)
1,41,800	2,363	23,630

Rough stone

Per hour Diesel consumption of excavator = 16 litres / hour
Per hour Average excavation of Roughstone = 20m³

TABLE 2.17: FUEL REQUIREMENT FOR ROUGHSTONE EXCAVATION

Rough stone reserves (m ³)	Per hour excavation (Rough stone reserve /20)	Diesel Consumption (in Liters) (No. of hours x 16 litres)
7,19,435	35,971	5,75,548

2.7.4 Project Cost

TABLE 2.18: PROJECT COST FOR THE PROPOSED QUARRY

Proposed Quarry	Project Cost
P1	Rs.1,19,60,000/-

Source: Approved Mining Plan & Prefeasibility Report

2.8 EMPLOYMENT REQUIREMENT:

The following manpower's are proposed in the mining plan to carry out the day-to-day quarrying activities, the same employment is aimed at maintaining the proposed production target and also to comply with the statutory provisions of The Metalliferous Mines Regulations, 1961.

TABLE 2.19: PROPOSED MANPOWER DEPLOYMENT

Mines Manager/Mines Foreman	1
Mate/Blaster	1
Excavator – Operator & Driver	7
Jack Hammer Operator	20
Security	1
Labour & Helper	2
Co-Operator and Cleaner	7
Total	39

Source: Approved Mining Plan

2.9 PROJECT IMPLEMENTATION SCHEDULE

The commercial operation will commence after the grant of Environmental Clearance. CTO will be obtained from the Tamil Nadu State Pollution Control Board. The conditions imposed during the Environmental Clearance will be compiled before the start of mining operation.

TABLE 2.20: EXPECTED TIME SCHEDULE

Sl.No.	Particulars	Time Schedule (In Month)					Remarks if any
		1 st	2 nd	3 rd	4 th	5 th	
1	Environmental Clearance						
2	Consent to Operate						Production Start Period
Time line may vary; subjected to rules and regulations /& other unforeseen circumstances							

Source: Anticipated based on Timelines framed in EIA Notification & CPCB Guidelines

3. DESCRIPTION OF ENVIRONMENT

3.0 GENERAL

This chapter presents a regional background to the baseline data at the very onset, which will help in better appreciation of micro-level field data, generated on several environmental and ecological attributes of the study area. The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions. The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering March, April & May 2023 with CPCB guidelines. Environmental data has been collected with reference to cluster quarries by CHENNAI METTEX LAB PRIVATE LIMITED – Approved by AAI, AGMARK, APEDA, BIS, [IC, FSSAI, GAFTA, IOPEPC, MOEF Et TEA BOARD, for the below attributes –

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

Study Area

An area of 10 km radius (aerial distance) from the periphery of the cluster is considered for EIA study. The data collection has been used to understand the existing environment scenario around the cluster against which the potential impacts of the project can be assessed. The study area has been divided into two zones viz **core zone** and **buffer zone** where core zone is considered as cluster and buffer zone taken as 10km radius from the periphery of the Cluster. Both Core zone and Buffer zone is taken as the study area.

Study Period

The baseline study was conducted during the pre-monsoon season i.e., March – May 2023.

Study Methodology

- The project area was surveyed in detail with the help of Total Station and the boundary pillars were picked up with the help of GPS. The boundary coordinates were superimposed on the satellite imagery to understand the relief of the area, besides Land use pattern of the area was studied through the Bhuvan (ISRO)
- Soil samples were collected and analysed for relevant physio-chemical characteristics, exchangeable Cations, nutrients & micro nutrients etc., in order to assess the impact due to mining activities and to recommend saplings for Greenbelt development
- Ground water samples were collected during the study period from the existing bore wells, while surface water was collected from ponds in the buffer zone. The samples were analysed for parameters necessary to determine water quality (based on IS: 10500:2012 criteria) and those which are relevant from the point of view of environmental impact of the proposed mines
- An onsite meteorological station was setup in cluster area, to collect data about wind speed, wind direction, temperature, relative humidity, rainfall and general weather conditions were recorded throughout the study period
- In order to assess the Ambient Air Quality (AAQ), samples of ambient air were collected by installation of Respiratory Dust Samplers (RDS) for Fugitive dust, PM₁₀ and SO₂, NO_x with gaseous attachments & Fine Dust Samplers (FDS) for PM_{2.5} and other parameters as per NAAQ norms and analysed for primary air pollutants to work out the existing status of air quality.
- The Noise level measurements were also made at various locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone.

- Baseline biological studies were carried out to assess the ecology of the study area to study the existing flora and fauna pattern of the area.
- Socio-Economic survey was conducted at village and household level in the study area to understand the present socio-economic conditions and assess the extent of impact due to the proposed mining project.

The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of samples analysis, etc., are given below Table 3.1.

TABLE 3.1: MONITORING ATTRIBUTES AND FREQUENCY OF MONITORING

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data's from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
*Soil	Physio-Chemical Characteristics	Once during the study period	6 (1 core & 5 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
*Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	6 (2 surface water & 4 ground water)	IS 10500& CPCB Standards
Meteorology	Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall	1 Hourly Continuous Mechanical/Automatic Weather Station	1	Site specific primary data& Secondary Data from IMD Station
*Ambient Air Quality	PM ₁₀ PM _{2.5} SO ₂ NO _x Fugitive Dust	24 hourly twice a week (March – May 2023)	8 (1 core & 7 buffer zone)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	8 (1 core & 7 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio-Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

Source: On-site monitoring/sampling by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories in association with GEMS

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

3.1 LAND ENVIRONMENT

The main objective of this section is to provide a baseline status of the study area covering 10km radius around the proposed mine site so temporal changes due to the mining activities on the surroundings can be assessed in future.

3.1.1 Land Use/ Land Cover

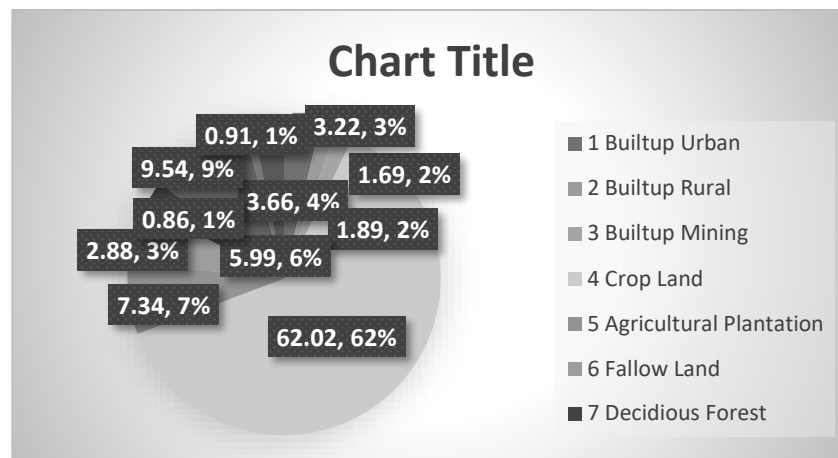
A visual interpretation technique has been adopted for land use classification based on the keys suggested in the chapter – V of the guidelines issued by NNRMS Bangalore & Level III classification with 1:50,000 scale for the preparation of land use mapping. Land use pattern of the area was studied through LISS III imagery of Bhuvan (ISRO). The 10 km radius map of study area was taken for analysis of Land use cover.

TABLE 3.2: LAND USE / LAND COVER TABLE 10 KM RADIUS

S.No	Classification	Area_Ha	Area_%
BUILTUP			
1	Builtup Urban	1191.46	3.66
2	Builtup Rural	549.38	1.69
3	Builtup Mining	614.98	1.89
AGRICULTURAL LAND			
4	Crop Land	20212.12	62.02
5	Agricultural Plantation	2391.62	7.34
6	Fallow Land	1952.70	5.99
FOREST			
7	Decidious Forest	937.94	2.88
8	Scrub Forest	281.16	0.86
BARREN/WASTELAND			
9	Scrub Land	3110.41	9.54
10	Barren Rocky	297.23	0.91
WATERBODIES			
11	Waterbodies	1048.40	3.22
		32587.39	100.00

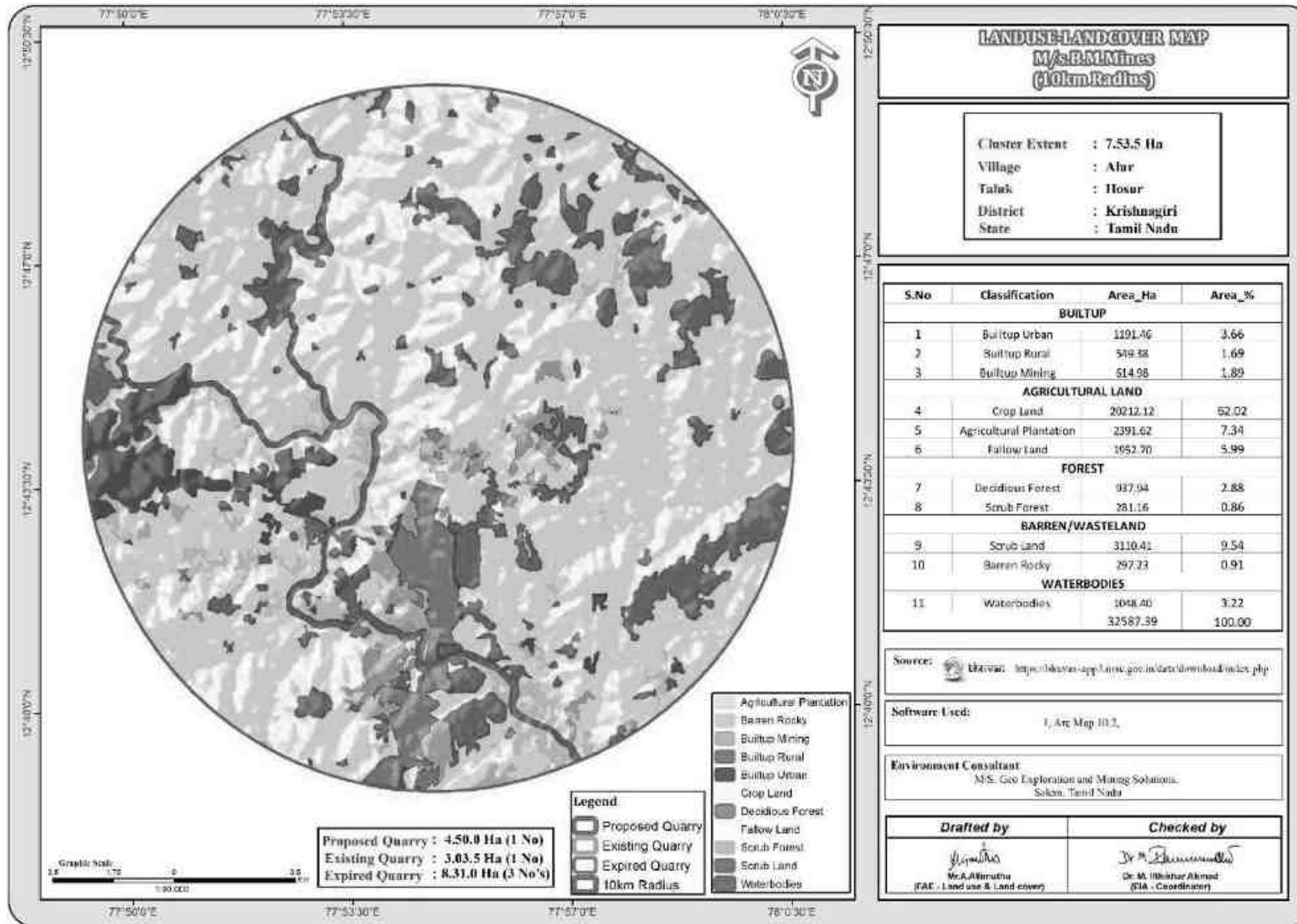
Source: Survey of India Toposheet and Landsat Satellite Imagery

FIGURE 3.1: PIE DIAGRAM OF LAND USE AND LAND IN STUDY AREA



Source: Table 3.2

FIGURE 3.2: LAND USE LAND COVER MAP 10KM RADIUS



From the above table, pie diagram and land use map it is inferred that the majority of the land in the study area is Agriculture land (includes crop, Plantation and fallow land) 75.35% followed by Builtup land 7.24%, Forest area – 3.74%. Barren/Waste lands– 10.45% and Wet lands & water bodies 3.22%

The total mining area within the study area is 614.98 ha i.e., 1.89%. The cluster area of 7.53.5ha contributes about 0.012% of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

3.1.2 Topography

The project area is plain topography, the gradient is gentle towards Southwestern Side and altitude of the area is 842m AMSL. The area is covered with topsoil formation of 1m thickness & Gravel 4m thickness; Massive Charnockite formation is found after 1m topsoil & Gravel 4m thickness formation which is clearly inferred from the existing nearby quarry pits.

3.1.3 Drainage Pattern of the Area

Drainage pattern are created by stream erosion over time that reveals characteristics of the kind of rocks and geological structures in a landscape region drained by streams.

Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin. They are governed by the topography of the land, whether a particular region is dominated by hard or soft rocks, and the gradient of the land.

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.

There are no streams, canals or water bodies crossing within the project area. The drainage pattern of the area is dendritic – sub dendritic.

3.1.4 Seismic Sensitivity

The proposed project site falls in the seismic Zone II, 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.

(Source: https://moes.gov.in/writereaddata/files/LS_EN_20032020_385.pdf)

3.1.5 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, are given in the below Table 3.3.

TABLE 3.3: DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE CLUSTER

Sl.No	Sensitive Ecological Features	Name	Arial Distance in km from Cluster
1	National Park / Wild life Sanctuaries	None	Cauvery North Wild life sanctuary -6.5km - SW
2	Reserve Forest	Sanamavu R.F.	700m – South
3	Lakes/Reservoir/ Dams/Stream/Rivers	Odai	220m_S
		Tank	650_NW
		Tank	960m NW
		Pedakullu Lake	2Km NW
		Canal	670m_W
		Tank	680m_SW
		Ponnaiyal River	1.3Km_W
		Kelavarapali Reservoir	5.3Km_NW
		Kammandoddi Lake	7Km_SE
4	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	None	Nil within 10 km Radius
5	Critically Polluted Areas	None	Nil within 10 km Radius
6	Mangroves	None	Nil within 10 km Radius
7	Mountains/Hills	None	Nil within 10 km Radius
8	Notified Archaeological Sites	None	Nil within 10 km Radius
9	Industries/Thermal Power Plants	None	Nil within 10 km Radius
10	Defence Installation	None	Nil within 10 km Radius

Source: Survey of India Toposheet, Village Cadastral Map and Field Survey

3.1.6 Soil Environment

Soil quality of the study area is one of the important components of the land environment. The composite soil samples were collected from the study area and analysed for different parameters. The locations of the monitoring sites are detailed in Table 3.4 and Figure 3.3.

The objective of the soil sampling is -

To determine the baseline soil characteristics of the study area; study the impact of proposed activity on soil characteristics and study the impact on soil more importantly agriculture production point of view.

TABLE 3.4: SOIL SAMPLING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	S-1	Core Zone	Project Area	12°44'20.55"N 77°54'50.05"E
2	S-2	Dinnur	400m West	12°44'20.37"N 77°54'33.26"E
3	S-3	Alur	960m SW	12°43'46.44"N 77°54'34.36"E
4	S-4	Gollapalli	5km SW	12°42'38.23"N 77°52'37.22"E
5	S-5	Kelavarapalli	4.8km NW	12°45'16.29"N 77°52'20.78"E
6	S-6	Devichettipatti	6km North	12°47'34.24"N 77°54'42.08"E

Source: On-site monitoring/sampling by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories in association with GEMS

Methodology –

For studying soil quality, sampling locations were selected to assess the existing soil conditions in and around the project site representing various land use conditions. The samples were collected by auger boring into the soil up to 90-cm depth. Six (6) locations were selected for soil sampling on the basis of soil types, vegetative cover, industrial & residential activities including infrastructure facilities, which would accord an overall idea of the soil characteristics. The samples were analysed for physical and chemical characteristics. The samples were sent to laboratory for analysis. The samples were filled in Polythene bags, coded and sent to laboratory for analysis and the details of methodology in respect are given in below Table 3.5.

TABLE 3.5: METHODOLOGY OF SAMPLING COLLECTION

Particulars	Details
Frequency	One grab sample from each station-once during the study period
Methodology	Composite grab samples of the topsoil were collected from 3 depths, and mixed to provide a representative sample for analysis. They were stored in airtight Polythene bags and analysed at the laboratory.

Source: On-site monitoring/sampling by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories in association with GEMS

Soil Testing Result –

The samples were analysed as per the standard methods prescribed in “Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India”. The important properties analysed for soil are bulk density, porosity, infiltration rate, pH and Organic matter, kjeldahi Nitrogen, Phosphorous and Potassium. The standard classifications of soil and physico-chemical characteristics of the soils are presented below in Table 3.6 & Test Results in Table 3.7.

TABLE 3.6: SOIL QUALITY STANDARD

Sl.No.	Soil Test	Remarks										
1	pH	<table border="1"> <tr> <td><4.5 Extremely acidic</td> <td>7.31-7.80 slightly alkaline</td> </tr> <tr> <td>4.51- 5.50 Very strongly acidic</td> <td>7.81-8.50 moderately alkaline</td> </tr> <tr> <td>5.51-6.0 moderately acidic</td> <td>8.51-9.0 strongly alkaline</td> </tr> <tr> <td>6.01-6.50 slightly acidic</td> <td>9.01 very strongly alkaline</td> </tr> <tr> <td>6.51-7.30 Neutral</td> <td></td> </tr> </table>	<4.5 Extremely acidic	7.31-7.80 slightly alkaline	4.51- 5.50 Very strongly acidic	7.81-8.50 moderately alkaline	5.51-6.0 moderately acidic	8.51-9.0 strongly alkaline	6.01-6.50 slightly acidic	9.01 very strongly alkaline	6.51-7.30 Neutral	
<4.5 Extremely acidic	7.31-7.80 slightly alkaline											
4.51- 5.50 Very strongly acidic	7.81-8.50 moderately alkaline											
5.51-6.0 moderately acidic	8.51-9.0 strongly alkaline											
6.01-6.50 slightly acidic	9.01 very strongly alkaline											
6.51-7.30 Neutral												
2	Electrical Conductivity (in $\mu\text{mohs/cm}$)	Normal <1000, Critical for germination 1000 – 2000, Critical for growth 2000- 4000, Injurious to most crops > 4000										
3	Organic Carbon (in %)	Upto 0.2: very less 0.21-0.4: less 0.41-0.5 medium, 0.51-0.8: on an average sufficient 0.81-1.00: sufficient >1.0 more than sufficient										
4	Nitrogen (in Kg/ha)	Upto 50 very less 51-100 less 101-150 good 151-300 Better >300 sufficient										
5	Phosphorus (in Kg/ha)	Upto 15 very less 16-30 less 31-50 medium, 51-65 on an average sufficient 66-80 sufficient >80 more than sufficient										
6	Potash (in Kg/ha)	0 -120 very less										

		120-180 less 181-240 medium 241-300 average 301-360 better >360 more than sufficient
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FIGURE 3.3: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS

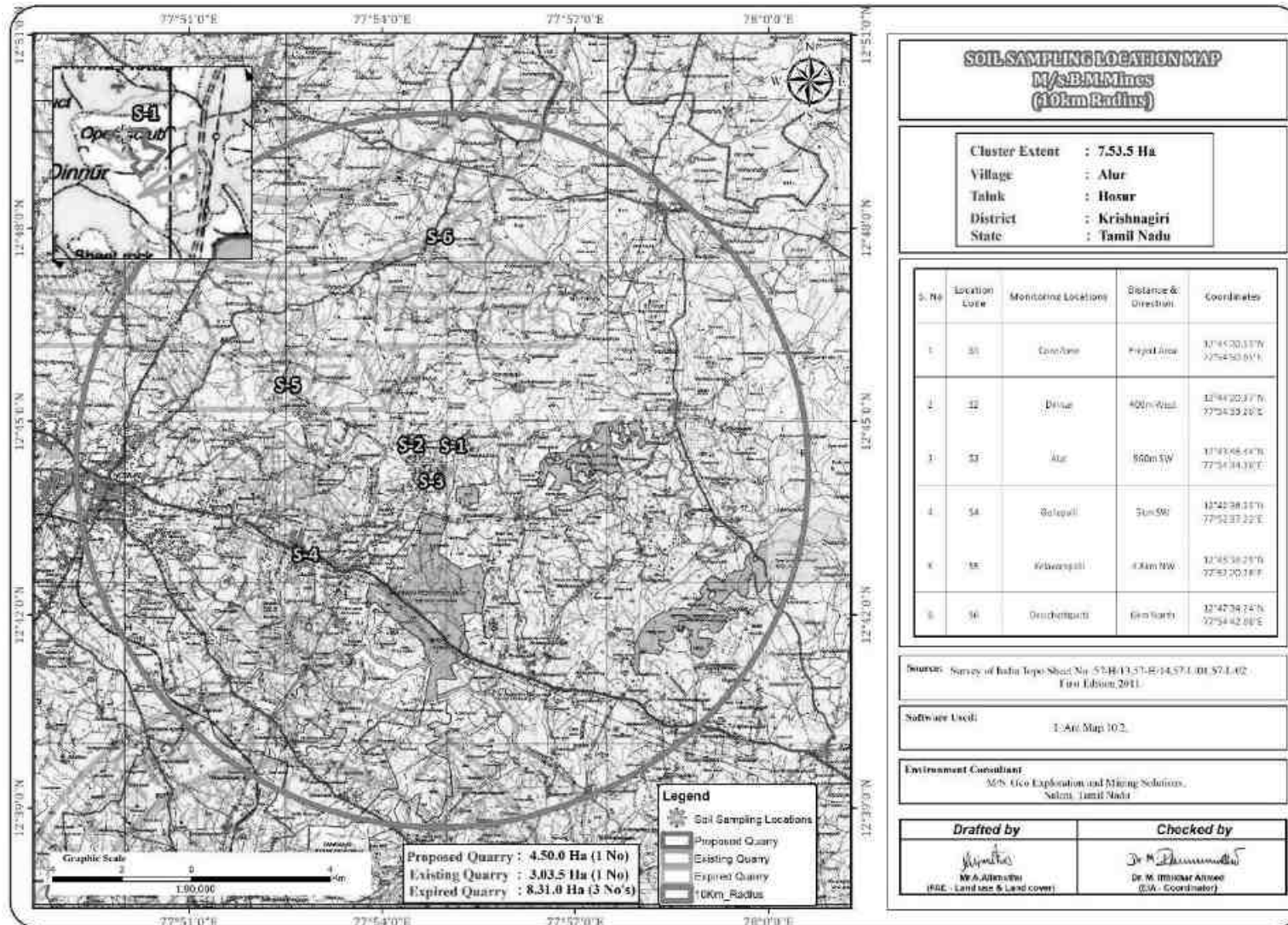


FIGURE 3.4: SOIL MAP

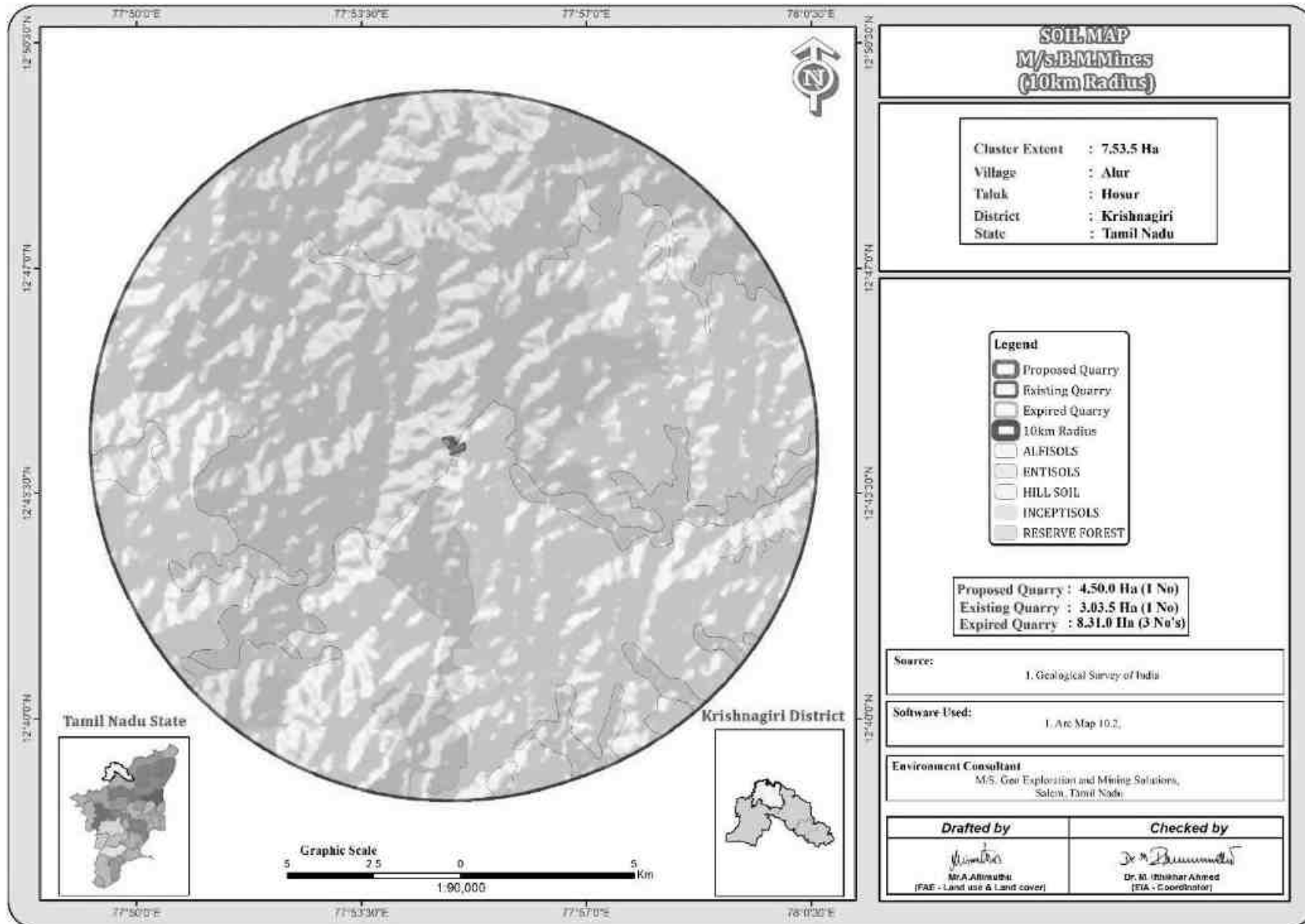


TABLE 3.7: SOIL QUALITY OF THE STUDY AREA

S.No	Parameters	Units	S1	S-2	S-3	S-4	S-5	S-6	Test Method
1	pH	...	8.13	8.72	7.87	7.71	8.12	7.89	IS 2720 (Part-26)
2	Electrical Conductivity (EC)	µs/cm	420	543	482	545	347	538	IS 14767
3	Texture	...	Clay Loam	Clay Loam	Clay Loam	Clay Loam	Clay Loam	Clay Loam	IS 2720 (Part-4)
4	Clay	%	36.8	37.2	36.7	35.9	37.9	35.6	IS 2720 (Part-4)
5	Sand	%	32.1	32.4	32.8	32.3	31.8	32.9	IS 2720 (Part-4)
6	Silt	%	31.1	30.4	30.5	31.8	30.3	31.5	IS 2720 (Part-4)
7	Water Holding Capacity (WHC)	%	42.3	42.9	45.4	49.8	48.7	43.4	IS 2720 (Part-2)
8	Bulk Density	g/cm ³	1.12	1.16	1.01	1.34	1.23	1.42	IS 2386 (Part-4)
9	Porosity	%	45.8	46.2	42.1	43.4	44.7	45.3	IS 13030
10	Calcium,(Ca)	mg/kg	156	189	172.4	167.8	172	178.3	IS 2720 (Part-23)
11	Magnesium,(Mg)	mg/kg	68.9	87.8	78.8	76.8	75.6	78.6	ETS/STP/SOIL-08
12	Manganese,(Mn)	mg/kg	30.4	28.2	28.2	29.2	28.1	26.3	ETS/STP/SOIL-18
13	Zinc,(Zn)	mg/kg	1.06	1.53	2.54	2.31	2.11	1.20	ETS/STP/SOIL-18
14	Boron (as B)	mg/kg	1.11	1.48	1.46	1.50	1.26	1.32	ETS/STP/SOIL-18
15	Chloride,(Cl)	mg/kg	136	149	145	161	156	141	BS 1377 -3
16	Total Soluble Sulphate	%	0.019	0.018	0.017	0.015	0.016	0.020	IS 2720 (Part-27)
17	Potassium (K)	mg/kg	36.7	43.6	38.1	40.6	32.9	43.4	ETS/STP/SOIL-18
18	Phosphorus (PO4)	mg/kg	1.08	2.38	1.71	1.37	1.1	1.53	ETS/STP/SOIL-19
19	Total Nitrogen (N)	mg/kg	292	332	334	284	291	361	ETS/STP/SOIL-15
20	Cadmium,(Cd)	mg/kg	BDL (DL : 1.0 mg/kg)						ETS/STP/SOIL-18
21	Chromium,(Cr)	mg/kg	BDL (DL : 1.0 mg/kg)						ETS/STP/SOIL-18
22	Copper,(Cu)	mg/kg	BDL (DL : 1.0 mg/kg)						ETS/STP/SOIL-18
23	Lead,(Pb)	mg/kg	0.8	1.41	0.96	1.14	1.02	1.03	ETS/STP/SOIL-18
24	Iron,(Fe)	mg/kg	2.12	1.78	2.56	2.63	2.89	2.51	ETS/STP/SOIL-18
25	Organic Matter,(OM)	%	2.15	3.32	3.31	2.62	2.81	2.86	IS 2720 (Part-22)
26	Organic Carbon,(OC)	%	1.25	1.93	1.92	1.52	1.63	1.66	BS 1377 -3
27	Cation Exchange Capacity (CEC)	meq/100g	37.6	38.2	34.3	33.8	40.5	34.6	IS 2720 (Part-24)

Source: Sampling Results by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories

Interpretation & Conclusion

Physical Characteristics –

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay Loam and Bulk Density of Soils in the study area varied between 1.01 – 1.42 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 42.3 – 49.8 %.

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline with pH range 7.71 to 8.72
- The available Nitrogen content range between 284 to 361 mg/kg
- The available Phosphorus content range between 1.08 to 2.38 mg/kg
- The available Potassium range between 32.9 to 43.6 mg/kg

3.2 WATER ENVIRONMENT

The water resources, both surface and groundwater play a significant role in the development of the area. The purpose of this study is to assess the water quality characteristics for critical parameters and evaluate the impacts on agricultural productivity, domestic community usage, recreational resources and aesthetics in the vicinity. The water samples were collected and transported as per the norms in pre-treated sampling cans to laboratory for analysis.

3.2.1 Surface Water Resources:

Ponnaiyal River the major lake about 1.3 km west from the Project area. Water body in the study area and the rainfall over the area is moderate, the rainwater storage in open wells and trenches are in practice over the area and the stored water acts as source of drinking water for few months after rainy season.

3.2.2 Ground Water Resources:

Groundwater occurs in all the crystalline formations of oldest Achaeans and Recent Alluvium. The occurrence and behaviour of groundwater are controlled by rainfall, topography, geomorphology, geology, structures etc.

Ground water is occurring in phreatic conditions in weathered and fractured gneiss rock formation. The weathering is controlled by the intensity of weathering and fracturing. Dug wells as wells as bore wells are more common ground water abstraction structures in the area. The diameter of the dug well is in the range of 7 to 10 m and depth of dug wells range from 10 to 17 m bgl. The dug wells yield up to 1 lps in summer months and few wells remains dry. The yield is adequate for irrigation for one or two crops in monsoon period.

3.2.3 Methodology

Reconnaissance survey was undertaken and monitoring locations were finalized based on;

- Drainage pattern;
- Location of Residential areas representing different activities/likely impact areas; and
- Likely areas, which can represent baseline conditions

two (2) surface water and four (4) ground water samples were collected from the study area and were analysed for physio-chemical, heavy metals and bacteriological parameters in order to assess the effect of mining and other activities on surface and ground water. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and 'Standard methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA). The water sampling locations are given in Table 3.8 and shown as Figure 3.6.

TABLE 3.8: WATER SAMPLING LOCATIONS

S.NO	CODE	LOCATIONS	DISTANCE & DIRECTION	COORDINATES
SURFACE WATER				
1	SW-1	Tank Near Dinnur	700m SW	12°44'3.19"N 77°54'30.99"E
2	SW-2	Ponnayar River	1.3km NW	12°44'33.38"N 77°54'3.07"E
GROUND WATER				
3	WW-1	Bukkasagaram	2.5km SE	12°43'36.09"N 77°56'10.72"E
4	WW-2	Venkatesapuram	3.0km NE	12°45'32.42"N 77°56'3.20"E
5	BW-1	Near Project Area	500m East	12°44'14.56"N 77°55'15.63"E
6	BW-2	Gollapalli	5km SW	12°42'40.88"N 77°52'39.49"E

FIGURE 3.5: WATER SAMPLING LOCATIONS AROUND 10 KM RADIUS

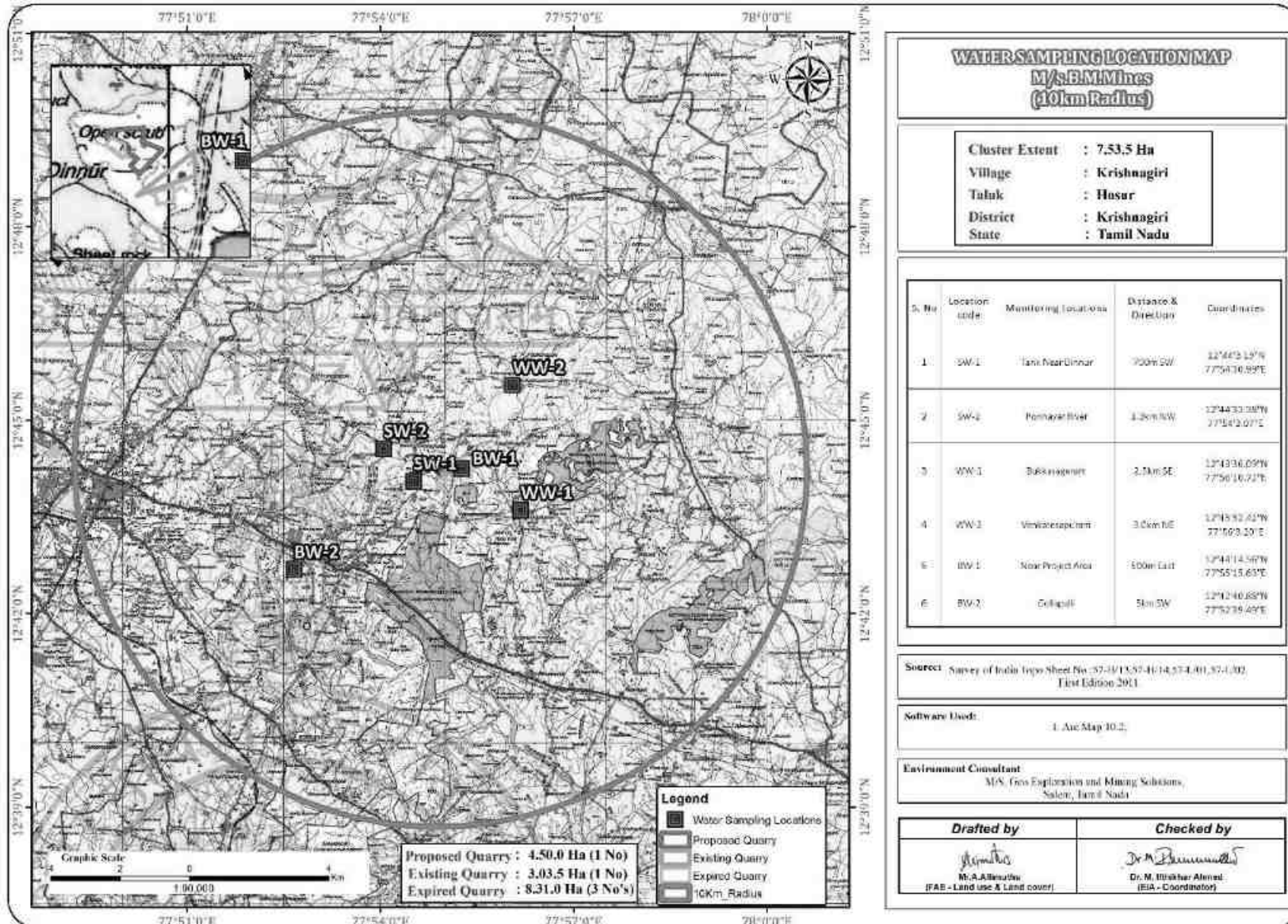


TABLE 3.9: GROUND WATER SAMPLING RESULTS

S.No	Parameters	Units	RESULTS				Standards as Per IS 10500: 2012	
			WW-1	WW-2	BW-1	BW-2	Desirable Limit	Permissible limit
1	Colour	Hazen	5	5	5	5	5	
2	Odour	...	Agreeable				Agreeable	Agreeable
3	pH	...	7.32	7.54	7.47	7.87	6.5 - 8.5	No Relaxation
4	Conductivity	µs/cm	1092	921	966	938	Not Specified	Not Specified
5	Turbidity	NTU	1.8	2.6	2.2	1.9	1	5
6	Total Dissolved Solids,(TDS)	mg/L	664	543	570	553	500	2000
7	Total Hardness,(CaCO ₃)	mg/L	236	220	196	180	200	600
8	Calcium,(Ca)	mg/L	49.6	52.9	48	44.8	75	200
9	Magnesium,(Mg)	mg/L	27.2	21.4	18.4	16.5	30	100
10	Total Alkalinity,(CaCO ₃)	mg/L	216	204	184	176	200	600
11	Chloride,(Cl)	mg/L	188.9	108	169.9	169	250	1000
12	Sulphate,(SO ₄)	mg/L	47.8	43.1	42.7	44.7	200	400
13	Iron,(Fe)	mg/L	0.31	0.31	0.24	0.48	0.3	No relaxation
14	Chlorine (Residual)	mg/L	BDL (DL:0.1 mg/l)				0.2	1
15	Fluoride,(F)	mg/L	0.25	0.25	0.17	0.32	1	1.5
16	Nitrate,(NO ₃)	mg/L	8.2	7.2	7.8	8.6	45	No relaxation
17	Copper,(Cu)	mg/L	BDL (DL:0.01 mg/l)				0.05	1.5
18	Manganese,(Mn)	mg/L	BDL (DL:0.02 mg/l)				0.1	0.3
19	Mercury,(Hg)	ug/L	BDL (DL:0.0005 mg/l)				0.001	No Relaxation
20	Cadmium,(Cd)	mg/L	BDL (DL:0.001 mg/l)				0.003	No Relaxation
21	Selenium,(Se)	mg/L	BDL (DL:0.005 mg/l)				0.01	No Relaxation
22	Aluminium,(Al)	mg/L	BDL (DL:0.005 mg/l)				0.03	0.2
23	Lead,(Pb)	mg/L	BDL (DL:0.005 mg/l)				0.01	No Relaxation
24	Zinc,(Zn)	mg/L	BDL(DL : 0.05 mg/l)				5	15
25	Total Chromium,(Cr)	mg/L	BDL(DL : 0.02 mg/l)				Not Specified	Not Specified
26	Boron,(B)	mg/L	BDL(DL : 0.05 mg/l)				0.5	1
27	Mineral Oil	mg/L	BDL(DL : 0.01 mg/l)				0.5	No Relaxation
28	Phenolic Compound,(C ₆ H ₅ OH)	mg/L	BDL (DL:0.0005 mg/l)				0.001	0.002
29	Anionic Detergent,(MBAS)	mg/L	BDL (DL:0.01 mg/l)				0.2	1
30	Cyanide,(CN)*	mg/L	BDL (DL:0.01 mg/l)				0.05	No Relaxation
31	Barium,(Ba)	mg/L	BDL(DL:0.05 mg/l)				0.7	No Relaxation
32	Ammonia,(as Total NH ₃ -N)*	mg/L	BDL (DL:0.01 mg/l)				0.5	No Relaxation
33	Sulphide,(H ₂ S)	mg/L	BDL (DL:0.01 mg/l)				0.05	No Relaxation
34	Molybdenum,(Mo)	mg/L	BDL (DL:0.02 mg/l)				0.07	No Relaxation
35	Arsenic,(As)	mg/L	BDL (DL:0.005 mg/l)				0.01	0.05
36	Total Suspended Solids,(TSS)	mg/L	BDL (DL:1.0 mg/l)				Not Specified	Not Specified
37	Total Coliform Count	MPN/100ml	214	118	162	145	Shall Not be Detectable	
38	Escherichia coli	MPN/100ml	<1.8	<1.8	<1.8	<1.8		

* IS: 10500:2012-Drinking Water Standards; # within the permissible limit as per the WHO Standard. The water can be used for drinking purpose in the absence of alternate sources. Note: SW- Surface water, GW – Ground water

TABLE 3.10: SURFACE WATER SAMPLING RESULTS

Sl. No.	Parameter	Unit	RESULT		CPCB Designated Best Use
			SW1	SW2	
1	Color	Hazen	<10	<10	300
2	Odour	-	Agreeable		Not specified
3	Taste	-	Agreeable		Not specified
4	pH@ 25°C	-	7.67	7.74	6.5 – 8.5
5	Conductivity @ 25°C	µmhos/cm	1380	1311	
6	Turbidity	NTU	3.5	3.9	Not specified
7	Total Dissolved Solids	mg /l	814	773	1500
8	Total Hardness as CaCO ₃	mg/l	272	268	Not specified
9	Calcium as Ca	mg/l	73.7	70.5	Not specified
10	Magnesium as Mg	mg/l	21.4	22.3	Not specified
11	Total Alkalinity as CaCO ₃	mg /l	232	224	Not specified
12	Chloride as Cl-	mg/l	283.9	275.9	600
13	Sulphate as SO ₄ -	mg/l	49.2	44.8	Not specified
14	Iron as Fe	mg/l	0.61	0.59	50
15	Free Residual Chlorine	mg /l	<0.1	<0.1	400
16	Fluoride as F	mg/l	0.54	0.37	Not specified
17	Nitrate	mg /l	14.8	16.2	Not specified
18	Copper (Cu)	mg /l	BDL (DL:0.01 mg/l)		Not specified
19	Manganese (Mn)	mg /l	BDL (DL:0.02 mg/l)		Not specified
20	Mercury (Hg)	mg /l	BDL (DL:0.0005 mg/l)		Not specified
21	Cadmium(Cd)	mg /l	BDL (DL:0.001 mg/l)		0.01
22	Selenium as (Se)	mg /l	BDL (DL:0.005 mg/l)		Not specified
23	Aluminium as Al	mg /l	BDL (DL:0.005 mg/l)		Not specified
24	Lead(Pb)	mg /l	BDL (DL:0.005 mg/l)		0.1
25	Zinc(Zn)	mg /l	BDL(DL : 0.05 mg/l)		15
26	Total chromium (Cr)	mg /l	BDL(DL : 0.02 mg/l)		0.05
27	Boron	mg /l	BDL(DL : 0.05 mg/l)		Not specified
28	Mineral Oil	mg /l	BDL(DL : 0.01 mg/l)		Not specified
29	Phenolic compounds as C ₆ H ₅ OH	mg /l	BDL (DL:0.0005 mg/l)		Not specified
30	Anionic Detergents (as MBAS)	mg /l	BDL (DL:0.01 mg/l)		Not specified
31	Cyanide as CN	mg /l	BDL (DL:0.01 mg/l)		Not specified
32	Biological Oxygen Demand (BOD at 27OC for 3 day)	mg /l	9.8	11.2	Not specified
33	Chemical Oxygen Demand (COD)	mg /l	32	36	Not specified
34	Dissolve Oxygen (DO)	mg /l	4.8	5.3	4
35	Barium as Ba	mg /l	BDL(DL:0.05 mg/l)		Not specified
36	Ammonia (Total Ammonia-N)	mg /l	BDL (DL:0.01 mg/l)		Not specified
37	Sulphide as H ₂ S	mg /l	BDL (DL:0.01 mg/l)		Not specified
38	Molybdenum as Mo	mg /l	BDL (DL:0.02 mg/l)		Not specified
39	Total Arsenic (As)	mg /l	BDL (DL:0.005 mg/l)		0.2
40	Total Suspended Solids	mg /l	28.6	29.5	Not specified
41	Total Coliform	MPN/100ml	1422	1156	5000
42	Escherichia coli	MPN/100ml	136	149	Not specified

3.2.4 Interpretation & Conclusion

Surface Water

Ph:

The pH is 7.67 to 7.74 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

Total Dissolved Solids:

Total Dissolved Solids is 773 to 814 mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

Other parameters:

Chloride content is 275.9 to 283.9 mg/l. Nitrates is around 14.8 to 16.2 mg/l, while sulphates content is 44.8 to 49.2 mg/l.

Ground Water

The pH of the water samples collected ranged from 7.32 to 7.87 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. The Total Dissolved Solids were found in the range of 543 to 664 mg/l in all samples. The Total hardness varied between 180 to 236 mg/l for all samples.

On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with IS 10500:2012 and are well within the prescribed limits.

3.2.5 Hydrology and Hydrogeological studies

The district is underlain by hard rock formation fissured and fractured crystalline rocks constitute the important aquifer systems in the district. Geophysical prospecting was carried out in that area by SSRMP-80 Instrument by qualified Geo physicist with the help of IGIS software and it was inferred that the low resistance encountered at the depth of 63m. The maximum depth of this proposed project is 40m. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area. There is no necessity of stream, channel diversion due to this proposed project.

During the rainy season there is a possibility of collection of seepage water from the subsurface levels which will be collected and stored in the mine sump pits and will be used for dust suppression and greenbelt development and during the end of the life of the mine this collected water will act as a temporary reservoir.

TABLE 3.11: WATER LEVEL OF OPEN WELLS 1 KM RADIUS

S.No	Name	LATITUDE	LONGITUDE	MARCH	APRIL	MAY
1	OW1	12° 43' 56.19"N	77° 54' 31.11"E	11.3	11.9	12.4
2	OW2	12° 44' 44.19"N	77° 54' 29.80"E	11.2	11.8	12.3
3	OW3	12° 44' 39.99"N	77° 54' 46.70"E	11	11.6	12.1
4	OW4	12° 43' 42.10"N	77° 54' 34.46"E	11.1	11.7	12.2
5	OW5	12° 44' 05.53"N	77° 55' 36.87"E	11.6	12.2	12.7
6	OW6	12° 44' 45.32"N	77° 55' 26.57"E	11.7	12.3	12.8
7	OW7	12° 43' 34.21"N	77° 55' 02.97"E	11.5	12.1	12.6
8	OW8	12° 44' 26.20"N	77° 54' 13.11"E	11.4	12	12.5

Source: Onsite monitoring data

TABLE 3.12: WATER LEVEL OF BOREWELLS 1 KM RADIUS

S.No	Name	LATITUDE	LONGITUDE	MARCH	APRIL	MAY
1	BW1	12° 44' 17.06"N	77° 54' 32.71"E	63	63.5	64
2	BW2	12° 44' 33.44"N	77° 54' 31.93"E	63.2	63.7	64.2
3	BW3	12° 44' 43.86"N	77° 54' 56.12"E	63.5	64	64.5
4	BW4	12° 44' 34.19"N	77° 55' 22.27"E	63.1	63.6	64.1
5	BW5	12° 44' 14.23"N	77° 55' 17.06"E	63.3	63.8	64.3
6	BW6	12° 43' 49.53"N	77° 55' 04.65"E	63.8	64.3	64.8
7	BW7	12° 43' 47.87"N	77° 54' 31.52"E	63.7	64.2	64.7
8	BW8	12° 44' 05.78"N	77° 54' 29.78"E	64	64.5	65

Source: Onsite monitoring data

It is observed from the borewell data the potential aquifer (Water table) in the area is about 63 – 68m bgl, the proposed quarrying depth will not intersect the Ground water table.

FIGURE 3.6: OPEN WELL CONTOUR MAP – MARCH 2023

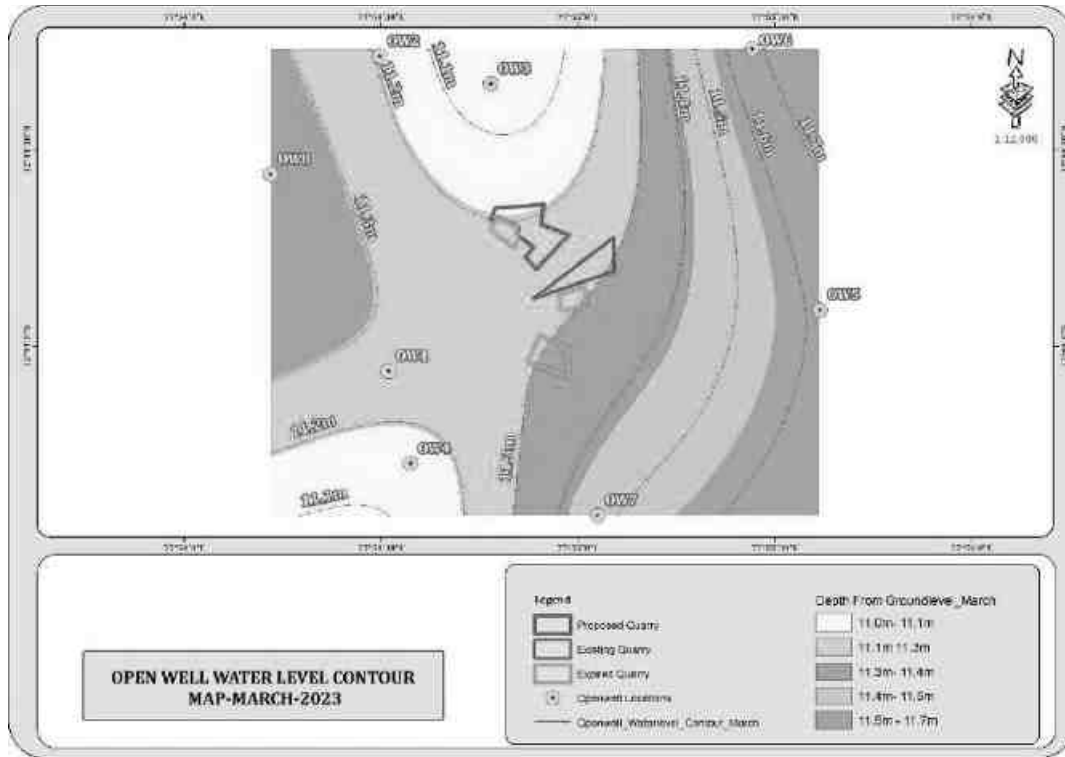


FIGURE 3.7: OPEN WELL CONTOUR MAP – APRIL 2023

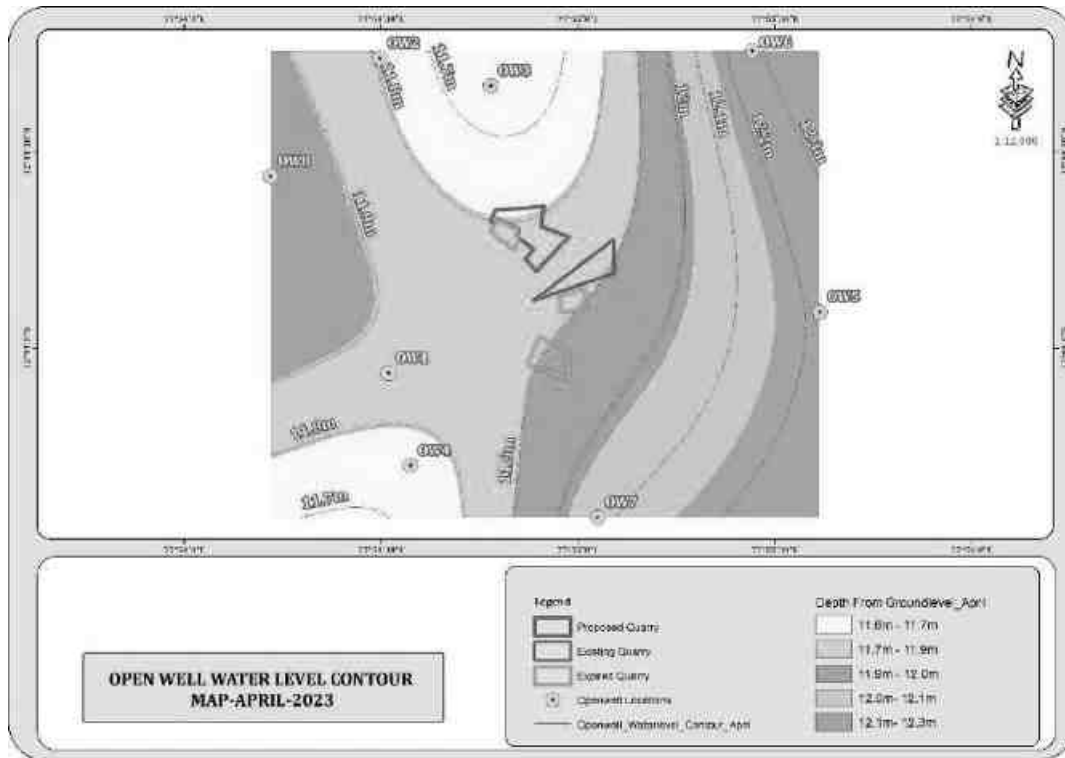


FIGURE 3.8: OPEN WELL CONTOUR MAP – MAY 2023

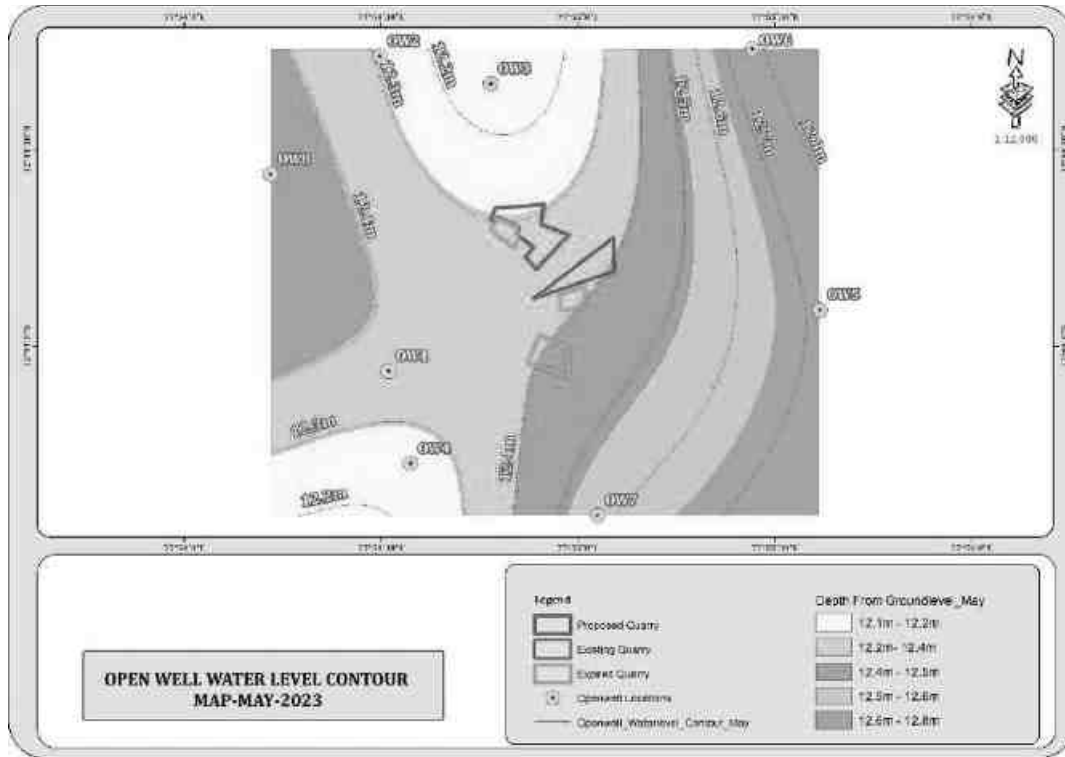


FIGURE 3.9: BORE WELL CONTOUR MAP – MARCH 2023

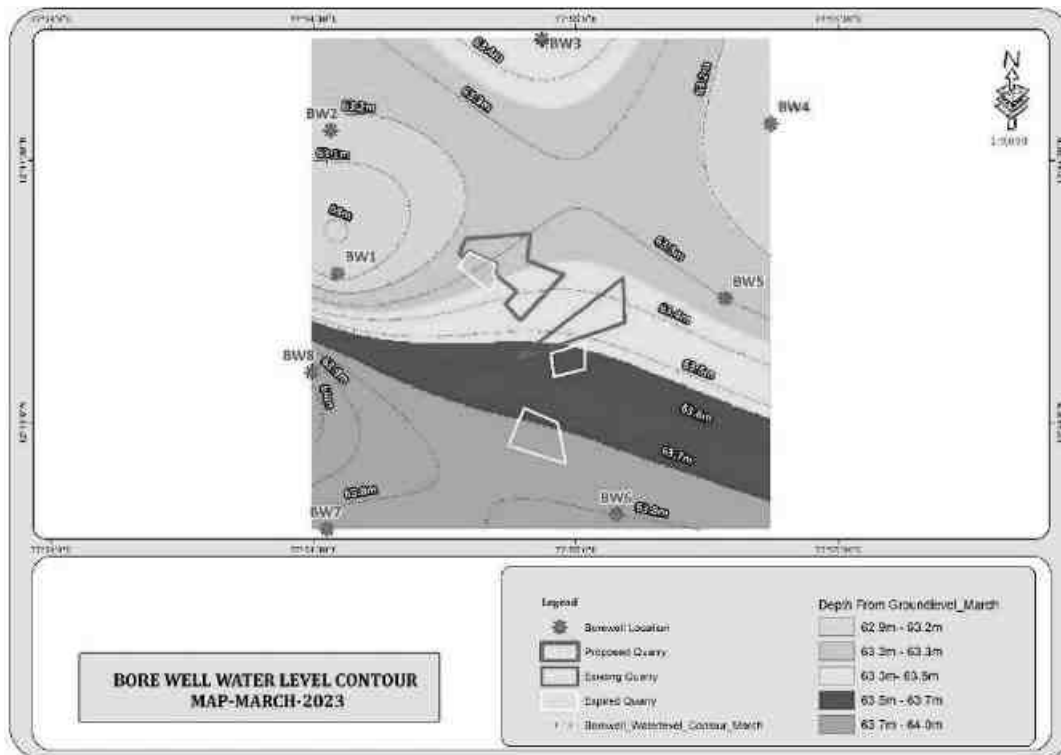


FIGURE 3.10: BORE WELL CONTOUR MAP – APRIL 2023

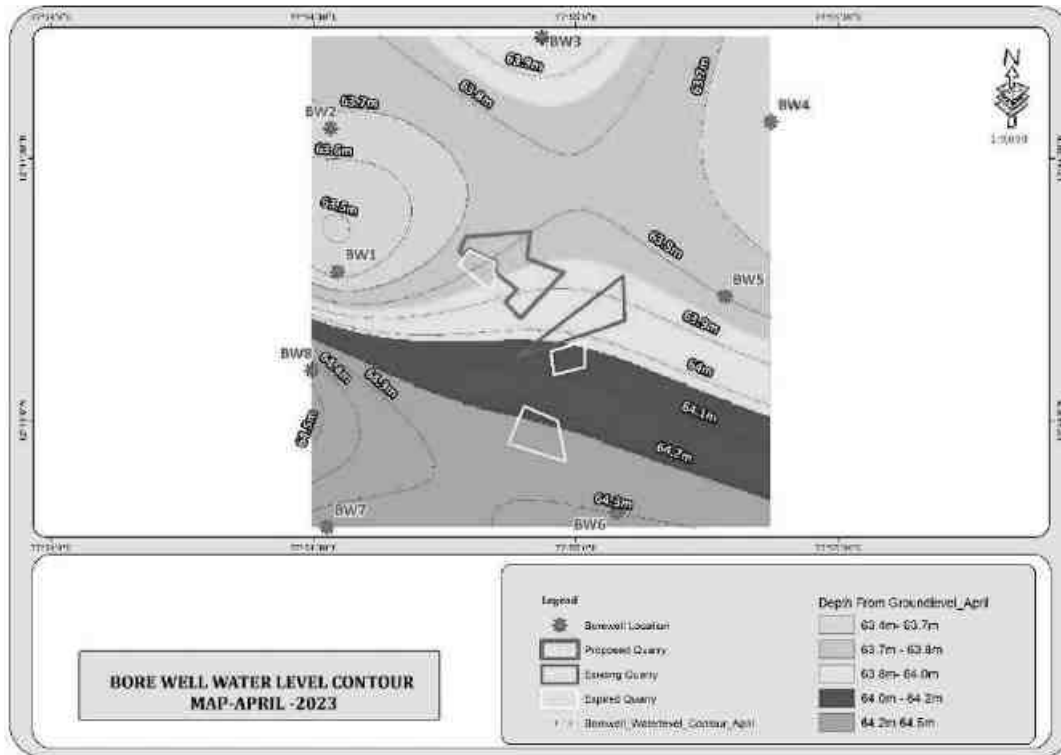


FIGURE 3.11: BORE WELL CONTOUR MAP – MAY 2023

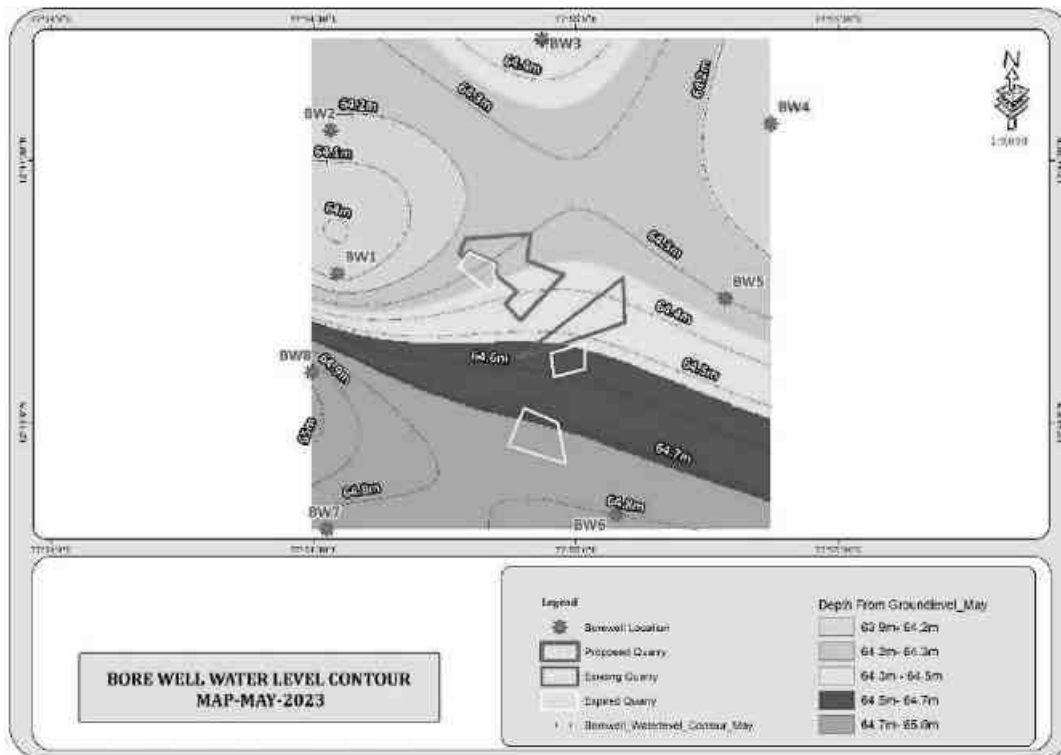


FIGURE 3.12: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE

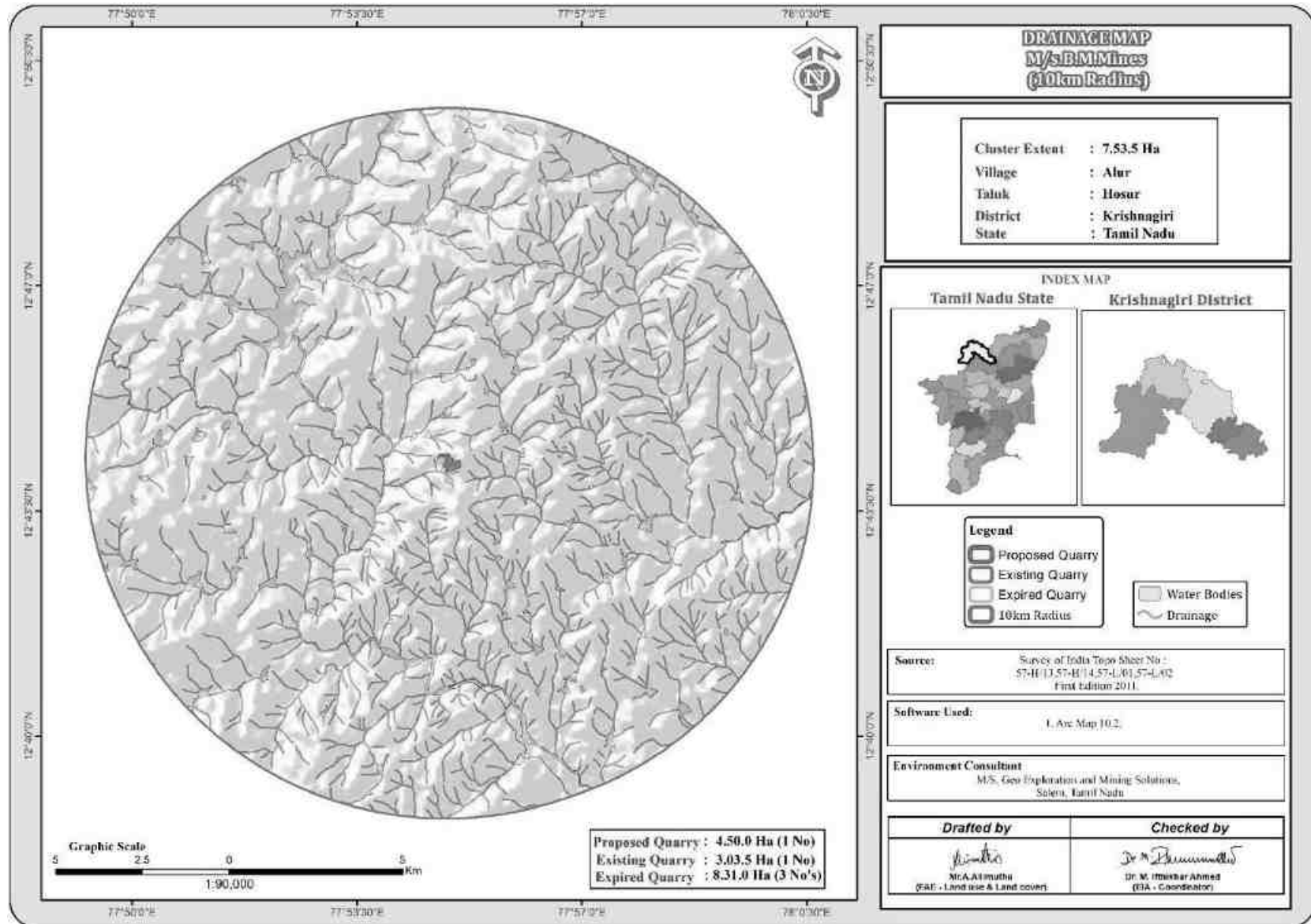
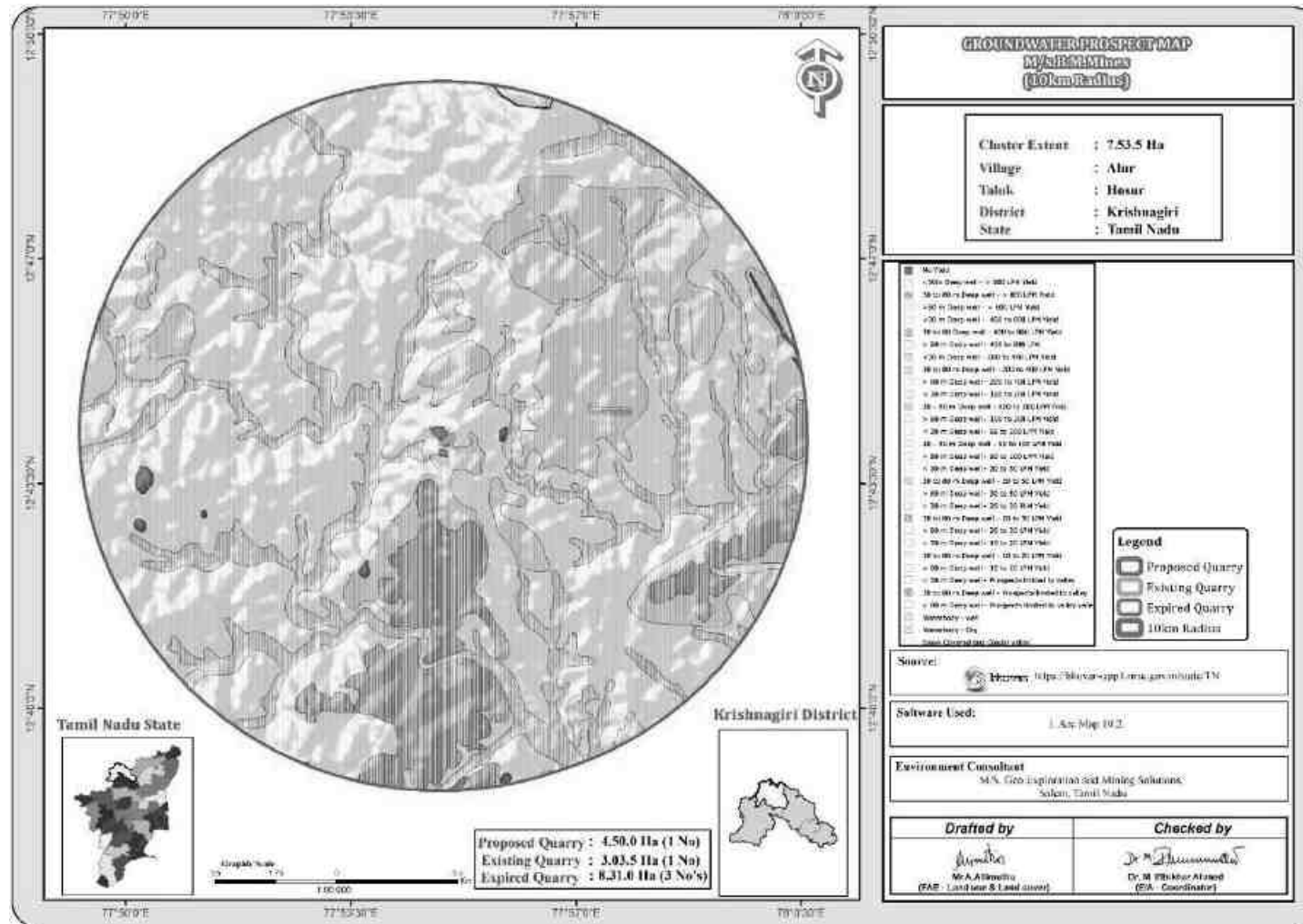


FIGURE 3.13: GROUND WATER PROSPECT MAP



3.2.5.1 Methodology and Data Acquisition

Electric Resistivity Method is well established for delineating lateral as well vertical discontinuities in the resistive structure of the Earth's subsurface. The present study makes use of vertical electric sounding (VES) to delineate the Vertical Resistivity structure at depth. Schlumberger electrode set up was employed for making sounding measurements. Since it is least influenced by lateral in homogeneities and is capable of providing higher depth of investigation. This is four electrodes collinear set up where in the outer electrodes send current into the ground and the inner electrodes measure the potential difference.

The present study utilizes maximum current electrode separation $AB/2$. The data from this survey are commonly arranged and contoured in the form of Pseudo-section that gives an approximate of the subsurface resistivity. This technique is used for the inversion of Schlumberger VES data to predict the layer parameter namely layer resistivity and Geo electric layer thickness. The main goal of the present study is to search the vertical in homogeneities that is consistent with the measured data.

For a Schlumberger among the Apparent resistivity can be calculated as follows

$$\rho_a = \frac{G\Delta V}{I}$$

ΔV = potential difference between receiving electrodes

G = Geometric Factor.

Rocks show wide variation in resistivity ranging from 10-8 more than 10+14 ohmmeter. On a broad classification, one can group the rocks falling in the range of 10-8 to 1 ohmmeter as good conductors. 1 to 106 ohmmeter as intermediate conductors and 106 to 1012 ohmmeter as more as poor conductor. The resistivity of rocks and subsurface lithology, which is mostly dependent on its porosity and the pore fluid resistivity is defined by Archie's Law,

$$\rho_r = F\rho_w = a \emptyset^m \rho_w$$

ρ_r = Resistivity of Rocks

ρ_w = Resistivity of water in pores of rock

F = Formation Factor

\emptyset = Fractional pore volume

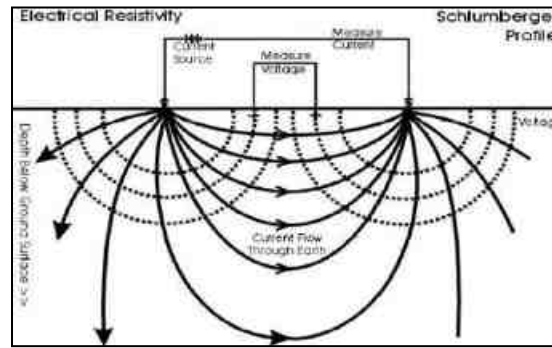
A = Constants with values ranging from 0.5 to 2.5

3.2.5.2 Survey Layout

The layout for a resistivity survey depends on the choice of the current and potential electrode arrangement, which is called electrode array. Here the present study is considered with Schlumberger array. In which the distance may be used for current electrode separation while potential electrode separation is kept on third to one fifth of the same. One interesting aspect in VES is the principle of reciprocity, which permits interchange of the potential and current electrode without any effect on the measured apparent resistivity.

The field equipment deployed for the study is in a deep resistivity meter with a model of SSR – MP – AT. This Signal stacking Resistivity meter is a high-quality data acquisition system incorporating several innovation features for Earth resistivity. In the presence of random earth Noises, the signal to noise ration can be enhanced by \sqrt{N} where N is the number of stacked readings. This SSR meter in which running averages of measurements $[1, (1+2)/2, (1+2+3)/3 \dots (1+2\dots+16/16)]$ up to the chosen stacks are displayed and the final average is stored automatically, in memory utilizing the principles of stacking to achieve the benefit of high signals to noise ratio. Based on these above significations the signal stacking resistivity meter was used for (VES) Vertical Electric Resistivity Sounding.

RESISTIVITY SURVEY PROFILE



Measurements of ground Resistivity is essentially done by sending a current through two electrodes called current electrodes (C_1 & C_2) and measuring the resulting potential by two other electrodes called potential electrode (P_1 & P_2). The amount of current required to be sent into the ground depends on the contact resistance at the current electrode, the ground resistivity and the depth of interest.

3.2.5.3 Data Presentation

It was inferred that the low resistance encountered at the depth of 68m. The maximum depth of the proposed project **40m**. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

3.2.5.4 Geophysical Data Interpretation

The geophysical data was obtained to study the lateral variations, vertical in homogeneities in the sub – surface with respect to the availability of groundwater. From the interpreted data, it has inferred that the area has moderate groundwater potential in the investigated area. This small quarrying operation will not have any significant impact on the natural water bodies.

3.3 AIR ENVIRONMENT

The existing ambient air quality of the area is important for evaluating the impact of mining activities on the ambient air quality.

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the cluster forms the baseline information. The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities. The prime objective of the baseline air quality study was to establish the existing ambient air quality of the study area. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of projects in cluster.

This section describes the identification of sampling locations, methodology adopted during the monitoring period and sampling frequency.

3.3.1 Meteorology & Climate

Meteorology is the key to understand the Air quality. The essential relationship between meteorological condition and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A temporary meteorological station was installed at project site by covering cluster quarries. The station was installed at a height of 3 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis.

Climate –

The climate is tropical in Krishnagiri. The Summers are much rainier than the winter. This climate is considered to be Aw according to the Köppen-Geiger climate classification.

- The average annual temperature is 25.5°C | 77.9 °F.
- The precipitation here is around 773 mm | 30.4 inch per year.
- The driest month is February, with 6 mm | 0.2 inch. The greatest amount of precipitation occurs in October, with an average of 144 mm | 5.7 inch.
- The warmest month of the year is April, with an average temperature of 29.0°C | 84.2°F.
- The lowest average temperatures in the year occur in January, when it is around 21.9°C | 71.4°F.
- The difference in precipitation between the driest month and the wettest month is 265 mm | 6inch. The variation in temperatures throughout the year is 4.6°C | 40.2°F.

Source: <https://en.climate-data.org/asia/india/tamil-nadu/krishnagiri-34157/>

Rainfall –**TABLE 3.13: RAINFALL DATA**

Actual Rainfall in mm					Normal Rainfall in mm
2013	2014	2015	2016	2017	
766.0	757.6	1049.7	590.6	1145.9	850.58

Source: [Krishnagiri | TWAD \(tn.gov.in\)](#)

TABLE 3.14: METEOROLOGICAL DATA RECORDED AT SITE

S.No	Parameters		Mar–2023	Apr–2023	May–2023
1	Temperature (0C)	Max	29.61	32.12	30.83
		Min	23.23	27.07	24.36
		Avg	26.42	29.59	27.59
2	Relative Humidity (%)	Avg	54.78	46.47	69.46
3	Wind Speed (m/s)	Max	4.97	4.34	4.32
		Min	1.52	2.34	1.27
		Avg	3.24	3.34	2.79
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind Direction		ENE,SE	SE,E	W,SSE

Source: On-site monitoring/sampling by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories in association with GEMS

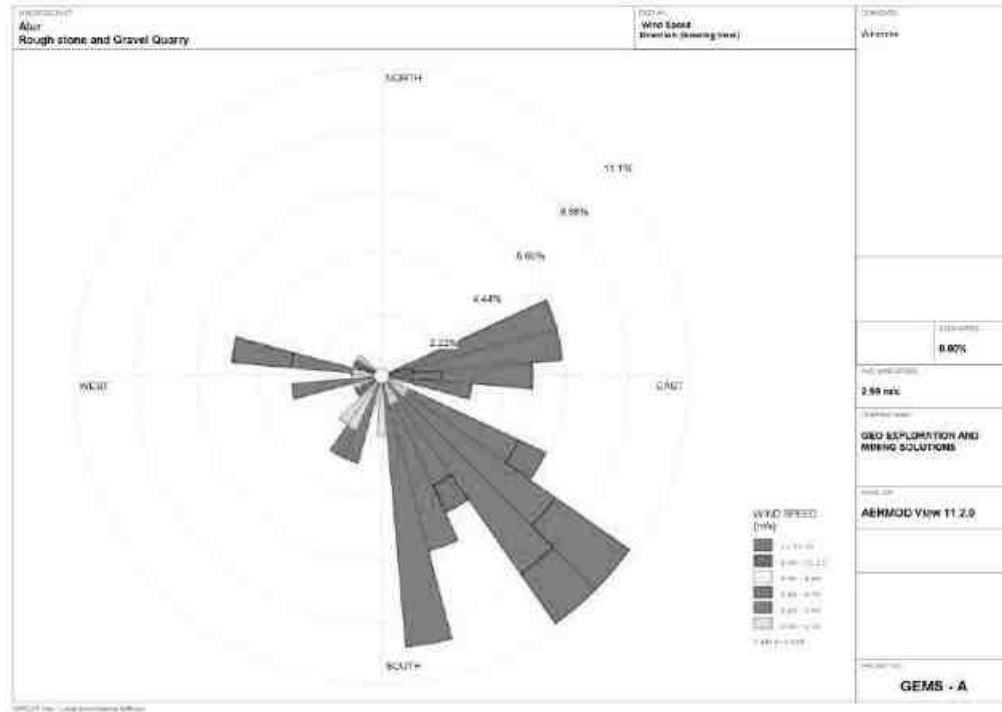
Correlation between Secondary and Primary Data

The meteorological data collected at the site is almost similar to that of secondary data collected from IMD Krishnagiri Agro. A comparison of site data generated during the three months with that of IMD, Krishnagiri_Agro reveals the following:

- The average maximum and minimum temperatures of IMD, Krishnagiri Agro showed a higher in respect of on-site data.
- The relative humidity levels were lesser at site as compared to IMD, Krishnagiri_Agro.
- The wind speed and direction at site shows similar trend that of IMD, Krishnagiri_Agro.

Wind rose diagram of the study site is depicted in Figure. 3.14. Predominant downwind direction of the area during study season is North East to South West.

FIGURE 3.14: WINDROSE DIAGRAM



Source: Wind Rose plot view, Lake Environmental Software

In the abstract of collected data wind rose were drawn on presented in figure No.3.14 during the monitoring period in the study area

- Predominant winds were from South East direction
- Wind velocity readings were recorded between 0.50 to 6.5 m/s
- Calm conditions prevail of about 0.00 % of the monitoring period
- At an average temperature of 26.9 °C | 80.4 °F, April is the hottest month of the year. The lowest average temperatures in the year occur in December, when it is around 20.3 °C | 68.5 °F
- The monitoring was carried out continuously for three months.

3.3.2 Methodology and Objective

The prime objective of the ambient air quality study is to assess the existing air quality of study area and its conformity to NAAQS. The observed sources of air pollution in the study area are industrial, traffic and domestic activities. The baseline status of the ambient air quality has been established through a scientifically designed ambient air quality-monitoring network considering the followings:

- Meteorological condition on synoptic scale;
- Topography of the study area;
- Representatives of regional background air quality for obtaining baseline status;
- Location of residential areas representing different activities;
- Accessibility and power availability; etc.,

3.3.3 Sampling and Analytical Techniques

TABLE 3.15: METHODOLOGY AND INSTRUMENT USED FOR AAQ MONITORING

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

Source: Sampling Methodology followed by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories & CPCB Notification

TABLE 3.16: NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl. No.	Pollutant	Time Weighted Average	Concentration in ambient air	
			Industrial, Residential, Rural & other areas	Ecologically Sensitive area (Notified by Central Govt.)
1	Sulphur Dioxide ($\mu\text{g}/\text{m}^3$)	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	Nitrogen Dioxide ($\mu\text{g}/\text{m}^3$)	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	Particulate matter (size less than 10 μm) PM ₁₀ ($\mu\text{g}/\text{m}^3$)	Annual Avg. 24 hours	60.0 100.0	60.0 100.0
4	Particulate matter (size less than 2.5 μm) PM _{2.5} ($\mu\text{g}/\text{m}^3$)	Annual Avg. 24 hours	40.0 60.0	40.0 60.0

Source: NAAQS CPCB Notification No. B-29016/20/90/PCI-I Dated: 18th Nov 2009

*Annual Arithmetic mean of minimum 208 measurements in a year taken twice a Week 24 hourly at uniform interval.

** 24 hourly / 8 hourly or 1 hourly monitored value as applicable shall be complied with 98 % of the time in a year. However, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

3.3.4 Frequency & Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at Eight (8) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period March to May, 2023. The baseline data of ambient air has been generated for PM₁₀, PM_{2.5}, Sulphur Dioxide (SO₂) & Nitrogen Dioxide (NO₂) Monitoring has been carried out as per the CPCB, MoEF guidelines and notifications.

It was ensured that the equipment was placed preferably at a height of at least 3 ± 0.5m above the ground level at each monitoring station, for negating the effects of wind-blown ground dust. The equipment was placed at open space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results.

3.3.5 Ambient Air Quality Monitoring Stations

Eight (8) monitoring stations were set up in the study area as depicted in Figure 3.17 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

TABLE 3.17: AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	AAQ1	Core Zone	Project Area	12°44'19.88"N 77°54'54.10"E
2	AAQ2	Dinnur	400m West	12°44'19.84"N 77°54'33.68"E
3	AAQ3	Bukkasagaram	2.5km SE	12°43'34.67"N 77°56'6.75"E
4	AAQ4	Venkatesapuram	3.0km NE	12°45'28.45"N 77°56'10.56"E
5	AAQ5	Gollapalli	5km SW	12°42'38.06"N 77°52'36.95"E
6	AAQ6	Kelavarapalli	4.8km NW	12°45'17.72"N 77°52'21.39"E
7	AAQ7	Alur	960m SW	12°43'47.05"N 77°54'33.26"E
8	AAQ8	Devichettipatti	6km North	12°47'34.39"N 77°54'41.83"E

Source: On-site monitoring/sampling by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories in association with GEMS

FIGURE 3.15: AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS

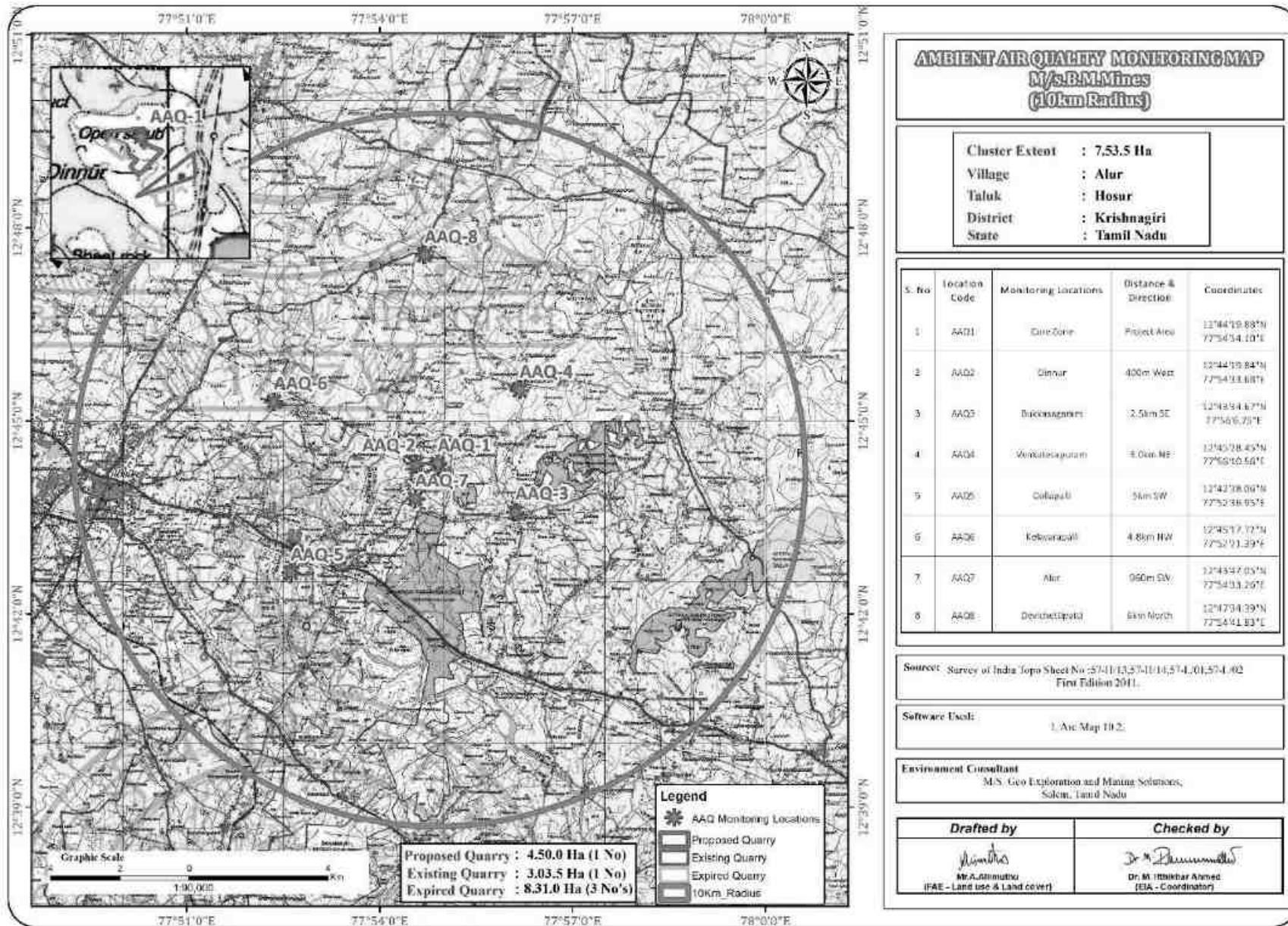


TABLE 3.18: AMBIENT AIR QUALITY DATA LOCATION AAQ1

Period: March – May-2023

Location: AAQ1- Core Zone (Project site)

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	66.3	22.3	46.2	8.1	26.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	67.2	22.4	45.3	8.3	24.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	65.2	23.6	47.2	8.4	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	66.2	23.4	46.3	7.2	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	66.5	22.1	44.2	7.6	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	67.3	23.1	46.3	7.1	23.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	68.3	21.3	45.2	9.5	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	68.2	22.2	43.2	9.6	24.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	68.3	23.5	45.6	8.3	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	65.3	24.5	47.5	8.2	23.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	67.2	23.6	46.3	8.4	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	65.5	22.5	45.2	7.2	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	66.3	22.3	43.2	7.1	24.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	64.5	21.0	42.1	7.5	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	63.5	22.5	43.1	8.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	66.9	23.6	47.5	8.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	65.3	22.4	48.6	9.1	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	64.2	22.5	48.5	8.3	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	65.3	24.3	45.6	9.2	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	66.3	25.3	43.2	9.5	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	67.3	26.5	42.5	9.8	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	68.3	24.2	44.5	7.1	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	69.3	23.2	45.5	7.6	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	67.5	22.5	46.3	8.3	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	66.3	21.5	44.2	9.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	67.9	22.3	43.5	8.5	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)

Remarks: The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.19: AMBIENT AIR QUALITY DATA LOCATION AAQ2

Period: March – May-2023

Location: AAQ2-- Dinnur

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	67.2	23.1	46.2	8.2	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	68.2	22.5	46.3	6.3	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	68.3	24.3	46.2	8.4	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	67.5	21.2	44.2	7.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	68.2	21.3	45.2	7.5	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	68.3	20.5	44.7	6.3	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	67.5	21.3	45.6	8.4	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	66.2	22.3	46.3	7.8	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	65.3	23.5	47.2	7.6	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	66.2	22.4	45.3	8.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	65.4	20.4	46.2	8.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	66.5	22.3	44.6	6.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	67.8	24.2	44.9	6.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	68.3	23.5	48.5	7.5	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	68.2	24.5	44.2	7.8	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	69.5	23.3	45.3	7.3	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	67.3	22.7	47.6	6.2	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	67.2	25.5	46.2	8.4	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	68.5	23.6	45.3	7.2	23.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	68.3	22.1	46.2	8.3	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	67.2	23.3	47.2	6.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	68.3	23.4	45.2	7.2	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	68.2	23.5	44.2	6.3	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	67.2	24.5	43.6	8.2	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	68.2	22.3	45.2	7.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	69.2	22.5	42.5	8.3	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)

Remarks: The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.20: AMBIENT AIR QUALITY DATA LOCATION AAQ3

Period: March – May-2023

: AAQ3- Bukkasagaram

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	61.2	22.1	43.2	5.5	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	60.3	20.3	42.2	5.3	19.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	61.3	21.3	43.5	6.2	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	63.3	22.5	42.6	7.0	19.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	61.2	23.6	43.5	5.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	61.3	22.5	42.6	6.8	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	62.9	22.3	44.5	7.2	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	62.5	22.6	44.3	6.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	61.3	22.5	45.6	8.4	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	61.7	23.4	44.2	7.6	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	64.2	24.5	46.5	6.3	18.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	60.2	23.0	46.3	6.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	60.3	22.4	45.5	7.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	61.4	21.4	42.3	7.6	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	61.8	20.3	44.3	6.3	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	62.5	22.5	46.5	6.5	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	63.5	23.6	43.5	7.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	63.4	22.1	43.8	7.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	64.2	22.5	42.1	8.2	20.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	65.3	21.3	43.5	7.0	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	65.2	21.1	42.3	8.3	20.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	65.3	22.5	42.5	6.0	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	65.2	21.9	43.6	8.2	29.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	65.9	20.9	44.2	7.3	28.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	63.5	20.5	42.5	6.5	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	63.9	20.3	43.5	5.5	20.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)

Remarks: The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.21: AMBIENT AIR QUALITY DATA LOCATION AAQ4

Period: March – May-2023

Location: AAQ4 – Venkatesapuram

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	62.4	22.3	42.3	6.2	19.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	63.2	20.1	41.2	6.3	19.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	62.5	23.6	43.5	6.4	19.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	63.5	22.5	40.2	6.5	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	62.4	19.0	43.2	6.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	64.5	20.3	41.5	6.2	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	63.7	21.3	40.5	6.8	18.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	64.5	19.2	43.2	6.2	18.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	62.3	20.3	45.1	6.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	62.3	22.5	44.2	6.4	20.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	62.5	23.6	43.1	6.5	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	63.5	22.3	42.6	6.3	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	63.7	22.4	44.3	6.5	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	64.4	19.0	44.2	6.8	18.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	65.5	19.5	42.6	6.7	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	61.2	20.6	42.8	6.2	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	62.8	19.4	43.7	6.3	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	63.5	19.8	42.1	6.4	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	64.2	19.7	43.0	5.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	61.3	20.6	42.1	5.8	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	63.2	20.3	43.5	6.4	20.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	62.2	19.8	44.0	6.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	64.3	18.8	42.5	5.9	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	62.3	21.3	41.8	6.2	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	61.2	21.5	42.7	6.5	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	61.8	20.6	45.9	6.3	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)

Remarks: The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.22: AMBIENT AIR QUALITY DATA LOCATION AAQ5

Period: March – May-2023

: AAQ5- Gollapalli

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	63.2	19.3	42.3	6.3	18.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	64.2	19.2	43.2	7.2	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	64.3	19.2	44.5	5.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	63.2	18.3	42.6	6.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	65.2	17.2	43.5	5.9	18.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	63.4	18.6	42.5	6.6	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	65.3	19.2	44.6	5.6	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	62.3	17.3	42.0	6.3	18.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	63.7	18.0	43.0	5.4	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	63.8	19.6	44.1	6.2	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	65.4	17.0	43.5	5.3	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	64.3	18.2	42.6	6.2	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	64.5	18.3	42.8	5.6	21.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	66.3	18.5	42.0	6.8	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	62.5	19.4	43.0	6.4	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	64.5	18.0	42.9	6.8	18.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	64.8	19.6	43.8	6.9	19.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	64.8	18.0	42.5	6.8	18.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	65.5	19.0	42.3	6.0	18.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	65.3	18.2	44.5	6.5	17.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	65.2	18.4	43.6	7.2	17.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	66.3	19.6	43.5	6.3	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	62.7	18.4	42.1	6.2	18.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	65.3	19.6	42.5	6.4	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	64.2	19.0	44.6	6.5	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	64.8	18.8	44.5	6.7	17.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)

Remarks: The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.23: AMBIENT AIR QUALITY DATA LOCATION AAQ6

Period: March – May-2023

Location: AAQ6 – Kelavarapalli

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	64.2	22.2	41.2	7.5	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	65.3	21.2	41.3	7.3	19.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	66.5	23.2	42.5	7.2	20.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	67.2	22.1	42.2	8.2	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	68.2	21.5	40.2	7.6	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	67.2	22.5	43.2	8.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	67.3	20.3	42.1	7.2	17.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	65.2	19.2	42.1	8.3	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	64.2	19.5	42.3	7.3	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	65.2	21.2	43.2	8.2	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	64.2	18.5	43.5	8.6	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	63.4	18.6	43.3	7.3	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	64.2	18.5	42.6	7.4	18.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	65.5	20.3	42.9	7.5	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	65.8	21.2	42.3	7.6	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	64.2	22.3	43.3	7.2	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	65.8	22.4	40.2	7.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	65.9	23.5	40.2	7.2	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	66.4	23.6	42.6	7.1	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	67.5	23.5	43.5	8.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	67.8	22.7	42.1	8.6	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	67.9	22.5	43.2	8.8	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	65.8	22.8	42.1	7.6	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	66.5	22.6	42.3	7.5	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	68.5	22.4	42.3	7.3	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	68.2	22.5	43.2	7.4	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)

Remarks: The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.24: AMBIENT AIR QUALITY DATA LOCATION AAQ7

Period: March – May-2023

Location: AAQ7– Alur

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	65.5	23.2	45.2	8.2	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	65.3	22.1	43.2	8.3	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	66.2	24.5	45.2	8.1	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	66.3	25.3	43.1	7.2	22.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	67.5	23.6	45.6	7.5	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	68.3	24.2	43.5	9.2	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	68.5	25.2	43.0	8.3	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	67.5	24.1	45.2	9.5	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	68.3	23.2	44.2	8.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	66.4	23.5	43.5	9.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	68.3	25.4	44.3	7.2	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	66.4	25.4	45.6	8.0	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	68.5	24.8	44.9	9.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	67.3	23.6	44.2	8.3	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	65.3	24.1	44.2	9.4	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	66.5	23.5	43.0	8.0	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	67.2	24.5	45.2	9.2	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	68.3	25.6	44.6	8.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	68.5	23.0	43.2	9.4	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	68.5	24.1	44.1	9.7	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	67.2	24.3	43.5	8.6	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	67.3	24.5	45.6	9.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	67.5	24.5	45.8	8.3	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	66.3	24.5	43.6	9.2	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	66.2	25.6	43.8	8.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	65.3	25.3	44.2	8.3	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)

Remarks: The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.25: AMBIENT AIR QUALITY DATA LOCATION AAQ8

Period: March – May-2023

Location: AAQ8– Devichettipatti

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	60.2	22.3	40.7	5.2	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	60.3	23.2	40.2	6.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	61.2	24.1	41.3	5.2	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	62.3	22.0	42.5	6.0	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	63.2	23.1	41.3	5.3	19.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	64.0	22.0	42.0	5.8	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	62.3	23.1	41.0	5.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	63.5	24.0	41.1	6.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	61.0	23.1	42.3	5.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	60.2	22.5	42.5	5.9	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	60.2	21.3	41.5	6.2	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	60.3	22.7	42.6	5.8	19.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	61.2	23.5	41.2	6.1	8.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	63.2	24.1	40.2	6.2	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	64.2	23.4	41.3	5.3	19.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	60.2	22.5	41.6	6.4	20.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	64.0	22.3	40.2	5.2	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	63.2	23.2	41.3	6.0	19.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	62.1	22.8	42.3	5.3	18.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	63.0	23.6	42.5	6.4	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	62.0	23.5	41.2	5.0	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	61.0	22.4	42.3	6.8	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	62.3	21.5	42.5	6.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	63.0	22.3	41.5	6.8	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	64.0	22.5	41.6	5.2	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	61.0	23.8	40.2	6.9	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)

Remarks: The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.26: ABSTRACT OF AMBIENT AIR QUALITY DATA

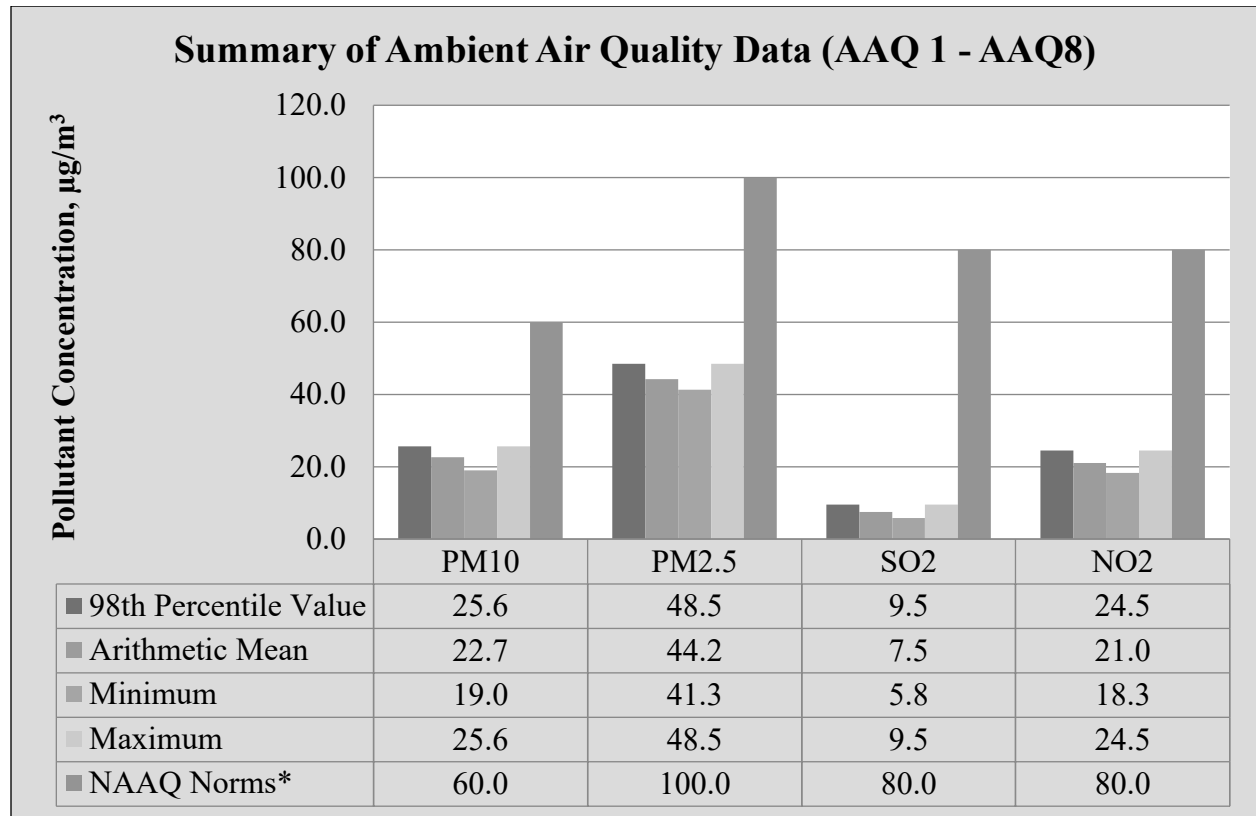
Sl. No.	Parameter	Pollutant Concentration, µg/m ³			
		PM _{2.5}	PM ₁₀	SO ₂	NO ₂
1	No. of Observations	260	260	260	260
2	10th Percentile Value	19.0	41.3	5.8	18.3
3	20th Percentile Value	20.0	42.2	6.2	18.7
4	30th Percentile Value	21.2	42.5	6.3	19.3
5	40th Percentile Value	22.1	43.0	6.5	20.2
6	50th Percentile Value	22.4	43.3	7.2	20.3
7	60th Percentile Value	22.5	43.6	7.3	20.8
8	70th Percentile Value	23.2	44.2	7.8	21.5
9	80th Percentile Value	23.6	45.2	8.3	21.5
10	90th Percentile Value	24.5	46.2	8.6	22.5
11	95th Percentile Value	25.3	46.5	9.2	23.5
12	98th Percentile Value	25.6	48.5	9.5	24.5
13	Arithmetic Mean	22.7	44.2	7.5	21.0
14	Geometric Mean	22.6	44.2	7.4	20.9
15	Standard Deviation	2.1	2.2	1.3	1.9
16	Minimum	19.0	41.3	5.8	18.3
17	Maximum	25.6	48.5	9.5	24.5
18	NAAQ Norms*	100.0	60.0	80.0	80.0
19	% Values exceeding Norms*	0.0	0.0	0.0	0.0

Legend: PM_{2.5}-Particulate Matter size less than 2.5 µm; PM₁₀-Respirable Particulate Matter size less than 10 µm; SO₂-Sulphur dioxide; NO_x-Oxides of Nitrogen; CO-Carbon monoxide; O₃-Ozone; NH₃-Ammonia;

Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C₆H₆-Benzene & BaP- Benzo (a) pyrene in particulate phase levels were monitored below their respective detectable limits

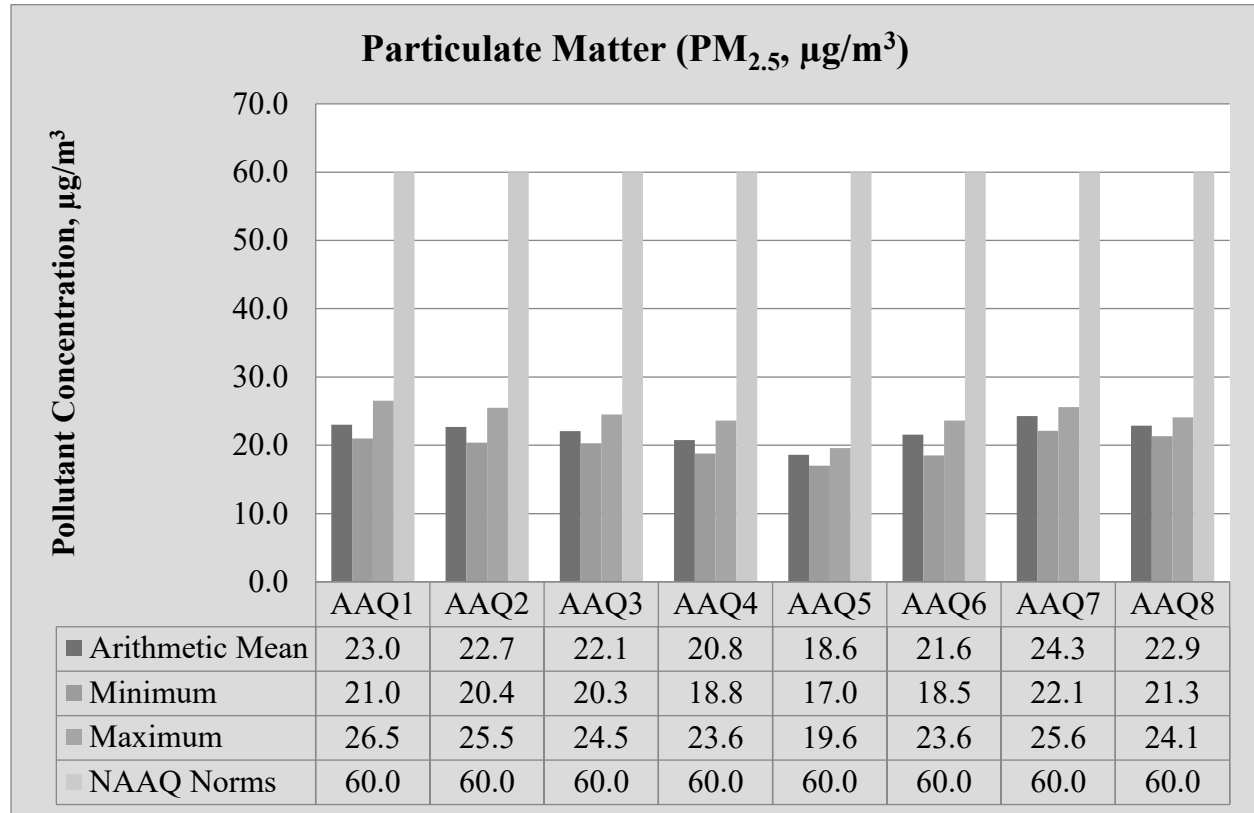
* NAAQ Norms-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Areas

FIGURE 3.16: BAR DIAGRAM OF SUMMARY OF AAQ 1 – AAQ 8



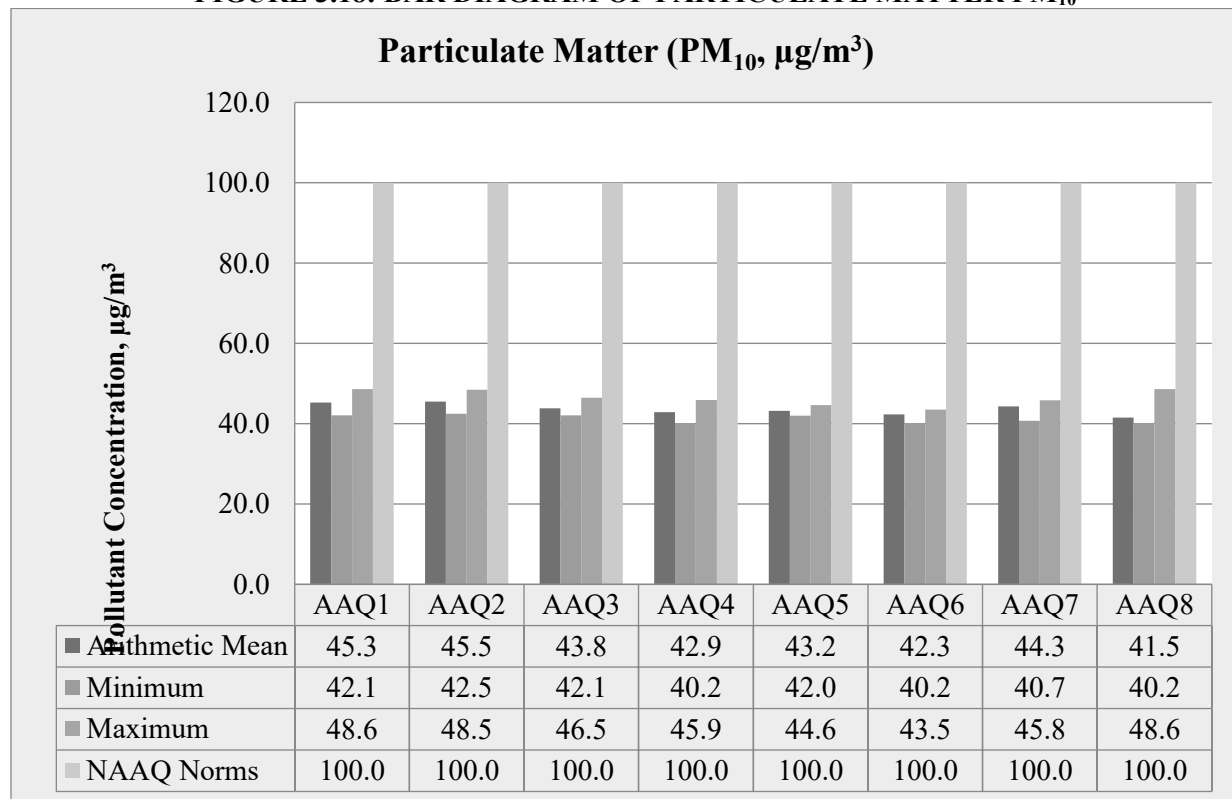
Source: Table 3.17 to 3.27

FIGURE 3.17: BAR DIAGRAM OF PARTICULATE MATTER PM_{2.5}



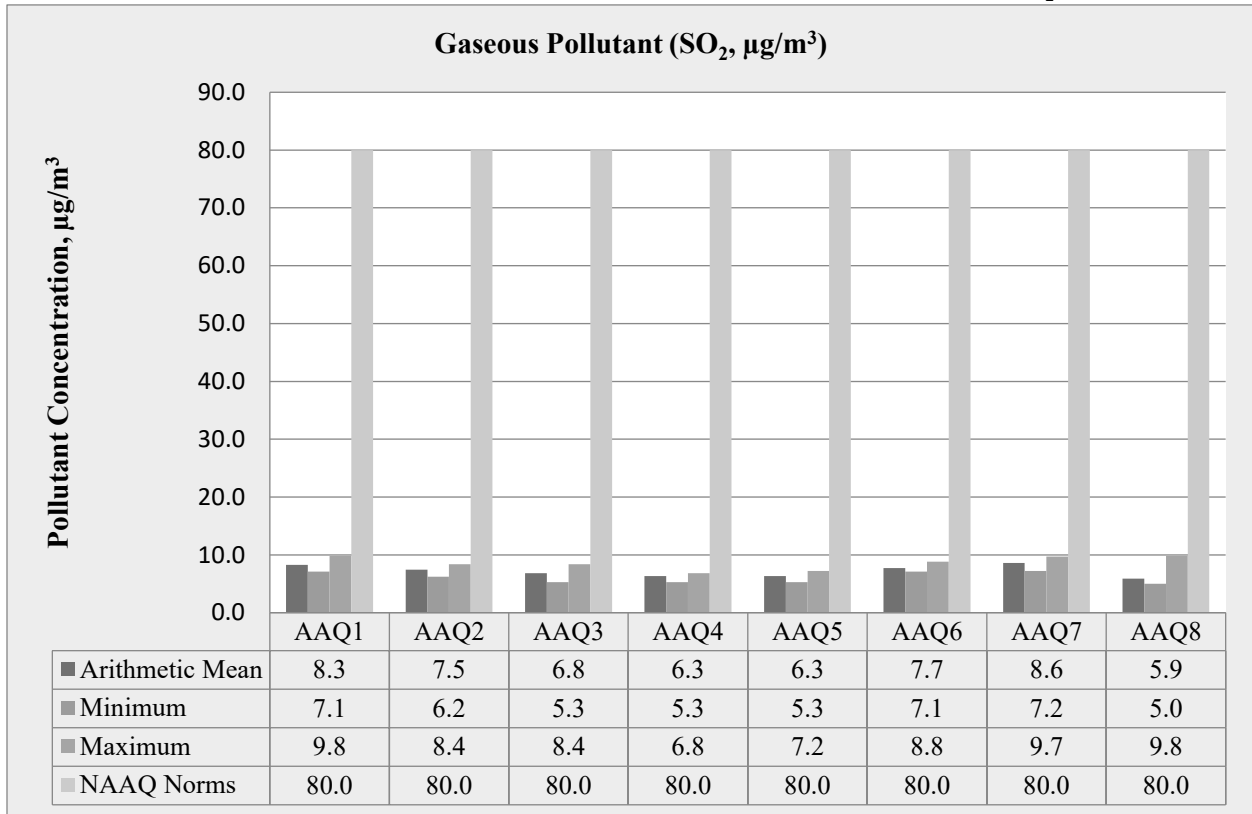
Source: Table 3.17 to 3.27

FIGURE 3.18: BAR DIAGRAM OF PARTICULATE MATTER PM₁₀



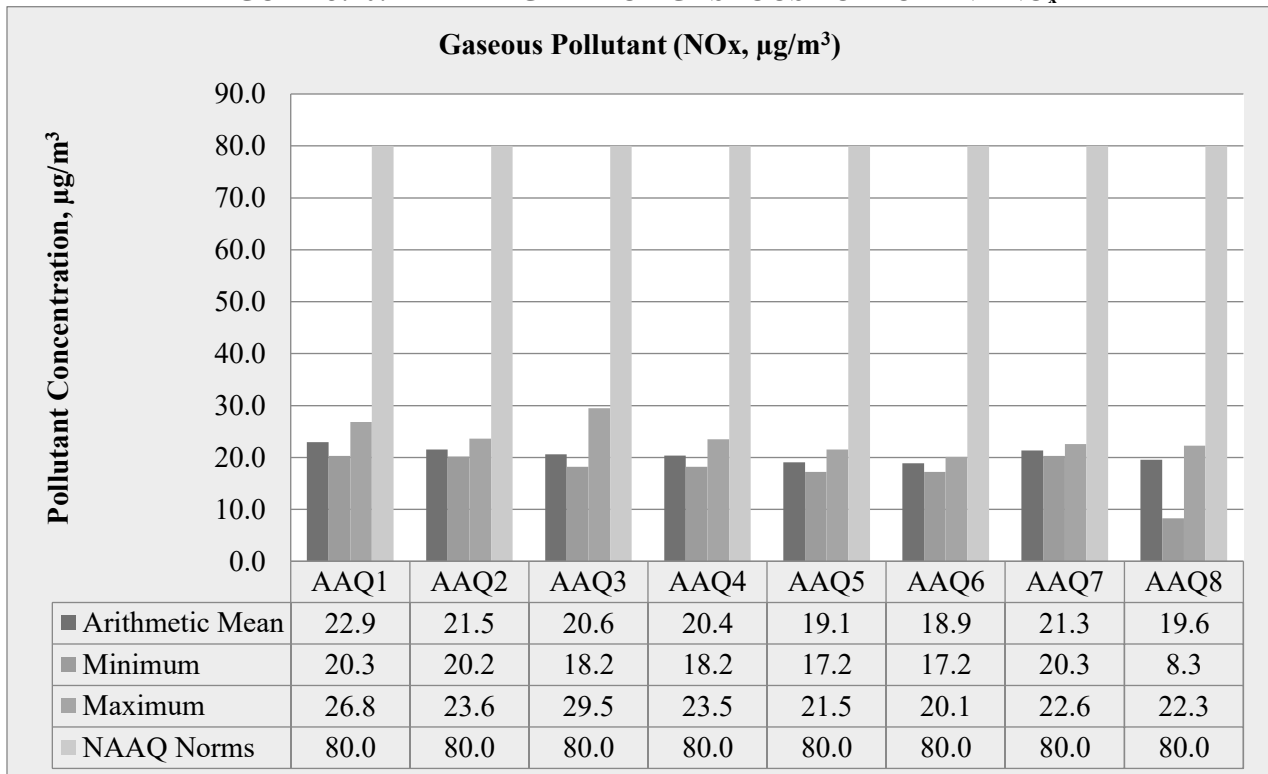
Source: Table 3.17 to 3.27

FIGURE 3.19: BAR DIAGRAM OF GASEOUS POLLUTANT SO₂



Source: Table 3.17 to 3.27

FIGURE 3.20: BAR DIAGRAM OF GASEOUS POLLUTANT NO_x



Source: Table 3.17 to 3.27

3.3.6 Interpretations & Conclusion

As per monitoring data, PM₁₀ ranges from 48.6 µg/m³ to 40.2 µg/m³, PM_{2.5} data ranges from 26.5 µg/m³ to 17 µg/m³, SO₂ ranges from 9.8 µg/m³ to 5 µg/m³ and NO₂ data ranges from 29.5 µg/m³ to 17.2 µg/m³. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

3.3.7 FUGITIVE DUST EMISSION –

Fugitive dust was recorded at 8AAQ monitoring stations for 26 days average during the study period.

TABLE 3.27: AVERAGE FUGITIVE DUST SAMPLE VALUES

AAQ Locations	Avg SPM (µg/m ³)
AAQ 1	66.55
AAQ 2	67.62
AAQ 3	62.8
AAQ 4	63.03
AAQ 5	64.42
AAQ 6	66.08
AAQ7	67.09
AAQ8	62.04

Source: Onsite monitoring/ sampling by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories

TABLE 3.28: FUGITIVE DUST SAMPLE VALUES IN µg/m³

SPM (µg/m ³)	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8
Average	66.55	67.62	62.8	63.03	64.42	66.08	67.07	62.04
Min	69.3	69.5	65.9	65.5	66.3	68.5	68.5	64.2
Max	63.5	65.3	60.2	61.2	62.3	63.4	65.3	60.2

Source: Calculations from Lab Analysis Reports

3.4 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in study area, the environmental assessment of noise from the mining activity and vehicular traffic can be undertaken by taking into consideration various factors like potential damage to hearing, physiological responses, and annoyance and general community responses.

The main objective of noise monitoring in the study area is to establish the baseline noise level and assess the impact of the total noise expected to be generated during the project operations around the project site.

3.4.1 Identification of Sampling Locations

In order to assess the ambient noise levels within the study area, noise monitoring was carried out at Eight (8) locations. The noise level monitoring locations were carried out by covering commercial, residential, rural areas within the radius of 10km. A noise monitoring methodology was chosen such that it best suited the purpose and objectives of the study.

TABLE 3.29: DETAILS OF SURFACE NOISE MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	N1	Core Zone	Project Area	12°44'17.82"N 77°54'54.26"E
2	N2	Dinnur	400m West	12°44'20.22"N 77°54'33.67"E
3	N3	Bukkasagaram	2.5km SE	12°43'35.27"N 77°56'5.15"E
4	N4	Venkatesapuram	3.0km NE	12°45'28.99"N 77°56'9.07"E
5	N5	Gollapalli	5km SW	12°42'38.18"N 77°52'36.75"E

6	N6	Kelavarapalli	4.8km NW	12°45'17.63"N 77°52'21.32"E
7	N7	Alur	960m SW	12°43'47.09"N 77°54'33.40"E
8	N8	Devichettipatti	6km North	12°47'34.82"N 77°54'41.68"E

Source: On-site monitoring/sampling by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories in association with GEMS

3.4.2 Method of Monitoring

Digital Sound Level Meter was used for the study. All reading was taken on the 'A-Weighting' frequency network, at a height of 1.5 meters from ground level. The sound level meter does not give a steady and consistent reading and it is quite difficult to assess the actual sound level over the entire monitoring period. To mitigate this shortcoming, the Continuous Equivalent Sound level, indicated by L_{eq} , is used. Equivalent sound level, 'Leq', can be obtained from variable sound pressure level, 'L', over a time period by using following equation. The equivalent noise level is defined mathematically as

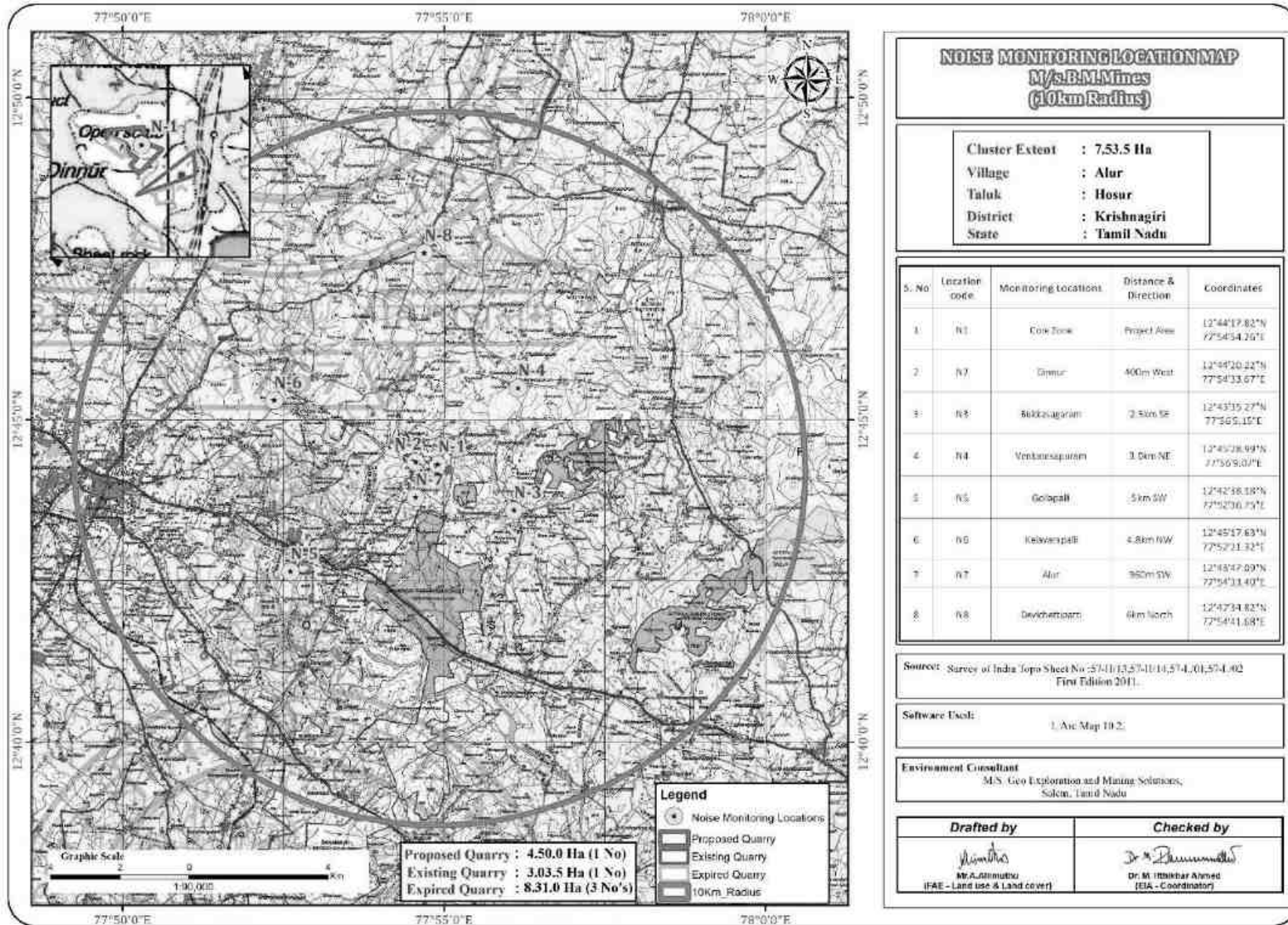
Measured noise levels, displayed as a function of time, is useful for describing the acoustical climate of the community. Noise levels recorded at each station with a time interval of about 60 minutes are computed for equivalent noise levels. Equivalent noise level is a single number descriptor for describing time varying noise levels.

$$L_{eq} = 10 \log L / T \sum (10L_n/10)$$

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

T = Time interval of observation

FIGURE 3.21: NOISE MONITORING STATIONS AROUND 10 KM RADIUS



3.4.3 Analysis of Ambient Noise Level in the Study Area

The Digital Sound pressure level has been measured by a sound level meter (Model: HTC SL-1352)

An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in below Table 3.31

Day time: 6:00 hours to 22.00 hours. Night time: 22:00 hours to 6.00 hours.

TABLE 3.30: AMBIENT NOISE QUALITY RESULT

S. No	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
1	Core Zone	41.8	36.1	Industrial Day Time- 75 dB (A) Night Time- 70 dB (A) Residential Day Time- 55 dB (A) Night Time- 45 dB (A)
2	Dinnur	41.5	36.8	
3	Bukkasagaram	40.4	36.5	
4	Venkatesapuram	41.2	37.0	
5	Gollapalli	38.3	33.9	
6	Kelavrapalli	39.6	35.5	
7	Alur	40.8	36.4	
8	Devichettipatti	39.0	36.3	

Source: On-site monitoring/sampling by CHENNAI METTEX LAB PRIVATE LIMITED Laboratories in association with GEMS

FIGURE 3.22: DAY TIME NOISE LEVELS IN CORE AND BUFFER ZONE

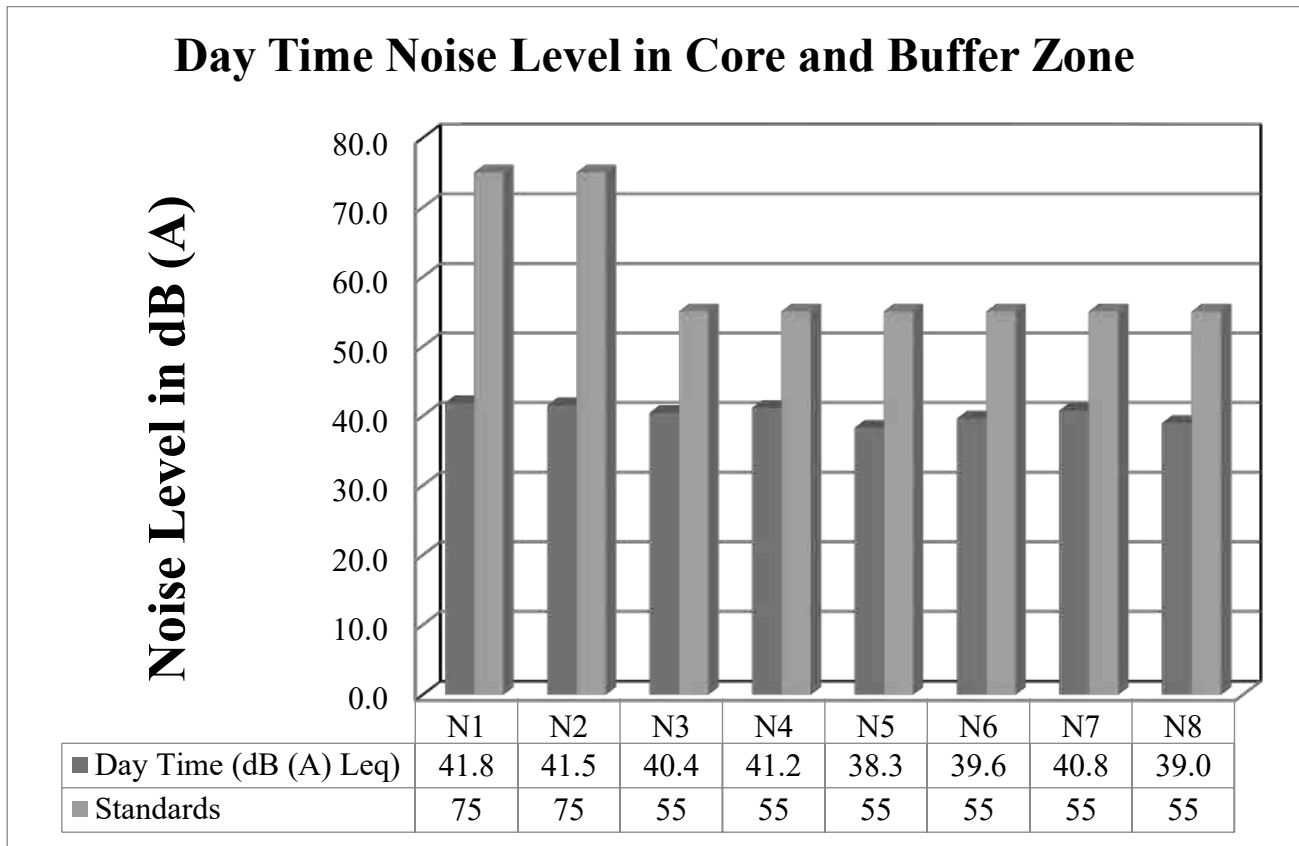
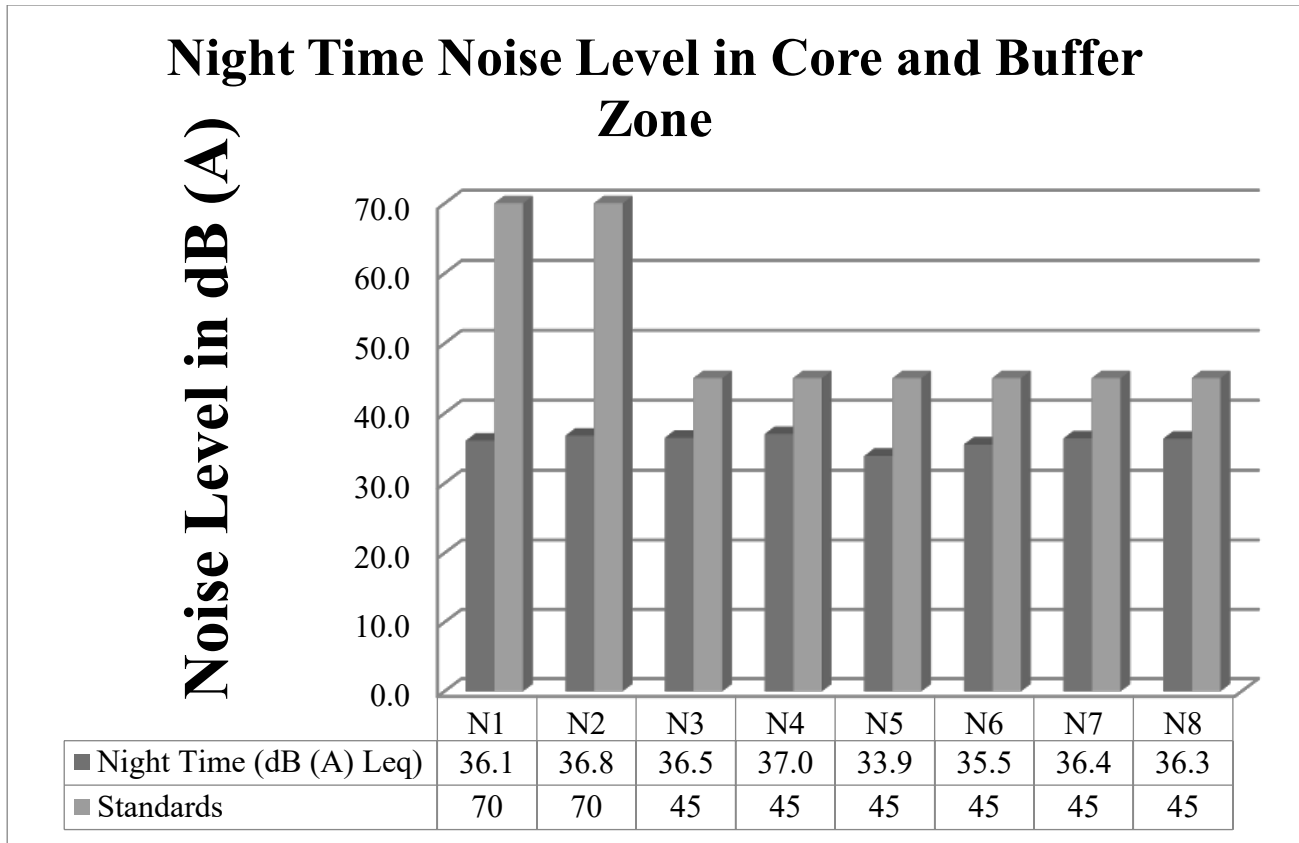


FIGURE 3.23: NIGHT TIME NOISE LEVELS IN CORE AND BUFFER ZONE



3.4.4 Interpretation & Conclusion:

Ambient noise levels were measured at 8 (Eight) locations around the proposed project area. Noise levels recorded in core zone during day time 41.8 dB (A) Leq and during night time it is 36.1 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 38.3 to 41.5 dB (A) Leq and during night time were from 33.9 to 37.0 dB (A) Leq.

Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

3.5 ECOLOGICAL ENVIRONMENT

The core area extent of 4.50.0 Ha of Rough stone quarry has an impact on diversity of flora and fauna of the surrounding area. But present work was carried out on detailed study of the impacts of Rough stone quarry on the ecology and biodiversity of the core lease area with the proper mitigation and sustainable management plan. The Core mining area is situated with exhibit flat topography. whereas in buffer zone some places agricultural land is dominated. The following methods were applied during the baseline study of flora, fauna and diversity assessment.

3.5.1 Scope of Work

Scope of work for this study includes identification of ecologically sensitive receptors, based on literature survey, field investigations and their mitigation with conservation action plan. The study was carried out in the core as well as buffer zone of the Proposed Rough stone quarry. The study was carried out systematically and scientifically using primary and secondary data in order to bring out factual information on the ecological conditions of the mine site and 10 km radius study area.

The study involved assessment of general habitat type, vegetation pattern, preparation of inventory of flora and fauna of terrestrial ecosystem within 10 km radius from the boundary of all the Proposed Mine site. Biological

assessment of the site was done to identify ecologically sensitive areas and whether there are any rare, endangered, endemic or threatened (REET) species of flora & fauna in the core area as well its buffer zone to be impacted. The study also designed to suggest suitable mitigation measures, if necessary, for protection of wildlife habitats and conservation of REET species if any.

3.5.2 Objectives of Biological Studies

The present study was undertaken with the following objectives:

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

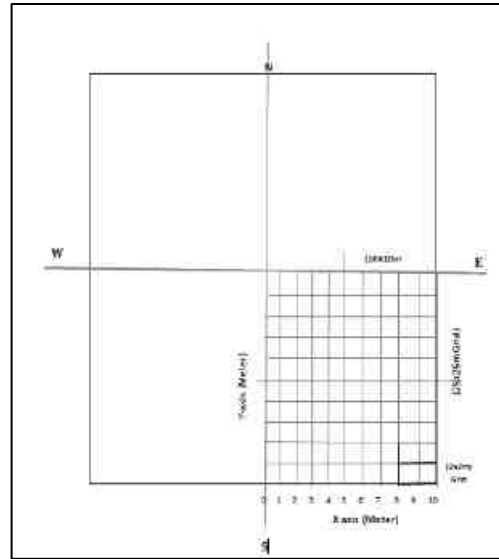
3.5.3 Methodology of Sampling

Identification of vegetation in relation to the natural flora and crops was conducted through reconnaissance field surveys and onsite observations in core and buffer zone. The plant species identification was done based on the reference materials and also by examining the morphological characteristics and reproductive materials i.e. flowers, fruits and seeds. Land use pattern in relation to agriculture crop varieties were identified through physical verification of land and interaction with local villagers.

The faunal elements (animal species) of core and buffer zone were identified by direct sightings or indirect evidences viz. pug marks, skeletal remains, scats and droppings etc. (Jayson and Easa 2004). Standard binocular was used for the observations. The authenticity of faunal elements occurrence was confirmed by interaction with the local people. Avifauna identification was done with pictorial descriptions of published literature. Information pertaining to existence of any migratory corridors and paths were obtained from local inhabitants. The status of each faunal element was determined and wildlife schedule category was ascertained as per the IUCN-Red Data Book and Indian wildlife (Protection) Act, 1972.

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

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

FIGURE 3.24: A SCHEMATIC DIAGRAM FOR FLORAL RANDOM SAMPLING

Phyto-sociological Survey method

Phyto-sociological parameters, viz., Abundance, Density, Frequency (%) were measured. A total of 10 quadrats were laid down randomly within core area and 40 quadrats were laid down within four quartiles randomly (10/quartile) in buffer area. In core area 10 quadrats were laid randomly to enumerated trees, shrubs, and herbs as per the Following formulae used for calculating the frequency (%), abundance and density of the floral species encountered in the 10 quadrats studied.

Quadrats method

Quadrats of 10×10 -m were laid down randomly within the core and 5-km buffer area; each quadrat was laid to assess the trees (>5 cm GBH) and one, 5×5 -m sub-quadrat nested within the quadrat for shrubs. The quadrats were laid randomly to cover the area to maximize the sampling efforts and minimize the species homogeneity, such as small stream areas, trees in agricultural bunds, tank bunds, farm forestry plantations, wildlife areas, and natural forest area, avenue plantations, house backyards, etc. In each quadrat individuals belonging to tree (10×10 -m) and shrub (5×5 -m) were recorded separately and have been identified on the field.

FLORA IN CORE ZONE

Taxonomically a total of 19 species belonging to 12 families have been recorded from the core mining lease area. It is exhibit plain topography. Based on the habitat classification of the enumerated plants the majority of species were Herbs 8 followed by Trees 5, Shrubs 4, and grasses 2. Details of flora with the scientific name were mentioned in Table No. 3.1. The result of the core zone of flora studies shows that Fabaceae and Lamiaceae, Poaceae are the main dominating species in the study area mentioned in Table No.3.1 No species found as threatened category.

FLORA IN BUFFER ZONE

The buffer region has a similar type of habitat, but it has a wider variety of vegetation than the core zone area. The proposed lease area has plain terrain. There are 97 different species identified in the buffer zone among the identified, floral (97) species were 43 trees, 23 herbs, 22 shrubs, 7 climbers/creepers, and grasses 2. According to the findings of the buffer zone flora studies, the dominant species in the study area are Fabaceae, Poaceae, and Mimosaceae, as shown in Table No.3.2. Apart from the proposed project area, there is agricultural land. Horticulture and agricultural land are untouched. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. Details of flora with the scientific name were mentioned in Table No.3.2.

A list of floral species has been prepared based on primary survey (site observations) and discussion with local people. The total number of different plant life forms under trees, shrubs, herbs, and climbers is shown in Table 3.3 and their % distribution

TABLE 3.31: FLORA IN CORE ZONE

Sl.No	English Name	Vernacular Name	Scientific Name	Family Name
Trees				
1.	Blue gum	Thayala maram	Eucalyptus	Myrtaceae
2.	Wild Date Palm	Icham	Phoenix sylvestris	Arecaceae
3.	Pongamia pinnata	Pongam	Millettia pinnata	Fabaceae
4.	Neem or Indian lilac	Vembu maram	Azadirachta indica	Meliaceae
5.	Pala indigo	Pala maram	Wrightia tinctoria	Apocynaceae
Shrubs				
6.	West Indian Lantana	Unni chedi	Lantana camara	Verbenaceae
7.	Avaram	Avarai	Senna auriculata	Fabaceae
8.	Milk Weed	Erukku	Calotropis gigantea	Apocynaceae
9.	Coromandel Boxwood	Karai	Canthium coromandelicum	Rubiaceae
Herbs				
10.	Common leucas	Thumbai	Leucas aspera	Lamiaceae
11.	Coat buttons	Thatha poo	Tridax procumbens	Asteraceae
12.	Indian doab	Arugampul	Cynodon dactylon	Poaceae
13.	Holy basil	Thulasi	Ocimum tenuiflorum	Lamiaceae
14.	Indian nettle	Nayuruvi	Achyranthes aspera	Amaranthaceae
15.	Fish poison	Kolinchi	Tephrosia purpurea	Fabaceae
16.	Goatweed	Kallurukki	Scoparia dulcis	Plantaginaceae
17.	Bindii	Nerunji mullu	Tribulus terrestris	Zygophyllaceae
Grasses				
18.	Eragrostis	Pullu	Eragrostis ferruginea	Poaceae
19.	Great brome	Thodappam	Bromus diandrus	Poaceae

(Sources: Species observation in the field study)

FIGURE 3.25: FLORA AND SURVEY PHOTOGRAPHS IN CORE ZONE



a. Phoenix sylvestris



b. Millettia pinnata



c. Wrightia tinctoria



d. Eucalyptus



e. Senna auriculata



f. Azadirachta indica



g. *Canthium coromandelicum*



h. *Tephrosia purpurea*



i. *Ocimum tenuiflorum*



j. *Scoparia dulcis*

FIGURE 3.26: FLORA DIVERSITY PATTERN IN CORE ZONE

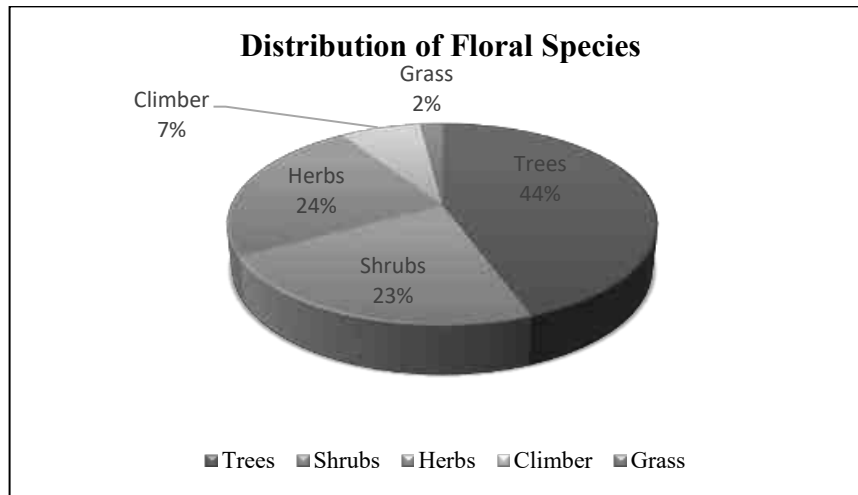


TABLE 3.32: FLORA IN BUFFER ZONE

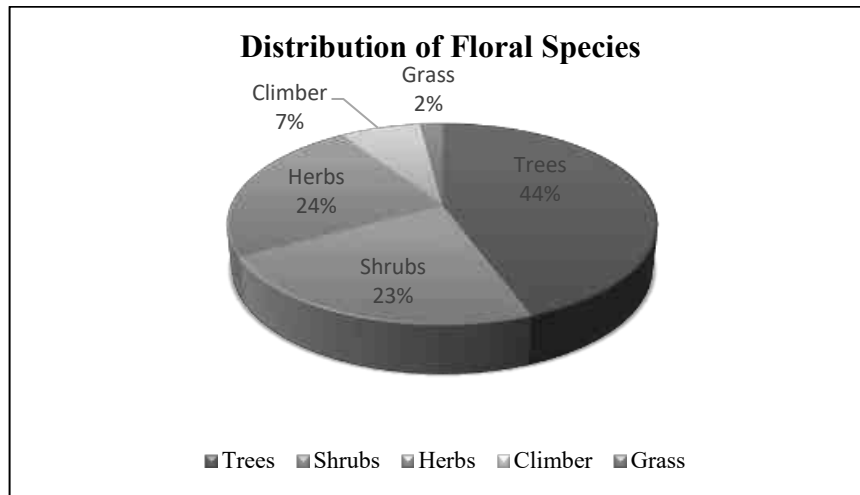
SI.No	English Name	Vernacular Name	Scientific Name	Family Name
Trees				
1.	Pongamia pinnata	Pongam	<i>Millettia pinnata</i>	Fabaceae
2.	Velvet mesquite	Mullu maram	<i>Prosopis juliflora</i>	Fabaceae
3.	Neem or Indian lilac	Vembu	<i>Azadirachta indica</i>	Meliaceae
4.	Pala indigo	Pala maram	<i>Wrightia tinctoria</i>	Apocynaceae
5.	Mango	Manga	<i>Mangifera indica</i>	Anacardiaceae
6.	Wild Tamarind	Savundal	<i>Leucaena latisiliqua</i>	Mimosaceae
7.	Coconut	Thennai maram	<i>Cocos nucifera</i>	Areaceae
8.	Wild Date Palm	Icham	<i>Phoenix sylvestris</i>	Areaceae
9.	Madras thorn	Kudukapuli	<i>Pithecellobium dulce</i>	Fabaceae
10.	Eucalyptus	Thailam maram	<i>Eucalyptus tereticornis</i>	Myrtaceae
11.	Indian siris	Eayal vaagai	<i>Albizia lebbek</i>	Mimosaceae
12.	Monkey pod tree	Thungumoonchi	<i>Samanea saman</i>	Fabaceae
13.	Portia tree	Poovarasam	<i>Thespesia populnea</i>	Malvaceae
14.	Jack fruit	Bala maram	<i>Artocarpus integrifolia</i>	Moraceae
15.	Tree of heaven	Perumaram	<i>Ailanthus excelsa</i>	Simaroubaceae
16.	Yellow Flame	Vagai	<i>Peltophorum pterocarpum</i>	Caesalpiniaceae
17.	Lemon	Ezhumuchaipalam	<i>Citrus lemon</i>	Rutaceae
18.	Jamun Fruit Plant	Naval maram	<i>Syzygium cumini</i>	Myrtaceae
19.	Gum arabic tree	Karuvelam	<i>Vachellia nilotica</i>	Fabaceae
20.	Yellow oleander	Ponarali	<i>Cassipouira thevetia</i>	Apocynaceae
21.	Rain Tree	Mazhiamaram	<i>Samanea saman</i>	Mimosaceae
22.	Chinese chaste tree	Nochi	<i>Vitex negundo</i>	Verbenaceae
23.	Teak	Thekku	<i>Tectona grandis</i>	Verbenaceae
24.	Indian mulberry	Nuna maram	<i>Morinda tinctoria</i>	Rubiaceae
25.	Drumstick tree	Murunga maram	<i>Moringa oleifera</i>	Moringaceae
26.	Guava	Koyya	<i>Psidium guajava</i>	Myrtaceae
27.	Indian-almond	Inguti	<i>Terminalia catappa</i>	Combretaceae
28.	Asian Palmyra palm	Panai maram	<i>Borassus flabellifer</i>	Areaceae
29.	River tamarind	Soundal maram	<i>Leucaena leucocephala</i>	Fabaceae
30.	Horsetail She-oak	Savukku maram	<i>Casuarina equisetifolia</i>	Casuarinaceae
31.	Indian gooseberry	Nelli	<i>Phyllanthus emblica</i>	Phyllanthaceae
32.	Peepal	Asoka maram	<i>Ficus religiosa</i>	legume
33.	Tamarind	Puliyamaram	<i>Tamarindus indica</i>	Legumes
34.	Malayan Cherry	Ten Pazham	<i>Muntingia calabura</i>	Muntingiaceae
35.	Jujube Trees	Elantha Pazham	<i>Ziziphus Mauritiana</i>	Rhamnaceae
36.	Papaya	Pappali maram	<i>Carica papaya L</i>	Caricaceae
37.	Java olive tree	Kutiraippitukku	<i>Sterculia foetida</i>	Malvaceae
38.	Banana tree	Vazhaimaram	<i>Musa acuminata</i>	Musaceae
39.	Custard apple	Seethapazham	<i>Annona reticulata</i>	Annonaceae
40.	Manilkara zapota	Sapota	<i>Manilkara zapota</i>	Sapotaceae
41.	Indian-almond	Badam	<i>Terminalia catappa</i>	Combretaceae
42.	Banyan tree	Alamaram	<i>Ficus benghalensis</i>	Moraceae
43.	Jack fruit	Palamaram	<i>Artocarpus heterophyllus</i>	Moraceae
Shrubs				
1.	Giant reed	Mudaampul	<i>Arundo donax</i>	Poaceae
2.	Devil's trumpet	Umathai	<i>Datura metel</i>	Solanaceae

3.	Avaram	Avarai	<i>Senna auriculata</i>	Fabaceae
4.	Water-hyacinth	Agayathamara	<i>Eichhornia crassipes</i>	Pontederiaceae
5.	Kangkong	Sarkaraivalli	<i>Ipomeae aquatica</i>	Convolvulaceae
6.	Castor bean	Amanakku	<i>Ricinus communis</i>	Euphorbiaceae
7.	Green amaranth	Kuppaikeerai	<i>Amaranthus vividis</i>	Amaranthaceae
8.	Jungle geranium	Idly Poo	<i>Ixora coccinea</i>	Rubiaceae
9.	Shoe flower	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae
10.	Milk Weed	Erukku	<i>Calotropis gigantea</i>	Apocynaceae
11.	Rough cocklebur	Marlumuttu	<i>Xanthium indicum</i>	Asteraceae
12.	Mexican prickly poppy	Bramathndu	<i>Argemone mexicana</i>	Papaveraceae
13.	Puriging nut	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae
14.	Malabar catmint	Pei veratti	<i>Anisomeles malabarica</i>	Lamiaceae
15.	Dwarf Heliotrope	Theelkoduku	<i>Heliotropium supinum</i>	Boraginaceae
16.	Touch-me-not	Thottalchinungi	<i>Mimosa pudica</i>	Mimosaceae
17.	Indian mallow	Thuthi	<i>Abutilon indicum</i>	Meliaceae
18.	Night shade plan	Sundaika	<i>Solanum torvum</i>	Solanaceae
19.	Rosary pea	Kundumani	<i>Abrus precatorius</i>	Fabaceae
20.	Indian Oleander	Arali	<i>Nerium indicum</i>	Apocynaceae
21.	West Indian Lantana	Unni chedi	<i>Lantana camara</i>	Verbenaceae
22.	Rough cocklebur	Marlumutt	<i>Xanthium indicum</i>	Asteraceae
Herbs				
1.	Carrot grass	Partiniyam	<i>Parthenium hysterophorus</i>	Asteraceae
2.	Sessile Joyweed	Ponnankanni	<i>Alternanthera sessilis</i>	Amaranthaceae
3.	Billygoat weed	Pumpillu	<i>Ageratum conyzoides</i>	Asteraceae
4.	Aloe barbadensis	Katrazhai	<i>Aloe vera</i>	Asphodelaceae
5.	Madagascar Periwinkle	Nithyakalyani	<i>Catharanthus roseus</i>	Apocynaceae
6.	Indian Mercury	Kuppamani	<i>Acalypha indica</i>	Euphorbiaceae
7.	Indian nettle	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae
8.	Chloris barbata	Kodai pul	<i>Chloris barbata</i>	Poaceae
9.	Bui	Ciru-pulai	<i>Aervalanata</i>	Amaranthaceae
10.	Indian doab	Arugampul	<i>Cynodon dactylon</i>	Poaceae
11.	Datura metel	Oomathai	<i>Datura metel</i>	Solanaceae
12.	Yellow elder	Manjarali	<i>Tecoma stans</i>	Apocynaceae
13.	Cleome viscosa	Nai kadugu	<i>Celome viscosa</i>	Capparidaceae
14.	Common leucas	Thumbai	<i>Leucas aspera</i>	Lamiaceae
15.	Fish poison	Kollukaivelai	<i>Tephrosia purpureae</i>	Papilionaceae
16.	Asthma-plant	Amman pacharisi	<i>Euphorbia hirta</i>	Euphorbiaceae
17.	Holy basil	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae
18.	Peanut	Kadalai	<i>Arachis hypogaea</i>	Fabaceae
19.	Red Hogweed	Mukurattai	<i>Boerhavia diffusa</i>	Nyctaginaceae
20.	Tridax daisy	Thatha poo	<i>Tridax procumbens</i>	Asteraceae
21.	Gale of the wind	Keelaneeli	<i>Phyllanthus niruri</i>	Phyllanthaceae
22.	Eggplant	kathirikai	<i>Solanum melongena</i>	Solanaceae
23.	European nightshade black	Manathakkali	<i>Solanumnigrum</i>	Solanaceae
Climber/Creepers				
1.	Ivy gourd	Kovai	<i>Coccinea grandis</i>	Cucurbitaceae

2.	Cucumis maderaspatanus	Musumusukkai	<i>Mukia maderaspatana</i>	Cucurbitaceae
3.	Butterfly pea	Sangu poo	<i>Clitoria ternatea</i>	Fabaceae
4.	Wild water lemon	Sirupoonakaali	<i>Passiflora foetida</i>	Passifloraceae
5.	Stemmed vine	Perandai	<i>Cissus quadrangularis</i>	Vitaceae
6.	Bottle Guard	Sorakkai	<i>Lagenaria siceraria</i>	Cucurbitaceae
7.	Nut grass	Korai	<i>Cyperus rotandus</i>	Poaceae
Grass				
1.	Eragrostis	Pullu	<i>Eragrostis ferruginea</i>	Poaceae
2.	Windmill grass	Chevvarakupul	<i>Chloris barbata</i>	Amaranthaceae

*E- Economical, M- Medicinal, EM- Both Economical and Medicinal, NE- Not evaluated

(Sources: Species observation in the field study)



Pie diagram showing % distribution of floral life forms

FIGURE 3.27: FLORA AND SURVEY PHOTOGRAPHS IN BUFFER ZONE



Ricinus communis



Lantana camara



Vitex negundo



Solanum torvum



Opuntia



Calotropis gigantea



Ocimum tenuiflorum



Tectona grandis



Musa acuminata



Abutilon indicum



Tridax procumbens



Coccinia grandis



Azadirachta indica



Borassus flabellifer



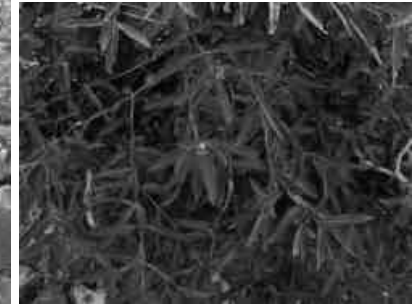
Prosopis juliflora



Thespesia Populnea



Ceibapentandra



Morinda tinctoria



Bambusoideae



Cardiospermum halicacabum



Ficus benghalensis



Nerium indicum



Leucas aspera



Cocos nucifera

*Tamarindus indica**Ziziphus mauritiana**Senna auriculata*

FAUNA

The faunal survey has been carried out as per the methodology cited and listed out Mammals, birds, Reptiles, Amphibians and Butterflies. All the listed species were compared with Red Data Book and Indian Wildlife Protection Act, 1972. There are no rare, endangered, threatened (RET) and endemic species present in core area.

FAUNA METHODOLOGY

TABLE NO: 3.33. METHODOLOGY APPLIED DURING THE 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	Grimmett R (2011); Ali S (1941)

Survey and Monitoring of Mammals

Intensive survey has been done by line transect methods (Walking and in vehicle) for all major habitats for surveying of mammals by direct and indirect evidence. Indirect methods such as faecal matter (i.e., scat) and pug mark by establishing 10 × 100-m linear transects depending on the habitat (i.e., existing wildlife game routes/forest trails used).

Direct observation technique has been used for surveying large and medium sized mammals. But this technique is perfectly suitable for surveying of diurnal mammals; however, good photographs were also taken for species identification.

Survey and Monitoring of Birds

Birds are sampled by using point count methods, and opportunistic bird sightings. By this bird vocal sounds and photographs, the species were identified in consultation with village local people.

Point count: in this method, the observer will stand in a randomly chosen point and birds seen or heard in 50m radius are recorded for 5-min. this observation is repeated in another point at least 30m from the first point. We have enumerated 20 point – counts in each quartile, which constitute a total of 80 points-count (20 x 4) within 10 km radius area.

Opportunistic bird sightings: while traveling in study area, many bird species will be detected in survey time. Such species are recoded by their appearance or by their call.

Survey and Monitoring of reptiles

Several survey techniques such as standard walk transect visual encounter survey methods were used to sampling reptiles in each and every habitat of the study area. While doing this survey, photographs were taken for

identification of species. Species identification was done by using standard field guides in consultation with village people expert.

The butterfly was enumerated by 2 linear transects of 10 × 100 m were laid within each quartile at minimum interval of 1 km. Further, amphibians and fishes documented in existing literature and secondary information in consultation with local people and wildlife experts.

FAUNA IN CORE ZONE

Core Zone: During the study, it was found that the faunal diversity in the core site was limited to Butterflies, insects, and some species of mammals & and reptiles among them numbers Insects 6, Reptiles 3, Mammals 3, and Avian 6. The core site has avifauna species like crow, Black drongo, Koel, etc. None of these species are threatened or endemic in the study area and surroundings. There is no Schedule I species and nine species are under Schedule IV according to the Indian Wildlife Act 1972. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

There are no critically endangered, endangered, vulnerable, and endemic species were observed. Details of fauna in the core zone with the scientific name were mentioned in Table No. 3.4.

TABLE 3.34: FAUNA IN CORE ZONE

SI. No	Common Name	Scientific Name	Schedule list WLPC 1972
Insects			
1.	Tawny coster	<i>Danaus chrysippus</i>	Schedule IV
2.	Striped tiger	<i>Danaus plexippus</i>	Schedule IV
3.	House fly	<i>Musca domestica</i>	-
4.	Dragonfly	<i>Agriansp</i>	-
5.	Common Tiger	<i>Danaus genutia</i>	NL
6.	Termite	<i>Hamitermes silvestri</i>	NE
Reptiles			
1.	Oriental garden lizard	<i>Calotes versicolor</i>	NL
2.	Indian forest skink	<i>Sphenomorphus indicus</i>	NL
3.	House lizards	<i>Hemidactylus flaviviridis</i>	Schedule IV
Mammals			
1.	Indian Field Mouse	<i>Mus booduga</i>	Schedule IV
2.	Asian Small Mongoose	<i>Herpestes javanicus</i>	Schedule (Part II)
3.	Squirrel	<i>Funambulus palmarum</i>	Schedule IV
Aves			
1.	Rose-ringed parkeet	<i>Psittacula krameri</i>	Schedule IV
2.	Common myna	<i>Acridotheres tristis</i>	NL
3.	Koel	<i>Eudynamys</i>	Schedule IV
4.	Black drongo	<i>Dicrurus macrocercus</i>	Schedule IV
5.	House crow	<i>Corvus splendens</i>	NL

*NE- Not evaluated; LC- Least Concern, NT –Near Threatened, T-Threatened

FAUNA IN BUFFER ZONE

Taxonomically a total of 53 species recorded were from the buffer zone area. Based on habitat classification the majority of species were Insect 5, followed by birds 23, Reptiles 7, Mammals 5, Amphibians 3, and Butterflies 11. There are five Schedule II species, and thirty-one species are under schedule IV according to the Indian wildlife Act 1972. A total of 23 species of bird were sighted in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed. There are no impacts on nearby fauna species.

Dominant species are mostly birds, butterflies, and insects, and three amphibian was observed during the extensive field visit *Sphaerotherca breviceps*, *Euphyctis hexadactylus*, *Bufo melanostictus*, etc. There is no schedule I Species in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

TABLE 3.35: FAUNA IN BUFFER ZONE**Mammals: (*directly sighted animals & Secondary data)**

SI. No	Common Name	Scientific Name	Schedule list WLP 1972
1.	Brown rat	<i>Rattus norvegicus</i>	Schedule IV
2.	Indian Field Mouse	<i>Mus booduga</i>	Schedule IV
3.	Asian Small Mongoose	<i>Herpestes javanicus</i>	Schedule (Part II)
4.	Indian hare	<i>Lepus nigricollis</i>	Schedule (Part II)
5.	Indian palm squirrel	<i>Funambulus palmarum</i>	Schedule IV

Status assigned by the IUCN, where – CR – Critically Endangered; EN – Endangered; LC – Least Concern; NT – Near Threatened; VU – Vulnerable, DA – Data Deficient, NE – Not Evaluated

Table 3.36. Listed birds

SI. No	Common Name	Scientific Name	Schedule list WLP 1972
1.	Rose-ringed Parakeet	<i>Psittaculakrameria</i>	Schedule IV
2.	Pond heron	<i>Ardeolagravii</i>	Schedule IV
3.	Little grebe	<i>Tachybaptusruficollis</i>	Schedule IV
4.	Small-blue kingfisher	<i>Alcedoatthis</i>	Schedule IV
5.	Grey heron	<i>Ardeacineria</i>	Schedule IV
6.	Cattle egret	<i>Bubulcus ibis</i>	Schedule IV
7.	Indian roller	<i>Coracias benghalensis</i>	Schedule IV
8.	Night heron	<i>Ncticoraxncticorax</i>	Schedule IV
9.	Large egret	<i>Casmerodiusalbus</i>	Schedule IV
10.	Asian koel	<i>Eudynamysscolopacea</i>	Schedule IV
11.	Red-necked halarope	<i>Phalaropuslobatus</i>	Schedule IV
12.	Yellow wagtail	<i>Motacilla flava</i>	Schedule IV
13.	Spotted dove	<i>Streptopeliachinensis</i>	Schedule IV
14.	Shikra	<i>Accipiter badius</i>	Schedule IV
15.	House crow	<i>Corvussplendens</i>	Schedule IV
16.	White-breasted kingfisher	<i>Halcyon smyrnensis</i>	Schedule IV
17.	Blue-rock pigeon	<i>Colombalivia</i>	Schedule IV
18.	Golden-backed wood Pecker	<i>Dinopiumbenghalensis</i>	Schedule IV
19.	Large cormorant	<i>Phalacrocorax carbo</i>	Schedule IV
20.	Jungle crow	<i>Corvusmacrorhynchos</i>	Schedule IV
21.	Robin	<i>Copsychussaularis</i>	Schedule IV
22.	Coot	<i>Fulicaatra</i>	Schedule IV
23.	Orange-headed thrush	<i>Zoothera citrine</i>	Schedule IV

*Status assigned by the IUCN, where – CR – Critically Endangered; EN – Endangered; LC – Least Concern; NT – Near Threatened; VU – Vulnerable, DA – Data Deficient, NE – Not Evaluated

Table 3.37. List of Reptiles either spotted or reported from the study area.
(*indicates direct observations & Secondary data)

SI. No	Common Name	Scientific Name	Schedule list WLPA 1972
1.	Green vine snake	<i>Ahaetulla nasuta</i>	Schedule IV
2.	Common krait	<i>Bungarus caeruleus</i>	Schedule IV
3.	House lizards	<i>Hemidactylus flaviviridis</i>	Schedule IV
4.	Russell's viper	<i>Vipera russseli</i>	Sch II (Part II)
5.	Rat snake	<i>Ptyas mucosa</i>	Sch IV (Part II)
6.	Common skink	<i>Mabuya carinatus</i>	NL
7.	Oriental garden lizard	<i>Calotes versicolor</i>	NL

Table 3.38. List of insects either spotted or reported from the study area

SI. No	Common Name	Scientific Name	Schedule list WLPA 1972
1.	Indian honey bee	<i>Apis cerana</i>	-
2.	Dragonfly	<i>Ceratogomphus pictus</i>	-
3.	Grasshopper	<i>Hieroglyphus sp</i>	NL
4.	Ant	<i>Camponotus Vicinus</i>	NL
5.	Termite	<i>Hamitermes silvestri</i>	NE

Table.3.39. List of Butterflies reported from the study area

SI. No	Common Name	Scientific Name	Schedule
1.	Common Indian crow	<i>Euploea core</i>	-
2.	Common Tiger	<i>Danaus genutia</i>	-
3.	Spotless grass yellow	<i>Euremalaeta</i>	-
4.	Striped tiger	<i>Danaus plexippus</i>	-
5.	Common emigrant	<i>Catopsiliapomona</i>	-
6.	Milkweed butterfly	<i>Danainae</i>	-
7.	Indian palm bob	<i>Suastusgremius</i>	-
8.	Common rose	<i>Pachlioptaaristolochiaee</i>	-
9.	Great orange tip	<i>Hebomoia glaucippe</i>	-
10.	Crimson tip	<i>Colotisdanae</i>	-
11.	Common jay	<i>Graphiumdoson</i>	-

*Status

IUCN, where – CR – Critically Endangered; EN – Endangered; LC – Least Concern; NT – Near Threatened; VU – Vulnerable, DA – Data Deficient, NE – Not Evaluated

assigned by the

*NL- Not listed, LC- Least concern, NT- Near threatened

Aquatic Vegetation

The field survey for assessing the aquatic vegetation was also undertaken during the study period. The list of aquatic plants observed in the study area is given in Table No 3.6.

Table No: 3.40. List of aquatic plants observed in the study area

Sl. No	Scientific name	Common Name	Vernacular Name (Tamil)
1	<i>Ipomea aquatica</i>	Water Morning Glory	Marshy amphibious hydrophytes
2	<i>Hydrilla verticillata</i>	Hydrilla	Submerged hydrophytes
3	<i>Pistia stratiotes</i>	Water lettuce	Free floating hydrophytes
4	<i>Cyperus articulates</i>	Jointed flatsedge	Emergent Hydrophytes
5	<i>Eichhornia crassipes</i>	Common water hyacinth	Free floating hydrophytes

***LC- Least Concern, NA-Not yet assessed**

3.5.4 Interpretation& Conclusion:

The observations and assessment of the overall ecological scenario involve details such as classification of Biogeographic zone, eco-region, habitat types and land cover, distances from natural habitats, vegetation/forest types, and sensitive ecological habitats such as Wetlands sites, Important Bird areas, migration corridors of important wildlife etc. Such baseline information provides better understanding of the situation and overall ecological importance of the area. This baseline information viewed against proposed project activities help in predicting their impacts on the wildlife and their habitats in the region. Data collected and information gathered from secondary literature on flora, fauna, protected area, natural habitats, and wildlife species etc., and Consulted and discussed with local people, from the villages, herders and farmers who inhabit close to the proposed project area.

3.6 SOCIO ECONOMIC ENVIRONMENT

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.

3.6.1 Objectives of the Study

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

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

3.6.2 Scope of Work

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

3.6.3 District Profile

'Krishna' refers to 'black' and 'giri' refers to 'hill'. This district is gifted with black granite hillocks and named as "krishnagiri". The region came under the rule of Krishna Deva Raya and hence it might have been named after this king. Its the holy land of wise scholars, men of valour and courage, blessed with the green valleys, hills and hillocks and inhabited by people known for innovative farming was divided, for the formation of Krishnagiri district, carved out of Dharmapuri district as 30th district of Tamil Nadu.

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

3.6.4 Study area:

ALUR VILLAGE

Alur village is situated in Teshil Hosur, District Krishnagiri and in State of Tamil Nadu India. Village has population of 404 as per census data of 2011, in which male population is 205 and female population is 199. Total geographical area of Alur village is 172.06 Hectares. Population density of Alur is 2 persons per Hectares. Total number of house hold in village is 83.

TABLE 3.41: VILLAGE POPULATION FACTS

ALUR VILLAGE	
Number of Households	83
Population	404
Male Population	205
Female Population	199
Sex-ratio	971
Literacy	305
Male Literacy	152
Female Literacy	153

Gram Panchayat name of the Alur village is Baliganapalli. CD Block name is Hosur and Teshil/Taluk or sub-district is Hosur. Data Reference year is 2009 of Census 2011. Sub District HQ Name is HOSUR and Sub District HQ Distance is 21 Km from the village. District Head Quarter name is KRISHNAGIRI and it's distance from the village is 77KM. Nearest Town of the Alur village is HOSUR and nearest town distance is 21 km. Pincode of Alur village is 635109. As per census 2011 village code of village Alur is 643712.

TABLE 3.42: POPULATION AND LITERACY DATA 10 Km RADIUS

Sl.No.	Village Name	NO HH	Total Population	Male	Female	Total SC Population	Male SC	Female SC	Total ST Population	Male ST	Female ST	Total Literate Population	Male Literate	Female Literate	Total Illiterate Population	Male Illiterate	Female Illiterate
1	Addakurukki	581	2504	1288	1216	425	226	199	8	4	4	1298	758	540	1206	530	676
2	Advanapalli	58	239	123	116	1	0	1	0	0	0	125	75	50	114	48	66
3	Alnatham	71	327	170	157	77	41	36	0	0	0	176	118	58	151	52	99
4	Alur	678	3018	1569	1449	178	80	98	5	1	4	1794	1058	736	1224	511	713
5	Amgondapalli	543	2634	1371	1263	141	71	70	0	0	0	1296	771	525	1338	600	738
6	Amuthugondapalli	120	543	274	269	228	117	111	0	0	0	228	131	97	315	143	172
7	Athimugam	937	4540	2339	2201	334	163	171	17	9	8	2297	1317	980	2243	1022	1221
8	Attur	160	667	334	333	172	92	80	0	0	0	427	238	189	240	96	144
9	Attur	77	354	187	167	226	120	106	0	0	0	190	105	85	164	82	82
10	Badathepalli	150	735	373	362	114	60	54	0	0	0	365	201	164	370	172	198
11	Berigai	1807	7884	3970	3914	597	284	313	6	4	2	5529	3007	2522	2355	963	1392
12	Chenathur	3458	15826	8925	6901	1154	632	522	110	59	51	11190	6809	4381	4636	2116	2520
13	Chinnakullu	71	331	165	166	69	30	39	0	0	0	207	109	98	124	56	68
14	Doripalli	852	3681	1898	1783	596	304	292	0	0	0	2013	1165	848	1668	733	935
15	Eluvapalli	283	1323	688	635	446	227	219	0	0	0	743	434	309	580	254	326
16	Jee mangalam	266	1148	577	571	388	190	198	0	0	0	746	408	338	402	169	233
17	Kalasthipuram	159	680	365	315	240	125	115	0	0	0	458	273	185	222	92	130
18	Kamandoddi	1450	6524	3394	3130	878	460	418	130	76	54	3601	2093	1508	2923	1301	1622
19	Kanimangalam	107	463	232	231	117	58	59	0	0	0	301	166	135	162	66	96
20	Karupalli	73	332	181	151	41	25	16	0	0	0	181	113	68	151	68	83
21	Kelavarapalli	117	529	274	255	49	27	22	0	0	0	312	174	138	217	100	117
22	Kembasandiram	184	891	450	441	331	162	169	0	0	0	516	273	243	375	177	198
23	Koladasapuram	221	857	429	428	390	196	194	0	0	0	492	276	216	365	153	212
24	Kurubarapalli	339	1571	820	751	713	376	337	0	0	0	757	437	320	814	383	431
25	Mallasandiram	116	528	286	242	122	68	54	0	0	0	356	217	139	172	69	103
26	Marandapalli	963	4663	2355	2308	122	58	64	0	0	0	2363	1355	1008	2300	1000	1300

27	Midithepalli	287	1287	667	620	278	141	137	31	14	17	630	369	261	657	298	359
28	Moorthyganadinna	181	777	391	386	6	1	5	0	0	0	437	248	189	340	143	197
29	Moranapalli	2174	9160	4855	4305	1503	767	736	13	4	9	5842	3403	2439	3318	1452	1866
30	Mugalpalli	239	970	500	470	199	103	96	0	0	0	597	344	253	373	156	217
31	Muthalli	108	444	223	221	130	64	66	0	0	0	222	132	90	222	91	131
32	Naligabetta Agraharam	281	1247	616	631	234	123	111	0	0	0	929	506	423	318	110	208
33	Nallaganakothapalli	968	3933	2028	1905	419	207	212	26	15	11	2309	1378	931	1624	650	974
34	Nallur	1319	5327	2739	2588	889	460	429	41	23	18	3453	1952	1501	1874	787	1087
35	Nandimangalam	591	2602	1314	1288	713	363	350	0	0	0	1406	797	609	1196	517	679
36	Nanjapuram	123	649	354	295	160	81	79	2	2	0	360	221	139	289	133	156
37	Nariganapuram	218	928	494	434	212	107	105	0	0	0	513	293	220	415	201	214
38	Onalvadi	1607	6656	3411	3245	1360	704	656	0	0	0	4443	2475	1968	2213	936	1277
39	Palavanapalli	258	1096	540	556	370	183	187	0	0	0	637	349	288	459	191	268
40	Pannapalli	997	4431	2275	2156	583	295	288	0	0	0	2207	1292	915	2224	983	1241
41	Pathamuthali	205	967	499	468	392	205	187	0	0	0	473	275	198	494	224	270
42	Peddakullu	109	521	265	256	120	66	54	0	0	0	264	141	123	257	124	133
43	Punugandoddi	187	834	430	404	226	113	113	0	0	0	482	267	215	352	163	189
44	Sanamavu	925	4248	2182	2066	659	322	337	183	100	83	2549	1487	1062	1699	695	1004
45	Siddanapalli	153	682	347	335	133	64	69	0	0	0	303	170	133	379	177	202
46	Sikkalapalli	373	1723	914	809	29	16	13	0	0	0	763	472	291	960	442	518
47	Subbagiri	158	656	333	323	0	0	0	0	0	0	360	194	166	296	139	157
48	Sudugondapalli	87	447	229	218	95	49	46	0	0	0	217	128	89	230	101	129
49	Thattiganapalli	277	1227	636	591	436	222	214	0	0	0	701	397	304	526	239	287
50	Thorapalli Agraharam	2177	9849	4669	5180	1178	581	597	10	3	7	6149	3014	3135	3700	1655	2045
51	Thuppuganapalli	989	4281	2192	2089	1201	616	585	0	0	0	2328	1340	988	1953	852	1101
52	Venkatesapuram	650	2873	1484	1389	583	290	293	0	0	0	1655	960	695	1218	524	694

Source: www.censusindia.gov.in – Tamil Nadu Census of India – 2011

TABLE 3.43: WORKERS PROFILE OF STUDY AREA

Sl.No.	Village Name	Total Workers Population	Male Workers	Female Workers	Total Main Workers	Main Cultivation Workers	Main Agriculture Workers	Main Other Workers	Total Margin Workers	Margin Cultivation Workers	Margin House Hold Workers	Margin Other Workers	Non Worker Population
1	Addakurukki	1023	709	314	682	199	272	210	341	31	1	75	902
2	Advanapalli	68	65	3	48	37	1	10	20	2	0	1	113
3	Alnatham	91	85	6	69	62	0	7	22	0	0	7	151
4	Alur	1140	828	312	673	431	88	149	467	213	22	136	1137
5	Amgondapalli	1249	793	456	1225	735	384	104	24	10	0	5	807
6	Amuthugondapalli	199	118	81	191	187	2	1	8	8	0	0	188
7	Athimugam	1936	1395	541	1525	485	547	458	411	44	69	90	1660
8	Attur	308	248	60	307	139	160	8	1	0	0	1	273
9	Attur	136	112	24	136	101	17	18	0	0	0	0	143
10	Badathepalli	302	220	82	285	106	100	75	17	2	0	13	280
11	Berigai	3335	2404	931	3089	514	775	1693	246	18	20	149	2983
12	Chenathur	5288	4184	1104	4714	310	166	4163	574	91	32	417	5797
13	Chinnakullu	195	105	90	188	169	1	15	7	4	0	2	76
14	Doripalli	1140	775	365	1056	353	243	444	84	9	0	54	1418
15	Eluvapalli	870	446	424	633	533	72	25	237	3	0	6	211
16	Jeemangalam	462	349	113	441	207	23	196	21	8	0	13	458
17	Kalasthipuram	42	38	4	36	1	6	27	6	3	0	2	311
18	Kamandoddi	3003	1982	1021	2221	863	403	906	782	209	20	341	2109
19	Kanimangalam	335	173	162	156	123	23	5	179	12	14	18	69
20	Karupalli	135	99	36	132	98	15	16	3	1	1	1	115
21	Kelavarapalli	334	188	146	329	296	7	21	5	2	0	3	109
22	Kembasandiram	257	233	24	249	202	24	23	8	3	0	2	417
23	Koladasapuram	431	269	162	401	79	161	158	30	5	0	16	266
24	Kurubarapalli	716	467	249	614	173	322	101	102	26	0	18	502
25	Mallasandiram	330	188	142	313	200	71	42	17	5	0	11	100
26	Marandapalli	2427	1411	1016	1688	796	651	204	739	11	9	127	1292

27	Midithepalli	729	399	330	727	259	406	60	2	2	0	0	290
28	Moorthyganadinna	453	258	195	451	339	96	14	2	0	0	1	191
29	Moranapalli	4081	2942	1139	3811	610	359	2716	270	16	12	226	3166
30	Mugalpalli	512	347	165	462	220	140	100	50	5	6	28	305
31	Muthalli	156	138	18	155	100	5	48	1	0	0	1	203
32	Naligabetta Agraharam	711	421	290	699	294	245	154	12	4	0	4	341
33	Nallaganakothapalli	1659	1201	458	1383	489	118	751	276	82	7	53	1447
34	Nallur	2140	1631	509	1993	723	222	1036	147	29	6	53	2079
35	Nandimangalam	1260	790	470	1134	497	475	115	126	14	5	49	818
36	Nanjapuram	420	245	175	407	219	45	128	13	3	0	9	120
37	Nariganapuram	499	287	212	409	54	308	42	90	6	0	10	222
38	Onalvadi	2861	2009	852	2524	400	525	1548	337	23	6	225	2393
39	Palavanapalli	480	331	149	478	220	239	19	2	1	0	0	407
40	Pannapalli	2068	1414	654	1810	986	536	253	258	57	1	44	1502
41	Pathamuthali	369	278	91	366	221	85	53	3	2	0	1	377
42	Peddakullu	252	157	95	241	134	47	60	11	0	0	5	161
43	Punugandoddi	435	278	157	430	175	136	119	5	0	0	4	247
44	Sanamavu	1913	1362	551	1661	924	266	454	252	15	1	130	1515
45	Siddanapalli	401	223	178	392	83	207	61	9	0	2	6	157
46	Sikkalapalli	893	560	333	833	150	514	142	60	13	0	38	476
47	Subbagiri	208	190	18	208	174	18	16	0	0	0	0	305
48	Sudugondapalli	329	168	161	211	202	3	3	118	12	1	9	57
49	Thattiganapalli	612	403	209	561	385	101	75	51	16	2	19	382
50	Thorapalli Agraharam	3855	2749	1106	3157	611	1086	1412	698	29	38	301	4074
51	Thuppuganapalli	2395	1381	1014	2322	445	1563	290	73	17	3	30	1075
52	Venkatesapuram	1211	857	354	965	815	91	55	246	5	0	11	1035

Source: www.censusindia.gov.in – Tamil Nadu Census of India – 2011

3.6.6 Recommendation and Suggestion

- Awareness program to be conducted to make the population aware to get education and a better livelihood.
- Vocational training programme can be organized to make the people self - employed, particularly for women and unemployed youth.
- On the basis of qualification and skills local community may be preferred. Long term and short-term employments can be generated.
- Health care centre and ambulance facility can be provided to the population to get easy access to medical facilities. Maternity facility should be made available at the place to avoid going to distant places for treatment which involves risks. Apart from that as these areas are prone to various diseases a hospital with modern facilities should be opened on a priority basis in a central place to provide better health facilities to the villagers around the project.
- While developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.

3.6.7 Summary & Conclusion

The socio-economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis.

The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

Environmental impacts both direct and indirect on various environmental attributes due to proposed mining activity will be created in the surrounding environment, during the operational and post-operational phases. The occurrence of mineral deposits, being site specific, their exploitation, often, does not allow for any choice except adoption of eco-friendly operation. The methods are required to be selected in such a manner, so as to maintain environmental equilibrium ensuring sustainable development.

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction.

Several scientific techniques and methodologies are available to predict impacts of physical environment. Mathematical models are the best tools to quantitatively describe the cause-and-effect relationships between sources of pollution and different components of environment. In cases where it is not possible to identify and validate a model for a particular situation, predictions have been arrived at based on logical reasoning / consultation / extrapolation.

The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail

- Land environment
- Soil environment
- Water Environment
- Air Environment
- Noise Environment
- Socio economic environment
- Biological Environment

Based on the baseline environmental status at the project site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed.

4.1 LAND ENVIRONMENT:

4.1.2 Anticipated Impacts

- Permanent or temporary change on land use and land cover.
- Change in Topography: Topography of the ML area will change at the end of the life of the mine.
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.
- If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course

4.1.2 Mitigation Measures

- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development of greenbelt etc.,
- Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
- Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt

-
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
 - At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir
 - In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 10 m safety barrier and other safety provided) so as to help minimise dust emissions.
 - Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle

4.1.3 Soil Environment

The proposed project area is covered by thin layer of Topsoil formation of about 1 m, the excavated topsoil will be used for green belt development.

4.1.4 Impacts on Soil Environment

Erosion and Sedimentation (Removal of protective vegetation cover; Exposure of underlying soil horizons that may be less pervious, or more erodible than the surface layers; Reduced capacity of soils to absorb rainfall; Increased energy in storm-water runoff due to concentration and velocity; and Exposure of subsurface materials which are unsuitable for vegetation establishment).

4.1.5 Mitigation Measures

- Run-off diversion – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry works areas. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion.
- Sedimentation ponds - Run-off from working areas will be routed towards sedimentation ponds. These trap sediment and reduce suspended sediment loads before runoff is discharged from the quarry site. Sedimentation ponds should be designed based on runoff, retention times, and soil characteristics. There may be a need to provide a series of sedimentation ponds to achieve the desired outcome.
- Retain vegetation – Retain existing or re-plant the vegetation at the site wherever possible.
- Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season

4.1.6 Waste Dump Management

There is no waste anticipated in this Rough Stone quarrying operation. The entire quarried out materials will be utilized (100%).

4.2 WATER ENVIRONMENT

4.2.1 Anticipated Impacts

- The major sources of water pollution normally associated due to mining and allied operations are:
 - Generation of waste water from vehicle washing.
 - Washouts from surface exposure or working areas
 - Domestic sewage
 - Disturbance to drainage course in the project area
 - Mine Pit water discharge
- Increase in sediment load during monsoon in downstream of lease area
- This being a mining project, there will be no process effluent. Waste from washing of machinery may result in discharge of Oil & grease, suspended solids.
- The sewage from soak pit may percolate to the ground water table and contaminate it.
- Surface drainage may be affected due to Mining
- Abstraction of water may lead to depletion of water table

Detail of water requirements in KLD as given below:

TABLE 4.1: WATER REQUIREMENT

*Purpose	Quantity	Source
Dust Suppression	0.9 KLD	From Existing bore wells from nearby area
Green Belt development	0.8 KLD	From Existing bore wells from nearby area
Domestic purpose	0.6 KLD	From existing, bore wells and drinking water will be sourced from Approved water vendors.
Total	2.3 KLD	

* Water for drinking purpose will be brought from approved water vendors

Source: Approved Mining Plan Pre-Feasibility Report

4.2.2 Mitigation Measures

- Garland drain, settling tank will be constructed along the proposed mining lease area. The Garland drain will be connected to settling tank and sediments will be trapped in the settling traps and only clear water will be discharged out to the natural drainage
- Rainwater will be collected in sump in the mining pits 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 and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judiciously utilize the rainwater as part of rainwater harvesting system.
- Providing benches with inner slopes and through a system of drains and channels, allowing rain water to descent into surrounding drains, so as to minimize the effects of erosion & water logging arising out of uncontrolled descent of water.
- Reuse the water collected during storm for dust suppression and greenbelt development within the mines
- Installing interceptor traps/oil separators to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will pass through interceptor traps/oil separators prior to its reuse;
- Periodic (every 6 month once) analysis of quarry pit water and ground water quality in nearby villages
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits
- Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes
- De-silting will be carried out before and immediately after the monsoon season
- Regular monitoring (every 6 month once) and analysing the quality of water in open well, bore wells and surface water

4.3 AIR ENVIRONMENT

4.3.1. Anticipated Impacts

- During mining, at various stages activities such as excavation, drilling, blasting, and transportation of materials, particular matter (PM), gases such as Sulphur dioxide, oxides of Nitrogen from vehicular exhaust are the main air pollutants.
- Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.
- The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

4.3.1.1. Modelling of Incremental Concentration

Wind erosion of the exposed areas and the air borne particulate matter generated by quarrying operation, and transportation are mainly PM₁₀ & PM_{2.5} and emissions of Sulphur dioxide (SO₂) & Oxides of Nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

Similarly, loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles causes of pollution. This leads to an impact on the ambient air environment around the project area. Anticipated incremental concentration due to this quarrying activity and net increase in emissions due to quarrying activities within 500 meters around the project area is predicted by Open Pit Source modelling using AERMOD Software.

The impact on Air Environment is due to the mining and allied activities during Land Development phase, Mining process and Transportation. The emissions of Sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are marginal. Loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles will be the main polluting source in the mining activities releasing Particulate Matter (PM₁₀) affecting Ambient Air of the area. Prediction of impacts on air environment has been carried out taking into consideration cumulative production the proposed quarries. Air environment and net increase in emissions by Open pit source modelling in AERMOD Software.

4.3.2.1 Emission Estimation

An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.

The general equation for emissions estimation is:

$$E = A \times EF \times (1-ER/100)$$

Where:

E = emissions;

A = activity rate;

EF = emission factor, and

ER = overall emission reduction efficiency, %

The proposed mining activity includes various activities like ground preparation, excavation, handling and transport of Rough Stone. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 4-2.

4.3.2 Frame work of Computation & Model details

By using the above-mentioned inputs, ground level concentrations due to the quarrying activities have been estimated to know the incremental concentration in ambient air quality and impact in the study area. The effect of air pollutants upon receptors are influenced by concentration of pollutants and their dispersion in the atmosphere. Air quality modelling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards and to apply mitigation measures to reduce impact caused by quarrying activities. Suspended Particulate Matter (SPM) is the major pollutant occurred during quarrying activities. The prediction included the impact of Excavation, Drilling, blasting (Occasionally), loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and Cloud cover.

Impact was predicted over the distance of 10 km around the source to assess the impact at each receptor separately at the various locations and maximum incremental GLC value at the project site. Maximum impact of PM₁₀ was observed close to the source due to low to moderate wind speeds. Incremental value of PM₁₀ was superimposed on the base line data monitored at the proposed site to predict total GLC of PM₁₀ due to combined impacts.

TABLE 4.2: ESTIMATED EMISSION RATE FOR PM₁₀

Activity	Source type	Value	Unit
Drilling	Point Source	0.100530613	g/s
Blasting	Point Source	0.002483740	g/s
Mineral Loading	Point Source	0.045892172	g/s
Haul Road	Line Source	0.002503832	g/s/m
Overall Mine	Area Source	0.075060963	g/s

TABLE 4.3: ESTIMATED EMISSION RATE FOR SO₂

Activity	Source type	Value	Unit
Overall Mine	Area Source	0.001484951	g/s

TABLE 4.4: ESTIMATED EMISSION RATE FOR NO_x

Activity	Source type	Value	Unit
Overall Mine	Area Source	0.000143967	g/s

FIGURE 4.1: AERMOD TERRAIN MAP

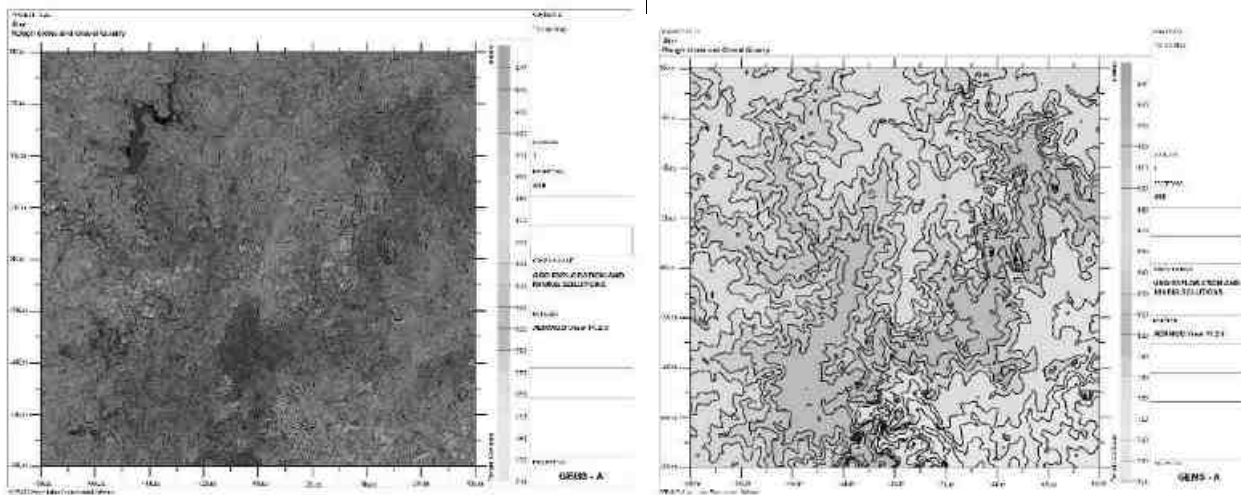


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM_{2.5}

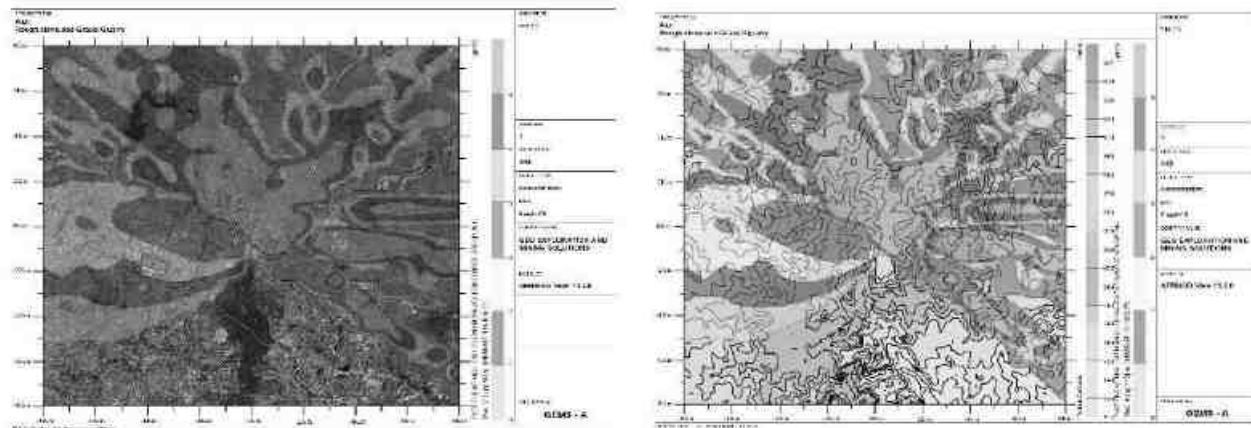


FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF PM10

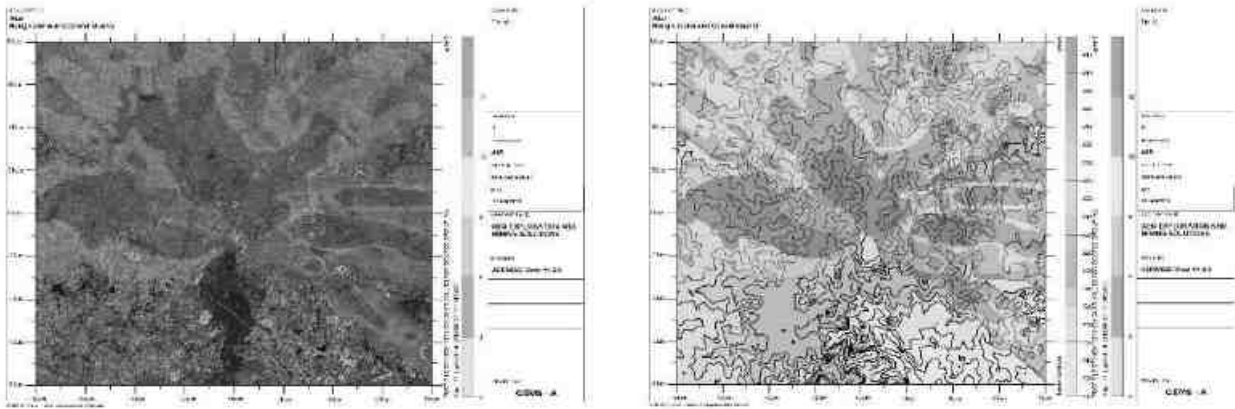


FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF SO₂

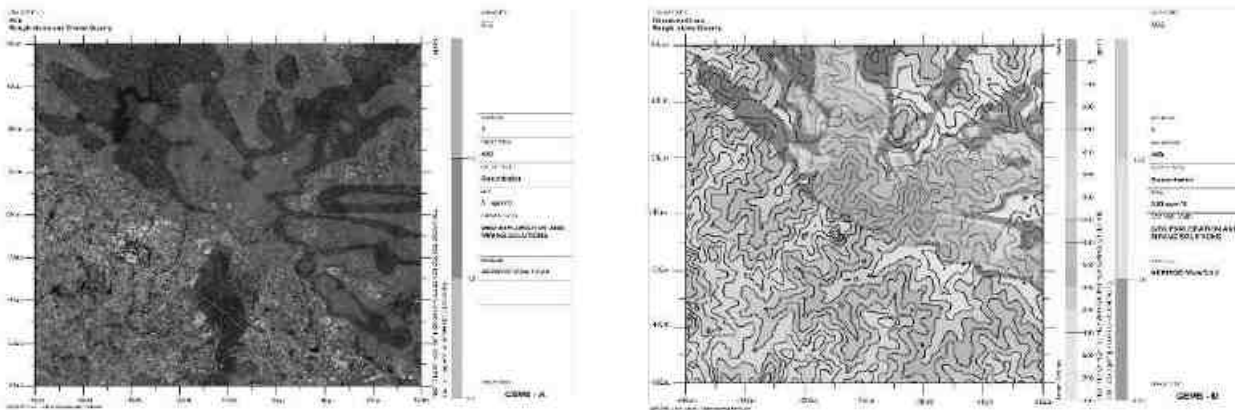


FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF NO_x

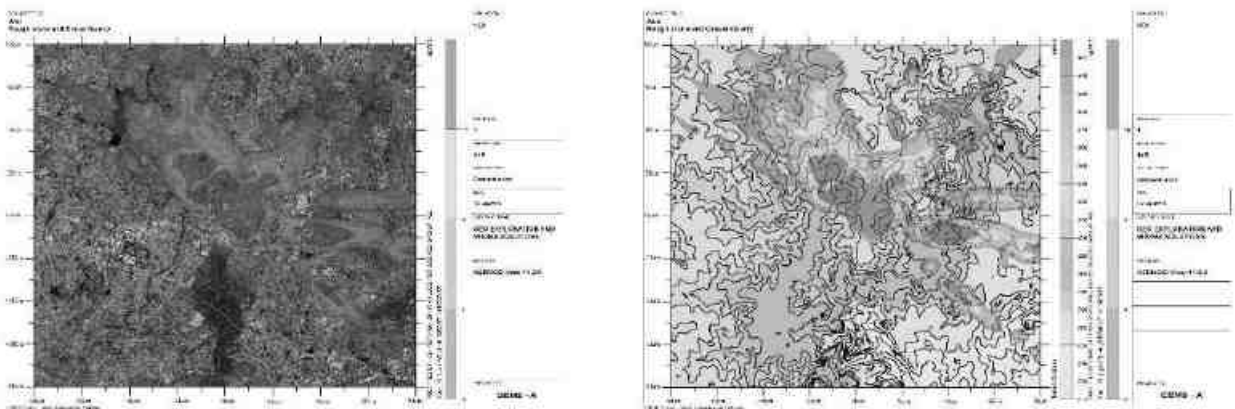
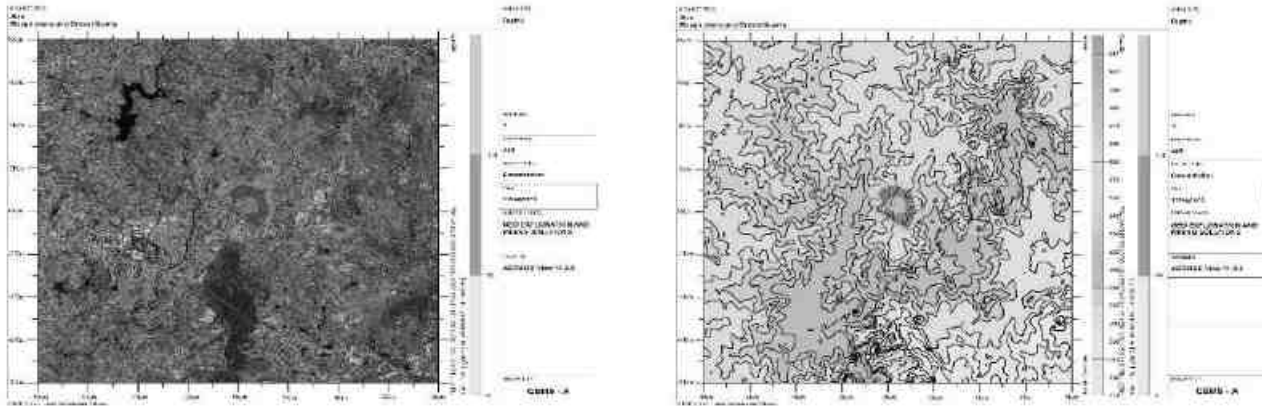


FIGURE 4.6: PREDICTED INCREMENTAL CONCENTRATION OF FUGITIVE DUST



4.3.2.1 Model Results

The post project Resultant Concentrations of PM₁₀, PM_{2.5}, SO₂& NO_x (GLC) is given in Table below:

TABLE 4.5: INCREMENTAL & RESULTANT GLC OF PM₁₀

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM ₁₀ (µg/m ³)	Incremental value of PM ₁₀ due to mining (µg/m ³)	Total PM ₁₀ (µg/m ³) (5+6)
AAQ1	12°44'19.88"N 77°54'54.10"E	47	67	45.26	17.55	62.81
AAQ2	12°44'19.84"N 77°54'33.68"E	-576	68	45.54	8.42	53.96
AAQ3	12°43'33.74"N 77°56'36.85"E	3177	-1369	43.81	14.60	58.41
AAQ4	12°45'28.45"N 77°56'10.56"E	2377	2203	42.91	16.00	58.91
AAQ5	12°42'38.06"N 77°52'36.95"E	-4140	-3092	43.19	1.00	44.19
AAQ6	12°45'17.72"N 77°52'21.39"E	-4613	1871	42.30	5.72	48.02
AAQ7	12°43'47.05"N 77°54'33.26"E	-592	-946	44.28	7.10	51.38
AAQ8	12°47'37.90"N 77°54'33.74"E	-576	6233	41.49	12.00	53.49

TABLE 4.6: INCREMENTAL & RESULTANT GLC OF PM_{2.5}

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM _{2.5} (µg/m ³)	Incremental value of PM _{2.5} due to mining (µg/m ³)	Total PM _{2.5} (µg/m ³) (5+6)
AAQ1	12°44'19.88"N 77°54'54.10"E	47	67	23.02	9.85	32.87
AAQ2	12°44'19.84"N 77°54'33.68"E	-576	68	22.84	4.73	27.57
AAQ3	12°43'33.74"N 77°56'36.85"E	3177	-1369	22.07	8.56	30.63
AAQ4	12°45'28.45"N 77°56'10.56"E	2377	2203	20.78	9.14	29.92
AAQ5	12°42'38.06"N 77°52'36.95"E	-4140	-3092	18.61	1.50	20.11
AAQ6	12°45'17.72"N 77°52'21.39"E	-4613	1871	21.56	2.80	24.36
AAQ7	12°43'47.05"N 77°54'33.26"E	-592	-946	24.29	3.90	28.19
AAQ8	12°47'37.90"N 77°54'33.74"E	-576	6233	22.87	6.66	29.53

TABLE 4.7: INCREMENTAL & RESULTANT GLC OF SO₂

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline So ₂ (µg/m ³)	Incremental value of So ₂ due to mining (µg/m ³)	Total So ₂ (µg/m ³) (5+6)
AAQ1	12°44'19.88"N 77°54'54.10"E	47	67	8.2	3.41	11.61
AAQ2	12°44'19.84"N 77°54'33.68"E	-576	68	7.4	1.41	8.81
AAQ3	12°43'33.74"N 77°56'36.85"E	3177	-1369	6.83	2.80	9.63
AAQ4	12°45'28.45"N 77°56'10.56"E	2377	2203	6.30	3.05	9.35
AAQ5	12°42'38.06"N 77°52'36.95"E	-4140	-3092	6.30	0	6.3
AAQ6	12°45'17.72"N 77°52'21.39"E	-4613	1871	7.68	0	7.68
AAQ7	12°43'47.05"N 77°54'33.26"E	-592	-946	8.57	0.39	8.96
AAQ8	12°47'37.90"N 77°54'33.74"E	-576	6233	5.88	1.89	7.77

TABLE 4.8: INCREMENTAL & RESULTANT GLC OF NO_x

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline No _x (µg/m ³)	Incremental value of No _x due to mining (µg/m ³)	Total No _x (µg/m ³) (5+6)
AAQ1	12°44'19.88"N 77°54'54.10"E	47	67	22.9	12.63	35.53
AAQ2	12°44'19.84"N 77°54'33.68"E	-576	68	21.5	0	21.5
AAQ3	12°43'33.74"N 77°56'36.85"E	3177	-1369	20.6	6.80	27.4
AAQ4	12°45'28.45"N 77°56'10.56"E	2377	2203	20.35	11.00	31.35
AAQ5	12°42'38.06"N 77°52'36.95"E	-4140	-3092	19.07	0	19.07
AAQ6	12°45'17.72"N 77°52'21.39"E	-4613	1871	18.86	0	18.86
AAQ7	12°43'47.05"N 77°54'33.26"E	-592	-946	21.34	0	21.34
AAQ8	12°47'37.90"N 77°54'33.74"E	-576	6233	19.93	2.19	22.12

TABLE 4.9: INCREMENTAL & RESULTANT GLC OF FUGITIVE DUST

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline Fugitive (µg/m ³)	Incremental value of Fugitive due to mining (µg/m ³)	Total Fugitive (µg/m ³) (5+6)
AAQ1	12°44'19.88"N 77°54'54.10"E	47	67	66.55	119	185.5
AAQ2	12°44'19.84"N 77°54'33.68"E	-576	68	67.62	0	67.62
AAQ3	12°43'33.74"N 77°56'36.85"E	3177	-1369	62.8	0	62.8
AAQ4	12°45'28.45"N 77°56'10.56"E	2377	2203	63.03	0	63.03
AAQ5	12°42'38.06"N 77°52'36.95"E	-4140	-3092	64.42	0	64.42
AAQ6	12°45'17.72"N 77°52'21.39"E	-4613	1871	66.08	0	66.08
AAQ7	12°43'47.05"N 77°54'33.26"E	-592	-946	67.09	0	67.09
AAQ8	12°47'37.90"N 77°54'33.74"E	-576	6233	62.04	0	62.04

From the resultant of cumulative concentration i.e., Background + Incremental Concentration of pollutant in all the receptor locations without effective mitigation measures are still within the prescribed NAAQ limits of 100, 80 & 80 µg/m³ for PM₁₀, SO₂ & NO_x respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

4.3.4. Mitigation Measures

Drilling – To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar.

Advantages of Wet Drilling: -

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

Blasting –

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e. at the time lunch hours, controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored

Haul Road & Transportation –

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- Transportation of material will be carried out during day time and material will be covered with tarpaulin
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- Water sprinkling on haul roads & loading points will be carried out twice a day
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- The un-metalled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.
- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Grading of haul roads and service roads to clear accumulation of loose materials

Green Belt –

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project area

Occupational Health –

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

4.4 NOISE ENVIRONMENT

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

Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources. Noise modelling has been carried out to assess the impact on surrounding ambient noise levels.

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

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

$$L_{p2} = L_{p1} - 20 \log (r_2/r_1) - A_{e1,2}$$

Where:

L_{p1} & L_{p2} are sound levels at points located at distances r_1 & r_2 from the source.

$A_{e1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$L_{p \text{ total}} = 10 \log \{10^{(L_{p1}/10)} + 10^{(L_{p2}/10)} + 10^{(L_{p3}/10)} + \dots\}$$

4.4.1 Anticipated Impacts

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

- Source data
- Receptor data
- Attenuation factor

Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4-8.

TABLE 4.10: ACTIVITY AND NOISE LEVEL PRODUCED BY MACHINERY

Sl.No.	Machinery / Activity	Impact on Environment?	Noise Produced in dB(A) at 50 ft from source*
1	Blasting	Yes	104
2	Jack Hammer	Yes	89
3	Compressor	No	80
4	Excavator	No	87
5	Tipper	No	79
Total Noise Produced			87.8

*50 feet from source = 15.24 meters

Source: U.S. Department of Transportation (Federal Highway Administration) – Construction Noise Handbook

The total noise to be produced by mining activity is calculated to be 87.8 dB (A). Generally, most mining operations produce noise between 100-109 dB (A). We have considered equipment and operation noise levels (max) to be approx. 109 dB (A) for noise prediction modelling.

TABLE 4.11: PREDICTED NOISE INCREMENTAL VALUES

Location ID	N1	N2	N3	N4	N5	N6	N7	N8
Maximum Monitored Value (Day) dB(A)	44.5	44.5	44.2	44.5	42.3	47.2	45.2	46.6
Incremental Value dB(A)	54.1	47.8	32.5	30.0	262.1	26.7	40.5	24.3
Total Predicted Noise level dB(A)	54.5	49.5	44.5	44.7	42.4	47.2	46.5	46.6

The incremental noise level is found to be 54.1 dB (A) in Core Zone and between the range of 42.4-49.5 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations are within permissible limits of Industrial area (core zone) & Residential area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123€, dated 14.2.2000 and subsequently amended vide S.O. 1046€, dated 22.11.2000, S.O. 1088€, dated 11.10.2002, S.O. 1569 €, dated 19.09.2006 and S.O. 50 € dated 11.01.2010 under the Environment (Protection) Act, 1986.).

1.4.3 Mitigation Measures

The following noise mitigation measures are proposed for control of Noise

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;
- The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;
- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;
- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

1.4.4 Ground Vibrations

Ground vibrations due to the proposed mining activities are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc., However, the major source of ground vibration from the quarry is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining lease area and may cause injury to persons or damage to the structures. Nearest habitation from the proposed project area is listed in below table. The ground vibrations due to the blasting in the quarry are calculated using the empirical equation.

The empirical equation for assessment of peak particle velocity (PPV) is:

$$V = K [R/Q^{0.5}]^{-B}$$

Where –

V = peak particle velocity (mm/s)

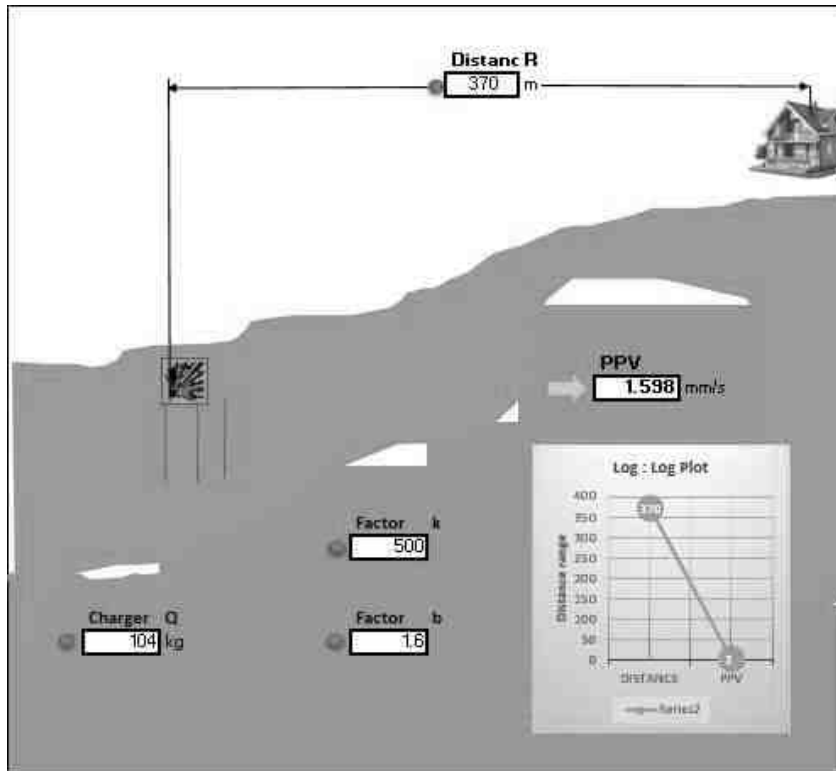
K = site and rock factor constant

Q = maximum instantaneous charge (kg)
 B = constant related to the rock and site (usually 1.6)
 R = distance from charge (m)

TABLE 4.12: PREDICTED PPV VALUES DUE TO BLASTING

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	104	370m -SW	1.598

FIGURE 4.7: GROUND VIBRATION PREDICTION



From the above graph, the charge per blast of **104 kg** is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. But the project proponent ensures that the charge per blast shall be less than 100 kg and carry out blasting twice or thrice a day based on the onsite conditions under the supervision of competent person employed. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

*Note: It will be ensured that the Maximum charge per blast session shall not exceed 25kgs.

4.4.3.1 Mitigation Measures

- The blasting operations in the project are carried out without deep hole drilling and blasting using delay detonators, which reduces the ground vibrations;
- Proper quantity of explosive, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting;
- Adequate safe distance from blasting will be maintained as per DGMS guidelines;
- Blasting shelter will be provided as per DGMS guidelines;
- Blasting operations will be carried out only during day time;
- The charge per delay will be minimized and preferably more number of delays will be used per blasts;
- During blasting, other activities in the immediate vicinity will be temporarily stopped;
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;

-
- A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed.
 - A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public.
 - Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire.
 - The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used.
 - The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
 - Appropriate blasting techniques shall be adopted such that the predicted peak particle velocity shall not exceed 8 Hz.
 - Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices

4.5 ECOLOGY AND BIODIVERSITY

4.5.1 Impact on Ecology and Biodiversity

The impact on biodiversity is difficult to quantify because of its diverse and dynamic characteristics, mining activities generally result in the deforestation, land degradation, water, air and noise pollution which directly or indirectly affect the faunal and floral status of the project area. However, occurrence and magnitude of these impacts are entirely dependent upon the project location, mode of operation and technology involved. Impact prediction is the main footstep in impact evaluation and identifies project actions that are likely to bring significant changes in the project environment. The present study was carried out to predict the likely impacts of the proposed project at Alur village and the surrounding environment with special reference to biological attributes covering habitats/ecosystems and associated biodiversity.

The proposed mining activities include removal of some scattered bushes and other thorny species. Although impacts on key habitat elements will occur on a local scale, but on a regional scale they would not be critical for the life cycle needs of the species observed or expected. Moreover, during conceptual stage, the mined-out areas on the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time. Existing roads will be used; new roads will not be constructed to reduce impact on flora.

Wild life is not commonly found in the project area and its immediate environs because of lack of vegetal cover and surface water. Except few domestic animals, reptiles, hares and some common birds are observed in the study area.

- I. None of the plants will be cut during operational phase of the mine.
- II. There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly.
- III. Most of the land in the buffer area is undulating terrain with crop lands, grass patches and small shrubs. Hence, there will be no effect on flora of the region

4.5.2 Mitigation Measures

Keeping all this in mind the mitigations have been suggested under environmental management plan. With the understanding of the role of plant species as bio-filter to control air pollution, appropriate plant species (mainly tree species) have been suggested conceding the area/site requirements and needed performance of specific species. The details of year wise proposed plantation program are given in Table 4.13.

The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas.

In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly in proposed areas falls in the cluster earmarked for plantation program as per Approved Mining Plan in different phases. This habitat improvement program would ensure the faunal species to re-colonize and improve the abundance status in the core zone.

The objectives of the green belt cover will cover the following:

- Noise abatement
- Ecological restoration
- Aesthetic, biological and visual improvement of area due to improved vegetative and plantations cover.

4.5.2.2.1. Species Recommendation for Plantation granted in the district

Following points have been considered while recommending the species for plantation:

- Natural growth of existing species and survival rate of various species.
- Suitability of a particular plant species for a particular type of area.
- Creating of biodiversity.
- Fast growing, thick canopy copy, perennial and evergreen large leaf area.
- Efficient in absorbing pollutants without major effects of natural growth.
- The following species may be considering primary for plantation best suited for the prevailing climate condition in the area.

TABLE 4.13: RECOMMENDED SPECIES FOR GREENBELT DEVELOPMENT PLAN

S. No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1	Borassus flabellifer	Arecaceae	Panai	T
2	Morinda pubescens	Rubiaceae	Nuna	T
3	Pongamia pinnata	Fabaceae	Pungam	T
4	Thespesia Populnea	Malvaceae	Puvarasu	T
5	Syrygium cumini	Myrtaceae	Naval	T
6	Saraca asoca	Fabaceae	Asoca	T
7	Limonia acidissima	Rutaceae	Odham	T
8	Lannea coromandelica	Anacardiaceae	Vila maram	T
9	Cassia roxburghii	Fabaceae	Sengondrai	T
10	Pterocarpus marsupium	Fabaceae	Vengai	T

The 7.5m Safety distance along the boundary has been identified to be utilized for subsequent Afforestation. However, the afforestation should always be carried out in a systematic and scientific manner. Regional trees like Neem, Pongamia, Pinnata will be planted along the Lease boundary and avenue plantation will be carried out in project area. The rate of survival expected to be 80% in this area. Afforestation Plan is given in Table No.4.14 and budget of green belt development plan are given in Table No.4.15.

TABLE 4.14: GREENBELT DEVELOPMENT PLAN

PROPOSAL				
Year	No. of trees proposed to be planted	Survival %	Area to be planted	Name of the species
I	It is proposed to plant 2,700 Nos of trees in the 1 st year	80%	Safety barrier, Un utilized area's and nearby village roads	Neem, Pungam, Sengondrai, Panai

TABLE 4.15: BUDGET FOR GREENBELT DEVELOPMENT PLAN

Activity	Year & No of Trees	Cost	Total Cost
Greenbelt development within the project area and nearby village roads	1 st year 2,700 Nos of trees	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant and maintenance	Rs 5,40,000/-

After complete extraction of mineral, the excavated pits will be allowed to collect rainwater and seepage water to serve as a reservoir to charge the nearby wells. Fish culture will also be attempted. A bund will be constructed around the pits. In order to minimize the impact of mining on the vegetation outside the mine lease area, it is recommended that adequate protection measures must be implemented. As mining involves movement of vehicles and increased anthropogenic activities, some of the areas can be fenced by involving local people and educating them about increased benefits of such activities.

4.5.3. Anticipated Impact on Fauna

- There is no Wildlife Sanctuary and Biosphere Reserve within 10 km radius of the project site.
- No rare, endemic & endangered species are reported in the buffer zone. However, during the course of mining, the management will practice scientific method of mining with proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife.
- Fencing around all the proposed mine lease areas will be constructed to restrict the entry of stray animals
- Green belt development will be carried out which will help in minimizing adverse impact on the flora found in the area.

4.5.3.1. Measures for protection and conservation of wildlife species

- Undertaking mitigative measures for conducive environment to the flora and fauna in consultation with Forest Department.
- Dust suppression system will be installed within mine and periphery of mine lease boundary.
- Plantation around mine area will help in creating habitats for small faunal species and to create better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages.

4.5.3.2. Mitigation Measures

- All the preventive measures will be taken for growth & development of fauna.
- Creating and development awareness for nature and wildlife in the adjoin villages.
- The workers shall be trained to not harm any wildlife, should it come near the project site. No work shall be carried out after 6.00 pm.

4.5.4. Impact on Aquatic Biodiversity

Mining activities will not disturb the existing aquatic ecology as there is no effluent discharge proposed from the Rough stone quarry. There is no natural perennial surface water body within the mine lease area. Hence, aquatic biodiversity is not observed in the mine lease area.

4.5.5. Impact Assessment on Biological Environment

A detail of impact and assessments was mentioned in Table No 4.16.

TABLE 4.16: ECOLOGICAL IMPACT ASSESSMENTS

SI.No	Attributes	Assessment
1	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.
2	Located near an area populated by rare or endangered species	No endangered, critically endangered, vulnerable species sighted in core mining lease area.
3	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/coastline/estuary/sea	No national park or eco-sensitive zone around 10km radius.
4	Proposed project restricts access to waterholes for wildlife	'NO'

5	Proposed mining project impact surface water quality that also provide water to wildlife	'NO' scheduled or threatened wildlife animal sighted regularly core in core area.
6	Proposed mining project increase siltation that would affect nearby biodiversity area.	Surface runoff management such as drains is constructed properly so there will be no siltation affect in nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities	'NO'
8	The project release effluents into a water body that also supplies water to a wildlife	No water body near to core zone so chances of water become polluted is low.
9	Mining project effect the forest based livelihood/ any specific forest product on which local livelihood depended	'NO'
10	Project likely to affect migration routes	'NO' 'migration route observed during monitoring period.
11	Project likely to affect flora of an area, which have medicinal value	'NO'
12	Forestland is to be diverted, has carbon high sequestration	NO. There was no forest land diverted.
13	The project likely to affect wetlands, Fish breeding grounds, marine ecology	'NO' Wetland was not present in near core Mining lease area. No breeding and nesting ground present in core mining area.

TABLE 4.17: ANTICIPATED IMPACT OF ECOLOGY AND BIODIVERSITY

Sl. No	Aspect Description	Likely Impacts on Ecology and Biodiversity (EB)	Impact Consequence - Probability Description / Justification	Significance	Mitigation Measures
Pre-Mining Phase					
1	Uprooting of vegetation of lease area	Site specific loss of common floral diversity (Direct impact)	Site possesses common floral (not trees) species. Clearance of these species will not result in loss of flora	Less severe	No immediate action required. However, Greenbelt /plantation will be developed in project site and in periphery of the project boundary, which will improve flora and fauna diversity of the project area.
		Site specific loss of associated faunal diversity (Partial impact)	Site supports only common species, which use wide variety of habitats of the buffer zone reserve forest area. So, there is no threat of faunal diversity.		
		-Loss of Habitat (Direct impact)	Site does not form Unique / critical habitat structure for unique flora or fauna.		
Mining phase					
2	Excavation of mineral using machine and labours, Transportation activities will generate noise.	Site-specific disturbance to normal faunal movements at the site due to noise. (Partial impact)	Site does not form unique / critical habitat structure for unique flora or fauna.	Less severe	Mining activity should not be operated after 5PM. Excavation of dump and transportation work should stop before 7PM.

3	Vehicular Movement for transportation of materials will result in generation of dust (SPM) due to haul roads and emission of SO ₂ , NO ₂ , CO etc.	Impact on surrounding agriculture and associated fauna due to deposition of dust and Emission of CO. (Indirect impact)	Impact is less as the agricultural land far from core area.	Less severe	All vehicles will be certified for appropriate Emission levels. More plantation has been suggested Upgrade the vehicles with alternative fuel such biodiesel, methanol and biofuel around the mining area.
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4.6 SOCIO ECONOMIC

4.6.1 Anticipated Impacts

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

4.6.2 Mitigation Measures

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

4.7 OCCUPATIONAL HEALTH AND SAFETY

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

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

4.7.1 Respiratory Hazards

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

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

4.7.2 Noise

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

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

-
- Periodic medical hearing checks will be performed on workers exposed to high noise levels

4.7.3 Physical Hazards

The following measures are proposed for control of physical hazards

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

4.7.4 Occupational Health Survey

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

- General physical tests
- Audiometric tests
- Full chest, X-ray, Lung function tests, Spirometric tests
- Periodic medical examination – yearly
- Lung function test – yearly, those who are exposed to dust
- Eye test

Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment.

First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

4.8 MINE WASTE MANAGEMENT

No waste is anticipated from this project, the entire excavated material will be utilized in different purpose.

4.9 MINE CLOSURE

Mine closure plan is the most important environmental requirement in mining project. The mine closure plan should cover technical, environmental, social, legal and financial aspects dealing with progressive and post closure activities. The closure operation is a continuous series of activities starting from the decommissioning of the project. Therefore, progressive mine closure plan should be specifically dealt with in the mining plan and is to be reviewed along with mining plan. As progressive mine closure is a continuous series of activities, it is obvious that the proposals of scientific mining have included most of the activities to be included in the closure plan. While formulating the closure objectives for the site, it is important to consider the existing or the pre-mining land use of the site; and how the operation will affect this activity.

The primary aim is to ensure that the following broad objectives along with the abandonment of the mine can be successfully achieved:

- To create a productive and sustainable after-use for the site, acceptable to mine owners, regulatory agencies, and the public
- To protect public health and safety of the surrounding habitation
- To minimize environmental damage
- To conserve valuable attributes and aesthetics
- To overcome adverse socio-economic impacts.

4.9.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

4.9.1.1 Physical Stability

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

4.9.1.2 Chemical Stability

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

4.9.1.3 Biological Stability

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

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

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

The Mine closure plan should be as per the approved mine plan. The mine closure is a part of approved Scheme of Mining plan and activities of closure shall be carried out as per the process described in mine closure plan.

5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 INTRODUCTION

Consideration of alternatives to a project proposal is a requirement of EIA process. During the scoping process, alternatives to a proposal can be considered or refined, either directly or by reference to the key issues identified. A comparison of alternatives helps to determine the best method of achieving the project objectives with minimum environmental impacts or indicates the most environmentally friendly and cost-effective options.

5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE

M/s. B.M.Mines Rough Stone & Gravel Quarry Project at Alur Village is a fresh quarry, Proponent obtained quarry lease for excavation of Rough Stone, which is site specific. The project area has following advantages: -

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

5.2 ANALYSIS OF ALTERNATIVE SITE

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

5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

Mechanized open cast mining operation with drilling and blasting method will be used to extract Rough Stone in the area. The lease areas have following advantages –

- As the mineral deposition is homogeneous and batholith formation, therefore opencast method of working is preferred over underground method
- The material will be loaded with the help of excavators into dumpers / trippers and transported to the needy customers.
- Blasting and availability of drills along with controlled blasting technology gives desired fragmentation so that the mineral is handled safely and used without secondary blasting.
- Semi-skilled labours fit for quarrying operations are easily available around the nearby villages

5.4 ANALYSIS OF ALTERNATIVE TECHNOLOGY

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

6. ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

The monitoring and evaluation of environmental parameters indicates potential changes occurring in the environment, which paves way for implementation of rectifying measures wherever required to maintain the status of the natural environment. Evaluation is also a very effective tool to judge the effectiveness or deficiency of the measures adopted and provides insight for future corrections.

The main objective of environmental monitoring is to ensure that the obtained results in respect of environmental attributes and prevailing conditions during operation stage are in conformity with the prediction during the planning stage. In case of substantial deviation from the earlier prediction of results, this forms as base data to identify the cause and suggest remedial measures. Environmental monitoring is mandatory to meet compliance of statutory provisions under the Environment (Protection) Act, 1986, relevant conditions regarding monitoring covered under EC orders issued by the SEIAA as well as the conditions set forth under the order issued by Tamil Nadu Pollution Control Board while granting CTO.

6.1 METHODOLOGY OF MONITORING MECHANISM FOR PROJECT

Implementation of EMP and periodic monitoring will be carried out by Project Proponent. A comprehensive monitoring mechanism has been devised for monitoring of impacts due to this project; Environmental protection measures like dust suppression, control of noise and blast vibrations, maintenance of machinery and vehicles, housekeeping in the mine premises, plantation, implementation of Environmental Management Plan and environmental clearance conditions will be monitored by the Respective Mine Management. On the other hand, implementation of area level protection measures like green belt development, environmental quality monitoring etc., are taken up by a senior executive who reports to their Mine Management.

An Environment monitoring cell (EMC) will be constituted to monitor the implementation of EMP and other environmental protection measures in the proposed project.

The responsibilities of this cell will be:

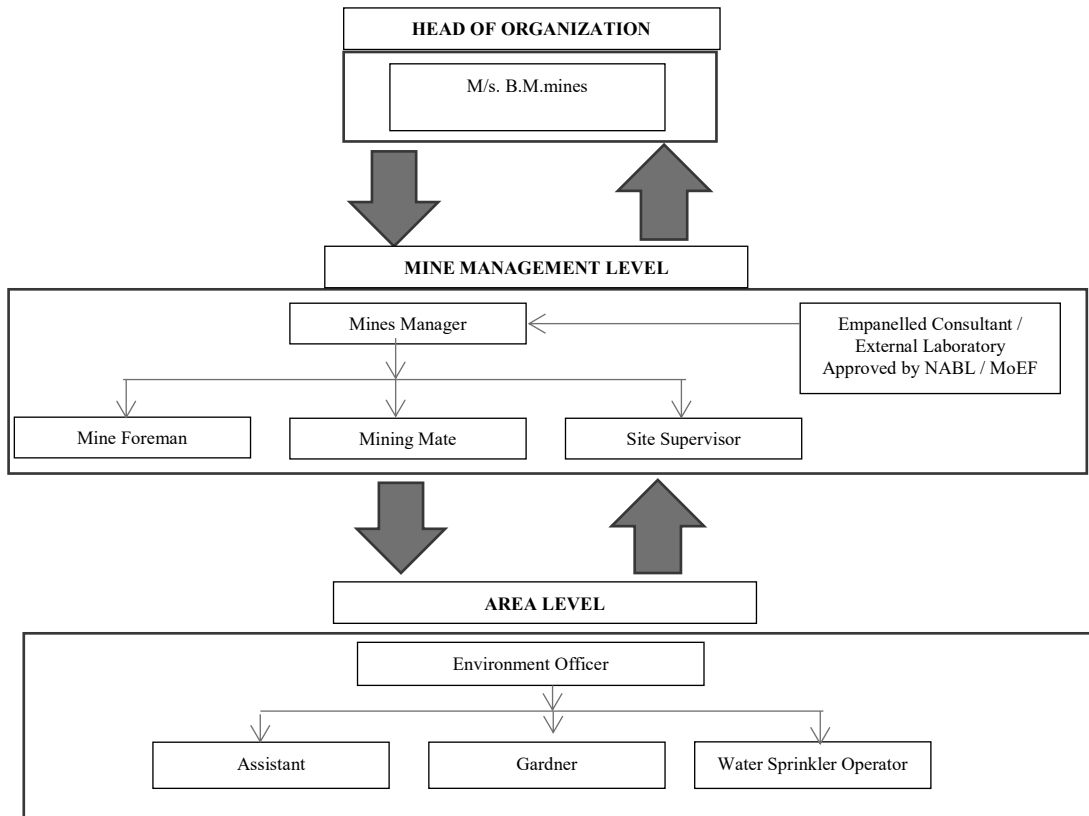
- Implementation of pollution control measures
- Monitoring programme implementation
- Post-plantation care
- To check the efficiency of pollution control measures taken
- Any other activity as may be related to environment
- Seeking expert's advice when needed.

The environmental monitoring cell will co-ordinate all monitoring program at site and data thus generated will be regularly furnished to the State regulatory agencies as compliance status reports.

The sampling and analysis report of the monitored environmental attributes will be submitted to the Tamil Nadu Pollution Control Board (TNPCB) at a frequency of half-yearly and yearly by each proposed project proponent. The half-yearly reports are submitted to Ministry of Environment and Forest, Regional Office and SEIAA as well.

The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board (CPCB)/Ministry of Environment, Forest and Climate Change (MoEF & CC).

FIGURE 6.1: PROPOSED ENVIRONMENTAL MONITORING CELL FOR PROJECT



* The Environmental Monitoring Cell will be formed in the proposed project

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

The mitigation measures proposed in Chapter-4 will be implemented so as to reduce the impact on the environment due to the operations of the proposed project. Implementation schedule of mitigation measures is given in Table 6.1.

TABLE 6.1 IMPLEMENTATION SCHEDULE

Sl No.	Recommendations	Time Period	Schedule
1	Land Environment Control Measures	Before commissioning of the project	Immediately after the commencement of project
2	Soil Quality Control Measures	Before commissioning of the project	Immediately after the commencement of project
3	Water Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
4	Air Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
5	Noise Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
6	Ecological Environment	Phase wise implementation every year along with mine operations	Immediately and as project progress

6.3 MONITORING SCHEDULE AND FREQUENCY

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges, emissions and wastes, for measurement against statutory standards. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

The environmental monitoring will be conducted in the mine operations as follows:

- Air quality;
- Water and wastewater quality;
- Noise levels;
- Soil Quality; and
- Greenbelt Development

The details of monitoring are detailed in Table 6.2

TABLE 6.2: PROPOSED MONITORING SCHEDULE POST EC

S.No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, PM _{2.5} , PM ₁₀ , SO ₂ and NO _x .
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall
3	Water Quality Monitoring	2 Locations (1SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in bgl
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	-	During blasting Operation	Peak Particle Velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	-	Once in six months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

Source: Guidance of manual for mining of minerals, February 2010

6.4 BUDGETARY PROVISION FOR ENVIRONMENTAL MONITORING

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and cost provision against each proposal is shown in Table 6.3. Monitoring work will be outsourced to external laboratory approved by NABL / MoEF.

The proposed capital cost for Environmental Monitoring Programme is Rs 3,80,000/- and the recurring cost is Rs 76,000/- per annum

TABLE 6.3 ENVIRONMENT MONITORING BUDGET

Sl.No.	Parameter	Capital Cost	Recurring Cost per annum
1	Air Quality	Rs. 3,80,000/-	Rs. 76,000/-
2	Meteorology		
3	Water Quality		
4	Hydrology		
5	Soil Quality		
6	Noise Quality		
7	Vibration Study		
Total		Rs 3,80,000/-	Rs 76,000/-

Source: Approved Mining Plan

6.5 REPORTING SCHEDULES OF MONITORED DATA

The monitored data on air quality, water quality, noise levels and other environmental attributes will be periodically examined by the Mine Management Coordinator and Respective Head of Organization for taking necessary corrective measures. The monitoring data will be submitted to Tamil Nadu State Pollution Control Board in the Compliance to CTO Conditions & environmental audit statements every year to MoEF & CC and Half-Yearly Compliance Monitoring Reports to MoEF & CC Regional Office and SEIAA.

Periodical reports to be submitted to: -

- MoEF & CC – Half yearly status report
- TNPCB - Half yearly status report
- Department of Geology and Mining: quarterly, half yearly annual reports

Besides the Mines Manager/Agent of respective project will submit the periodical reports to –

- Director of mines safety,
- Labour enforcement officer,
- Controller of explosives as per the norms stipulated by the department.

7. ADDITIONAL STUDIES

7.0 GENERAL

The following Additional Studies were done as per items identified by project proponent and items identified by regulatory authority. And items identified by public and other stakeholders will be incorporated after Public Hearing.

- Public Consultation
- Risk Assessment
- Disaster Management Plan
- Cumulative Impact Study
- Plastic Waste Management

7.1. PUBLIC CONSULTATION

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the District is submitted along with this Draft EIA / EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

7.2 RISK ASSESSMENT

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities.

The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

Factors of risks involved due to human induced activities in connection with these proposed mining & allied activities with detailed analysis of causes and control measures for the mine is given in below Table 7.1.

TABLE 7.1 RISK ASSESSMENT& CONTROL MEASURES

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

2	Drilling	<p>Improper and unsafe practices</p> <p>Due to high pressure of compressed air, hoses may burst</p> <p>Drill Rod may break</p>	<ul style="list-style-type: none"> ▪ Safe operating procedure established for drilling (SOP) will be strictly followed. ▪ Only trained operators will be deployed. ▪ No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places, ▪ Drilling shall not be carried on simultaneously on the benches at places directly one above the other. ▪ Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual. ▪ All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition. ▪ Operator shall regularly use all the personal protective equipment.
4	Blasting	<p>Fly rock, ground vibration, Noise and dust.</p> <p>Improper charging, stemming & Blasting/fining of blast holes</p> <p>Vibration due to movement of vehicles</p>	<ul style="list-style-type: none"> ▪ Restrict maximum charge per delay as per regulations and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blasting can be conducted safely. ▪ SOP for Charging, Stemming & Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation ▪ Shots are fired during daytime only. ▪ All holes charged on any one day shall be fired on the same day. ▪ The danger zone will be distinctly demarcated (by means of red flags)
5	Transportation	<p>Potential hazards and unsafe workings contributing to accident and injuries</p> <p>Overloading of material</p> <p>While reversal & overtaking of vehicle</p> <p>Operator of truck leaving his cabin when it is loaded.</p>	<ul style="list-style-type: none"> ▪ Before commencing work, drivers personally check the dumper/truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition. ▪ Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle. ▪ Concave 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 ▪ Periodical maintenance of vehicles as per operator manual
6	Natural calamities	Unexpected happenings	<ul style="list-style-type: none"> ▪ Escape Routes will be provided to prevent inundation of storm water ▪ Fire Extinguishers & Sand Buckets
7	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	<ul style="list-style-type: none"> ▪ Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

Source: Analysed and Proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone II. The area is far away from the sea hence the disaster due to heavy floods and tsunamis are not anticipated

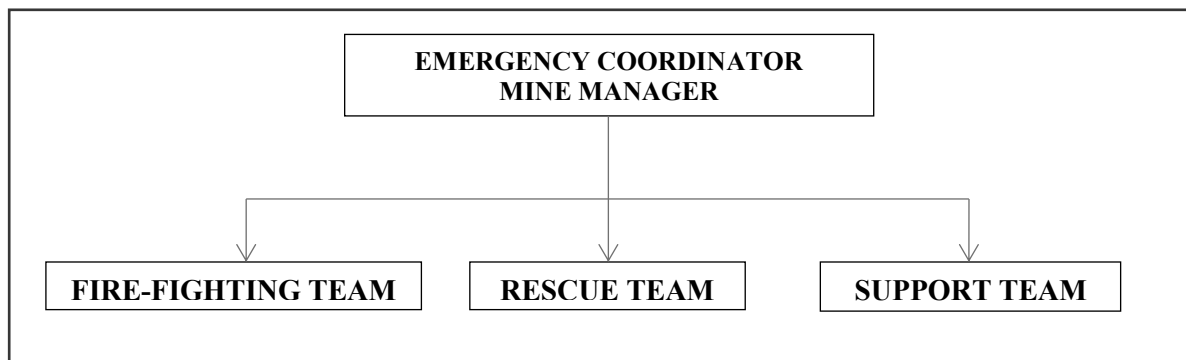
The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

- Rescue and medical treatment of casualties;
- Safeguard other people;
- Minimize damage to property and the environment;
- Initially contain and ultimately bring the incident under control;
- Secure the safe rehabilitation of affected area; and
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency

In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations and the coordination among key personnel and their team has been shown in Fig 7.1.

FIGURE 7.1: DISASTER MANAGEMENT TEAM LAYOUT



The emergency organization shall be headed by emergency coordinator who will be qualified competent mine manager. In his absence senior most people available at the mine shall be emergency coordinator till arrival of mine manager. There would be three teams for taking care of emergency situations – Fire-Fighting Team, Rescue Team and Support Team. The proposed composition of the teams is given in Table 7.2.

TABLE 7.2: PROPOSED TEAMS TO DEAL WITH EMERGENCY SITUATION

DESIGNATION	QUALIFICATION
FIRE-FIGHTING TEAM	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Team Member	Mines Foreman
Team Member	Mining Mate
RESCUE TEAM	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Team Member/ Incident Controller (IC)	Environment Officer
Team Member	Mining Foreman
SUPPORT TEAM	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Assistant Team Leader	Environment Officer
Team Member	Mining Mate
Security Team Leader/ Emergency Security Controller	Mines Foreman

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

Roles and responsibilities of emergency team –

- (a) Emergency coordinator (EC)

The emergency coordinator shall assume absolute control of site and shall be located at MECR.

(b) Incident controller (IC)

Incident controller shall be a person who shall go to the scene of emergency and supervise the action plan to overcome or contain the emergency. Shift supervisor or Environmental Officer shall assume the charge of IC.

(c) Communication and advisory team

The advisory and communication team shall consist of heads of Mining Departments i.e., Mines Manager

(d) Roll call coordinator

The Mine Foreman shall be Roll Call Coordinator. The roll call coordinator will conduct the roll call and will evacuate the mine personnel to assembly point. His prime function shall be to account for all personnel on duty.

(e) Search and rescue team

There shall be a group of people trained and equipped to carry out rescue operation of trapped personnel. The people trained in first aid and fire-fighting shall be included in search and rescue team.

(f) Emergency security controller

Emergency Security Controller shall be senior most security person located at main gate office and directing the outside agencies e.g. fire brigade, police, doctor and media men etc.,

Emergency control procedure –

The onset of emergency, will in all probability, commence with a major fire or explosion or collapse of wall along excavation and shall be detected by various safety devices and also by members of operational staff on duty. If located by a staff member on duty, he (as per site emergency procedure of which he is adequately briefed) will go to nearest alarm call point, break glass and trigger off the alarms. He will also try his best to inform about location and nature of accident to the emergency control room. In accordance with work emergency procedure the following key activities will immediately take place to interpret and take control of emergency.

- On site fire crew led by a fireman will arrive at the site of incident with fire foam tenders and necessary equipment.
- Emergency security controller will commence his role from main gate office
- Incident controller shall rush to the site of emergency and with the help of rescue team and will start handling the emergency.
- Site main controller will arrive at MECR with members of his advisory and communication team and will assume absolute control of the site.
 - He will receive information continuously from incident controller and give decisions and directions to:
 - Incident controller
 - Mine control rooms
 - Emergency security controller

Proposed fire extinguishers at different locations –

The following type of fire extinguishers has been proposed at strategic locations within the mine.

TABLE 7.3: PROPOSED FIRE EXTINGUISHERS AT DIFFERENT LOCATIONS

LOCATION	TYPE OF FIRE EXTINGUISHERS
Electrical Equipment's	CO ₂ type, foam type, dry chemical powder type
Fuel Storage Area	CO ₂ type, foam type, dry chemical powder type, Sand bucket
Office Area	Dry chemical type, foam type

Alarm system to be followed during disaster –

On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system. On receiving the message of "Emergency Over" from Incident Controller the emergency control room attendant will give "All Clear Signal", by sounding alarm straight for 2 minutes.

The features of alarm system will be explained to one and all to avoid panic or misunderstanding during disaster. In order to prevent or take care of hazard / disasters if any the following control measures have been adopted.

- All safety precautions and provisions of Metalliferous Mines Regulations (MMR), 1961 is strictly followed during all mining operations.
- Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- Entry of unauthorized persons into mine & allied areas is completely prohibited.
- Fire-fighting and first-aid provisions in the mines office complex and mining area are provided.
- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring.
- Training and refresher courses for all the employees working in hazardous premises.
- Working of mine, as per approved plans and regularly updating the mine plans.
- Cleaning of mine faces is regularly done.
- Handling of explosives, charging and blasting are carried out only by qualified persons following SOP.
- Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- A blasting SIREN is used at the time of blasting for audio signal.
- Before blasting and after blasting, red and green flags are displayed as visual signals.
- Warning notice boards indicating the time of blasting and NOT TO TRESPASS are displayed at prominent places.
- Regular maintenance and testing of all mining equipment were carried out as per manufacturer's guidelines.

7.4 CUMULATIVE IMPACT STUDY

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

TABLE 7.4: LIST OF QUARRIES WITHIN 500 METER RADIUS

PROPOSED QUARRY				
CODE	Name of the Owner	S.F. Nos ,Village & Taluk	Extent in ha	Status
P1	M/s. B.M. Mines, C/o. C.N. Kaarathi, Villa No.23, Vakil Hosur Hills, Off Rayakottai Road, Chennathur Post, Hosur, Krishnagiri District, Tamil Nadu State – 635 109.	207/1A1, 207/1A2A and 208/3 (Part), Alur Village, Hosur Taluk	4.50.0	Received for TOR Vide Lr No. SEIAA- TN/F.No.9897/ TOR- 1442/2023 Dated: 09.05.2023
EXISTING QUARRY				
E1	B.G.Manjula, W/o. Late Baskar, 77-D, Indira Nagar, Bagalur, Hosur.	208/1, Alur Village, Hosur Taluk	3.03.5	19.06.2019 to 18.06.2024
EXPIRED QUARRIES				
EX1	P.Baskar, S/o.Paapiiah, 77-D, Indira Nagar, Bagalur, Hosur.	209, Alur Village, Hosur Taluk	4.21.5	07.04.2003 to 06.04.2008
EX2	P.Baskar, Sri venkateshwara Blue Metals, 77-D, Indira Nagar, Bagalur, Hosur.	319/2B, 2C, 2D, Alur Village, Hosur Taluk	0.85.00	20.03.2015 to 19.03.2020
EX3	M.Durai, S/o M.Malla Gounder, No.13/47,12B,Shanthi nagar,Opp Ragavendra Theatre, Hosur.	207/1, Alur Village, Hosur Taluk	0.63.0	28.12.2002 to 27.12.2007
EX4	Chennai Mines, Ramesh Nagar, Thiruneemalai road, West thambaram, Chennai.	211, Alur Village, Hosur Taluk	3.46.5	20.03.2015 to 19.03.2020
TOTAL CLUSTER EXTENT			7.53.50 ha	

Note: -

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

TABLE 7.5: SALIENT FEATURES OF PROPOSAL “P1”

Name of the Quarry	M/s. B.M.Mines Rough Stone & Gravel Quarry		
Toposheet No	57-H/14		
Latitude between	12°44'11.7824"N to 12°44'21.6581"N		
Longitude between	77°54'46.9577"E to 77°54'58.7361"E		
Highest Elevation	842 m AMSL		
Proposed Depth of Mining	40m bgl (1m Topsoil + 4m Gravel + 35m Rough Stone)		
Geological Resources	Rough Stone in m ³	Gravel in m ³	Topsoil in m ³
	15,75,000	1,80,000	45,000
Mineable Reserves	Rough Stone in m ³	Gravel m ³	Topsoil m ³
	7,19,435	1,41,800	36,032
Year-wise Production for 10 years	Rough Stone in m ³	Gravel m ³	Topsoil m ³
	7,19,435	1,41,800	36,032
Ultimate Pit Dimension	275m (L) * 130m (W) * 40m (D)		
Water Level in the surrounding area	68-63m bgl		
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting		
Topography	The lease area is a plain topography. The area has gentle slope towards Southwestern side. The altitude of the area is 842m (max) above mean sea level.		
Machinery proposal for this scheme period	Hand Jack Hammer	10 Nos	
	Compressor	3 Nos	
	Excavator with Bucket & Rock Breaker	2 Nos	
	Tipppers	5 Nos	
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.		
Proposed Manpower Deployment	39 Nos		
Total Project Cost	Rs.1,19,60,000/-		
Proposed CER Cost	Rs.5,00,000/-		
Nearby Water Bodies	Odai	220m S	
	Tank	650 NW	
	Canal	670m W	
	Tank	680m SW	
	Ponnaiyal River	1.3Km W	
	Kelavarapali Reservoir	5.3Km NW	
	Kammandoddi Lake	7Km SE	
Greenbelt Development Plan	Proposed to plant about 2700 Nos of trees in the safety barrier and village roads considering 500 Nos of Trees per hectare.		
Proposed Water Requirement	2.3 KLD		
Nearest Habitation	370m South west		

Source: Approved Mining Plan and as per recommendations given in TOR letter (Point -1).

TABLE 7.6: SALIENT FEATURES OF PROPOSAL “E1”

Name of the Quarry	Tmt.B.G.Manjula Rough Stone Quarry	
Toposheet No	57-H/14	
Latitude between	12°44'07.13" N- 12°44'16.54" N	
Longitude between	77°54'53.17" E- 77°55'05.39" E	
Proposed Production	Rough Stone in m ³	
	17,27,250	
Ultimate Depth	114m	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Machinery proposed	Jack Hammer	3Nos

	Wagon Drill	1 No
	Hydraulic Excavator	1 Nos
	Tipplers	3 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone..	
Proposed Manpower Deployment	18 Nos	
Project Cost	Rs. 25,35,000/-	

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the quarries (proposed and existing) within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting.

Air Environment –

Calculating the Cumulative Load of Mining within the cluster is as shown in table 7.9 & 7.10.

TABLE 7.7: CUMULATIVE PRODUCTION LOAD OF ROUGH STONE

Quarry	PROPOSED PRODUCTION DETAILS			
	Years in m ³	Per Year in m ³	Per Day in m ³	Number of Lorry Load Per Day @ 12m ³ per load
P1	7,19,435	71,943	240	20
E1	17,27,250	3,45,450	1151	96
Total	24,46,685	4,17,393	1,391	116

On a cumulative basis considering all the 2 quarries it can be seen that the overall production of Rough Stone is **1,391m³** per day with a capacity of **116 trips** of Rough Stone per day (@12m³ per load) from the cluster quarries.

TABLE 7.8: CUMULATIVE PRODUCTION LOAD OF GRAVEL

Quarry	PROPOSED PRODUCTION DETAILS			
	Years in m ³	Per Year in m ³	Per Day in m ³	Number of Lorry Load Per Day @ 12m ³ per load
P1	1,41,800	47,266	158	13
Total	1,41,800	47,266	158	13

On a cumulative basis considering all the 1 quarry it can be seen that the overall production of Gravel is **158m³** per day with a capacity of **13 trips** of Gravel per day (@12m³ per load) from the Quarry.

TABLE 7.9: CUMULATIVE PRODUCTION LOAD OF TOPSOIL

Quarry	PROPOSED PRODUCTION DETAILS			
	Years in m ³	Per Year in m ³	Per Day in m ³	Number of Lorry Load Per Day @ 12m ³ per load
P1	36,032	12,010	40	4
E1	28,500	28,500	95	8
Total	64,532	40,510	135	12

On a cumulative basis considering all the 2 quarries it can be seen that the overall production of Topsoil is **135m³** per day with a capacity of **12 trips** of Topsoil per day (@12m³ per load) from the Quarry.

The excavated topsoil will be stored within the project premises and it will be used for green belt development.

***Note:** Per day production of Rough Stone for proposed quarry calculated for 10 Years of production period.

Based on the above production quantities the emissions due to various activities in all the mines includes various activities like ground preparation, excavation, handling and transport of ore. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 7.11.

TABLE 7.10: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS

EMISSION ESTIMATION FOR QUARRY "P1"				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM ₁₀	Drilling	Point Source	0.100530613	g/s
	Blasting	Point Source	0.002483740	g/s
	Mineral Loading	Point Source	0.045892172	g/s
	Haul Road	Line Source	0.002503832	g/s/m
	Overall Mine	Area Source	0.075060963	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.001484951	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000143967	g/s
EMISSION ESTIMATION FOR QUARRY "E1"				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM ₁₀	Drilling	Point Source	0.151459098	g/s
	Blasting	Point Source	0.019279301	g/s
	Mineral Loading	Point Source	0.050419296	g/s
	Haul Road	Line Source	0.002537684	g/s/m
	Overall Mine	Area Source	0.072515355	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	0.003613235	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000266847	g/s

Source: Emission Calculations

Noise Environment –

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. Cumulative Noise modelling has been carried out considering blasting and compressor operation (drilling) and transportation activities. Predictions have been carried out to compute the noise level at various distances around the different quarries within the 500 m radius.

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

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

Where:

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

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

$$Lp_{total} = 10 \log \{10^{(Lp1/10)} + 10^{(Lp2/10)} + 10^{(Lp3/10)} + \dots\}$$

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

Source data has been computed taking into account of all the machinery and activities used in the mining process.

TABLE 7.11: PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER

Location Code	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	49.1	49.2	52	55
Habitation Near E1	44.2	48.1	49.6	55

Source: Lab Monitoring Data

The incremental noise level is found within the range of 48.1 – 49.3 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O.123(E), dated 14.2.2000 and subsequently amended vide S.O.

1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment(Protection) Act, 1986.).

Ground Vibrations

Ground vibrations due to mining activities in the all the Mines within cluster are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc. However, the major source of ground vibration from the all the mines is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining areas and may cause injury to persons or damage to the structures.

$$V = K [R/Q^{0.5}]^{-B}$$

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

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

R = distance from charge (m)

TABLE 7.12: GROUND VIBRATIONS IN THE CLUSTER

Location Code	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	104	370m – SW	1.598
E1	498	750m – SW	1.812

Source: Blasting Calculations

From the above table, the charge per blast is considered as maximum in each mine and the resultant PPV is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

Socio Economic Environment –

The 2 mines shall contribute towards CER and the community shall develop.

TABLE 7.13: SOCIO ECONOMIC BENEFITS FROM THE CLUSTER

Location Code	Project Cost	CER Cost
P1	Rs.1,19,60,000	Rs.5,00,000
E1	Rs.25,35,000	Rs.50,700
Total	Rs. 1,44,95,000	Rs. 5,50,700

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

- The Projects shall fund towards CER – **Rs 5,00,000/-**
- Total Cluster shall fund towards CER – **Rs.5,50,700**

TABLE 7.14: EMPLOYMENT BENEFITS FROM 2 MINES IN THE CLUSTER

Location Code	Employment
P1	39
E1	18
Total	57

A total of 57 people will get employment due to the cluster quarries.

TABLE 7.15: GREENBELT DEVELOPMENT BENEFITS FROM 2 MINE IN THE CLUSTER

CODE	No of Trees proposed to be planted	Survival %	Name of the Species
P1	2,700	80%	Neem, Pongamia, Panai
E1	1,500	80%	Neem, Pongamia, Vilvam
Total	4,200	80%	

Based on the Proposed Mining Plan, it is anticipated that they shall grow native species of Neem, Pungamia, Panai etc in the Cluster at a rate of 4,200 Trees Planted over a period of 5 Years with Survival Rate of 80%.

7.5 PLASTIC WASTE MANAGEMENT PLAN

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

Objective –

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

TABLE 7.16: ACTION PLAN TO MANAGE PLASTIC WASTE IN THE CLUSTER QUARRIES

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

Source: Proposed by FAE's and EC

8. PROJECT BENEFITS

8.0 GENERAL

The Rough stone quarry project at Alur Village aims to produce 7,19,435m³ Rough Stone over a Scheme period of 10 Years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

- ✚ Increase in Employment Potential
- ✚ Improvement in Socio-Economic Welfare
- ✚ Improvement in Physical Infrastructure
- ✚ Improvement in Social infrastructure

8.1 EMPLOYMENT POTENTIAL

It is an existing quarry about 39 persons will get employment opportunity for carrying out mining operations and preference will be given to the local people. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

The impact of mining activity in the area will be more positive on the socio-economic environment in the immediate project impact area. The employment opportunities both direct and indirect will contribute to enhanced money incomes to job seekers with minimal skill sets especially among the local communities.

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

The project area is located in Alur Village, Hosur Taluk and Krishnagiri District of Tamil Nadu and the area have communications, roads and other facilities already well established. The following physical infrastructure facilities will further improve due to proposed mine.

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

Employment is expected during civil construction period, in trade, garbage lifting, sanitation and other ancillary services, Employment in these sectors will be primarily temporary or contractual and involvement of unskilled labour will be more. A major part of the labour force will be mainly from local villagers who are expected to engage themselves both in agriculture and mining activities. This will enhance their income and lead to overall economic growth of the area.

8.5 OTHER TANGIBLE BENEFITS

The proposed mine is likely to have other tangible benefits as given below.

- Indirect employment opportunities to local people in contractual works like construction of infrastructural facilities, transportation, sanitation, for supply of goods and services to the mine and other community services.
- Additional housing demand for rental accommodation will increase
- Cultural, recreation and aesthetic facilities will also improve
- Improvement in communication, transport, education, community development and medical facilities and overall change in employment and income opportunity
- The State Government will also benefit directly from the proposed mine, through increased revenue from royalties, cess, DMF, GST etc.,

CORPORATE ENVIRONMENT RESPONSIBILITY

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

As per para 6 (II) of the office memorandum, being a green field project & Capital Investment is \leq 100 crores, This project shall contribute 2% of Capital Investment towards CER as per directions of EAC/SEAC. Cumulative Capital cost is Rs.1,19,60,000/-

TABLE 8.1: CER – ACTION PLAN

Activity	Beneficiaries	Total
Renovation/ Re construction of Existing toilets	Nearby Government School	Rs 5,00,000/-
Providing Environmental Related books to the School library		
Carrying out plantation in the school compound wall		
TOTAL		Rs 5,00,000/-

Source: Field survey conducted by FAE, consultation with project proponent

9. ENVIRONMENTAL COST BENEFIT ANALYSIS

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

10. ENVIRONMENTAL MANAGEMENT PLAN

10.0 GENERAL

Environment Management Plan (EMP) aims at the preservation of ecological system by considering in-built pollution abatement facilities at the proposed site. Good practices of Environmental Management plan will ensure to keep all the environmental parameters of the project in respect of Ambient Air quality, Water quality, Socio – economic improvement standards.

Mitigation measures at the source level and an overall environment management plan at the study area are elicited so as to improve the supportive capacity of the receiving bodies. The EMP presented in this chapter discusses the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored after approval of the EIA.

10.1 ENVIRONMENTAL POLICY

The Project Proponent is committed to conduct all its operations and activities in an environmentally responsible manner and to continually improve environmental performance.

The Proponent M/s. B.M.Mines –

- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities
- Implement a program to train employees in general environmental issues and individual workplace environmental responsibilities
- Allocate necessary resources to ensure the implementation of the environmental policy
- Ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts
- Implement monitoring programmes to provide early warning of any deficiency or unanticipated performance in environmental safeguards
- Conduct periodic reviews to verify environmental performance and to continuously strive towards improvement

Description of the Administration and Technical Setup –

The Environment Monitoring Cell discussed under Chapter 6 will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level of each Proposed Quarry.

The said team will be responsible for:

- Monitoring of the water/ waste water quality, air quality and solid waste generated
- Analysis of the water and air samples collected through external laboratory
- Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- Co-ordination of the environment related activities within the project as well as with outside agencies
- Collection of health statistics of the workers and population of the surrounding villages
- Green belt development
- Monitoring the progress of implementation of the environmental monitoring programme
- Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

10.2 LAND ENVIRONMENT MANAGEMENT –

Landscape of the area will be changed due to the quarrying operation, restoration of the land by converting the quarry pit into temporary reservoir and the remaining part of the area (un utilized areas, infrastructure, haul Roads) will be utilized for greenbelt development. Aesthetic of the Environment will not be affected. There is no major vegetation in the project area during the course of quarrying operation and after completion of the quarrying operation thick plantation will be developed under greenbelt development programme.

TABLE 10.1: PROPOSED CONTROLS FOR LAND ENVIRONMENT

CONTROL	RESPONSIBILITY
Design vehicle wash-down areas so that all runoff water is captured and passed through oil water separators and sediment catchment devices.	Mines Manager
Re fuelling to be undertaken in a safe location, away from vehicle movement pathways & 100m away of any watercourse. Re fuelling activity to be under visual observation at all times. Drainage of refuelling areas to sumps with oil/water separation	Mine Foreman & Mining Mate
Soil and groundwater testing as required following up a particular incident of contamination.	Mines Manager
At conceptual stage, the mining pits will be converted into Rain Water Harvesting. Remaining area will be converted into greenbelt area	Mines Manager
No external dumping i.e., outside the project area	Mine Foreman
Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.	Mines Manager
The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.3 SOIL MANAGEMENT

There is no overburden or waste anticipated from proposed project.

TABLE 10.2: PROPOSED CONTROLS FOR SOIL MANAGEMENT

CONTROL	RESPONSIBILITY
Surface run-off from the project boundary via garland drains will be diverted to the mine pits	Mine Foreman & Mining Mate
Design haul roads and other access roads with drainage systems to minimize concentration of flow and erosion risk	Mines Manager
Empty sediment from sediment traps Maintain, repair or upgrade garland drain system	Mines Manager
Test soils for pH, EC, chloride, size & water holding capacity	Manager Mines

Source: Proposed by FAE's & EIA Coordinator

10.4 WATER MANAGEMENT

In the Rough stone quarry project, no process is involved for the effluent generation, only oil & grease from the machinery wash is anticipated and domestic sewage from mine office.

The quarrying operation is proposed upto a depth of **40m**, the water table in the area is 63 m below ground level, hence the proposed project will not intersect the Ground water table during entire quarry period.

TABLE 10.3: PROPOSED CONTROLS FOR WATER ENVIRONMENT

CONTROL	RESPONSIBILITY
To maximize the reuse of pit water for water supply	Mines Foreman
Temporary and permanent garland drain will be constructed to contain the catchments of the mining area and to divert runoff from undisturbed areas through the mining areas	Mines Manager
Natural drains/nallahs/brooklets outside the project area should not be disturbed at any point of mining operations	Mines Manager
Ensure there is no process effluent generation or discharge from the project area into water bodies	Mines Foreman
Domestic sewage generated from the project area will be disposed in septic tank and soak pit system	Mines Foreman
Monthly or after rainfall, inspection for performance of water management structures and systems	Mines Manager
Conduct ground water and surface water monitoring for parameters specified by CPCB	Manager Mines

Source: Proposed by FAE's & EIA Coordinator

10.5 AIR QUALITY MANAGEMENT

The mining activity would result in the increase of particulate matter concentrations due to fugitive dust. Daily water sprinkling on the haul roads, approach roads in the vicinity would be undertaken and will be continued as there is possibility for dust generation due to truck mobility. It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements.

TABLE 10.4: PROPOSED CONTROLS FOR AIR ENVIRONMENT

CONTROL	RESPONSIBILITY
Generation of dust during excavation is minimized by daily (twice) water sprinkling on working face and daily (twice) water sprinkling on haul road	Mines Manager
Wet drilling procedure /drills with dust extractor system to control dust generation during drilling at source itself is implemented	Mines Manager
Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution	Mines Manager
Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted air pollution control measures	Mines Manager
Provision of Dust Mask to all workers	Mines Manager
Greenbelt development all along the periphery of the project area	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.6 NOISE POLLUTION CONTROL

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and cutting activities. No mining activities are planned during night time.

TABLE 10.5: PROPOSED CONTROLS FOR NOISE ENVIRONMENT

CONTROL	RESPONSIBILITY
Development of thick greenbelt all along the Buffer Zone (7.5 Meters) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Foreman
Deployment of mining equipment with an inbuilt mechanism to reduce noise	Mines Manager
Provision of earmuff/ ear plugs to workers working in noise prone zones in the mines	Mining Mate
Provision of effective silencers for mining machinery and transport vehicles	Mines Manager
Provision of sound proof AC operator cabins to HEMM	Mines Manager

Sharp drill bits are used to minimize noise from drilling	Mines Foreman
Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting	Mines Manager
Annual ambient noise level monitoring are carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	Mines Manager
Reduce maximum instantaneous charge using delays while blasting	Mining Mate
Change the burden and spacing by altering the drilling pattern and/or delay layout, or altering the hole inclination	Mines Manager
Undertake noise or vibration monitoring	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.7 GROUND VIBRATION AND FLY ROCK CONTROL

The Rough stone quarry operation creates vibration due to the blasting and movement of Heavy Earth moving machineries, fly rocks due to the blasting.

TABLE 10.6: PROPOSED CONTROLS FOR GROUND VIBRATIONS & FLY ROCK

CONTROL	RESPONSIBILITY
Controlled blasting using delay detonators will be carried out to maintain the PPV value (below 8Hz) well within the prescribed standards of DGMS	Mines Manager
Drilling and blasting will be carried under the supervision of qualified persons	Mines Manager
Proper stemming of holes should be carried out with statutory competent qualified blaster under the supervision of statutory mines manager to avoid any anomalies during blasting	Mines Manager
Suitable spacing and burden will be maintained to avoid misfire / fly rocks	Manager Mines
Number of blast holes will be restricted to control ground vibrations	Manager Mines
Blasting will be carried out only during noon time	Mining Mate
Undertake noise or vibration monitoring	Mines Manager
ensure blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material	Mines Foreman

Source: Proposed by FAE's & EIA Coordinator

10.8 BIOLOGICAL ENVIRONMENT MANAGEMENT

The proponent will take all necessary steps to avoid the impact on the ecology of the area by adopting suitable management measures in the planning and implementation stage. During mining, thick plantation will be carried out around the project periphery, on safety barrier zone, on top benches of quarried out area etc.,

Following control measures are proposed for its management and will be the responsibility of the Mines Manager.

- Greenbelt development all along the safety barrier of the project area
- It is also proposed to implement the greenbelt development programme and post plantation status will be regularly checked for every season.
- The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
- Year wise greenbelt development will be recorded and monitored
 - Based on the area of plantation.
 - Period of plantation
 - Type of plantation
 - Spacing between the plants
 - Type of manuring and fertilizers and its periods
 - Lopping period, interval of watering
 - Survival rate

- Density of plantation

- The ultimate reclamation planned leaves a congenial environment for development of flora & immigration of small fauna through green belt and water reservoir. The green belt and water reservoir developed within the Project at the end of mine life will attract the birds and animals towards the project area in the post mining period.

10.8.1 Green Belt Development Plan

About 2,700 nos. of saplings is proposed to be planted for the Mining plan period in safety barrier of lease area and panchayat roads with survival rate 80%. The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

TABLE 10.7 PROPOSED GREENBELT ACTIVITIES FOR 5 YEAR PLAN PERIOD

Year	No. of trees proposed to be planted	Survival %	Area to be planted	Name of the species
I	It is proposed to plant 2,700 Nos of trees in the 1 st year	80%	Safety barrier, Unutilized area's and nearby village roads	Neem, Pungam, Sengondrai, Panai, Vilvam.

Source: Conceptual Plan of Approved Mining plan & Proposed by FAE's & EIA Coordinator

The objectives of the greenbelt development plan are –

- Provide a green belt around the periphery of the quarry area to combat the dispersal of dust in the adjoining areas,
- Protect the erosion of the soil, Conserve moisture for increasing ground water recharging,
- Restore the ecology of the area, restore aesthetic beauty of the locality and meet the requirement of fodder, fuel and timber of the local community.

A well-planned Green Belt with multi rows (two tiers) preferably with long canopy leaves shall be developed with dense plantations around the boundary and haul roads to prevent air, dust noise propagation to undesired places and efforts will be taken for the enhancement of survival rate.

10.8.2 Species Recommended for Plantation

Following points have been considered while recommending the species for plantation:

- Creating of bio-diversity.
- Fast growing, thick canopy cover, perennial and evergreen large leaf area,
- Efficient in absorbing pollutants without major effects on natural growth

TABLE 10.8: RECOMMENDED SPECIES TO PLANT IN THE GREENBELT

S.No	Botanical Name	Local Name	Importance
1.	Azadirachta indica	Neem, Vembu	Neem oil & neem products
2.	Tamarindus indica	Tamarind	Edible & Medicinal and other Uses
3.	Polyalthia longifolia	Nettilinkam	Tall and evergreen tree
4.	Borassus Flabellifer	Palmyra Palm	Tall Wind breaker tree and its fruits are edible

Source: Proposed by FAE's & EIA Coordinator

10.9 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

Occupational safety and health are very closely related to productivity and good employer-employee relationship. The main factors of occupational health impact in quarries are fugitive dust and noise. Safety of employees during quarrying operation and maintenance of mining equipment will be taken care as per Mines Act 1952 and Rule 29 of Mines Rules 1955. To avoid any adverse effect on the health of workers due to dust, noise and vibration sufficient measures have been provided.

10.9.1 Medical Surveillance and Examinations –

- Identifying workers with conditions that may be aggravated by exposure to dust & noise and establishing baseline measures for determining changes in health.
- Evaluating the effect of noise on workers
- Enabling corrective actions to be taken when necessary
- Providing health education

The health status of workers in the mine shall be regularly monitored under an occupational surveillance program. Under this program, all the employees are subjected to a detailed medical examination at the time of employment. The medical examination covers the following tests under mines act 1952.

- General Physical Examination and Blood Pressure
- X-ray Chest and ECG
- Sputum test
- Detailed Routine Blood and Urine examination

The medical histories of all employees will be maintained in a standard format annually. Thereafter, the employees will be subject to medical examination annually. The below tests keep upgrading the database of medical history of the employees.

TABLE 10.9: MEDICAL EXAMINATION SCHEDULE

Sl.No	Activities	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
1	Initial Medical Examination (Mine Workers)					
A	Physical Check-up					
B	Psychological Test					
C	Audiometric Test					
D	Respiratory Test					
2	Periodical Medical Examination (Mine Workers)					
A	Physical Check – up					
B	Audiometric Test					
C	Eye Check – up					
D	Respiratory Test					
3	Medical Camp (Mine Workers & Nearby Villagers)					
4	Training (Mine Workers)					

Medical Follow ups:- Work force will be divided into three targeted groups age wise as follows:-		
Age Group	PME as per Mines Rules 1955	Special Examination
Less than 25 years	Once in a Three Years	In case of emergencies
Between 25 to 40 Years	Once in a Three Years	In case of emergencies
Above 40 Years	Once in a Three Years	In case of emergencies

Medical help on top priority immediately after diagnosis/ accident is the essence of preventive aspects.

10.9.2 Proposed Occupational Health and Safety Measures –

- The mine site have adequate drinking water supply so that workers do not get dehydrated.
- Lightweight and loose-fitting clothes having light colours will be preferred to wear.
- Noise exposure measurements will be taken to determine the need for noise control strategies.
- The personal protective equipment will be provided for mine workers.
- Supervisor will be instructed for reporting any problems with hearing protectors or noise control equipment.
- At noisy working activity, exposure time will be minimized.
- Dust generating sources will be identified and proper control measure will be adopted.
- Periodic medical examinations will be provided for all workers.
- Strict observance of the provisions of DGMS Acts, Rules and Regulations in respect of safety both by management and the workers.

- The width of road will be maintained more than thrice the width of the vehicle. A code of traffic rules will be implemented.
- In respect of contract work, safety code for contractors and workers will be implemented. They will be allowed to work under strict supervision of statutory person/officials only after they will impart training at vocational training centres. All personal protective equipment's will be provided to them.
- A safety committee meeting every month will be organized to discuss the safety of the mines and the persons employed.
- Celebration of annual mines safety week and environmental week in order to develop safety awareness and harmony amongst employees and co quarry owners.

FIGURE 10.1: PERSONAL PROTECTIVE EQUIPMENT TO THE MINE WORKERS



10.9.3 Health and Safety Training Programme

The Proponent will provide special induction program along with machinery manufacturers for the operators and co-operators to run and maintain the machinery effectively and efficiently. The training program for the supervisors and office staffs will be arranged in the Group Vocational Training Centres in the State and engage Environmental Consultants to provide periodical training to all the employees to carry out the mining operation in and eco-friendly manner.

TABLE 10.10: LIST OF PERIODICAL TRAININGS PROPOSED FOR EMPLOYEES

Course	Personnel	Frequency	Duration	Instruction
New-Employee Training	All new employees exposed to mine hazards	Once	One week	Employee rights Supervisor responsibilities Self-rescue Respiratory devices Transportation controls Communication systems Escape and emergency evacuation Ground control hazards Occupational health hazards Electrical hazards First aid Explosives
Task Training Like Drilling, Blasting, Stemming, safety, Slope stability, Dewatering, Haul road maintenance,	Employees assigned to new work tasks	Before new Assignments	Variable	Task-specific health & safety procedures and SOP for various mining activity. Supervised practice in assigned work tasks.
Refresher Training	All employees who received new-hire training	Yearly	One week	Required health and safety standards Transportation controls Communication systems Escape ways, emergency evacuations Fire warning Ground control hazards First aid Electrical hazards Accident prevention Explosives Respirator devices
Hazard Training	All employees exposed to mine hazards	Once	Variable	Hazard recognition and avoidance Emergency evacuation procedures Health standards Safety rules Respiratory devices

Source: Proposed by FAE's & EIA Coordinator as per DGMS Norms

10.9.4A Budgetary Provision for Environmental Management –

Adequate budgetary provision has been made by the Company for execution of Environmental Management Plan. The Table 10.11 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

TABLE 10.11: EMP BUDGET FOR PROPOSED PROJECT

	Mitigation Measure	Provision for Implementation	Capital	Recurring
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	45000	4 5 0 0 0
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	800000	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance - 10 Units	250000	25000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed - 5 Units	25000	1250
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	90000
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000
Noise Environment	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0

	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Compentent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	1870531
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	5000	20000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
Mine Closure	1. Progressive Closure Activity - Surface Runoff managent	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	45000	5000
	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	900000	10000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 2700Trees - (750 Inside Lease Area & 1950 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)	150000	22500
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	585000	58500
4. Implementation of Final Mine Closure Activity as per Approved Mining Plan on Last Year	Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year	138150	0	

	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budge and not necessarily implemented in the Project Site	4244667	0
Implementation of EC, Mining Plan & DGMS Condition	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	10000	1000
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0	50000
	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) - 39Employees	156000	39000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	39000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	9000
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	225000	10000
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
	CER	As per MoEF &CC OM 22-65/2017-IA.III Dated 25.02.2021	Detailed Description in following slides and Budget allocation is included as per MoeEF & CC OM	500000	0
TOTAL			3841000	3181781

* Marked cost is already discussed in the mining plan hence that is not included in the total Environmental Management plan cost

Total Cost for the Ten years

Year	Total Cost	Year	Total Cost
1 st	Rs.70,22,781	6 th	Rs.61,26,406
2 nd	Rs.33,40,870	7 th	Rs.45,12,226
3 rd	Rs.35,07,914	8 th	Rs.47,37,838
4 th	Rs.36,83,309	9 th	Rs.49,74,729
5 th	Rs.40,05,625	10 th	Rs.53,61,616

Cost inflation 5% per annum

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

10.10 CONCLUSION –

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

11. SUMMARY AND CONCLUSION

M/s. B.M. Mines Rough Stone & Gravel Quarry Project at Alur Village of Hosur Taluk, Krishnagiri District (Over an Extent of : 4.50.0 ha) lease falls under “B” category as per MoEF & CC Notification (S.O. 3977 (E)).

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B-1 and appraised by SEAC/ SEIAA as well as for cluster situation.

A detailed Draft EIA/EMP Report is prepared for public and other stakeholders' suggestions and a Final EIA/EMP Report will be prepared based on the outcome of Public Consultation.

Environmental monitoring and audit mechanism have been recommended before and after commencement of the project, where necessary, to verify the accuracy of the EIA predictions and the effectiveness of recommended mitigation measures.

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the months March to May 2023 for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suitable mitigation measures for likely adverse impacts due to the proposed project is suggested individually for the respective proposed project under Chapter 10.

The project proponent ensures to obtain necessary clearances and quarrying will be carried out as per rules and regulations. The Mining Activity will be carried out in a phased manner as per the approved mining plan after obtaining EC, CTO from TNPCB, execution of lease deed and obtaining DGMS Permission and working will be carried out under the supervision of Competent Persons employed.

Overall, the EIA report has predicted that the project will comply with all environment standards and legislation after commencement of the project and operational stage mitigation measures are implemented.

Mining operations has positive impact on environment and socio economy such as landscape improvement, water as by-product, economy development and better public services, providing and supply of Rough Stone & Gravel as per market demand.

Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 39 people directly in the cluster and indirectly around 50 people.

As discussed, it is safe to say that the proposed quarry is not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigate technique, as well as to serve as biological indicators for the pollutants released from the M/s. B.M. Mines Rough Stone & Gravel Quarry Project at Alur Village of Hosur Taluk, Krishnagiri District (Extent: 4.50.5 ha).

12. DISCLOSURE OF CONSULTANT

M/s. B.M.Mines, have engaged M/s Geo Exploration and Mining Solutions, an Accredited Organization under Quality Council of India – National Accreditation Board for Education & Training, New Delhi, for carrying out the EIA Study as per the ToR Issued.

Name and address of the consultancy:

GEO EXPLORATION AND MINING SOLUTIONS

No 17, Advaita Ashram Road,

Alagapuram, Salem – 636 004

Tamil Nadu, India

Email: infogeoexploration@gmail.com

Web: www.gemssalem.com

Phone: 0427 2431989.

The Accredited Experts and associated members who were engaged for this EIA study as given below –

Sl.No.	Name of the expert	In house/ Empanelled	EIA Coordinator		FAE	
			Sector	Category	Sector	Category
1	Dr. M. Ifthikhar Ahmed	In-house	1	A	WP GEO SC	B A A
2	Dr. P. Thangaraju	In-house	-	-	HG GEO	A A
3	Mr. A. Jagannathan	In-house	-	-	AP NV SHW	B A B
4	Mr. N. Senthilkumar	Empanelled	38 28	B B	AQ WP RH	B B A
5	Mrs. Jisha parameswaran	In-house	-	-	SW	B
6	Mr. Govindasamy	In-house	-	-	WP	B
7	Mrs. K. Anitha	In-house	-	-	SE	A
8	Mrs. Amirtham	In-house	-	-	EB	B
9	Mr. Alagappa Moses	Empanelled	-	-	EB	A
10	Mr. A. Allimuthu	In-house	-	-	LU	B
11	Mr. S. Pavel	Empanelled	-	-	RH	B
12	Mr. J. R. Vikram Krishna	Empanelled	-	-	SHW RH	A A

Abbreviations			
EC	EIA Coordinator	EB	Ecology and bio-diversity
AEC	Associate EIA Coordinator	NV	Noise and vibration
FAE	Functional Area Expert	SE	Socio economics
FAA	Functional Area Associates	HG	Hydrology, ground water and water conservation
TM	Team Member	SC	Soil conservation
GEO	Geology	RH	Risk assessment and hazard management
WP	Water pollution monitoring, prevention and control	SHW	Solid and hazardous wastes
AP	Air pollution monitoring, prevention and control	MSW	Municipal Solid Wastes
LU	Land Use	ISW	Industrial Solid Wastes
AQ	Meteorology, air quality modeling, and prediction	HW	Hazardous Wastes

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

Declaration by experts contributing to the EIA/EMP of M/s. B.M. Mines Rough Stone & Gravel Quarry Project over an cluster Extent of 7.53.5 ha at Alur Village of Hosur 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. M. Ifthikhar Ahmed**

Designation: **EIA Coordinator**

Date & Signature:


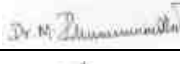

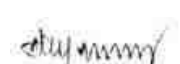

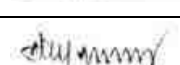

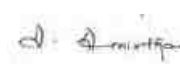






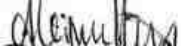





Period of Involvement: **March 2023 to till date**

Associated Team Member with EIA Coordinator:

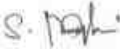
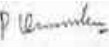


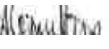

1. **Mr. S. Nagamani**
2. **Mr. Viswanathan**
3. **Mr. Santhoshkumar**
4. **Mr. S. Ilavarasan**

FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

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

7	RH	<ul style="list-style-type: none"> ▪ Identification of hazards and hazardous substances ▪ Risks and consequences analysis ▪ Vulnerability assessment ▪ Preparation of Emergency Preparedness Plan ▪ Management plan for safety. 	Mr. N. Senthilkumar	
			Mr. S. Pavel	
			Mr. J. R. Vikram Krishna	
8	LU	<ul style="list-style-type: none"> ▪ Construction of Land use Map ▪ Impact of project on surrounding land use ▪ Suggesting post closure sustainable land use and mitigative measures. 	Mr. A. Allimuthu	
9	NV	<ul style="list-style-type: none"> ▪ Identify impacts due to noise and vibrations ▪ Suggesting appropriate mitigation measures for EMP. 	Mr. A. Jagannathan	
10	AQ	<ul style="list-style-type: none"> ▪ Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. ▪ Recommending mitigations measures for EMP 	Mr. N. Senthilkumar	
11	SC	<ul style="list-style-type: none"> ▪ Assessing the impact on soil environment and proposed mitigation measures for soil conservation 	Dr. M. Ifthikhar Ahmed	
12	SHW	<ul style="list-style-type: none"> ▪ Identify source of generation of non-hazardous solid waste and hazardous waste. ▪ Suggesting measures for minimization of generation of waste and how it can be reused or recycled. 	Mr. A. Jagannathan	
			Mr. J. R. Vikram Krishna	

LIST OF TEAM MEMBERS ENGAGED IN THIS PROJECT

Sl.No.	Name	Functional Area	Involvement	Signature
1	Mr. S. Nagamani	AP; GEO; AQ	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures ▪ Provide inputs on Geological Aspects ▪ Analyse & provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures 	
2	Mr. Viswanathan	AP; WP; LU	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Provide inputs & Assisting FAE with sources of Air Pollution, its impact and suggest control measures ▪ Assisting FAE on sources of water pollution, its impacts and suggest control measures ▪ Assisting FAE in preparation of land use maps 	
3	Mr. Santhoshkumar	GEO; SC	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Provide inputs on Geological Aspects ▪ Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan ▪ Provide inputs & Assisting FAE with soil conservation methods and identifying impacts 	
4	Mr. Umamahesvaran	GEO	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Provide inputs on Geological Aspects ▪ Assist in Resources & Reserve Calculation and preparation of Production Plan & Conceptual Plan 	
5	Mr. A. Allimuthu	SE	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of data's ▪ Provide inputs by analysing primary and secondary data 	
6	Mr. S. Ilavarasan	LU; SC	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assisting FAE in preparation of land use maps 	

			<ul style="list-style-type: none"> ▪ Provide inputs & Assisting FAE with soil conservation methods and identifying impacts 	
7	Mr. E. Vadivel	HG	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE & provide inputs on aquifer characteristics, ground water level/table ▪ Assist with methods of ground water recharge and conduct pump test, flow rate 	<i>E. Vadivel</i>
8	Mr. D. Dinesh	NV	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE and provide inputs on impacts due to proposed mine activity and suggest mitigation measures ▪ Assist FAE with prediction modelling 	<i>D. Dinesh</i>
9	Mr. Panneer Selvam	EB	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of baseline data ▪ Provide inputs and assist with labelling of Flora and Fauna 	<i>P. Panneer Selvam</i>
10	Mrs. Nathiya	EB	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of baseline data ▪ Provide inputs and assist with labelling of Flora and Fauna 	<i>T. Annap</i>

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, Dr. M. Ifthikhar Ahmed, Managing Partner, Geo Exploration and Mining Solutions, hereby, confirm that the above-mentioned Functional Area Experts and Team Members prepared the cluster EIA/EMP for M/s. B.M. Mines Rough Stone & Gravel Quarry Project over a cluster Extent of 7.53.5 ha at Alur Village of Hosur Taluk, Krishnagiri District of Tamil Nadu. It is also certified that information furnished in the EIA study are true and correct to the best of our Knowledge.

Signature & Date:



Name:

Dr. M. Ifthikhar Ahmed

Designation:

Managing Partner

Name of the EIA Consultant Organization:

M/s. Geo Exploration and Mining Solutions

NABET Certificate No & Issue Date:

NABET/EIA/2225/RA0276 Dated: 20.02.2023

Validity:

Valid till 06.08.2025

ANNEXURE

M/s.B.M.MINES ROUGH STONE & GRAVEL QUARRY

Alur Village, Hosur Taluk, Krishnagiri District,
Tamil Nadu State

ToR obtained

Lr No. SEIAA-TN/F.No.9897/SEAC/TOR-1442/2023 Dated: 09.05.2023

EXTENT = 4.50.0 Ha

Project Proponent

M/s. B.M. Mines,

C/o. C.N. Kaarathi,

Villa No.23, Vakil Hosur Hills,

Off Rayakottai Road, Chennathur Post,

Hosur, Krishnagiri District,

Tamil Nadu State – 635 109.

LIST OF ANNEXURES

Annexure No	DESCRIPTION	PAGE NO
P1- M/s.B.M.MINES	COPY OF TERMS OF REFERENCE	1A-23A
	COPY OF 500M RADIUS QUARRIES DETAILS LETTER	24A-25A
	COPY OF MINING PLAN APPROVAL LETTER	26A-28A
	COPY OF APPROVED MINING PLAN WITH PLATES	29A-126A
	COPY OF ADDITIONAL DOCUUMENT	127A-131A
EXISTING QUARRY		
E1- B.G.MANJULA	COPY OF MINING PLAN APPROVAL LETTER	132A-134A
	COPY OF BASE LINE MONITORING DATA	135A-164A
	COPY OF NABET CERTIFICATE	165A



THIRU. DEEPAK S. BILGI, I.F.S.
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU

3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai - 600 015.
Phone No. 044-24359973
Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr.No.SEIAA-TN/F.No.9897/ToR-1442/2023 Dated:09.05.2023.

To

M/s. B M Mines
C/o. C N Kaarthi
Villa No. 23, Vakil Hosur Hills,
Chennathur Post,
Hosur Taluk,
Krishnagiri District-635109

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with public Hearing (ToR) for the Proposed Rough Stone and Gravel Quarry lease over an extent of 4.50.0Ha S.F.No.207/1A1, 207/1A2A & 208/3 (P), Alur Village, Hosur Taluk, Krishnagiri District by M/s. B.M.Mines - under project category – “B1” and Schedule S.No.1 (a) – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

- Ref:** 1. Online proposal No.SIA/TN/MIN/421183/2023, dt:07/03/2023.
2. Your application submitted for Terms of Reference dated: 14.03.2023.
3. Minutes of the 368th SEAC Meeting held on 19.04.2023.
4. Minutes of the 615th SEIAA meeting held on 08.05.2023 & 09.05.2023. ✓

Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference.

The proponent, M/s. B M Mines has submitted application for Terms of Reference (ToR) with public Hearing on 14.03.2023, in Form-1, Pre- Feasibility report for the Proposed Rough Stone and


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Gravel Quarry lease over an extent of 4.50.0Ha S.F.No.207/1A1, 207/1A2A & 208/3 (P), Alur Village, Hosur Taluk, Krishnagiri District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough Stone and Gravel Quarry lease over an extent of 4.50.0Ha S.F.No.207/1A1, 207/1A2A & 208/3 (P), Alur Village, Hosur Taluk, Krishnagiri District by M/s. B.M.Mines - For Terms of Reference.

(SIA/TN/MIN/421183/2023, dt: 07/03/2023)

The proposal was placed in the 368th SEAC Meeting held on 19.04.2023. The details of the minutes are available in the website (parivesh.nic.in).

The SEAC noted the following:

1. The project proponent, M/s. B.M.Mines has applied for Terms of Reference for the Proposed Rough Stone and Gravel Quarry lease over an extent of 4.50.0Ha S.F.No.207/1A1, 207/1A2A & 208/3 (P), Alur Village, Hosur Taluk, Krishnagiri District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006.
3. As per the precise area communication the lease period is for 10 Years. The mining plan is for 10 Years. The production for 1st 5 Years shall not to exceed 439250m³ of Rough Stone & 141800m³ of Gravel Quarry & the production for 2nd 5 Years shall not to exceed 280,185 m³ of Rough Stone and the ultimate depth of 40m BGL.

Based on the presentation and details furnished by the project proponent, **SEAC decided to grant Terms of Reference (TOR) with Public Hearing** subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:


1. The PP shall submit cumulative EIA impact study considering Crushers 500m radius around the vicinity of the proposed mining area.
2. The PP shall submit photographs of fencing, greenbelt and garland drain.
3. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc.
4. The study on impact of the dust & other environmental impacts due to proposed quarrying operations on the Rose flowers being cultivated through greenhouse nearby.


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5. The Proponent shall furnish photographs of greenbelt, fencing and garland drain around the boundary of the proposed quarry.
6. The proponent shall furnish a revised EMP budget for entire life of proposed mining.
7. The revised and corrected version of the Production & Development Plan shall be produced with showing the safety berm width of 2m is maintained for the bench height of 2m distinctly in the gravel formation and it shall be duly signed by the concerned QP & approved by the concerned AD (Geology & Mining).
8. 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 prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease during the time of appraisal for obtaining the EC.
9. The Proponent shall submit a conceptual 'Slope Stability Plan' indicating the mitigating measures for the proposed quarry during the appraisal while obtaining the EC, as the depth of the proposed quarry working is extended beyond 30 m below ground level.
10. 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.
11. 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.
12. 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.
13. 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,
 - a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b. Quantity of minerals mined out.
 - c. Highest production achieved in any one year
 - d. Detail of approved depth of mining.
 - e. Actual depth of the mining achieved earlier.
 - f. Name of the person already mined in that leases area.


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- g. If EC and CTO already obtained, the copy of the same shall be submitted.
- h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
14. 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).
15. The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,
16. The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the proposed quarry based on the volume of rock handled & area of excavation.
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 Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may 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.


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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. Public Hearing points raised and commitments 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 and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.


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32. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
33. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
34. 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.
35. 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 and local school/college authorities. 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.
36. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site-specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
37. 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.
38. 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.
39. 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


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- 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.
40. 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.
 41. 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.
 42. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
 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. 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.
 45. 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.
 46. 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.


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Appendix -I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	<i>Aegle marmelos</i>	Vilvam	வில்வம்
2	<i>Adenaanthera pavonina</i>	Manjadi	மஞ்சாடி, ஆனைக்குன்றிமணி
3	<i>Albizia lebbek</i>	Vaagai	வாகை
4	<i>Albizia amara</i>	Usil	உசில்
5	<i>Bauhinia purpurea</i>	Mantharai	மந்தாரை
6	<i>Bauhinia racemosa</i>	Aathu	ஆத்தி
7	<i>Bauhinia tomentosa</i>	Iruvathu	இருவாத்தி
8	<i>Buchanania axillaris</i>	Kattuma	காட்டுமா
9	<i>Borassus flabellifer</i>	Panai	பனை
10	<i>Butea monosperma</i>	Murukkamaram	முருக்கமரம்
11	<i>Bobax ceiba</i>	Ilavu, Sevvilavu	இலவு
12	<i>Calophyllum inophyllum</i>	Punai	புன்னை
13	<i>Cassia fistula</i>	Sarakondrai	சர்க்கொன்றை
14	<i>Cassia roxburghii</i>	Sengondrai	செங்கொன்றை
15	<i>Chloroxylon swietenia</i>	Purasamaram	புரசு மரம்
16	<i>Cochlospermum religiosum</i>	Kongu, Manjallavu	கோங்கு, மஞ்சள் இலவு
17	<i>Cordia dichotoma</i>	Naruvuli	நருவூளி
18	<i>Creteva adansoni</i>	Mavalingum	மாவிலங்கம்
19	<i>Dillenia indica</i>	Uva, Uzha	உசா
20	<i>Dillenia pentagyna</i>	SiruUva, Sitruzha	சிறு உசா
21	<i>Diospyro sebenum</i>	Karungali	கருங்காலை
22	<i>Diospyro schloroxylon</i>	Vaganai	வாகணை
23	<i>Ficus amplissima</i>	Kalltchi	கல் இச்சி
24	<i>Hibiscus tiliaceou</i>	Aatrupoovarasu	ஆற்றுப்புவரசு
25	<i>Hardwickia binata</i>	Aacha	ஆச்சா
26	<i>Holoptelia integrifolia</i>	Aayili	ஆயா மரம், ஆயிலி
27	<i>Lannea coromandelica</i>	Odhiam	ஒதியம்
28	<i>Lagerstroemia speciosa</i>	Poo Marudhu	பூ மருது
29	<i>Lepisanthus tetraphylla</i>	Neikottaimaram	நெய் கொட்டை மரம்
30	<i>Limonia acidissima</i>	Vila maram	வில்லா மரம்
31	<i>Litsea glutinos</i>	Pisinpattai	அரம்பா, பிசின்பட்டை
32	<i>Madhuca longifolia</i>	Illuppai	இலுப்பை
33	<i>Mamikara hexandra</i>	UlakkaiPaalai	உலக்கை பாலை
34	<i>Mimusops elengi</i>	Magizhamaram	மகிழ்மரம்
35	<i>Mitragyna parvifolia</i>	Kadambu	கடம்பு
36	<i>Morinda pubescens</i>	Nuna	நுணா
37	<i>Morinda citrifolia</i>	Vellai Nuna	வெள்ளை நுணா
38	<i>Phoenix sylvestre</i>	Eachai	ஈச்சமரம்
39	<i>Pongamia pinnat</i>	Pungam	புங்கம்

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40	<i>Premna mollissima</i>	Munnai	முன்னை
41	<i>Premna serratifolia</i>	Narumunai	நறு முன்னை
42	<i>Premna tomentosa</i>	Malaipoovarasu	மலை பூவரசு
43	<i>Prosopis cinerea</i>	Vanni maram	வன்னி மரம்
44	<i>Pterocarpus marsupium</i>	Vengai	வேங்கை
45	<i>Pterospermum canescens</i>	Vernangu, Tada	வெண்ணாங்கு
46	<i>Pterospermum xylocarpum</i>	Polavu	புலவு
47	<i>Putranjiva roxburghii</i>	Karipala	கறிபாலா
48	<i>Salvadora persica</i>	Ugaa Maram	ஊகா மரம்
49	<i>Sapindus emarginatus</i>	Manipungan, Soapukai	மணிப்பங்கள் சோப்புக்காய்
50	<i>Saraca asoca</i>	Asoca	அசோகா
51	<i>Streblus asper</i>	Piray maram	பிராய் மரம்
52	<i>Strychnos nuxvomica</i>	Yetti	எட்டி
53	<i>Strychnos potatorum</i>	Therthang Kottai	தேத்தான் கொட்டை
54	<i>Syzygium cumini</i>	Naval	நாவல்
55	<i>Terminalia belleric</i>	Thandri	தான்றி
56	<i>Terminalia arjuna</i>	Ven marudhu	வெண் மருது
57	<i>Toona ciliata</i>	Sandhana vembu	சந்தன வேம்பு
58	<i>Thespesia populnea</i>	Puvarasu	பூவரசு
59	<i>Walsuratrifoliata</i>	valsura	வால்சுரா
60	<i>Wrightia tinctoria</i>	Veppalai	வெப்பாலை
61	<i>Pithecolobium dulce</i>	Kodukkapuli	கொடுக்காப்புளி

Appendix-II

Display Board

(Size 6' x5' with Blue Background and White Letters)

கரங்கம்

கரங்கத்தில் குவாரி செயல்பாடுகளுக்கான சுற்றுச்சூழல் அனுமதி கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு வழங்கப்பட்டுள்ளது என்பது தெரிவிக்கப்பட்டு சுற்றுச்சூழல் அனுமதி தேதி வரை செல்லத்தக்கதாக உள்ளது.

பகமை பகுதி வளர்ச்சி செயல்பாடுகளை கரங்க திட்டம்	குவாரியின் எல்லைவாய் சுற்றி மேலே அமைக்க வேண்டும் கரங்கப்பகுதியின் கீழும் தளமாட்டத்திலிருந்து... மீட்டர்கள் மிகாமல் இறக்க வேண்டும் காற்றில் மாசு ஏற்படாதவாறு கரங்க பணிகளை மேற்கொள்ள வேண்டும்.
நடவடிக்கை புறமறிக்கப்பட வேண்டிய மரங்கள் எண்ணிக்கை.	வாகனங்கள் செல்லும் பாதையில் மாசு ஏற்படாத அளவிற்கு தண்ணீரை முறையாக தண்ணீர் வாரிகளின் மூலமாக அகவப்போது தெரிக்க வேண்டும். இணைச்சல் அளவையும் தூசி மாசுபாட்டையும் குறைப்பதற்காக குவாரியின் எல்லைவாய் சுற்றி அடர்த்தியான பகமை பகுதியை ஏற்படுத்த வேண்டும்.
கரங்கத்தில் வெகுவாக எவக்கும்பொழுது நிலத்திரவுகள் ஏற்படாதவாறும் மற்றும் கடுகம் பறக்காதவாறும் பாதுகாப்பு நடவடிக்கைகளை உள்விப்பாக செயல்படுத்தப்பட வேண்டும்	
கரங்கத்தில் இருந்து ஏற்படும் இணைச்சல் அளவு 85 டி.சிபீஸ் (dBA) அளவிற்கு மேல் ஏற்படாதவாறு தகுந்த கட்டுப்பாடுகளை மேற்கொள்ள வேண்டும்.	
கரங்க எட்டி விதிகளை பணிக் கீழ் கரங்கத்தில் உள்ள பணியாளர்களுக்கு தகுந்த பாதுகாப்பு கருவிகள் வழங்குவதற்கு கைதாரமுள்ள கழிப்பறை வசதிகளை செய்து தர வேண்டும்	
கிராமம் தலைவது பரிசீலித்து வழியாக வாகனங்கள் செல்லும் சாலைவாய் தொடர்த்து தகுந்த பாதுகாக்க வேண்டும்	
கரங்கப்பணிகளை அருகில் உள்ள விவசாய பணிகள் மற்றும் தீர்நிலைகள் பாதிக்கப்படக்கூடாது.	
தீர்நிலைகள் பாதிக்கப்படாமல் இருப்பதை உறுதி செய்யும் வாகனமே தவிர்த்து தீர்நிலை தொடர்த்து கைகாணிக்க வேண்டும்	
கரங்கத்திலிருந்து கனிம பொருட்களை எடுத்துச் செல்லுது கிராம மக்களுக்கு எந்தக் கிரமத்தினையும் ஏற்படுத்தாதவாறு பாதுகாப்போடும் மற்றும் சுற்றுச்சூழல் பாதிக்கவாத வண்ணம் வாகனங்களை இயக்க வேண்டும்	
கரங்கப்பணிகள் முடிக்கப்பட்டவுடன் கரங்க மூடல் திட்டத்தில் உள்ளவாறு கரங்கத்தினை மூட வேண்டும்.	
கரங்க நடவடிக்கைகளை முடித்தபின்னர் கரங்கப் பகுதி மற்றும் கரங்க நடவடிக்கைகளை இடைபுற ஏற்பாடுகளுக்கும் மேலே எந்தப் பகுதியையும் மறுகட்டுமானம் செய்து தரவாரங்கள் விவகாரிகள் ஆகியவற்றின் வளர்ச்சிக்கு ஏற்ற வகையில் பகமைப்பகுதியை உருவாக்க வேண்டும்.	
முறையான நிபந்தனைகளை அறிய பாரிவேஷ் (http://parivesh.ac.in) என்கிற இணையதளத்தைப் பார்வையிடவும் மேலும் எந்தவித சந்தர்ப்பம் சார்ந்த புகாரைக்கூட செயல்படவே உண் சுற்றுச்சூழல் மற்றும் வள அகவச்சத்தில் முருகினை ஏற்ற வட்டார ஆளுகலகம் 044 - 2222225 (அலுவலர்) துரிதமாக மாசு கட்டுப்பாட்டு வாரியத்தின் மூலம் சுற்றுச்சூழல் பெறியுள்ள அனுமதி.	

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Discussion by SEIAA and the Remarks:-

The proposal was placed in the 615th Authority meeting held on 08.05.2023 & 09.05.2023. The Authority noted that this proposal was placed for appraisal in this 368th SEAC meeting held on 19.04.2023. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the conditions in '**Annexure B**' of this minute.

1. The project proponent shall prepare mine closure plan considering quantity of Topsoil & Weathered rock. If any.
2. 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.
3. Letter from local Director of Agriculture that proposed land is unsuitable for Agriculture.

Annexure 'B'**Cluster Management Committee**

1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.
2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,
3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.
4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.
5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.


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7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.

Impact study of mining

12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & soil biological, physical land chemical features .
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.
 - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - g) Bio-geochemical processes and its foot prints including environmental stress.
 - h) Sediment geochemistry in the surface streams.

Agriculture & Agro-Biodiversity

13. Impact on surrounding agricultural fields around the proposed mining Area.
14. Impact on soil flora & vegetation around the project site.
15. Details of type of vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.
16. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
17. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.


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18. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.

Forests

19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
20. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
21. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
22. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.

Water Environment

23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.
24. Erosion Control measures.
25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.
28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.


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30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.

Energy

31. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.

Climate Change

32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.

Mine Closure Plan

34. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.

EMP


35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.
36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.

Risk Assessment

37. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.

Disaster Management Plan

38. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its


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related activities covering the entire mine lease period as per precise area communication order issued.

Others


39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.
40. As per the MoEF& CC office memorandum F.No.22-65/2017-1A.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
41. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the 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.


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- 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.


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- 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


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- 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


MEMBER SECRETARY
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- given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
 - 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
 - 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
 - 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
 - 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
 - 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
 - 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
 - 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.


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- 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.


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- 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.

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7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
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.


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27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

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


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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.


MEMBER SECRETARY
SEIAA-TN

Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Krishnagiri District.
7. The EO/BDO, Paladurai Village, Madukkarai Taluk, Coimbatore District
8. Stock File.

From

Dr. S.Vediappan, M.Sc.,Ph.d.,
Deputy Director,
Dept of Geology and Mining,
Krishnagiri.

To

M/s. B.M. Mines, C/o. C.N. Kaarathi,
Villa No. 23, Vakil Hosur Hills,
Off Rayakottai Road, Chennathur Post,
Hosur, Krishnagiri.

Roc.No.738/2022/Mines Dated: 17.02.2023

Sir,

Sub: Mines and Minerals – Minor Mineral - Rough Stone - Krishnagiri District – Hosur Taluk – Alur Village- Patta land in S.F.No. 207/1A1 (0.74.00), 207/1A2A (2.37.00) and 208/3(P) (1.39.00) Over an extent of 4.50.00 Hects – Application preferred by M/s. B.M. Mines - Draft Mining Plan submitted - Approved – Other quarry situated in 500 mtrs radial distance – Details furnished - reg.

Ref: 1. Mining Plan approved by the Deputy Director of Geology and Mining, Krishnagiri in Rc.no. 738/2022/Mines dated: .02.2023.
2. M/s. B.M. Mines, letter dated: 17.02.2023

Kind attention is invited to the references cited above.

2. M/s. B.M. Mines has been preferred an application for quarrying Rough stone over an extent of 4.50.00 Hects of patta land in S.F.No. 207/1A1 (0.74.00), 207/1A2A (2.37.00) and 208/3(P) (1.39.00) in Alur Village, Hosur Taluk, Krishnagiri District for a period of 10 year under the provisions of Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959. In this regard, the precise area communication has given the lessee vide letter dated: 19.01.2023 with a direction to submit approved mining plan and Environment Clearance.

3. In this connection, as stipulated in the TNMMCR Rules, 1959 the applicant has submitted the Mining Plan for on 16.02.2023. Accordingly, the Mining plan submitted by the applicant has been approved by the Deputy Director (Mines) vide letter dated .02.2023. In addition to that the details of other quarries situated within 500 mts radial distance from the subject quarry is furnished as follows.

I. Details of Existing quarries.


Sl No	Name of the lessee	Village & Taluk	Mineral	S.F No.	Extent in Het	Rc.No. & Date	Lease period.
1.	B.G.Manjula,W/o.late.Baskar, 77-D, Indira Nagar, Bagalur, Hosur	Alur, Hosur	Rough stone	208/1	3.03.5	Rc.No.680/2013/ Mines dated:19.06.2019	19.06.2019 to 18.06.2024

II. Details of Expired/Old quarries.

Sl. No	Name of the lessee	Village	Mineral	S.F No.	Extent in Het	Rc.No. & Date	Lease period.
1.	P.Baskar, S/o.Paapiyah, 77-D, Indira Nagar, Bagalur Road, Hosur.	Alur, Hosur	Rough stone	209	4.21.5	Rc.No.282/2003/ Mines dated:07.04.2003	07.04.2003 to 06.04.2008
2.	P.Baskar, M/s.Sri Venkateshwara Blue Metals, 77-D, Indira Nagar, Bagalur Hosur.	Alur, Hosur	Rough stone	208/1(Pa rt)	3.02.5	Rc.No.2024/2002 /Mines dated:24.02.2003	24.02.2003 to 23.02.2008
3.	M.Durai, S/o.M.Malla Gounder, No.13/47, 12B, Shanti Nagar, Opp Ragavendra Theatre, Hosur	Alur, Hosur	Rough stone	207/1	0.63.0	Rc.No.1825/2002 /Mines dated:28.12.2002	28.12.2002 to 27.12.2007
4.	Chennai mines, Ramesh Nagar, Thiruneermalai Road, West Thambaram, Chennai	Alur, Hosur	Rough stone	211	3.46.5	Rc.No.276/2013/ Mines dated:11.03.2015	20.03.2015 to 19.03.2020

III. Details of Proposed quarries

Sl No	Name of the lessee	Village & Taluk	Mineral	S.F No.	Extent in Het	Rc.No. & Date	Lease period.
1.	M/s. B.M. Mines, C/o. C.N. Kaarathi, Villa No. 23, Vakil Hosur Hills, Off Rayakottai , Chennathur Post, Hosur, Krishnagiri	Alur, Hosur	Rough stone	207/1A1 207/1A2A 208/3(P)	4.50.00	-	Instant Proposal


 Deputy Director,
 Dept of Geology and Mining,
 Krishnagiri.

Copy to :-

The Chairman,
 Tamil Nadu State Environment
 Impact Assessment Authority,
 3rd Floor, Panakal Maligai,
 No. 1 Jeenes Road, Saidapet,
 Chennai -15.



From

Dr.S.Vediappan,M.Sc.,Ph.D.,
Deputy Director,
Dept of Geology and Mining,
Krishnagiri.

To

M/s. B.M. Mines,
C/o. C.N. Kaarathi,
Villa No. 23, Vakil Hosur Hills,
Off Rayakottai Road,
Chennathur Post,
Hosur, Krishnagiri.

Rc.No. 738 /2022/Mines Dated: 17 .02.2023.

Sir,

Sub: Mines and Minerals – Minor Mineral - Rough Stone -
Krishnagiri District – Hosur Taluk – Alur Village- Patta
land in S.F.No. 207/1A1 (0.74.00), 207/1A2A (2.37.00)
and 208/3(P) (1.39.00) Over an extent of 4.50.00 Hects -
Application preferred by M/s. B.M. Mines - Draft Mining
Plan submitted - Approved - reg.

Ref: 1. Application prepared by M/s. B.M. Mines, C/o. C.N.
Karthi, Villa No. 23, Vakil Hosur Hills, off Rayakottai
Road, Chennathur Post, Hosur, Krishnagiri dated:
26.04.2022.
2. This Office Letter No.738/2022/Mines dated:
19.01.2023.
3. Draft Mining plan submitted by M/s. B.M. Mines,
dated: 16.02.2023.

Kind attention is invited to the references cited above.

2. M/s. B.M. Mines has been preferred an application for
quarrying Rough stone over an extent of 4.50.00 Hects of patta land
in S.F.No. 207/1A1 (0.74.00), 207/1A2A (2.37.00) and 208/3(P)
(1.39.00) in Alur Village, Hosur Taluk, Krishnagiri District for a
period of 10 year under the provisions of Rule 19 (1) of Tamil Nadu
Minor Mineral Concession Rules, 1959. In this regard, the precise
area communication has given the lessee vide letter dated:
19.01.2023 with a direction to submit approved mining plan and
Environment Clearance.

3. Accordingly, the lessee M/s. B.M. Mines had submitted 03
copies of draft Mining Plan vide letter dated: 16.02.2023 and the
same has been examined in details and it is found correct.

4. As per the mining plan the year wise production for the proposed first and second five years are as follows.

First Five Years	Year	Recoverable Reserves (m³) @ 100%	Gravel in (m³)	Top Soil (m³)
	1 st Year	84250	47472	12090
	2 nd year	86580	48384	12210
	3 rd year	86220	45944	11732
	4 th year	91260	-	-
	5 th year	90940	-	-
	Total	439250	141800	36032

Second Five Years	Year	Recoverable Reserves (m³) @ 100%	Top Soil Gravel in (m³)
	1 st Year	60500	-
	2 nd year	53425	-
	3 rd year	50380	-
	4 th year	57530	-
	5 th year	58350	-
	Total	280185	-

5. Hence, the power delegated under Rule 42 of TNMMCR, 1959 and as per the guidelines/instructions issued by the Commissioner of Geology and Mining, vide letter Rc.No.3868/LC/2012 dated:19.11.2012, the said mining plan submitted by the lessee is hereby approved subject to the following conditions.

i) 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.


ii) This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of Mines and Minerals Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act 1957, or any other connected Laws industry Forest (Conservation) Act 1980, Forest Conservation Rules 1981 Environment protection Act 1980, Indian Explosive Act 1884 (Central Act IV of 1884) and the rules made there under, Minor Mineral Conservation and Development Rules, and The Tamil Nadu Minor Mineral Concession rules, 1959.

iii) That the mining plan is approved without prejudice to any other order or directions from any court of competent jurisdiction.

iv) All the conditions mentioned in the precise area letter should be followed during quarry operation as per rules.

v) The applicant should get prior Environmental clearance from the appropriate authority and should submit it to the District Collector, Krishnagiri.

vi) Every Mining Plan duly approved under rule 41(9) of TNMMCR, 1959 shall be valid for a period of five years. Further, the applicant shall submit modification in the mining plan if any, review the mining plan and submit scheme of mining plan for the next five years of the lease if any as per TNMMCR 1959.


Deputy Director,
Dept of Geology and Mining,
Krishnagiri.

Copy submitted to : 1. The Commissioneer,
Dept of Geology and Mining,
Guindy, Chennai -32.

**MINING PLAN AND PROGRESSIVE QUARRY
CLOSURE PLAN FOR ALUR ROUGH STONE
AND GRAVEL QUARRY**

(PREPARED UNDER RULES 41 & 42 AS AMENDED IN TAMIL NADU MINOR MINERAL

Patta Lands / Lease Period = Ten Years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 4.50.0 Ha
S.F.NOS : 207/1A1, 207/1A2A and 208/3 (P)
VILLAGE : ALUR
TALUK : HOSUR
DISTRICT : KRISHNAGIRI
STATE : TAMIL NADU

FOR

APPLICANT

M/s. B.M. Mines,

C/o. C.N. Kaarathi,

Villa No.23, Vakil Hosur Hills,

Off Rayakottai Road, Chennathur Post,

Hosur, Krishnagiri District,

Tamil Nadu State – 635 109.

PREPARED BY

P.Viswanathan, M.Sc.,

Qualified Person

Regd. Off. No.17, Advaita Ashram Road,

Alagapuram, Salem District – 636 004.

Cell: +91 94422 78601 & 94433 56539.

E-mail: infogeoexploration@gmail.com



M/s. B.M. Mines,
C/o. C.N. Kaarathi,
Villa No.23, Vakil Hosur Hills,
Off Rayakottai Road, Chennathur Post,
Hosur, Krishnagiri District,
Tamil Nadu State – 635 109.



CONSENT LETTER FROM APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Alur Rough stone and Gravel Quarry in S.F.Nos. 207/1A1, 207/1A2A and 208/3 (Part) over an extent of 4.50.0 Ha of Patta lands in Alur Village, Hosur Taluk, Krishnagiri District, Tamil Nadu State has been prepared by

P.Viswanathan, M.Sc.,
Qualified Person

We request to the Deputy Director, Department of Geology and Mining, Krishnagiri District to make further correspondence regarding the modification of the Mining Plan with the said Qualified Person at his following address.

P.Viswanathan, M.Sc.,
Regd. Off. No. 17,
Advaitha Ashram Road,
Alagapuram, Salem District – 636 004.
Cell: +91 94422 78601 & 94433 56539.

We hereby undertake that all the modifications, if any made in the Mining Plan by the Qualified Person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Signature of the Applicant

For M/s. B.M. Mines

C.N. Kaarathi

(Authorized Signatory)

Place: Krishnagiri

Date: 20.01.2023

M/s. B.M. Mines,
C/o. C.N. Kaarthy,
Villa No.23, Vakil Hosur Hills,
Off Rayakottai Road, Chennathur Post,
Hosur, Krishnagiri District,
Tamil Nadu State – 635 109.

DECLARATION OF THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Alur Rough stone and Gravel Quarry in S.F.Nos. 207/1A1, 207/1A2A and 208/3 (Part) over an extent of 4.50.0 Ha of Patta lands in Alur Village, Hosur Taluk, Krishnagiri District, Tamil Nadu State has been prepared in full consultation with me.

I have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to Quarry.

Signature of the Applicant

For M/s. B.M. Mines



C.N. Kaarthy

(Authorized Signatory)

Place: Krishnagiri

Date: 20.01.2023

CERTIFICATE

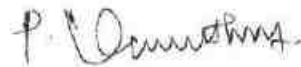


Certified that I am, **P.Viswanathan, M.Sc.**, having an office at **Regd. Off. No. 17**, Advaitha Ashram Road, Alagapuram, Salem District – 636 004, holding a Post Graduate Degree in Geology (M.Sc. Applied Geology) from Periyar University, Salem and I worked in the field of Geology in a role of Geologist.

Rule 15(I)(a) and (b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016 stipulates the eligibility for preparing Mining plans as “(I)(a) a post graduate degree in Geology granted by a university established” and (I)(b) “Professional experience of five years of working in a supervisory capacity in the field of mining after obtaining the degree”. Since my qualification and experience are satisfied the Rule (I)(a) and (I)(b) of 15 of the said Rules, I am eligible to prepare Mining Plans for both Major and Minor Minerals.

Accordingly, I am preparing this Mining Plan and Progressive Quarry Closure Plan in Respect of Alur Rough stone and Gravel Quarry in over an extent of 4.50.0 Hectares of patta lands in S.F.Nos. 207/1A1, 207/1A2A and 208/3 (Part) of Alur Village, Hosur Taluk, Krishnagiri District, Tamil Nadu State for **M/s. B.M. Mines, C/o. C.N. Kaarthi, Villa No.23, Vakil Hosur Hills, Off Rayakottai Road, Chennathur Post, Hosur, Krishnagiri District, Tamil Nadu State – 635 109**. Since the Mining Plan is prepared as per the provisions contained in Rule 15(I)(a) and (I)(b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

Signature of the Qualified Person


P.Viswanathan, M.Sc.,

Place: Salem

Date: 16.02.2023

P.Viswanathan, M.Sc.,

Regd. Off. No. 17,

Advaita Ashram Road,

Alagapuram, Salem District – 636 004.

Cell: +91 94422 78601 & 94433 56539.



CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959 have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Alur Rough stone and Gravel Quarry in S.F.Nos. 207/1A1, 207/1A2A and 208/3 (Part) over an extent of 4.50.0 Ha of Patta lands in Alur Village, Hosur Taluk, Krishnagiri District, Tamil Nadu State has been prepared for

M/s. B.M. Mines,

C/o. C.N. Kaarathi,

Villa No.23, Vakil Hosur Hills,

Off Rayakottai Road, Chennathur Post,

Hosur, Krishnagiri District,

Tamil Nadu State – 635 109.

Whenever specific permissions / exemptions / relaxations and approvals are required, the Applicant will approach the concerned authorities of the Deputy Director, Department of Geology and Mining, Krishnagiri District, Tamil Nadu for such permissions / exemptions / relaxations and approvals.

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

Signature of the Qualified Person

P. Viswanathan
P.Viswanathan, M.Sc.,

Place: Salem

Date: 16.02.2023

P.Viswanathan, M.Sc.,

Regd. Off. No. 17,

Advaita Ashram Road,

Alagapuram, Salem District – 636 004.

Cell: +91 94422 78601 & 94433 56539.



CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations and Orders made there under have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Alur Rough stone and Gravel Quarry in S.F.Nos. 207/1A1, 207/1A2A and 208/3 (Part) over an extent of 4.50.0 Ha of Patta lands in Alur Village, Hosur Taluk, Krishnagiri District, Tamil Nadu State has been prepared for

M/s. B.M. Mines,

C/o. C.N. Kaarathi,

Villa No.23, Vakil Hosur Hills,

Off Rayakottai Road, Chennathur Post,

Hosur, Krishnagiri District,

Tamil Nadu State – 635 109.

Whenever specific permissions / exemptions / relaxations and approvals are required, the Applicant will approach the concerned authorities of Director General of Mines Safety (DGMS), No.5, II Street, Block-AA, Anna Nagar, Chennai-40, Tamil Nadu for such permissions / exemptions / relaxations and approvals.

It is also certified that information furnished in the Mining Plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

P.Viswanathan, M.Sc.,

Place: Salem

Date: 16.02.2023

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MINING PLAN AND PROGRESSIVE QUARRY CLOSURE PLAN FOR ALUR ROUGH STONE AND GRAVEL QUARRY

(PREPARED UNDER RULES 41 & 42 AS PER THE AMENDED UNDER TAMIL NADU MINOR MINERAL
CONCESSION RULES, 1959)

1.0 INTRODUCTION AND EXECUTIVE SUMMARY

This Mining Plan and Environment Management Plan is prepared for M/s. B.M. Mines, C/o. C.N. Kaarthi, having an office at Villa No.23, Vakil Hosur Hills, Off. Rayakottai Road, Chennaiur Post, Hosur, Krishnagiri District, Tamil Nadu State – 635 109.

The applicant applied for Rough stone quarry over an extent of 4.50.0 Ha of Patta lands in S.F.Nos. 207/1A1, 207/1A2A and 208/3 (Part) of Alur Village, Hosur Taluk, Krishnagiri District, Tamil Nadu State.

The application was processed by the Deputy Director, Department of Geology and Mining, Krishnagiri District and passed a Precise Area Communication letter vide **Rc.No.738/2022/Mines, Dated: 19.01.2023** to submit Mining Plan for the approval in Department of Geology and Mining, Krishnagiri and obtain Environmental Clearance from the State Level Environment Impact Assessment Authority, Tamil Nadu with following conditions to provide (Refer Annexure No. I):-

- a. The quarried out minerals should be transported after paid the necessary seniorage fee as per Appendix- II of Tamil Nadu Minor Mineral Concession Rules, 1959.
- b. A safety distance of 7.5 meters and 10 meters should be provided for the adjacent Patta lands and Government lands.
- c. The quarry operation should be carried out with mild explosives by an authorized explosive agency and no hindrance shall be caused to the adjacent patta and Government lands.
- d. The applicant shall submit the approved mining plan within the time stipulated in the precise area communication letter.
- e. Prior Environment clearance should be obtained from the competent authority in respect of the area applied for quarry lease before grant of quarry lease.

In order to ensure compliance of the order of the Honourable Supreme Court Dated: 27.02.2012 in I.A.No.12.13.2011 in Special Leave Petition SLP (C) No 19628-19629/2009, it has been now decided that all mining projects of minor minerals including their renewal irrespective of sizes of the lease would hence forth require prior environmental clearance mining project within the lease applied area up to less than 100ha including projects or minor mineral with lease applied area less then 5ha would be treated as category B as defined in the EIA notification 2006 and will be considered by the state notified by MoEF as prescribed procedure under EIA notification 2006.

In the above circumstances the applicant through his consultant is hereby preparing the Mining Plan, Environmental Management Plan and Progressive Quarry Closure Plan for approval and subsequent submission of Form-I, Form-IM and Pre feasibility report to obtain environmental clearance from the State Level Environment Impact Assessment Authority, Tamil Nadu, Rough stone and Gravel quarry. This mining plan is prepared by considering the Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the EIA Notification 2006 and its subsequent Amendment and judgments till 2023.

Short Notes of Mining Plan:

- a. Village Panchayat - Alur
 - b. Panchayat Union - Hosur
 - c. The Geological Resources are **15,75,000m³** of Rough stone, **1,80,000m³** of Gravel and **45,000m³** of Topsoil in the entire area.
 - d. The Total Mineable Reserves are **7,19,435m³** of Rough stone, **1,41,800m³** of Gravel and **36,032m³** of Topsoil in the entire area.
 - e. The proposed quantity of reserves/ (level of production) to be mined are **7,19,435m³** of Rough Stone (4,39,250m³ for first five years and 2,80,185m³ for remaining five years period) for ten years and **1,41,800m³** of Gravel in the entire area.
 - f. Total extent of the lease applied area = 4.50.0 Ha.
 - g. Topography of the area = The area exhibits plain topography.
 - h. Proposed Depth of mining = 40m below ground level.
 - i. Lease Period = Ten years.
 - j. Mining Plan Period = Five years.
- It is a fresh lease applied area. At present the area is virgin.
- k. Method of mining / level of mechanization.
Opencast mechanized method, the quarry operation involves shallow hand jack hammer drilling, mild blasting.
 - l. Type of machineries proposed in the quarrying operation is given below:
Excavators attached with rock breaker (Rental Basis).
Hand jack hammer, Compressor (Diesel drive) (4 Jack Hammer capacity) (Rental Basis).
 - m. No trees will be uprooted due to this quarrying operation.
 - n. The approach road from the main road to quarry road will be constructed and maintained in a good condition for the haulage of Rough stone and machineries.
 - o. There is No Export of this Rough stone and Gravel.

- p. Topo sketch covering 10km and 1km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structures like bridges, wells, archaeological importance, place of worship is marked and enclosed as Plate Nos. IA and IB.
- q. The lease applied area is about 4.50.0 Ha bounded by thirteen corners, the corners are designated as 1-13 Clockwise from the Northeastern corner, the Co-ordinates for all the corners are clearly marked in the Quarry Lease and Surface Plan enclosed as (Plate No-II).
- r. The plans of proposed quarrying area showing the dimensions of the pit, their proposed depth and maximum area of proposed quarrying are enclosed as Plate Nos. III and IV.
- s. General conditions will not be applicable for the proposed area. The area applied for lease is 10Km away from the,
- Interstate Boundary,*
 - Protected area under wild life protection ACT, 1972,*
 - Critically polluted areas as identified by CPCB,*
 - Notified Eco sensitive areas.*
- t. There is no waste anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- u. Around 39 employees are deploying in the quarrying operation.
- v. Total Cost of the project is about **Rs.1,29,75,000/-**
- w. Infrastructures around the quarry lease applied area:

TABLE - 1

Particulars	Location	Approximate aerial distance and direction from lease applied area
Nearest Post Office	Bukkasagaram	3km – Southeast
Nearest School	Dasarappalli	1km – Northeast
Nearest Dispensary	Hosur	9km – West
Nearest Town	Hosur	9km – West
Nearest Police Station	Hosur	9km – West
Nearest Hospital	Hosur	9km – West
Nearest D.S.P. Office	Hosur	9km – West
Nearest Railway Station	Hosur	9km – West
Nearest Airport	Bangalore	42km – Northwest
Nearest Seaport	Chennai	264km – Northeast
District Head quarters	Krishnagiri	40km – Southeast

2.0 GENERAL INFORMATION

2.1 a) Name of the Applicant : M/s. B.M. Mines,
C.N. Kaarathi (Partner & Authorized Signatory)

**b) Address of the Applicant (With Phone No and Aadhaar No)**

Address : Villa No.23, Vakil Hosur Hills,
Off Rayakottai Road, Chennathur Post,
Hosur, Krishnagiri District,
Tamil Nadu State

Pin Code : 635 109

Mobile No : +91 73810 15095 and 95667 54420

Aadhaar No : 9967 7773 7105 (Refer Annexure No. IX)

Email ID : karthinatarajan@hotmail.com

c) Status of the Applicant (Individual / Company / Firm):

The applicant is a Partnership Firm. (Refer Annexure No. VII). Thiru. C.N.Kaarathi is the Partner and he is an Authorized person for signing all the documents on behalf of this Firm (Refer Annexure No. VIII).

2.2 a) Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough stone and Gravel only.

b) Precise area communication letter details received from the Competent Authority of the Government:

The precise area communication letter was received from the Deputy Director, Department of Geology and Mining, Krishnagiri District vide **Rc.No.738/2022/Mines, Dated:19.01.2023** to submit approved mining plan and to obtain Environmental Clearance from the State Level Environmental Impact Assessment Authority, Tamil Nadu.

c) Period of permission / lease to be granted:

Ten years.

d) Name and address of the Qualified Person who preparing the Mining Plan:

Name : P.Viswanathan, M.Sc.,
Qualified Person

Address : Reg. No.17, Advaita Ashram Road,
Alagapuram, Salem – 636 004.

Telephone : 0427- 2431989 (Office)

Cell No : +91 94422 78601 & 94433 56539

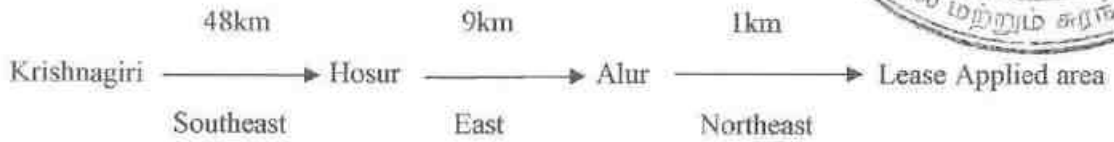
Email : infogeoexploration@gmail.com



3.0 LOCATION

a) Details of the area with location map:

The lease applied area is located about 40km Northwest side of Krishnagiri, 9km East side of Hosur and 1km Northeast side of Alur Village.



Location Map of the Lease Applied Area

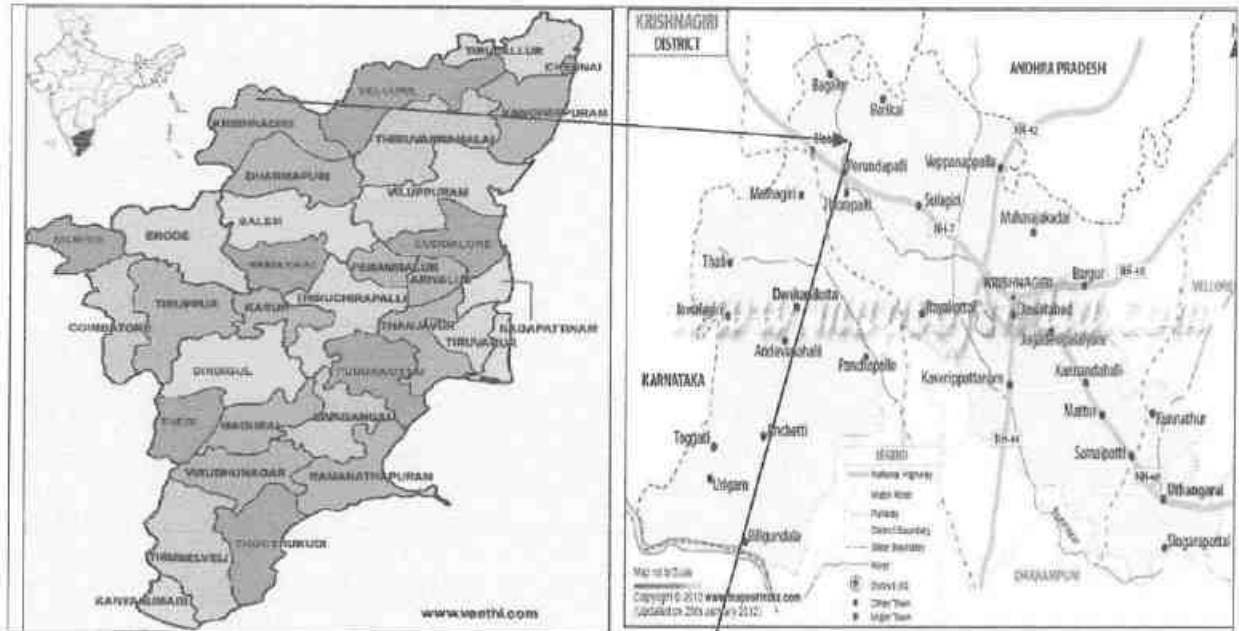


TABLE - 2

District	Taluk	Village	S.F. Nos.	Lease Applied Area in ha.	Patta No's.
Krishnagiri	Hosur	Alur	207/1A1	0.74.0	2482
			207/1A2A	2.37.0	
			208/3 (P)	1.39.0	
Total Extent				4.50.0	

b) Classification of the area (Ryotwari/ Poramboke / others):

It is a Patta lands (Barren land) which are not fit for vegetation/ Cultivation.

c) Ownership / Occupancy of the applied area (surface right):

It is a Patta lands, Jointly registered in the name of the Mr. R.Krishnaswamy, Mr. C.N.Kaarthi, Mrs. Nandhini, Mr. V.Vijayakumar and Mrs. Chitra vide **Patta Nos. 2482** (Refer Annexure Nos. IV & VI).

d) Toposheet No. with latitude and longitude:

The lease applied area falls in the Toposheet No: **57 - H/14** Latitude between: **12°44'11.7824"N to 12°44'21.6581"N** and Longitude between: **77°54'46.9577"E to 77°54'58.7361"E** on WGS datum-1984. Please refer the Plate Nos. I to II.

e) Existence of public road / Railway line, if any nearby and approximate distance:

The approach (metal) road is situated on the Northern side of the applied area which connects the village road located at 300m on the Northeastern side of the lease applied area.

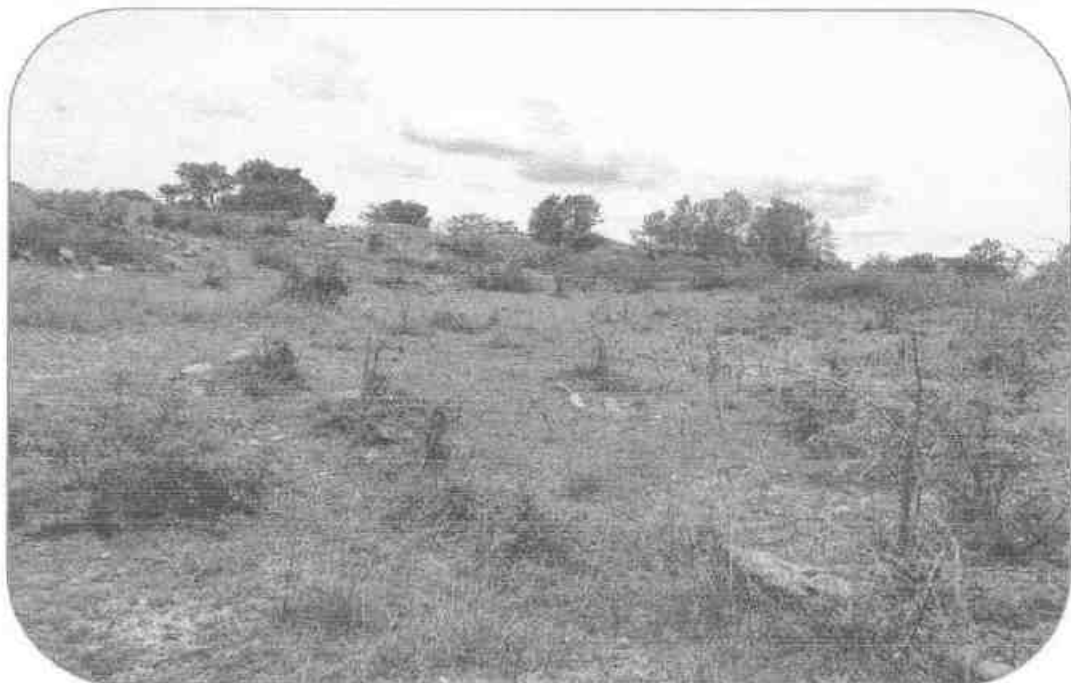
Multiple road access is available from the quarry to state highways and National Highway, no villages are enrooted hence the traffic density is not much more due to the transportation of Rough stone.

The approach road from the quarry is will be constructed, the same will be utilized for haulage and maintained during the entire lease period, tree sapling will be planted on the either side of the road to prevent dust and noise propagation to the nearby areas.

The Nearest Railway line is Salem - Bangalore which is about 9km on the Southwestern side of the lease applied area.

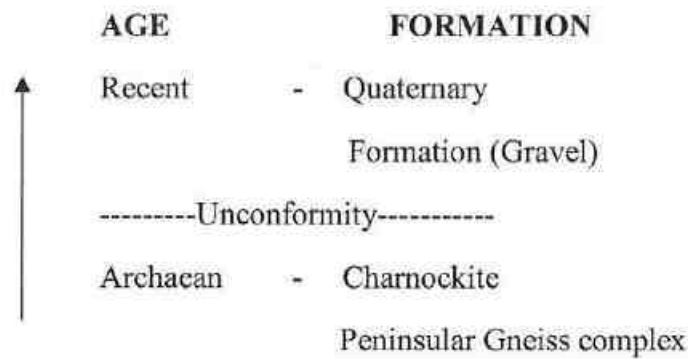
PART – A**4.0 GEOLOGY AND MINERAL RESERVES****4.1 Brief description of the Topography and general Geology of the area (with plans):**

The lease applied area exhibits plain topography. The area has gentle sloping towards Southwestern side. The altitude of the area is 842m above Mean Sea level. The area is covered by Topsoil thickness of 1m and Gravel thickness of 4m. Massive Charnockite is found after 5m (Topsoil & Gravel) which is clearly inferred from the nearby existing quarry pits. The Water table is found at a depth of 68m in summer and at 63m in rainy seasons. Normal annual rainfall is about 985mm.

Images of Alur Rough Stone and Gravel Quarry lease applied area

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional of the Charnockite is body N35°E – S35°W with towards dipping SE60°.

The general geological sequences of the rocks in this area are given below:



4.2 Details of exploration already carried out if any:

State Geology and Mining Dept, Govt. of Tamil Nadu, has carried out the Regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Krishnagiri District. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area. The Rough stone formation is clearly inferred from the near existing quarry pits.

4.3 Estimation of Reserves:

a) Geological reserves with geological sections on a scale of 1:1000 / 1:2000

As far as Rough stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone within the field and careful evaluation of body luster, physical properties, engineering properties and commercial aspects etc.,

Totally five sections have been drawn, two section drawn Length wise horizontally as (X-Y & XI-Y-) and other three cross sections are drawn Width wise vertically as (A-B, C-D & E-F) to cover the maximum area considered for lease.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in 1:1000 scale (please refer the Geological plan and sections Plate No- III). As the sale of Rough stone is in terms of cubic meters (Volume) only and not in terms of tonnage.

Geological Resources (Plate No. III):

The Geological Resources of Rough stone and Gravel are calculated up to a maximum depth of 40m (1m Topsoil and 4m Gravel + 35m Rough stone) below ground level. The total

Geological resources are calculated by area method. The calculation of the geological resources is given below:

Total Extent of the area : 4.50.0 Hectares

Area in square meter (4.50.0 x 10,000) : 45,000m²

TOPSOIL:

Depth of Estimation of Resources : 1m

Total Geological Resources (Area x Depth) : 45,000m² x 1m

: **45,000m³**

GRAVEL:

Depth of Estimation of Resources : 4m

Total Geological Resources (Area x Depth) : 45,000m² x 4m

: **1,18,000m³**

ROUGH STONE:

Depth of Estimation of Resources : 35m

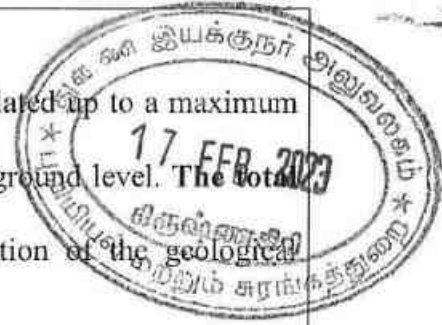
Total Geological Resources (Area x Depth) : 45,000m² x 35m

: **15,75,000m³**

Total Geological Resources of Topsoil : **45,000m³**

Total Geological Resources of Gravel : **1,18,000m³**

Total Geological Resources of Rough stone : **15,75,000m³**



Mineable Reserves:

The Mineable reserves are calculated after leaving the safety distance and bench loss to a maximum depth of 40m below ground level.

TABLE - 3

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Mineable Reserves of Rough stone in (m ³)100%	Gravel (m ³)	Topsoil (m ³)
XY-AB	i	120	130	1	-	-	15600
	ii	119	129	4	-	61404	-
	iii	115	121	5	69575	-	-
	iv	110	111	5	61050	-	-
	v	105	101	5	53025	-	-
	vi	100	91	5	45500	-	-
	vii	95	81	5	38475	-	-
	viii	90	71	5	31950	-	-
	ix	85	61	5	25925	-	-
Total					325500	61404	15600
XY-CD	i	87	100	1	-	-	8700
	ii	87	99	4	-	34452	-
	iii	87	91	5	39585	-	-
	iv	87	81	5	35235	-	-
	v	87	71	5	30885	-	-
	vi	87	61	5	26535	-	-
	vii	87	51	5	22185	-	-
	viii	87	41	5	17835	-	-
	ix	87	31	5	13485	-	-
Total					185745	34452	8700
XY-EF	i	68	124	1	-	-	8432
	ii	67	123	4	-	32964	-
	iii	63	119	5	37485	-	-
	iv	58	114	5	33060	-	-
	v	53	109	5	28885	-	-
	vi	48	104	5	24960	-	-
	vii	43	99	5	21285	-	-
	viii	38	89	5	16910	-	-
	ix	33	79	5	13035	-	-
Total					175620	32964	8432
X1Y1-EF	i	60	55	1	-	-	3300
	ii	59	55	4	-	12980	-
	iii	51	51	5	13005	-	-
	iv	41	46	5	9430	-	-
	v	31	41	5	6355	-	-
	vi	21	36	5	3780	-	-
Total					32570	12980	3300
Grand Total					719435	141800	36032

The mineable reserves have been computed as 7,19,435m³ of Rough stone, 1,41,800m³ of Gravel formation and 36,032m³ of Topsoil at the rate of 100% recovery upto a maximum depth of 40m below from the ground level for a period of ten years.

5.0 MINING**5.1 Method of mining (opencast / underground):**

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height.

However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) is available with Director General of Mines Safety. If the applicant/lessee intends to modify the dimensions of benches, relaxation and permission are available with Director General of Mines Safety under 106 (2) (b) of Metalliferous Mines Regulations, 1961. In such a scenario if there is any drastic change in the Resources and Reserves a modified plan will be submitted to the concerned authority for necessary relaxation, clearance and permission. The relaxation will be applied and obtained after the execution of lease deed / commencement of quarry operation.

5.2 Mode of working (mechanized, semi mechanized, manual):

The Rough stone is proposed to quarry at 5m bench height & width with conventional Opencast Mechanized Method.

The quarry operation involves shallow hand jack hammer drilling, mild explosives in blasting, excavation, Loading and transportation of Rough stone to the needy crusher.

The production of Rough stone in this quarry involves the following method which is typical for Rough stone quarrying in contrast to other major mineral mining.

Splitting of rock mass of considerable volume from the parent rock mass by hand jackhammer drilling and mild explosives blasting, hydraulic excavators are used for loading the Rough stone from pithead to the needy crushers.

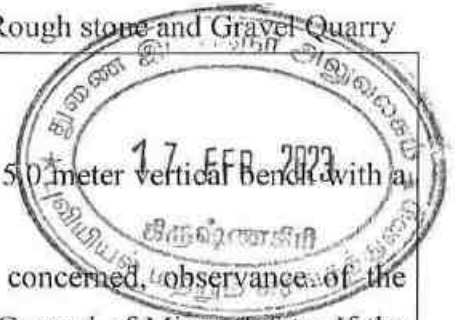
Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining.

5.3 Proposed Bench Height and Width:

The Charnockite is hard and compact rock, the bench height is proposed 5.0 meter vertical bench the width of the bench is not less than the Height.

5.4 Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.):

The overburden in the form of Topsoil and Gravel, the top soil (36,032m³) will be safely removed and preserved within the applied area. After completion of quarry operation backfilled in the part of the quarry pit also spread out the quarried out top bench to facilitate the greenbelt development and the Gravel (1,41,800m³) will be directly loaded into tippers for the filling and levelling of low lying areas. The excavated Rough stone will be directly loaded into tippers to the needy customers. The Composite year wise Development and production plan and sections indicating the Pit lay out, Green belt development are shown in Plate No-III.



Year wise development and Production

TABLE - 4

FIRST FIVE YEARWISE PROPOSED PRODUCTION DETAILS

Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserve of Rough stone in (m ³) 100%	Gravel (m ³)	Topsoil (m ³)
I	XY-AB	i	93	130	1	-	-	12090
		ii	92	129	4	-	47472	-
		iii	60	121	5	36300	-	-
		iv	50	111	5	27750	-	-
		v	40	101	5	20200	-	-
	Total						84250	47472	12090
II	XY-AB	i	27	130	1	-	-	3510
		ii	27	129	4	-	13932	-
		iii	52	121	5	31460	-	-
		iv	52	111	5	28860	-	-
		v	52	101	5	26260	-	-
	XY-CD	i	87	100	1	-	-	8700
		ii	87	99	4	-	34452	-
	Total						86580	48384	12210
III	XY-AB	iii	3	121	5	1815	-	-
		iv	8	111	5	4440	-	-
		v	13	101	5	6565	-	-
	XY-CD	iii	65	91	5	29575	-	-
		iv	60	81	5	24300	-	-
		v	55	71	5	19525	-	-
	XY-EF	i	68	124	1	-	-	8432
		ii	67	123	4	-	32964	-
	X1Y1-EF	i	60	55	1	-	-	3300
		ii	59	55	4	-	12980	-
Total						86220	45944	11732
IV	XY-AB	vi	100	91	5	45500	-	-
		vii	47	81	5	19035	-	-
	XY-CD	vi	50	61	5	15250	-	-
		vii	45	51	5	11475	-	-
Total						91260		
V	XY-AB	vii	48	81	5	19440	-	-
		viii	90	71	5	31950	-	-
		ix	85	61	5	25925	-	-
	XY-CD	viii	40	41	5	8200	-	-
		ix	35	31	5	5425	-	-
	Total						90940	
Grand Total						439250	141800	36032

The Recoverable reserves have been computed as 4,39,250m³ of Rough stone and 1,41,800m³ of Gravel at 100% recovery upto a depth of 40m below ground level for first five years.

TABLE - 4A

SECOND FIVE YEARWISE PROPOSED PRODUCTION DETAILS						
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserve of Rough stone in(m ³)100%
VI	XY-CD	iii	22	91	5	10010
	XY-EF	iii	63	119	5	37485
	X1Y1-EF	iii	51	51	5	13005
	Total					60500
VII	XY-CD	iv	27	81	5	10935
	XY-EF	iv	58	114	5	33060
	X1Y1-EF	iv	41	46	5	9430
	Total					53425
VIII	XY-CD	v	32	71	5	11360
	XY-EF	v	53	109	5	28885
	X1Y1-EF	v	31	41	5	6355
		vi	21	36	5	3780
	Total					50380
IX	XY-CD	vi	37	61	5	11285
	XY-EF	vi	48	104	5	24960
		vii	43	99	5	21285
	Total					57530
X	XY-CD	vii	42	51	5	10710
		viii	47	41	5	9635
		ix	52	31	5	8060
	XY-EF	viii	38	89	5	16910
		ix	33	79	5	13035
	Total					58350
Grand Total						280185

The Recoverable reserves have been computed as **2,80,185m³** of Rough stone at 100% recovery upto a depth of 40m below ground level for remaining five years.

The Recoverable reserves have been computed as **7,19,435m³** of Rough stone and **1,41,800m³** of Gravel at 100% recovery upto a depth of 40m below ground level for ten years.

The applicant ensures the total quantity proposed in the benches will not exceed during the quarrying operation. Besides the Rough stone locked up in benches will be exploited after obtaining necessary permission from the office of **Director General of Mine Safety, Chennai** region by submitting relevant documents, appropriate safety plans and its Mitigation measures.

One lorry load	=	6m ³ (approx.)
Total No of Working days	=	300 Days per year
Total quantity to be removed ten years plan period	=	7,19,435m ³
Hence total lorry loads per day	=	7,19,435m ³ /6m ³
	=	1,19,906 lorry loads
	=	1,19,906/10 years
	=	11,991/300 Days
Rough stone	=	40 lorry loads per day

Total quantity to be removed in this first three years	=	1,41,800m ³
Hence total lorry loads per day	=	1,41,800m ³ /6m ³
	=	23,633 lorry loads
	=	23,633/3 Years
	=	7,878/300 Days
Gravel	=	26 lorry load per day
Total quantity to be removed in this first three years	=	36,032m ³
Hence total lorry loads per day	=	36,032m ³ /6m ³
	=	6,005 lorry loads
	=	6,005/3 Years
	=	2,002/300 Days
Gravel	=	7 lorry load per day

Working hours = 8.30 am to 5.30 pm (with 12.30-1.30 pm lunch break)

5.5 Machineries to be used:

For Mining:

The following machineries are utilized on rental basis for the development and production work at this quarry.

TABLE – 5

I. DRILLING MACHINE

S.No.	Type	Nos	Dia Hole mm	Size Capacity	Motive power
1	Hand jack hammer	10	32	1.2m to 2.0m	Compressed air
2	Compressor	3	-	400 psi	Diesel Drive

II. EXCAVATION & LOADING EQUIPMENT:

S.No.	Type	Nos	Capacity	Motive Power
1	Excavator with Bucket and Rock Breaker	2	300	Diesel Drive

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

S.No.	Type	Nos	Capacity	Motive Power
1	Tippers	5	20 tonnes	Diesel Drive

**5.6 Disposal of Overburden/Waste:**

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The overburden in the form of Topsoil and Gravel, the top soil (36,032m³) will be safely removed and preserved within the applied area. After completion of quarry operation backfilled in the part of the quarry pit also spread out the quarried out top bench to facilitate the greenbelt development and the Gravel (1,41,800m³) will be directly loaded into tippers for the filling and levelling of low lying areas. The excavated Rough stone will be directly loaded into tippers to the needy customers. There is no Waste anticipated during this plan period hence, disposal of waste does not arise.

5.7 Brief note on conceptual mining plan for the entire lease period base on the geological, mining and Environment considerations:

Conceptual mining plan is prepared with an object of long term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

As the applicant has applied quarry lease for ten years, the ultimate pit limit (dimension) at the end of lease period is given below:

TABLE – 6

Length in m (Max)	Width in m (Max)	Depth in m (Max)
275	130	40m below ground level

Greenbelt has proposed on the safety zone by planting Neem, Pongamia Pinnata, Casuarina, etc., trees of native species. All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF&CC Norms. Please refer Plate Nos. III & IV.

It is propose to engage any local institution to monitor the EIA and EMP during the course of quarrying operation after the grant of quarry lease.

There is no waste anticipated during the entire life of quarry. Hence, backfilling is not possible in this quarry. After completion of quarry operation, the quarry pit will be allowed to collect the seepage and rainwater, the water storage will be kept as temporary reservoir for charging the nearby wells and the storage water will be used for afforestation purpose. The quarry area will be fenced with barbed wire fencing to prevent inadvertent entry of public and cattle (Refer Plate No. IV).



6.0 BLASTING

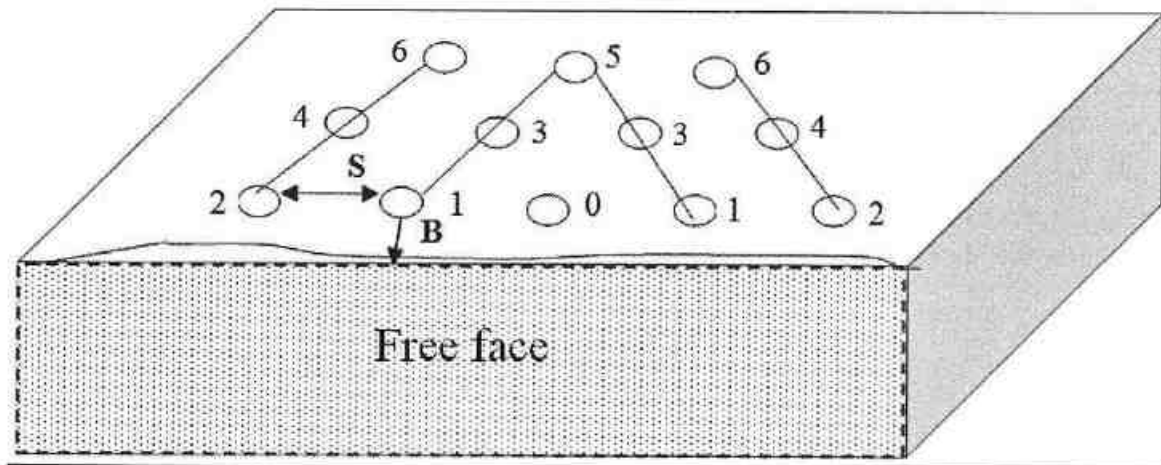
6.1 Blasting pattern:

The quarrying operation is proposed to be carried out by Mechanized Opencast Method in conjunction with conventional method of mining using Hand jack hammer drilling and blasting of shattering effect for loosening the Rough stone.

Drilling and blasting parameters are as follows:

Depth of Each hole	:	1.5m
Diameter of hole	:	30-32mm
Spacing between holes	:	1.2m
Burden for hole	:	1.0m
Pattern of hole	:	Zigzag – Multi-rows
Inclination of holes	:	80° from horizontal
Use of delay detonators	:	25millisecond relays
Detonating fuse	:	“Detonating” Cord

BLASTING PATTERN DRAWING



Staggered “V” Pattern of Blasting Design

Spacing	=	1.2m
Burden	=	1.0m
Depth of the hole	=	1.5m
No of holes proposed per day=		208 Holes

6.2 Type of explosives to be used:

Small Dia. 25mm mild explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed.

6.3 Measures proposed to minimize ground vibration due to blasting:

The quarry is situated more than 300m from the nearby villages, Controlled blasting measures is being adopt for minimizing ground vibration and fly rock.

Shallow depths hand jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give hearing effect in Rough stone for easy excavation and to control fly rock.

Delay detonators:

Delay blasting (millisecond delays) permits to divide the shot in to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals.

The major advantages of delay blasting are:

- Reduction of ground vibration.
- Reduction in air blast.
- Reduction in over break.
- Improved fragmentation.
- Better control of fly-rock.

Blasting program for the production per day:

No of Holes	= 208 Holes
Yield	= 624 Tons
Powder factor	= 6 Tons/Kg of explosives
Total explosive required	= 104 Kg-Mild explosives
Charge/ hole	= 0.5 Kg
Blasting at day time only	= 12.00 – 12.30p.m (whenever required)

6.4 Storage and safety measures to be taken while blasting:

The applicant will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman / Permit Mines Manager. The explosives agencies should be have the valid Blaster certificate. He will blast holes in the quarry site. After the completion of Blasting the Explosives Agencies will take it out back the remaining quantity of Explosives.

7.0 MINE DRAINAGE**7.1 Depth of water table (based on nearby wells and water bodies):**

The Water Table in the area is 68m in summer season and 63m in Rainy season which is observed from the existing private boreholes. The lease area is fully covered by Massive Charnockite formation. Hence the Ground Water problem will not arise. If water seepage may occur due to the fracture, the same will be used for Greenbelt.

TABLE - 7

Type	Distance & Direction	Location
Bore Well	910m Southeastern side	12°43'48.69"N 77°55'02.53"E

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7.2 Arrangements and places where the mine water is finally proposed to be discharged:
Quarry operations are confined well above the water table during the entire lease period. If water is encountered at due to rain water and seepage, the same will be pumped out by SHP water pumps to the Greenbelt development areas. Besides, the water will also be used for dust suppression on haul roads during Haulage of machineries.

8.0 OTHER PERMANENT STRUCTURES (also shown in the map)

8.1 Habitations/ Villages natham:

There is no approved habitation/village located within 300m radius of the lease applied area.

8.2 Power Lines (HT/LT):

There is no EB (HT/LT) line or Housing area situated within 50m radius of the lease applied area.

8.3 Water bodies (river, ponds, lake, odai, canal, etc.):

There is no River, Pond, Lake, Canal, Reservoir located within 50m radius of the lease applied area.

8.4 Archaeological / historical monuments:

There is no Archaeological / historical monuments within 500m radius from the lease applied area.

8.5 Road (NH, SH):

The Nearest National Highway (NH-44) Salem – Bangalore is situated about 4km on the Southeastern side of the lease applied area.

The State Highway (SH-85) Hosur – Rayakottai is situated about 11km on the Southeastern side of the lease applied area.

8.6 Places of worships:

There is no place of worships within the radius of 300m from the lease applied area.

8.7 Reserved forest / forest / social forest / wild life sanctuary etc.,:

There is no reserved forest / forest / social forest / wild life sanctuary etc., located within 500m radius of the lease applied area.

SALIENT FEATURES

S. No.	Salient Features Present around site	Prescribed safety distance	If any present within Prescribed distance it's actual distance and direction from the area															
1.	Railways, Highways, Reservoirs or Canal	50m	None of the above situated within 50m radius.															
2.	Village Road	10m	There is no village road situated within the radius of 10m from the lease applied area.															
3.	Habitation / Village	300m	There is no approved habitation within 300m radius from the lease applied area.															
4.	Adjacent Patta lands / Govt. Land	7.5m/10m	<table border="1"> <thead> <tr> <th>Direction</th> <th>Classification</th> <th>Safety Distance</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>East</td> <td>Govt land / Patta land</td> <td>10m / 7.5m</td> </tr> <tr> <td>South</td> <td>Govt land / Patta land</td> <td>10m / 7.5m</td> </tr> <tr> <td>West</td> <td>Govt land</td> <td>10m</td> </tr> </tbody> </table> <p>(Refer Plate No. II).</p>	Direction	Classification	Safety Distance	North	Patta land	7.5m	East	Govt land / Patta land	10m / 7.5m	South	Govt land / Patta land	10m / 7.5m	West	Govt land	10m
Direction	Classification	Safety Distance																
North	Patta land	7.5m																
East	Govt land / Patta land	10m / 7.5m																
South	Govt land / Patta land	10m / 7.5m																
West	Govt land	10m																
5.	Housing area, EB line (HT & LT Line)	50m	There is no EB (HT/LT) line or Housing area situated within 50m radius of the lease applied area.															
6.	Boundaries of the permitted area	7.5m/10m	<p>The boundaries of the permitted areas is as follows:</p> <p>North – S.F.No. 85/12 and 85/13</p> <p>East – S.F.Nos. 208/3(P) and 208/2</p> <p>South – S.F.Nos. 207/2, 207/1B and 207/1A2B</p> <p>West – S.F.No. 207/2</p> <p>(Refer Plate No. II).</p>															
7.	Reserve forest	1km	There is no reserved forest located within the radius of 1km from the lease applied area. (Refer Plate No. IA and IB).															
8.	Protected area / ECO sensitive area/Wild Life Sanctuary	10Km	There is no ECO sensitive Zone/ Wild Life Sanctuary/ Critically Polluted Area/ HACA/ CRZ located within 10km radius of the area. (Refer Plate No. IA).															



9.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES

9.1 Employment potential (skilled, semi skilled, un skilled):

The following manpower's are proposed in the mining plan to carry out the day-to-day quarrying activities, the same employment is maintaining aimed at the proposed production target and also to comply with the statutory provisions of the Metalliferous mines regulations, 1961.

a. Skilled labour:

Mine Foreman	:	1
Blaster/mate	:	1
Excavator Operator & Driver	:	7
Hand jack hammer operator	:	20

b. Semi-skilled:

Security	:	1
----------	---	---

c. Unskilled:

Labour & Helper	:	2
Co-operator and Cleaner	:	7
Total	:	39

The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations. It is been ensured that the labour will not be employed less than 18 years, No **child labour** will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.

9.2 Welfare Measures:

a. **Drinking Water:**

Packaged drinking water is available from the nearby approved water vendors in Alur which is located about 1km on the Southwestern side of the lease applied area.

b. **Sanitary Facilities:**

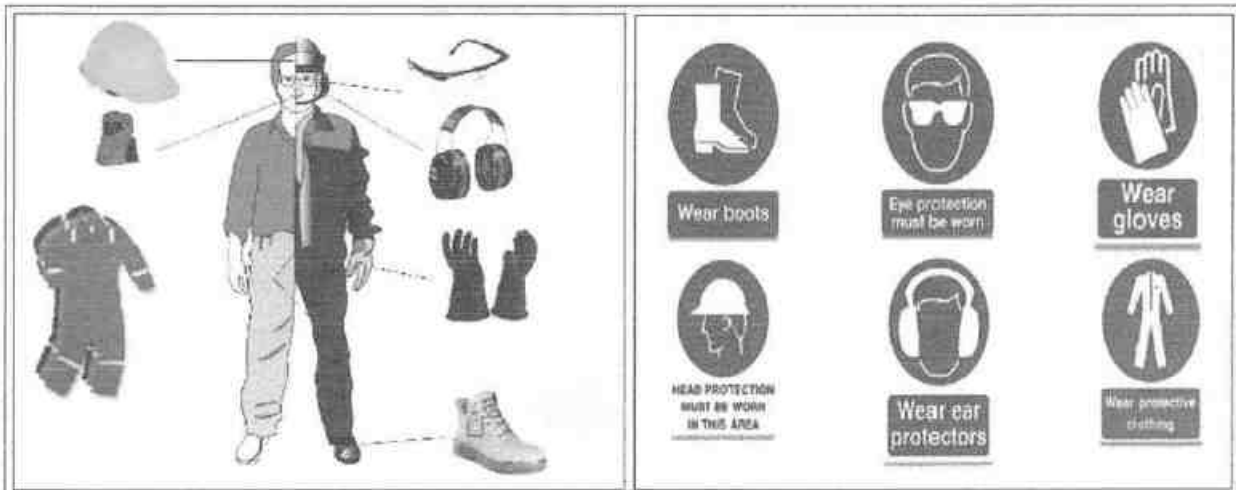
Hygienic modern Sanitary Facilities will be constructed with in the safety area as semi permanent structure and it will be maintained periodically.

c. First aid facility:

First aid kits are kept in Mines office room, in case of such eventualities the victim will be given first aid immediately at the site by the competent and statutory foreman/permit manager/master. In case of an emergency, the foreman/permit manager/master will be in charge of first aid and injured person will be taken to the hospital by the applicant's vehicle. Hospital is available in Hosur located at a distance of 9km on the Western side.

d. Labour Health:

Periodically medical check-up related to occupational health safety will be conducted to all the workers in applicant own cost.

e. Precautionary safety measures to the labourers:

- Helmets,
- Mine Goggles,
- Ear plugs,
- Ear muffs,
- Dust mask,
- Reflector jackets,
- Safety Shoes

All personnel protective devices will be provided as per the specification approved by Director of mines safety. Periodically medical check-up will be conducted for all workers for any mine health related problems. Proper training and vocational education will be given by qualified and experienced safety officer to all the employees about the safety and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically, to carry out the quarrying operations scientifically and to safe guard the men and machinery and to create awareness about conventional opencast quarrying operations.

PART – B**10.0 ENVIRONMENT MANAGEMENT PLAN****10.1 Existing Land use pattern:**

The quarry lease applied area is exhibits plain topography. The area is a dry barren land devoid of Agriculture and Habitations. The land is not used for any specific vegetation.

LAND USE TABLE – 8

Description	Present area (Ha)	Area required during the first five years of the plan period (Ha)	Area at the end of this quarrying period (Ha)
Quarrying Pit	Nil	3.59.0	3.59.0
Infrastructure	Nil	0.02.0	0.02.0
Roads	Nil	0.01.0	0.03.0
Green Belt	Nil	0.35.5	0.83.0
Unutilized Area	4.50.0	1.23.5	0.03.0
Grand Total	4.50.0	4.50.0	4.50.0

10.2 Water Regime:






It is a simple opencast quarry operation. The quality of water will not be affected due to this quarrying operation. However, mitigation measures will be carried out like Garland drains constructed on all sides of quarry pit to avoid surface run-off rain water entering into the pit.

The waste water discharged to water bodies will be met the standard prescribed under the Environment (Protection) Act – 1986 by The Ministry of Environment, Forest and Climate change.



10.3 Flora and Fauna:

TABLE - 9

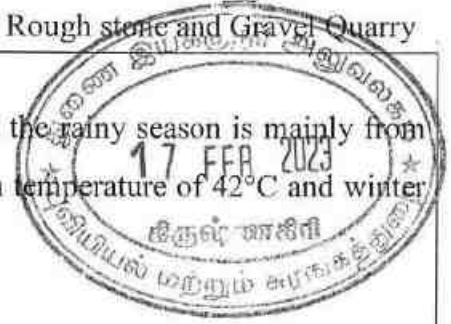
S.No.	Name of the plant (Scientific)	Family Name	Common Name	Habit	Picture
1.	<i>Azadirachta indica</i>	Meliaceae	Neem, Vembu	Tree	
2.	<i>Acacia nilotica</i>	Fabaceae	Karuvelam	Tree	
3.	<i>Cocos nucifera</i>	Arecaceae	Thennai, Coconut tree	Tree	
4.	<i>Aloe vera</i>	Asphodelaceae	Katralai	Shrub	
5.	<i>Borassus flabellifer</i>	Arecaceae	Palm, Panai	Tree	

List of Fauna

S.No.	Scientific Name	Common Name	Picture
1.	<i>Dicurus longicaudatus</i>	Grey Drongo	
2.	<i>Ovisaries</i>	Sheep	
3.	<i>Mirafraerythroptera</i>	Redwinged bushlark	
4.	<i>Corvus levaillantii</i>	Crow	
5.	<i>Funambulus palmarum</i>	Squirrel	

10.4 Climatic Conditions:

The area receives rainfall of about 985mm/annum and the rainy season is mainly from Oct - Dec during monsoon. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 22°C.

**10.5 Human settlement:**

There are few villages located in this area within 5km radius; the approximate distance and population are given below.

TABLE – 10

S. No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population
1.	Alur	1km – Southwest	400
2.	Bukkasagaram	3km – Southeast	2,200
3.	Dasarappalli	2km – Northeast	1,000
4.	Muthali	2km – Northwest	500

Basic human welfare Amenities such as Health Centre, Schools, Communication Facilities, and Commercial Centres etc., are available at Hosur located about 9km on the Western side of the area.

10.6 Plan for air, dust suppression:

The air quality will be affected by the Suspended Particulate Matter (SPM) generated by the mild blasting, hand jack hammer drilling, Loading and unloading during the Rough stone quarry operation.

The following Mitigations measures will be carried out:

- Mist Water spraying will be carried out by means of water sprinklers to suppress the dust emission in the Haul roads.
- Vegetations will be formed on the non quarrying area.
- Avoiding spillages during the transportation.

Air quality will be monitored periodically as per Norms and Mitigative measures carried out to prevent dust and Air propagation in to air. The estimated budget for dust suppression would be around **Rs.52,000/year**.

10.7 Plan for Noise level control:

The noise level increased due to the Excavation, Drilling, Blasting and Transportation.

Engineering Noise control:

Noise will be created due to the usage of Machineries and Vehicles. The Noise will be controlled in the following manner.

- Selection of new low – noise equipment's is proposed to be deployed for the Rough stone quarry operation.
- Modifications of older equipments.
- Implementation of effective preventive maintenance which reduces noise more than 50%.
- Developing Green belts which act as Acoustic barrier, pollution absorbent and noise controller.
- The drivers will be strictly instructed to move the vehicle during the transportation not exceed 40km per hour.
- Sentries with flags & whistle will posted in village road junction and populated area to control and regulate traffic.

Shallow holes of 32mm diameter and maximum depth of 1.5m will be drilled and conventional low power explosives such as Mild Explosives, ordinary safety fuse will be used for Rough stone. Hence, ground vibration and noise pollution i.e., minimal and restricted within the quarry working area.

Noise level monitoring and other Mitigation measures will be carried out to reduce Noise and Vibration. The estimated budget for Noise level monitoring would be around **Rs.2,000/Year**.

10.8 Environment impact assessment statement describing impact of mining on the next ten years:

In the mining plan proposed for a production of Rough stone does not involve deep hole drilling and blasting. Such limited mining activity is not likely to cause any impact adversely on the environment. As far as pollution of air, water and noise concerned, the Environment impact studies will be conducted as per EIA notification issued by MoEF&CC. It is B2 Category mine. The estimated budget would be around **Rs.7,60,000/-**

10.9 Proposal for waste management:

There is no waste anticipated in this Rough stone and Gravel quarrying operation. The entire quarried out materials will be utilized (100%).

10.10 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.):

In the plan is proposed only to a maximum depth of 40m below ground level has been envisaged as workable depth for safe & economic mining for the entire lease period. There is no waste generated hence, backfilling is not possible. Hence, the quarry area will be fenced with Barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle. The barbed wire fencing cost would be around **Rs.3,36,000/-**.

10.11 Programme of Greenbelt development (indicate extend, number, name of species to be afforested):

The safety zone all along the boundary barrier has been identified to be utilized for Greenbelt development. Appropriate native species of Neem, Pongamia Pinnata, Casuarina, etc. trees will be planted in a phased manner as described below.

TABLE-11

Year	No. of trees proposed to be planted	Survival %	Area to be covered sq.m.	Name of the species	No. of trees expected to be grown
I	80	80%	710	Neem, Pongamia pinnata, Thespesia populnea, Casuarina, etc.,	63
II	80	80%	710		63
III	80	80%	710		63
IV	80	80%	710		63
V	80	80%	710		63
VI	110	80%	950		84
VII	110	80%	950		84
VIII	110	80%	950		84
IX	110	80%	950		84
X	110	80%	950		84

Nearly 3,500sq.m area is proposed to use under Greenbelt by planting 950 Number of tree saplings during entire period with an anticipated survival rate of 80% (Please refer Plate No. III). The estimated budget for plantation and maintenance of Greenbelt development would be around **Rs.95,000/-** for the period of Ten years.

10.12 Proposed financial estimate / budget for (EMP) environment management:

Budget Provision for the entire lease period:

TABLE - 12

S. No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charges/ year
1	Ambient air quality monitoring	6500	4	26000	52000
2	Noise level monitoring	250	4	1000	2000
3	Ground vibration monitoring	1000	2	2000	4000
4	Water sampling and analysis	9000	1	9000	18000
Total EMP Cost/ year					76,000

The EMP cost would be around **Rs.7,60,000/-** for the period of Ten years.

A. Project cost / investment																					
i) Land cost	<p>The Land value as per the Government Guideline land cost</p> <table border="1"> <thead> <tr> <th>S.F.Nos</th> <th>Extent (Ha)</th> <th>Cost / Ha</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>207/1A1</td> <td>0.74.0</td> <td>530000</td> <td>392200</td> </tr> <tr> <td>207/1A2A</td> <td>2.37.0</td> <td>530000</td> <td>1256100</td> </tr> <tr> <td>208/3 (P)</td> <td>1.39.0</td> <td>464000</td> <td>644960</td> </tr> <tr> <td></td> <td>4.50.0</td> <td></td> <td>2293260</td> </tr> </tbody> </table> <p>i.e., Rs.22,94,000/-. (source : https://tnreginet.gov.in/portal/)</p>	S.F.Nos	Extent (Ha)	Cost / Ha	Total	207/1A1	0.74.0	530000	392200	207/1A2A	2.37.0	530000	1256100	208/3 (P)	1.39.0	464000	644960		4.50.0		2293260
S.F.Nos	Extent (Ha)	Cost / Ha	Total																		
207/1A1	0.74.0	530000	392200																		
207/1A2A	2.37.0	530000	1256100																		
208/3 (P)	1.39.0	464000	644960																		
	4.50.0		2293260																		
ii) Machinery to be used	<p>The following machineries are proposed to meet out the productions. Excavator attached with rock breaker, Tippers, Tractor mounted compressor with Hand jack hammer and loose tools (Rental Basis)</p>																				
iii) Refilling/ Fencing	<p>Fencing will be constructed around the quarry pit to prevent the inadvertent entry of public and cattles cost would be around</p>																				
iv) Labourers shed	<p>Labour sheds will be constructed as semi permanent structure. The cost would be around</p>																				
v) Sanitary facility	<p>Adequate latrine and urinal accommodation shall be provided at conveniently accessible places the cost would be around</p>																				
vi) Others items	<p>First aid room & accessories</p>																				
vii) Drinking water facility for the labourers	<p>Packaged drinking water will be provided for all the Labours. Drinking water will be readily available at conveniently accessible points during the whole of the working shift the cost would be around</p>																				
viii) Sanitary arrangement	<p>The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around</p>																				
ix) Safety kit	<p>All the Safety kit such as Helmet, Earmuffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided to the workers by the applicant own cost which would be around</p>																				
x) Water sprinkling	<p>Water will be sprinkled in the haul roads by water sprinklers the cost would be around</p>																				
xi) Garland drains Construction	<p>Construction of garland drains to divert surface run-off from virgin area away from mining area</p>																				

xii) Greenbelt etc.	Greenbelt program will be carried out in the boundary barriers the cost would be around	Rs.95,000
	Total Project Cost	17,55,70,000

B. EMP Cost :- (Per year)

Air Quality monitoring	Rs.52,000/-
Water Quality Sampling	Rs.18,000/-
Noise Monitoring	Rs. 2,000/-
Ground vibration test	Rs. 4,000/-
Total Cost	Rs.76,000/-

Total EMP Cost for the Ten years period is Rs.7,60,000/-

Description	Amount (Rs.)
A. Operational Cost	1,19,60,000
B. EMP Cost	7,60,000
Total Project Cost (A+ B)	1,27,20,000
The applicant Indents to involve corporate environment responsibilities (CER) activity like Water Purifier, Fan, Cot, Bed and sanitary facilities to the Hosur Dispensary and Water Purifier to the nearby Govt. School at 2.0% from the total project cost. The Cost would be around Rs.2,55,000/- .	2,55,000
Total Cost	1,29,75,000

The Total cost would be around one crore twenty nine lakh and seventy five thousand only.



11.0 PROGRESSIVE QUARRY CLOSURE PLAN

11.1 Introduction:

The Progressive Quarry Closure Plan for Rough stone and Gravel quarry over an extent of 4.50.0 Ha of Patta lands in S.F.Nos.207/1A1, 207/1A2A and 208/3 (Part) of Alur Village, Hosur Taluk, Krishnagiri District, Tamil Nadu State has been prepared for M/s. B.M. Mines, C/o. C.N. Kaarathi, having an office at Villa No.23, Vakil Hosur Hills, Off Rayakottai Road, Chennathur Post, Hosur, Krishnagiri District, Tamil Nadu State – 635 109.

11.2 Present Land use pattern:

LAND USE TABLE – 13

Description	Present area in (ha)
Area under Quarrying	Nil
Infrastructure	Nil
Roads	Nil
Green Belt	Nil
Unutilized Area	4.50.0
Grand Total	4.50.0

11.3 Method of Mining:

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height for Rough stone.

However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) is available with Director General of Mines Safety. If the applicant/lessee intends to modify the dimensions of benches, relaxation and permission are available with Director General of Mines Safety under 106 (2) (b) of Metalliferous Mines Regulations, 1961. In such a scenario if there is any drastic change in the Resources and Reserves a modified plan will be submitted to the concerned authority for necessary relaxation, clearance and permission. The relaxation will be applied and obtained after the execution of lease deed / commencement of quarry operation.

11.4 Mineral Processing Operations:

The quarried out Rough stone will be transported by the 10/20tons capacity Tippers to the needy crushers. Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers. Hence, no mineral processing involved within the applied area.

11.5 Reasons for closure:

As the mineral is not going to be exhausted during the proposed plan period no immediate closure is planned due to sufficient reserves are available to carry on the activities. Hence, the reason for closure will be discussed in the final mine closure plan.

11.6 Statutory obligations:

The applicant ensures to comply all the conditions stipulated in the previous area communication letter before grant of quarry lease and during the course of quarry operations.

11.7 Progressive quarry closure plan preparation:

Name and address of the Qualified Person who prepared the progressive closure plan and name and address of the executing agency who is involved in the preparation of progressive quarry closure plan.

Name : **P.Viswanathan, M.Sc.,**
Qualified Person

Address : Reg. No.17, Advaita Ashram Road,
Alagapuram, Salem – 636 004.

Telephone : 0427- 2431989 (Office)

Cell No : +91 94422 78601 & 94433 56539

Applicant will himself implement the closure plan; no outside agency will be involved.

11.8 Review of Implementation of Mining Plan including Progressive Closure Plan upto the Final Closure Plan:

Mining Plan and Progressive quarry closure plan are being submitted for the first time. It will be reviewed after Ten years and review of implementation will be given in the next mining plan.

11.9 Closure Plan:**(i) Mined Out Land:**

At the end of mining plan period, about 3.59.0 Ha of area will be mined out. Land use at various stages is given in the table below.

LAND USE TABLE – 14

Description	Present area (Ha)	Area required during the first five years of the plan period (Ha)	Area at the end of this quarrying period (Ha)
Quarrying Pit	Nil	3.59.0	3.59.0
Infrastructure	Nil	0.02.0	0.02.0
Roads	Nil	0.01.0	0.03.0
Green Belt	Nil	0.35.5	0.83.0
Unutilized Area	4.50.0	1.23.5	0.03.0
Grand Total	4.50.0	4.50.0	4.50.0

(ii) Water quality management:

Following control measures will be adopted for controlling water pollution:

- Construction of Garland drain with check dams / gully plugs at strategic places to arrest silt wash off from broken up area.
- Collection of surface run-off from broken up area in mine pits for settling and only properly settled excess water from mine pit will be discharged to nearby users. The storm water/ mine water will be used for dust suppression, greenbelt development, etc.
- Periodic analysis of mine pit water and ground water quality in nearby villages.
- The quarried out pit will be allowed to collect rain and seepage water which will act as a reservoir for storage. This water storage will enhance the static level and ground water recharge of nearby wells and it will be used for agriculture purpose to the nearby agriculture lands.
- Domestic sewage from site office & urinals/latrines provided in QL is discharged in septic tank followed by soak pits.

(iii) Air Quality Management:

The proposed mining method is not likely to produce much of dust and fugitive emissions to cause damage to ambient air quality of the area. Workers will be provided with personnel protective equipment like face-mask, earplug/ muffs.

For air pollution management at the progressive quarry closure plan, greenbelt will be developed to prevent and control air pollution.

(iv) Top Soil and Waste Management:

There is 36,032m³ of topsoil will be generated during the entire lease period. Except topsoil, there is no waste anticipated during the entire life of quarry. The quarried out topsoil will be preserved all along the safety barrier and utilized for construction of bund and afforestation purpose. The entire quarried out Rough stone and Gravel will be utilized (100%). Hence, waste management does not arise.

(v) Disposal of mining machinery:

All the machineries will be engage on rental basis. Hence, disposal or decommissioning of mining machinery does not arise.



**(vi) Safety & Security:**

Safety measures will be implemented to prevent access in the excavation area to unauthorized persons as per Mine Act 1952, MMR 1961.

- Safety measures will be implemented as per Mine Act 1952, MMR 1961, and Mines Rules 1955.
- Provisions of MMR 1961 shall be strictly followed and all roads shall be wider than the height of the bench or equal to the height of the bench and have a gradient of not more than 1 in 16.
- The bench height will be 5.0m.
- Width of working bench will be kept about 5.0m for ease of operations and provide sufficient room for the movement of equipments.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipments shall be provided for use by the work persons.
- Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.
- Danger signs shall be displayed near the excavations and proper signal by siren alarm will be provide before blasting time to prevent any accident.
- Security guards will be posted.
- In the event of temporary closer, approaches will be fenced off and notice displayed.

(vii) Disaster Management and Risk Assessment:

This should deal with action plan for high risk accidents like landslides, subsidence, flood, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of applicant to meet such eventualities and the assistance to be required from the local authorities should be described.

- The mechanized mining activities in the area may involve any high risk accident due to side falls/collapse, flying stones due to blasting etc.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, TNMMCR 1959 and other laws applicable to mine will be strictly complied with.
- During heavy rainfall the mining activities will be suspended.
- All persons in supervisory capacity will be provided with proper communication facilities.
- Competent persons will be provided FIRST AID kits which they will always carry.
- The Greenbelt Development will be formed in around the quarried out top benches and panchayat road of the lease applied area.

(viii) Care and Maintenance during Temporary Discontinuance:

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:
 - Quarry roads and approach roads,
 - Fencing on approach roads,
 - Checking and maintenance of machines and equipment,
 - Drinking water arrangements,
 - Quarry office, first aid stations etc.
- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB and IBM Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

(ix) Economic Repercussion of Closure of Quarry and manpower Retrenchments:

The quarry lease is granted for a period of Ten years only. As per the production Programme envisaged, there will be no effect on the man power as the majority of persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

(x) Time Scheduling For Abandonment:

The lease applied area has enormous potential for continuance of operations even after the expiry of the lease period. The details of time schedule of all abandonment will be given at the time of final closure plan.

**(xi) Abandonment Cost:**

As at present mining is not going to be closed so abandonment cost could not be assessed. However based on the progressive quarry closure activities during the plan period, cost is assessed as given below:

LAND USE TABLE – 15

ACTIVITY	YEAR										RATE	COST (Rs.)
	I	II	III	IV	V	VI	VII	VIII	IX	X		
Plantation (In Nos.)	80	80	80	80	80	110	110	110	110	110	@100 Rs Per sapling Including Maintenance	95,000
Plantation Cost	8000	8000	8000	8000	8000	11000	11000	11000	11000	11000		
Wire Fencing for 1120 Mtrs length	Rs. 3,36,000/-										@300 Rs Per Meter	3,36,000
Garland Drain with settling traps for 1050 Mtrs length	Rs.3,15,000/-										@300 Rs Per Meter	3,15,000
Total												7,46,000



12.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

This Mining plan for Rough stone (Charnockite) and Gravel is under Rules 1959 & 2019 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied within the quarrying operation, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Concerned Department.

Prepared by

P. Viswanathan
P. Viswanathan, M.Sc.,

Qualified Person

Place: Salem

Date: 16.02.2023

DONATE RED
SPREAD GREEN
SAVE BLUE

This Mining Plan is approved based on guidelines / instruction issued and in corporation of the particulars specified in the letter Roc. No. 738/2022 Dated 17.2.2023 of the Deputy Director of Geology and Mining, Krishnagiri and subject to further fulfilment of the conditions laid down under Tamil Nadu Minor Mineral Concession Rules, 1959 and Minor Mineral Conservation and Development Rule 2019.

P. Viswanathan
17.2.2023
DEPUTY DIRECTOR
Geology and Mining,
Collectorate, Krishnagiri.

170223

This Mining Plan is approved subject to the conditions / Stipulation indicated in the Mining Plan Approval

Letter Roc. No. 738/2022 Dated 17.2.2023

ந.க.எண். 738/2022/கனிமம் நாள்: .01.2023.



குறிப்பாணை

பொருள் : கனிமங்களும் சுரங்கங்களும் - சிறு கனிமம் - சாதாரண கற்கள் - கிருஷ்ணகிரி மாவட்டம் - ஓசூர் வட்டம் - ஆலூர் கிராமம் - பட்டா புல எண். 207/1ஏ1, 207/1ஏ2 மற்றும் 208/3(பகுதி)-ல் 4.50.0 ஹெக்டேர் பரப்பில் சாதாரண கற்குவாரி செய்ய தி/ள். பி.எம்.மைன்ஸ் என்பவர் விண்ணப்பம் அளித்தது - புலத்தணிக்கை அறிக்கை சமர்ப்பிக்கப்பட்டது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவினை பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

- பார்வை :
1. அரசாணை எண்.208 தொழில் துறை நாள் 21.09.2020-ல்
 2. தி/ள். பி.எம்.மைன்ஸ், சி/ஓ. சி.என்.கார்த்தி, எண்.23, வாசல் ஓசூர் ஹில்ஸ், ராயக்கோட்டை சாலை எதிரில், சென்னத்தூர் அஞ்சல், ஓசூர், கிருஷ்ணகிரி - 635 109 என்பவரின் விண்ணப்பம் நாள்: 26.04.2022.
 3. இவ்வலுவலக கடித ந.க.எண். 738/2022/கனிமம், நாள்: 02.05.2022.
 4. வட்டாட்சியர், ஓசூர் கடிதம் ந.க.2850/2022/அ2 நாள்:11.05.2022.
 5. வருவாய் கோட்டாட்சியர், ஓசூர் கடிதம் ந.க.எண்.2073/2022/பி2 நாள்: 17.06.2022.
 6. அரசு ஆணை (3D) எண்.243 தொழில், முதலீட்டு ஊக்குவிப்பு மற்றும் வர்த்தகம் (எம்எம்இ-2) துறை நாள்: 14.12.2022.
 7. வன உயிரினக்காப்பாளர், ஓசூர் கடித ந.க.எண்.4353/2022/எல் நாள்:10.01.2023.
 8. உதவி புலியியலாளர் (கனிமம்) புலத்தணிக்கை அறிக்கை நாள்: 11.01.2023.
 9. மற்றும் உரிய ஆவணங்கள்

பார்வைகளின் மீது கனிவான கவனம் வேண்டப்படுகிறது.

2. கிருஷ்ணகிரி மாவட்டம், ஓசூர் வட்டம், ஆலூர் கிராமம், பட்டா புல எண்.207/1ஏ1, 207/1ஏ2 மற்றும் 208/3(பகுதி-1) -ல் 4.50.0 ஹெக்டேர் பரப்பில் சாதாரண வகை கற்குவாரி செய்ய உரிமம் வழங்க கோரி தி/ள். பி.எம்.மைன்ஸ்



என்பவர் 26.04.2022 நாள் விண்ணப்பத்தினை உரிய ஆவணங்களுடன் சமர்ப்பித்துள்ளார்.

3. மேற்கண்ட விண்ணப்பம் தொடர்பாக வட்டாட்சியர், ஓதூர், வருவாய் கோட்டாட்சியர், ஓதூர், வன உயிரினக்காப்பாளர், ஓதூர் மற்றும் உதவி புவியியலாளர் (கனிமம்), கிருஷ்ணகிரி ஆகியோர் புலத்தணிக்கை மேற்கொண்டு ஓதூர் வட்டம், ஆலூர் கிராமம், பட்டா புல எண்.207/1ஏ1(0.74.0), 207/1ஏ2ஏ (2.37.0) மற்றும் 208/3 (பகுதி) (1.39.0) -ல் 4.50.0 ஹெக்டேர் பரப்பளவில் விண்ணப்பதாரர் தி/ள்.பி.எம்.மைன்ஸ் என்பவருக்கு நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

நிபந்தனைகள்:

- 1959-ம் வருடத்திய தமிழ்நாடு சிறு கனிம சலுகை விதிகள், அட்டவணை IIல் கண்டுள்ளபடி குவாரி செய்யப்படும் கனிமங்களுக்குரிய சீனியரேஜ் தொகை அவ்வப்போது செலுத்தி கனிமம் கொண்டு செல்லப்பட வேண்டும்.
- அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீ மற்றும் அரசு நிலங்களுக்கு 10மீ பாதுகாப்பு இடைவெளி விட்டு குவாரிப் பணி மேற்கொள்ள வேண்டும்.
- அனுபவம் வாய்ந்த வெடிபொருள் பயன்படுத்துவோர் மூலம் குறைந்த அளவு சக்தி கொண்ட வெடிபொருட்களை பயன்படுத்தி அருகிலுள்ள பட்டாதாரர்களுக்கு எவ்வித இடையூறுமின்றி / அருகிலுள்ள பட்டா மற்றும் அரசு புலங்களில் எவ்வித ஆக்கிரமிப்பும் இன்றி குவாரிப்பணி மேற்கொள்ள வேண்டும்.
- விதிகளின் படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினை உரிய காலத்திற்குள் சமர்ப்பிக்க வேண்டும்.
- குவாரி உரிமம் வழங்க உள்ள பகுதிக்கு சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் முன் அனுமதி பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும்..

4. எனவே, வட்டாட்சியர், ஓதூர், வருவாய் கோட்டாட்சியர், ஓதூர், வன உயிரினக்காப்பாளர், ஓதூர் மற்றும் உதவி புவியியலாளர் (கனிமம்) ஆகியோரின்



பரிந்துரை மற்றும் நிபந்தனைகளின் அடிப்படையில், கிருஷ்ணகிரி மாவட்டம், ஒசூர் வட்டம், ஆலூர் கிராமம், பட்டா புல எண்.207/1ஏ1, 207/1ஏ2ஏ மற்றும் 208/3(பகுதி) -ல் 4.50.0ஹெக்டேர் பரப்பளவில் விண்ணப்பதாரர் தி/ள். பி.எம்.மைன்ஸ் என்பவருக்கு 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன் படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 (பத்து) வருட காலத்திற்கு கிராவல் மண் மற்றும் சாதாரண கற்குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

5. மேலும், தமிழ்நாடு சிறு கனிம சலுகை விதிகள்-1959 விதி எண். 41-ன் படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறு மனுதாரரைக் கேட்டுக்கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959-ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-ன் படி சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.

17.01.23
துணை இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
கிருஷ்ணகிரி.

17/1/23 85
190123

பெறுநர்:

தி/ள். பி.எம்.மைன்ஸ்,
சி/ஓ. சி.என்.கார்த்தி,
எண்.23, வாகீல் ஒசூர் ஹில்ஸ்,
ராயக்கோட்டை சாலை எதிரில்,
சென்னத்தூர் அஞ்சல்,
ஒசூர்,
கிருஷ்ணகிரி - 635 109

நகல்:

1. ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, சென்னை.
2. மாவட்ட ஆட்சித் தலைவர், கிருஷ்ணகிரி - தகவலுக்காக.



District : Krishnagiri

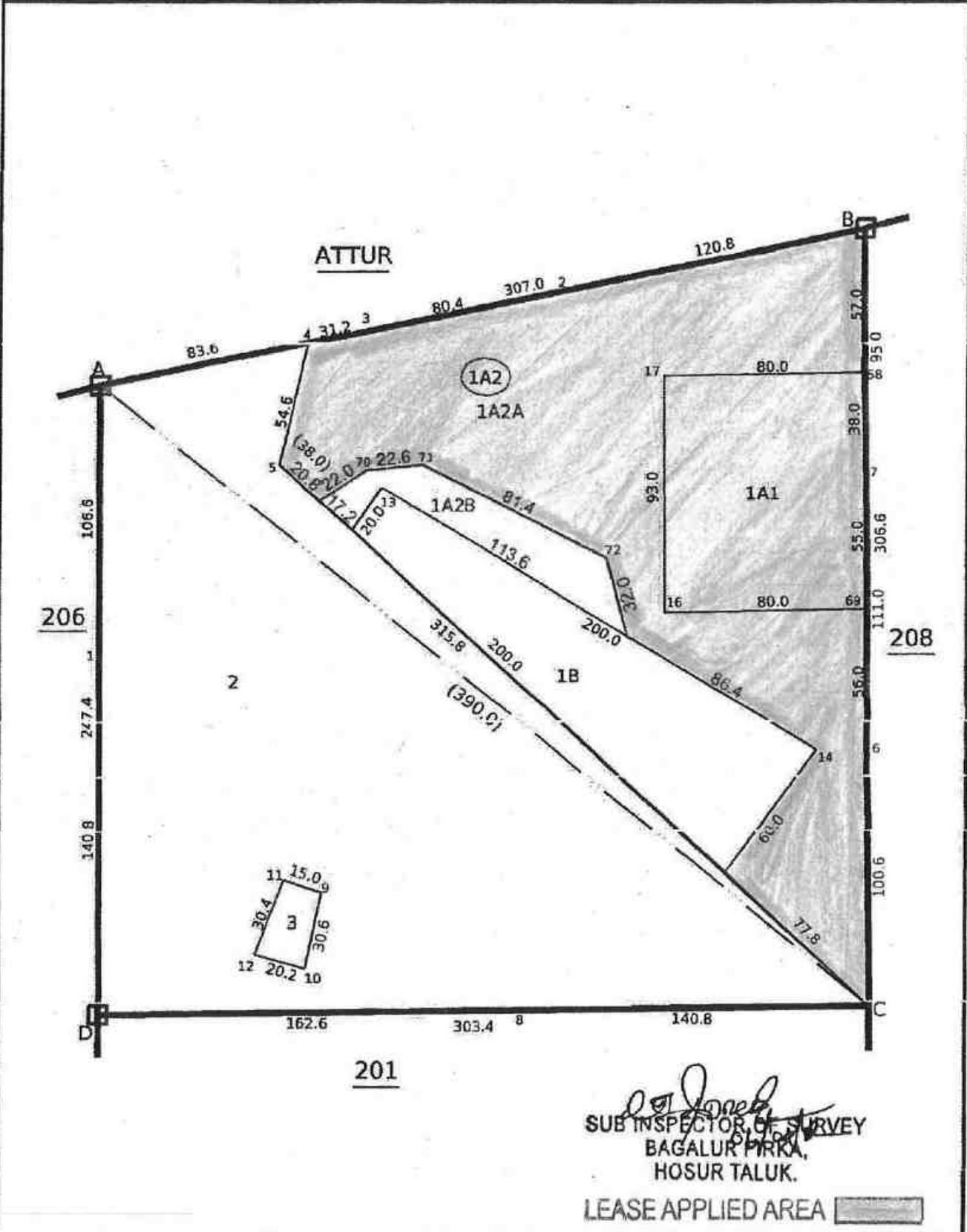
Survey No : 207

Taluk : Hosur

Area : Hect 08 Ares 44,00

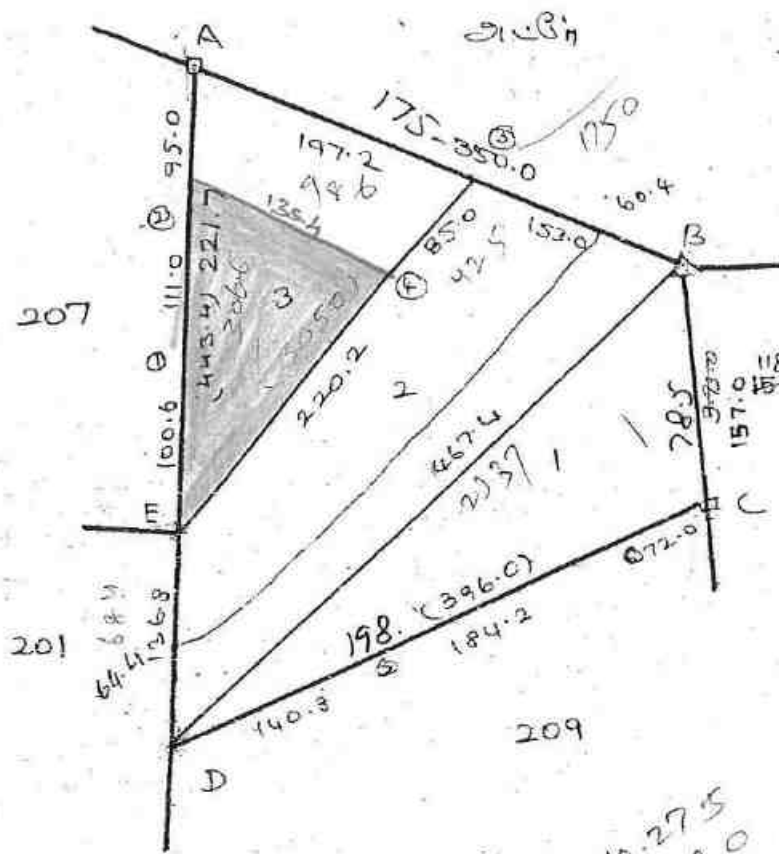
Village : ALUR [117]

Scale : 1 : 2000



பெண். 117
 கிராமம்
 எண். 117
 டி. 2018

பரப்பு: ஹெக்டேர்
 17 FEB 2021
 117



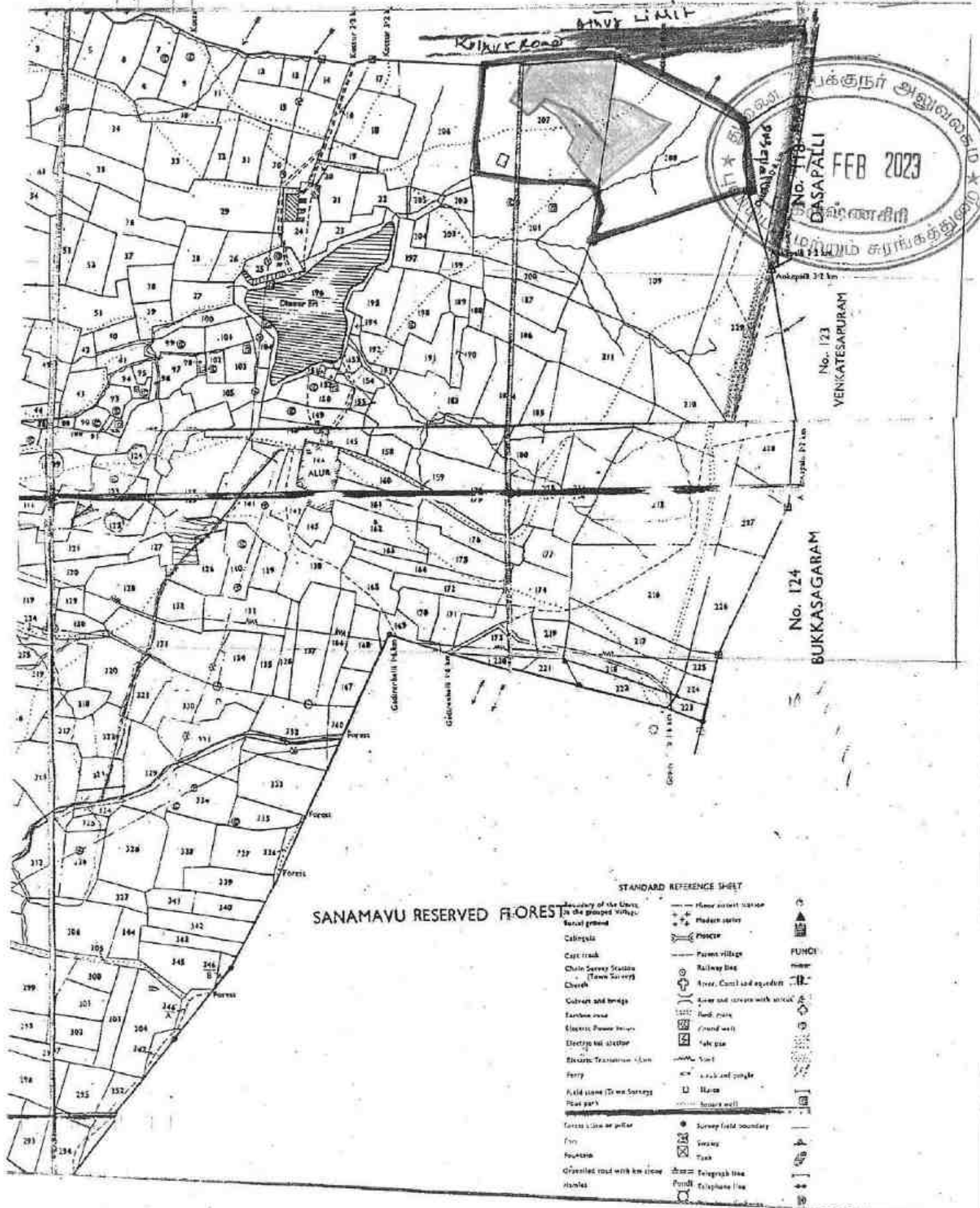
C		396.0	
	324.0	LINE 6	
	140.8	LINE 5	
	D		
	A		
	350.0		
4	78.8	184.2	
		152.8	line 3
		B	
		A	
		483.4	
2	112	211.6	
1	112	100.6	
		E	

VILLAGE ADMINIS... OFFICER
 No. 1 ALUR
 HOSUR TALUK

சான்றிதழ்
 சி. நாமன்
 20.5.2018

அளவு. 1 மீ. = 5000 மீ. = 5000 மீ.

LEASE APPLIED AREA



SANAMAVU RESERVED FOREST

STANDARD REFERENCE SHEET

Boundary of the Units in the grouped village	— River and its branches	▲
Barren ground	— Paddy canal	▲
Casingula	— Pucca	▲
Cart track	— Paved village	▲
Chain Survey Station (Town Survey)	— Railway line	▲
Church	— River, Canal and equivalent	▲
Culvert and bridge	— Low and covered with sluiceway	▲
Farmhouse	— Field mark	▲
Electric Power house	— Ground wall	▲
Electric sub station	— Gate post	▲
Electric Transmission Line	— Well	▲
Ferry	— Wood and jungle	▲
Field stone (Town Survey)	— House	▲
Pile yard	— House wall	▲
Forest line or pillar	— Survey field boundary	▲
Fun	— Survey	▲
Footpath	— Tank	▲
Controlled road with low stone	— Telegraph line	▲
Hamlet	— Telephone line	▲

LEASE APPLIED AREA



தமிழக அரசு
வருவாய்த் துறை



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

மாவட்டம் : கிருஷ்ணகிரி

வட்டம் : ஓசூர்

வருவாய் கிராமம் : ஆலூர்

பட்டா எண் : 2482

உரிமையாளர்கள் பெயர்

1. ராஜ் கவுண்டர்	மகன்	கிருஷ்ணசுவாமி
2. நடராஜன்	மகன்	கார்த்தி
3. கிருஷ்ணன்	மகள்	நந்தினி
4. வெங்கடாச்சலம்	மகன்	விஜயகுமார்
5. கிருஷ்ணன்	மனைவி	சித்ரா

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	
207	1A1	0 - 74.00	0.80	--	--	--	--	2021/0103/31/172612- -- -- 16-05-2021
207	1A2A	2 - 36.90	2.58	--	--	--	--	2021/0105/31/321956- -2022/31/09/000585SD -- 01-04-2022
207	1B	0 - 81.00	0.88	--	--	--	--	2021/0103/31/172613- -- -- 24-05-2021
208	3	2 - 79.00	3.04	--	--	--	--	2021/0103/31/172612- -- -- 16-05-2021
		6 - 70.90	7.30					

குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 31/09/117/02482/60716 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 16-02-2023 அன்று 12:10:22 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

பண் 2 117. அபிப்பிராயம்

கீழ்க்கண்ட விவரத்தில் வருடவாரி புலவாரி கைப்பற்று சாகுபடி அடங்கல் கணக்கு



இரண்டாம் போகம்.			
(13)	எந்த பாதுகாப்பில் பயிர் செய்யப்பட்டது என்பதை மாதத்தில் அறியவை செய்யப்பட்டது.	(14)	பயிரின் பெயர்.
(15)	பயிரான / அறியவைபான பரப்பு.	(16)	உண்மையான பயிச்சல் ஆதாரம்.
(17)	விளைச்சல் அளவு விழுக்காடு.	(18)	விவரம்
			கிராம அறியவையின் குறிப்புகள் :- (1) புலவாரியின் பகுதிகளில் மட்டும் பயிரிடப்பட்ட இளங்களில் விவசாயிகள் அளவில் கைப்பற்றில் இல்லாத நிலங்களின் அளவு பரப்பு ஆகும். (2) முந்தைய பாதுகாப்பில் பயிச்சல் உதவியின்றி பயிரிடப்பட்டவை என்று பதிவாகியுள்ள நிலங்களுக்கு பிந்தைய பாதுகாப்பில் நீர் பயிச்சப்பட்ட விவரங்கள்.
		(18.அ)	கீழ்க்கண்ட விவரத்தில் பயிரிடப்பட்டது உள்ள நிலத்தில் கண்மை மற்றும் பரப்பின் விவரங்கள் ஒவ்வொரு பகுதியில் உள்ள அல்லது FFR அளவில். (அ) வனம், (ஆ) பயனற்ற பயிர், செய்ய இயலாத நிலம், (இ) விவசாயம் அல்லாத இதர காரியங்களுக்கு பயன் படுத்தப்படும் நிலம், (ஈ) பயிரிடத்தக்க தரிசு (உ) நிலையான புல் தரைகளும் மற்றும் இதர மேய்ச்சல் நிலங்களும், (ஊ) விதைக்கப்பட்ட நிகர பரப்பில் சேர்க்கப்படாத மரவகைப் பயிர்களும் தோப்புகளும், (எ) நடப்புத் தரிசுகள் (ஏ) இதர தரிசு நிலங்கள்.
		(19)	பயிர் பார்வையிடுவதில் ஆலோசனை குறிப்புகள்
			M. S. K. S. S.

ANNEXURE

கி. எண். 117. ஆவார்.



ப. அமச்சுத்தி
தமிழ்நிலை
மெய்யப்பா
என்.பி. சிவன்
சிவன்
ரிட out
407
50198
11-2-23

மெய்யப்பா
ரிட out

ரிட out

ரிட out

ரிட out

ரிட out

ரிட out

	2	3	4	5	6	7	8	9	10	
2B	201-2B	ர	4	...	7-2	7	2 77	2 18-0	6 04	211 ல. நாராயணப்பா.
1A	-3A	ர	4	...	7-2	7	2 77	0 04-5	0 12	204 அ. நரசிம்மய்யா.
1B1	-3B1a	ர	4	...	7-2	7	2 77	0 08-0	0 22	107 வெ. வெங்கடேசன் மனைவி சாவித்திரியம்மாள்.
1B2	-3B1a	ர	4	...	7-2	7	2 77	0 10-5	0 30	312 கி. முனியம்மாள்.
								6 08-5	13 76	
...	202	ர	4	...	8-3	8	2 15	0 31-0	0 36	570 சி. வெங்கடேசப்பா (1), சி. கிருஷ்ணப்பா (2).
...	203	அ	தி. ஏ. தி.	...	...	...	...	1 15-0	...	...
...	204	ர	4	...	8-2	7	2 77	0 23-0	0 64	204 அ. நரசிம்மய்யா.
...	205	அ	புற	...	...	...	...	0 47-5	...	...
1	206-1	ர	4	...	8-5	12	0 62	0 24-5	0 15	371 வெ. ராமச்சந்திரன்.
2	-2	அ	புற	...	...	...	...	4 94-0	...	...
3	-3	ர	4	...	8-5	12	0 62	0 67-0	0 41	366 மு. ரங்கப்பா.
4	-4	ர	4	...	7-2	7	2 77	0 07-5	0 21	366 மு. ரங்கப்பா.
								5 93-0	0 77	
1	207 ①	ர	4	...	8-4	10	1 09	4 17-0	4 53	667 வெ. ராமச்சந்திரன் (1), வெ. ராமய்யா (2), ரா. வெங்கடேசப்பா (3).
2	-2	அ	புற	...	...	...	...	4 22-0	...	...
3	-3	ர	4	...	8-3	8	2 15	0 05 0	0 11	107 வெங்கடேசப்பா மனைவி சாவித்திரியம்மாள்.
								8 44-0	4 64	
1	208-1	ர	4	...	8-4	10	1 09	3 03-5	3 30	249 ல. பில்லப்பா சவுடு.

கல்லாங்குத்து.

வாரி.

மேய்ச்சல்தரை.

மேய்ச்சல்தரை.



207-1A 207-1A 5 4 ... 8-4 10 109 3.36.0 3.66

207-1B 207-1A 2 4 .. 8-4 10 109 0.81.0 0.88 847
417.0 4.54

K. Gopal Pillai
 Rajan L. K. Srinivasan
 M. Srinivasan

New Submission Carried out
 as per T.L. 8A/975/1407
 dt. 29.10.97
 M. Srinivasan

AS per T.L. 8A/475/1409 - dt. 14.6.2000

207/1A1 - 207/1A 5-4. 8-4-10- 1-09. 0.74.0 . 0.80 857 G. Srinivasan

1A2 207/1A 5-4. 8-4-10. 1-09. 2.62.0 - 2.86 667 G. Srinivasan
3.36.0 3.66

12.6.2000
 207-1A2

206 3A 0.29.5 0.18 366 G. Srinivasan

-3A 0.18.0 0.11 1080 G. Srinivasan

3C 0.19.5 0.11 366 G. Srinivasan

2.67.0 - 0.41

Chaper appu 20/11/97
 dt. 20.11.97

G. Srinivasan

[Handwritten signature]

2	3
2B	201-2B 0
1A	-3A 0
3B1	-3B1 0
3B2	-3B1 0
...	202 0
...	203 0
...	204 0
...	205 0
1	206-1 0
2	-2 0
3	-3 0
4	-4 0
1	207 0
2	-2 0
3	-3 0
1	208-1 0



1	2	3	4	5	6	7	8	9	10		
							ந. பை.	ஹெ ஏர்ஸ்	நு பை		
208	2	208-2	அ	40	...	...	...	4 45-0	...		
	3	-3	ர	4	...	8-3	8	2 15	2 79-0	3 04	249 வ. பில்லப்ப கவுடு.
								10 27 5	6 34		
209	...	209	அ	40	...	...	...	8 82-5	...	...	வாரி.
210	1	210-பா	ர	11	...	8-5	12	0 62	2 12-5	1 32	556 வெ. ராமய்யா (1), ரா. வெங்கடேசன் (2).
	2	-பா	ர	4	...	8-5	12	0 62	0 06 5	0 06	556 வெ. ராமய்யா (1), ரா. வெங்கடேசன் (2).
	3	-பா	ர	4	...	8-5	12	0 62	0 16-5	0 10	556 வெ ராமய்யா (1), ரா. வெங்கடேசன் (2).
								2 35 5	1 48		
211	...	211	ர	4	...	8-5	12	0 62	3 46-5	2 14	868 450 ரா. வெங்கடசாமி.
212	...	212	ர	4	...	8-5	12	0 62	4 40-5	2 72	190 வெங்கடசாமி மனைவி திம்மக்காள்.
213	1	213-பா	ர	4	...	8-5	12	0 62	2 53-0	1 57	449 ரா. வெங்கடேசன்.
	2	-பா	ர	4	...	8-5	12	0 62	0 13-5	0 08	449 ரா. வெங்கடேசன்.
	3	-பா	ர	4	...	8-5	12	0 62	0 81-0	0 50	538 ரா. வெங்கடேசன்.
								3 47-5	2 15		
214	...	214	ர	4	...	8-5	12	0 62	2 54-5	1 57	299 ரா. முனி வெங்கடப்பா.
215	1	215-பா	ர	4	...	8-5	12	0 62	6 12-0	3 77	690 மு. சஞ்சீவப்பா (1), கு. சின்ன குரப்பா (2), கு. முனிவெங்கடப்பா (3), வெ. வெங்கடேசப்பா (4).
	2	-பா	ர	4	...	8-5	12	0 62	0 22-0	0 14	690 மு. சஞ்சீவப்பா (1), கு. சின்ன குரப்பா (2), கு. முனிவெங்கடப்பா (3), வெ. வெங்கடேசப்பா (4).

மேய்ச்சு 215/11

வாரி.

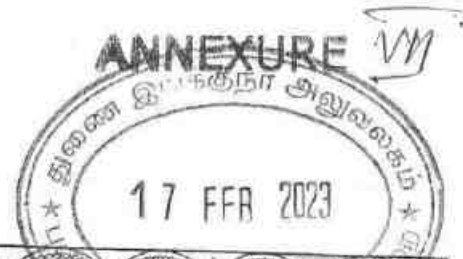
பூஸ்தி

212/1

பூஸ்தி

215

ANNEXURE



தமிழ்நாடு தமில்நாடு TAMILNADU

No.
Date: 01/08/2021
Rs. 500/-

M/s. BM Mines
Hosur.
PARTNERSHIP DEED

AR 952635
K. SELVARANI
STAMP VENDOR
LICENCE No 868/1994
HOSUR-635 109

THIS DEED OF PARTNERSHIP IS EXECUTED ON THIS 01st DAY OF AUGUST 2021 AT HOSUR.

BETWEEN

1. **Mr. R.KRISHNASWAMY**, S/o. Raju Gounder, aged about 72 years, residing at No.7/14, Dharmapuri Road, Vellar, Salem - 636 451, Tamil Nadu.

AADHAAR No. 8624 4804 4640, PAN. CQPPK0917F,

MOBILE No. 9751693055

(Hereinafter referred to as "FIRST PARTY/MANAGING PARTNER")

FIRST PARTY

SECOND PARTY

THIRD PARTY

C.K. Nandhini

FOURTH PARTY

V. Vijayakumar

FIFTH PARTY

K. Chitra





: 2 :

2. Mr. KAARTHI.C.N., S/o. Natarajan, aged about 37 years, residing at No.44/1, Chinnakakaveri, Vellakalpatty Post, Rasipuram, Namakkal - 637 406, Tamil Nadu.

AADHAAR No. 9967 7773 7105, PAN. BISPK2336N

(Hereinafter referred to as "SECOND PARTY /
MANAGING PARTNER")

3. Mrs. NANDHINI, D/o. Krishnan, aged about 26 years, residing at No.11/5-122a, Melvelalar Street, Mechari Post, Mettur Taluk, Salem - 636 453, Tamil Nadu

AADHAAR No. 6875 2629 0599, PAN. FQWPK7015Q

(Hereinafter referred to as "THIRD PARTY/PARTNER")

4. Mr. V.VIJAYAKUMAR, S/o. Venkatachalam, aged about 38 years, residing at No.3/286, Mallikundam West Kattu Valavu, Mallikundam Post, Salem - 636 458, Tamil Nadu.

AADHAAR No. 9064 7345 6592, PAN. AZAPV0901E

(Hereinafter referred to as "FOURTH PARTY/PARTNER")

5. Mrs. CHITRA, W/o. Krishnan, aged about 47 years, residing at No.11/5-122a, Melvelalar Street, Mechari Post, Mettur Taluk, Salem - 636 453, Tamil Nadu.

AADHAAR No. 8624 3709 0080, PAN. FSBPK3965A

(Hereinafter referred to as "FIFTH PARTY/PARTNER")

FIRST PARTY

SECOND PARTY

THIRD PARTY

C.K.Nandhini

FOURTH PARTY

V. Vijayakumar

FIFTH PARTY

K. Chitra





: 3 :

(Hereinafter jointly referred to as "PARTIES / PARTNERS") and hereinafter referred collectively as partners and individually a partner which expression shall unless the context otherwise, requires, include their legal heirs, successors in interest, nominees, representatives, and assigns and administrators.

WHEREAS, the parties, ie. first, second, third, fourth and fifth parties have mutually agreed to carry on and conduct the business under partnership on the following terms and conditions.

NOW THIS DEED OF PARTNERSHIP WITNESSETH AS FOLLOWS :-

1.01. COMMENCEMENT:

This Partnership Deed shall come into operation with immediate effect.

1.02. NAME AND STYLE

The Business of the firm shall be carried out under the name and style of **M/s.B.M.MINES**, or under such other name and style as the partners as may be agreed from time to time.

1.03 PRINCIPAL PLACE OF BUSINESS

The firm shall have its principal place of business at Survey No. 208-3 Allur Village, Hosur Taluk, Krishnagiri District - 635 109, Tamilnadu.

FIRST PARTY

SECOND PARTY

THIRD PARTY

C.K.Wandhini

FOURTH PARTY

V. vijayakumar

FIFTH PARTY

K.Chitra





1.04 DURATION OF PARTNERSHIP

The partnership will be "AT WILL". Any partner desiring to retire from the firm shall do so by giving Three month's notice in writing to the other partners. Death or retirement of a partner shall not have the effect of dissolving the firm and remaining partners shall be entitled to carry on the business of the firm by admission of one or more other persons as partners.

1.05. FACTORY/IES, BRANCHES /OFFICES ETC.

The firm may open factory/ies, branches, offices etc., at different place/s as may be decided by the partners from time to time.

1.06. NATURE OF BUSINESS

- a. The firm shall carry on the business of Mines and Blue metals.
- b. The firm may carry on any other profitable business by the unanimous consent of all the partners.

1.07. CAPITAL CONTRIBUTION

That all the partners bring **Rs.5,00,000/- (Rupees Five Lakhs Only)** each towards their capital contribution into the firm. The Partners may bring in additional capital to the firm as unanimously decided by them from time to time.

FIRST PARTY

SECOND PARTY

THIRD PARTY

C.K.Randhavi

FOURTH PARTY

V. Vijayalakshmi

FIFTH PARTY

K.Chitra



1.08 INTEREST ON CAPITAL AND/OR LOAN



The fund contribution by the partner's either in the firm of capital or loan shall carry simple interest @12% per annum or such other rate as may be prescribed under section 40(b) of the Income Tax Act 1961 or any other applicable provision as may be in force for income tax assessment of the partnership firm for the relevant accounting period. Partners have got option of not to charge interest on capital by passing resolution in writing in this regard every year.

1.09 MANAGEMENT AND REMUNERATION

All the partners shall be working partners and shall be responsible for the day-to-day management of the business and are entitled to a monthly remuneration of such amount as may be decided by the partners mutually. The first and second party/partners will be the Managing Partners of the firm for all practical purposes. The remuneration payable to the said working partners shall be computed in the manner laid down or deduction under section 40(b)(v), read with Explanation 3 of the Income-Tax Act, 1961 or any other applicable provision as may be in force in the Income-tax assessment of the partnership firm for the relevant accounting year. However, with mutual consent, payment or remuneration to partners can be waived every year. General management of the firm shall be carried on by the first party and second party being the Managing Partner. The Managing Partners shall sign all the papers required for the development of the firm before all the Governmental agencies and offices.

FIRST PARTY

SECOND PARTY

THIRD PARTY

C.K. Nandhini

FOURTH PARTY

V. vijayam

FIFTH PARTY

K. Chitra





1.10 ACCOUNTS

Proper books of account shall be maintained by the firm and the same shall be closed once a year on 31st March and the same shall be signed by all the partners.

1.11 SHARING OF PROFIT / LOSSESS

The Profit & losses arrived as per the Income Tax 1961 shall be divided by the partners are as per their capital investment ratio as hereunder :

1. FIRST PARTNER - 20%
2. SECOND PARTNER - 20%
3. THIRD PARTNER - 20%
4. FOURTH PARTNER - 20%
5. FIFTH PARTNER - 20%

1.12 ADMISSION RETIRMENT EXPULSION OF PARTNERS AND DISSOLUTION OF THE FIRM:

- a> **ADMISSION :** No New partner shall be admitted to the firm except with the written consent of all the partners. However, in the case of the nominee of a deceased partner as is referred to in clause 2 below, the other partners shall be bound to admit such nominee as a partner of the firm, in the manner mentioned therein.
- b> **RETIREMENT :** Any partner desiring to retire from the firm shall do so by giving three month's Notice in writing to the other partner/s.

FIRST PARTY

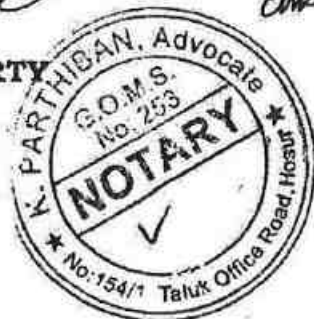
SECOND PARTY

THIRD PARTY

E.K. Sundhini

FOURTH PARTY

V. Vidyaiah



FIFTH PARTY

K. Chitra



c> **EXPULSION** : A partner may be expelled from the firm by a majority decision to that effect of the firm in the following circumstances

- i) If the partner borrows any funds in the name of the firm without the written Consent of the other partners;
- ii) If the partner refuses to co-operate with the other partners, in complying with the statutory obligations of the firm in respect of income-tax, sales tax, provident fund, ESI and in respect of dealings with other statutory authorities thereby exposing the firm to higher tax obligations, penalties damages, losses and other civil and criminal proceedings
- iii) If the partner tries to sell/transfer or other wise dispose off the fixed assets of the firm without the written consent of the other partners.
- iv) If the partner carries out any act, deed or thing which prevent the firm from the conduct of day to day business and other affairs of the firm. However, before exercising the aforesaid power, the offending partner shall be made suitable amendments or to make good the damages and losses incurred by the firm as maintained above.

d> **DISSOLUTION** : Death, retirement or expulsion of a partner will not have the effect of dissolving the firm. In particular, no partner has the right to demand dissolution of the firm.

FIRST PARTY

SECOND PARTY

THIRD PARTY

C.K. Nandhini

FOURTH PARTY

V. Vijayak

FIFTH PARTY

K. Chitra



: 8 :

e> **SETTLEMENT OF ACCOUNTS** : In the event of admission/retirement and expulsion of partners and the dissolution of the firm, for the purposes of settlement of rights and accounts between the partners, all the fixed assets of the business shall be revalued taking into account the life of such assets the prevailing market prices for the same and all other factors provision for bad and doubtful debts shall also be made. Any surplus or deficit arising out of the aforesaid exercise shall be divided in proportion to the profit sharing ratio and credited or debited, as the case may be, to the respective accounts of the partners.

WHEREAS, if the continuing partner is unable to credit the "Surplus" immediately to the account of the retiring member, he/she shall be allowed a reasonable period not exceeding one / two years to credit the "Surplus" in monthly installments with interest which is equal to the Commercial Banks lending rate on the outstanding amount.

02. RIGHT TO NOMINATE :

Any partner shall have the right to nominate in writing any other individual being related to him or her, as a spouse, son or daughter, parent to succeed such partner in firm, in the event of death of such partner and the other partners shall admit such nominee as a partner to fully succeed to the partnership interest of such deceased partner, with the consent of the remaining partners as well as that of nominated person. Spouse of the partner will automatically replace the deceased partner

FIRST PARTY



SECOND PARTY



THIRD PARTY

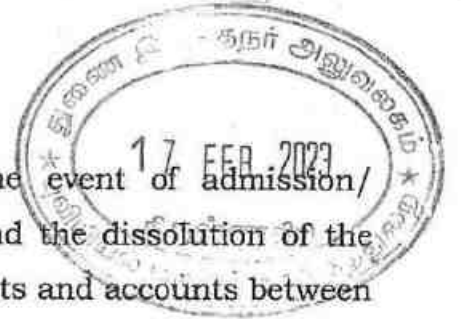
C.K.Nandhini

FOURTH PARTY

V.vijayar

FIFTH PARTY

K.Chitra



03. BORROWING POWERS :



No partner shall have the right to borrow funds in the name of the firm without the written consent of other partner/s. Further, no partner shall provide any type of guarantee in the name of the firm and create any type of liability or charge against the firm without the written consent of all the partners.

PROVIDED THAT, the firm can borrow funds from banks, financial institutions and other private parties for the purposes of the business of the firm only with the unanimous consent of all the partners in writing and all such documents shall be signed by all the partners or by any partner duly authorized in his behalf.

04. BANK ACCOUNT AND OPERATION :-

Bank accounts may be opened in any bank/s with the concurrence of all the partners and such accounts shall be operated by the First and Second Partner of the firm jointly or severally and all other partners shall ratify all legal and lawful acts of the first and second party/partner. The banks may accept the signatures of the first and second partner in opening bank accounts and operating the same jointly or individually.

The other partners are at liberty to verify the books of accounts at any point of time without any intervention of the Managing Partners.

FIRST PARTY

SECOND PARTY

THIRD PARTY

e.k.Mandhavi

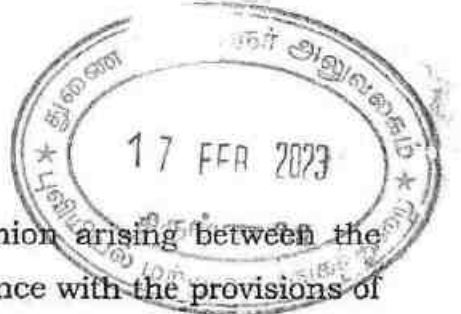
FOURTH PARTY

v. vijayakumar

FIFTH PARTY

k. Chitra





05. ARBITRATION :

In case of any dispute or difference of opinion arising between the partners, the same shall be settled only in accordance with the provisions of the Indian Arbitration Act, 1940, and none of the partners shall be entitled to approach the court of law and during the pendency of arbitration proceedings, none of the partners shall obtain any injunction or stay to paralyze the business of the firm.

06. APPLICATION OF INDIAN PARTNERSHIP ACT, 1932:

Except to the extent mentioned above in this deed to the contrary, all the other provisions of the Indian Partnership Act, 1932 shall be applicable to the firm.

07. AMENDMENTS / ALTERATIONS ETC.

No amendments, alterations, additions, deletions, substitutions to this Partnership Deed shall be done without the consent in writing of all the partners.

IN WITNESSES WHEREOF THE PARTIES HEREIN HAVE SET THEIR RESPECTIVE HANDS AND SIGN THIS DEED OF PARTNERSHIP ON THE DAY, MONTH AND YEAR FIRST ABOVE MENTIONED.

FIRST PARTY

SECOND PARTY

THIRD PARTY

C.K. Nandhini

FOURTH PARTY

V. Vijayan

FIFTH PARTY

K. Chitra

WITNESSES :

1. C. Abishek s/o Y.N. Chempakumar, Hosur



2. Moken G. Anwarappan, Gooliyangapalli, Hosur

DRAFTED BY :-



K. PARTHIBAN, B.A., B.L.
Advocate & Notary
No:154/1, Taluk Office Road,
Hosur Krishnagiri Dt-635109



இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

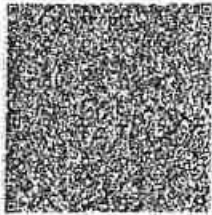
பதிவேட்டு எண்/ Enrolment No.: 0000/00331/46207

Download Date: 27/04/2021

To
கிருஷ்ணசுவாமி ராஜூ கவுண்டர்
Krishnaswamy Raju Gounder
S/O: Raju Gounder
7/14
dharamapur road
Vellar
Vellar
Salem, Tamil Nadu - 636451
9751693055



Issue Date: 10/12/2016

Signature not verified



உங்கள் ஆதார் எண் / Your Aadhaar No. :
8624 4804 4640
VID : 9117 3143 4155 1142

எனது ஆதார். எனது அடையாளம்

தகவல்

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- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

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- மூலக்கூறு செயலியைப் பயன்படுத்தி உங்கள் ஸ்மார்ட் போனில் ஆதாரை எடுத்துச் செல்லுங்கள்

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கிருஷ்ணசுவாமி ராஜூ கவுண்டர்
Krishneswamy Raju Gounder
பிறந்த நாள்/DOB: 16/06/1948
ஆண்/ MALE

Issue Date: 10/12/2016

8624 4804 4640
VID : 9117 3143 4155 1142

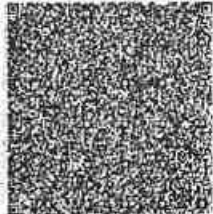
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முகவரி:
தந்தை / தாய் பெயர்: ராஜூ கவுண்டர், 7/14,
தாமபுரி ரோடு, வெள்ளாள், சேலம்,
தமிழ்நாடு - 636451

Address:
S/O: Raju Gounder, 7/14, dharamapur road,
Vellar, Salem,
Tamil Nadu - 636451



8624 4804 4640
VID : 9117 3143 4155 1142

எனது ஆதார். எனது அடையாளம்





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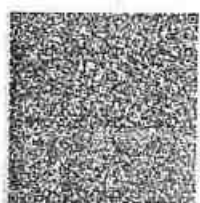
பதிவேட்டு எண்/ Enrolment No.: 1110/81014/00584

Download Date: 10/11/2013

To
கார்த்தி சி ந
Kaarthi C N
S/O: Natarajan
44-1
Chinnakaveri
Vellakalpatty (Post)
Rasipuram
Seerapalli(BO)
Namakkal Tamil Nadu - 637406
9566954420

Generation Date: 01/10/2013

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உண்மையானது



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VID : 9106 4251 5555 2428

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கார்த்தி சி ந



கார்த்தி சி ந
Kaarthi C N
பிறந்த நாள்/DOB: 15/05/1983
ஆண்/ MALE

9967 7773 7105
VID : 9106 4251 5555 2428

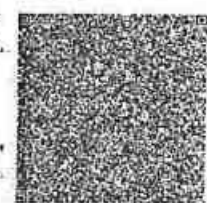
எனது ஆதார், எனது அடையாளம்



கார்த்தி சி ந

முகவரி:
நகரை / தாய் பெயர்: நகரை, 44-1,
சின்னக்காவேரி, வேலக்கல்பட்டி (அஞ்சல்),
இராசிபுரம், தாமகல, தாமிழ் நாடு - 637405

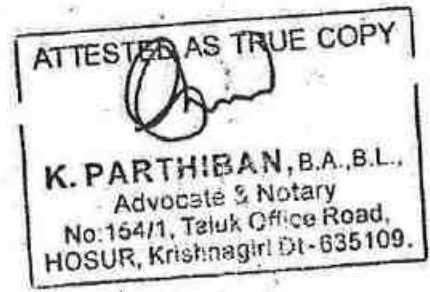
Address:
S/O: Natarajan, 44-1, Chinnakaveri,
Vellakalpatty (Post), Rasipuram,
Namakkal,
Tamil Nadu - 637406



QR Code with Registration

9967 7773 7105
VID : 9106 4251 5555 2428

chokkathy





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ஆதார்

உத்திய தனிமை அடையாள ஆணையு அமைதி
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பதிவேட்டு எண்/ Enrolment No.: 2007/14487/27487

Download Date: 27/01/2021

To
நந்தினி கிருஷ்ணன்
NANDHINI KRISHNAN
D/O: Krishnan
DNO.11/5-122a
MELVELALAR STREET
MECHARI POST METTUR TALUK
Mettur
Mecheri
Salem Tamil Nadu - 636453
9443899043

Issue Date: 08/09/2018

உங்கள் ஆதார் எண் / Your Aadhaar No. :
6875 2629 0599
VID : 9190 1538 2404 5447

எனது ஆதார், எனது அடையாளம்

தகவல்

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ஆதார்

உத்திய தனிமை அடையாள ஆணையு அமைதி
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Download Date: 27/01/2021

நந்தினி கிருஷ்ணன்
NANDHINI KRISHNAN
பிறந்த நாள்/DOB: 03/05/1995
பெண் FEMALE

Issue Date: 08/09/2018

6875 2629 0599
VID : 9190 1538 2404 5447

எனது ஆதார், எனது அடையாளம்

இந்திய அரசாங்கம்
Government of India

ஆதார்

உத்திய தனிமை அடையாள ஆணையு அமைதி
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Download Date: 27/01/2021

முகவரி:
D/O: கிருஷ்ணன், கண்ண, 11/5-122a,
மெல்வேலாரா சாலை, மெச்சரி அஞ்சல்
மையம், மெட்ரா, சேலம்,
தமிழ் நாடு - 636453

Address:
D/O: Krishnan, DNO.11/5-122a,
MELVELALAR STREET, MECHARI POST
METTUR TALUK, Mettur, Salem,
Tamil Nadu - 636453

6875 2629 0599
VID : 9190 1538 2404 5447

எனது ஆதார், எனது அடையாளம்



ATTESTED AS TRUE COPY

(Signature)

K. PARTHIBAN, B.A., B.L.,
Advocate & Notary
No:154/1, Taluk Office Road,
Hosur, Tamil Nadu - 636453



இந்திய அரசு
भारत सरकार

आधार

இந்திய அரசாங்கம்
Government of India

இந்திய அடையாள அமைப்பு அலுவலகம்
Unique Identification Authority of India

பதிவேட்டு எண்/ Enrolment No.: 2043/50643/00153

Download Date: 27/01/2023

To
விஜயகுமார் வெங்கடாஜலம்
Vijayakumar Venkataschalam
S/O: Venkataschalam
3/285
MALLIKUNDAM WEST KATTU VALAVU
MALLIKUNDAM POST
Mallikudam
Mallikuntham
Salem Tamil Nadu - 636456
9790613060

Issue Date: 24/01/2023

Signature Not Verified

உங்கள் ஆதார் எண் / Your Aadhaar No. :
9064 7345 6592
VID : 9145 5277 6395 3093

எனது ஆதார், எனது அடையாளம்

இந்திய அரசு
Government of India

AADHAAR

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- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

INFORMATION

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■ ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்

■ பல்வேறு அரசு மற்றும் அரசு சாரா சேவைகளை எளிதில் பெற ஆதார் உதவுகிறது.

■ உங்கள் மொபைல் எண் மற்றும் மின்னஞ்சல் முகவரி ஆதாரில் புதுப்பிக்கவும்

■ Aadhaar செயலியை பயன்படுத்தி உங்கள் சமசுரல் போனில் ஆதாரை எடுத்துக் கொள்ளுங்கள்

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भारत सरकार

आधार

இந்திய அரசாங்கம்
Government of India

இந்திய அடையாள அமைப்பு அலுவலகம்
Unique Identification Authority of India

பதிவேட்டு எண்/ Enrolment No.: 2043/50643/00153

Download Date: 27/01/2023

To
விஜயகுமார் வெங்கடாஜலம்
Vijayakumar Venkataschalam
பிறந்த நாள்/DOB: 22/05/1982
ஆண்/ MALE

Issue Date: 24/01/2023

உங்கள் ஆதார் எண் / Your Aadhaar No. :
9064 7345 6592
VID : 9145 5277 6395 3093

எனது ஆதார், எனது அடையாளம்

இந்திய அரசு
Government of India

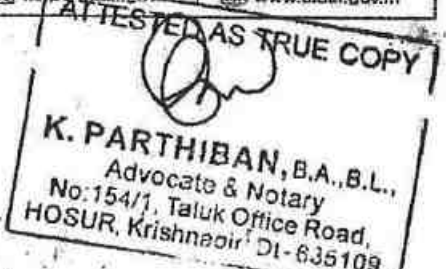
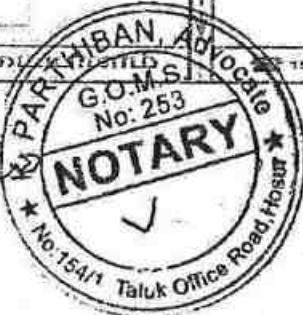
AADHAAR

தகவல்:
நாடு / தாய் பெயர்: வெங்கடாஜலம், 3/285, மல்லிகுண்டம் மேற்கு கட்டுவலம், மல்லிகுண்டம் போஸ்ட், மல்லிகுண்டம், சேலம், தமிழ் நாடு - 636456

Address:
S/O: Venkataschalam, 3.285, MALLIKUNDAM WEST KATTU VALAVU, MALLIKUNDAM POST, Mallikudam, Salem, Tamil Nadu - 636456

9064 7345 6592
VID : 9145 5277 6395 3093

எனது ஆதார், எனது அடையாளம்





भारत सरकार
आधार

இந்திய அரசாங்கம்
Government of India

இந்திய தனி மட்ட தடய அடையாள ஆணையர்
Unique Identification Authority of India

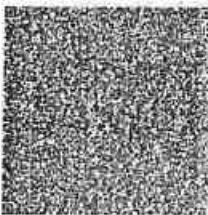
பதிவேட்டு எண்/ Enrolment No.: 0000/00379/95330

Download Date: 27/04/2021

To
சித்ரா
Chitra
W/O: Krishnan
DNO 11/5-122a
MELVELALAR STREET
MECHARI POST METTUR TALUK
Mettur
Mechari
Salem Tamil Nadu - 636453
9443839043

Issue Date: 14/04/2017

Signature Not Verified



உங்கள் ஆதார் எண் / Your Aadhaar No. :
8624 3709 0080
VID : 9172 2395 3295 2768

எனது ஆதார். எனது அடையாளம்

भारत सरकार
Government of India

आधार
AADHAAR

தகவல்

- ஆதார் அடையாளத்திற்கான சான்று. குடியுரிமைக்கு அல்ல.
- பாதுகாப்பான QR குறியீடு ஆய்வுகள் XML / ஆணைகள் அங்கீகரிக்கப்பட்ட பயன்படுத்தி, அடையாளத்தை சரிபார்க்கவும்
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

INFORMATION

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- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- பல்வேறு அரசு மற்றும் அரசு சாரா சேவைகளை எளிதில் பெற ஆதார் உதவுகிறது.
- உங்கள் மொபைல் எண் மற்றும் பின்னஞ்சல் ஐடிஐயை ஆதாரில் புதுப்பிக்கவும்
- mAadhaar செயலியைப் பயன்படுத்தி உங்கள் சமாராட்டி போனில் ஆதாரை எடுத்துச் செல்லுங்கள்

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आधार
Unique Identification Authority of India

Download Date: 27/04/2021

சித்ரா
Chitra
பிறந்த நாள்/DOB: 05/08/1974
பால்/ FEMALE

Issue Date: 14/04/2017

8624 3709 0080
VID : 9172 2395 3295 2768

எனது ஆதார். எனது அடையாளம்

भारत सरकार
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Download Date: 27/04/2021

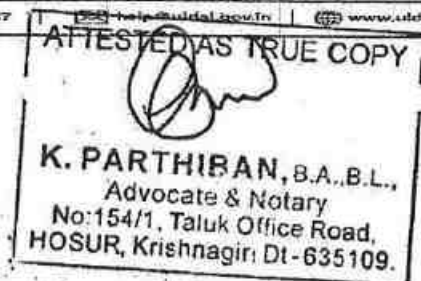
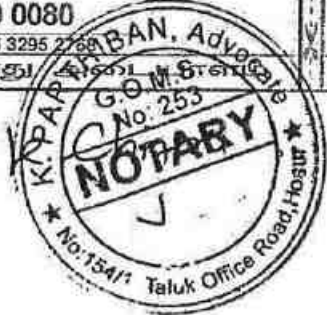
மகலாதி:
W/O: சித்ரா, எண் 11/5-122a,
மெல்லைசாலை தெரு, மெச்சரி அஞ்சல்
மேட்டூர் வட்டம், மேட்டூர், சேலம்,
தமிழ்நாடு - 636453

Address:
W/O: Krishnan, DNO 11/5-122a,
MELVELALAR STREET, MECHARI POST
METTUR TALUK, Mettur, Salem,
Tamil Nac. - 636453

Issue Date: 14/04/2017

8624 3709 0080
VID : 9172 2395 3295 2768

எனது ஆதார். எனது அடையாளம்



TP/108120657/2021

ANNEXURE VII

20/12/21
7 FEB 2021



क़र्मीपुना 6 तमिलनाडु TAMILNADU Rs.100/-

16/12/21

B.M. Mines
Hosur

CM 262570

K.V. VISAYA RAGHAVAN
STAMP VENDOR
L No. 1/2005/KGI
HOSUR, TAMIL NADU

SPECIAL POWER OF ATTORNEY

THIS DEED OF SPECIAL POWER OF ATTORNEY IS EXECUTED ON THIS 17th DAY OF DECEMBER 2021 AT SHOOLAGIRI.

BY

M/s.B.M.MINES, a registered firm, Represented by its Partners, having its Office at Survey No. 208-3, Allur Village, Hosur Taluk, Krishnagiri District - 635 109, Tamilnadu.

REPRESENTED BY PARTNERS:-

1. Mrs. NANDHINI, D/o. Krishnan, aged about 26 years, residing at No.11/5-122a, Melvelalar Street, Mechari Post, Mettur Taluk, Salem - 636 453, Tamil Nadu. **AADHAAR No. 6875 2629 0599, PAN. FQWPK7015Q**

ATTORNEYS

M/s.B.M.MINES

Rep by Partners:-

enka...

PRINCIPALS

M/s.B.M.MINES,

Rep by partners:-

C.K.Nandhini

V. Visaya

K. Chi...

Document No.	20	of 2021 of Book	4
Contains	16	Sheets	1 Sheet.
 Registering Officer			



: 2 :



2. Mr. V.VIJAYAKUMAR, S/o. Venkatachalam, aged about 38 years, residing at No.3/286, Mallikundam West Kattu Valavu, Mallikundam Post, Salem - 636 458, Tamil Nadu.

AADHAAR No. 9064 7345 6592, PAN. AZAPV0901E

3. Mrs. CHITRA, W/o. Krishnan, aged about 47 years, residing at No.11/5-122a, Melvelalar Street, Mechari Post, Mettur Taluk, Salem - 636 453, Tamil Nadu.

AADHAAR No. 8624 3709 0080, PAN. FSBPK3965A

(Hereinafter called the "PRINCIPALS")

TO AND IN FAVOUR OF

M/s.B.M.MINES, a registered firm, Represented by its Partners, having its Office at Survey No. 208-3, Allur Village, Hosur Taluk, Krishnagiri District - 635 109, Tamilnadu.

REPRESENTED BY PARTNERS:-

1. Mr. R.KRISHNASWAMY, S/o. Raju Gounder, aged about 72 years, residing at No.7/14, Dharmapuri Road, Vellar, Salem - 636 451, Tamil Nadu.

AADHAAR No. 8624 4804 4640, PAN: CQPPK0917F,

MOBILE No. 9751693055

ATTORNEYS

M/s.B.M.MINES
Rep by Partners:-


attorney

PRINCIPALS

M/s.B.M.MINES
Rep by Partners:-

C.K.Nandhini
V. Vijayaraj
K. Chirou

Document No.	20	of 2021 of Book	4
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d Registering Officer			



: 3 :



2. Mr. KAARTHIL.C.N, S/o. Natarajan, aged about 37 years, residing at No.44/1, Chinnakakaveri, Vellakalpatty Post, Rasipuram, Namakkal - 637 406, Tamil Nadu. **AADHAAR No. 9967 7773 7105, PAN. BISP2336N**

(Hereinafter called the "ATTORNEYS")

WHEREAS, the Principals and Attorneys are partners in the registered firm by name M/s.B.M.Mines and carrying on blue metal quarry and mining business. The Principals being the partners of the firm are not in a position to travel every time Hosur and other places to look after the affairs of the business and to sign the required related documents etc.,. The principals are hereby appointing the other partners of the firm as attorneys to carry out all legal acts on behalf of them. The principals are hereby giving powers to the above Attorneys empowering and authorizing the Special Power of Attorneys to do, execute, perform all the following acts, things and deeds on their behalf also in the name of the firm:-

WHEREAS, the Principals have decided to appoint, empower and authorize their Power of Attorneys to maintain the quarry and related business under the following terms :-

1. To apply to the Local Panchayat or Municipal Authorities, or Corporation, Directorate of Mines, Additional Director Mines, for obtaining and availing mining permissions, licenses, participate in tenders and to carry on all the quarry related business etc., and to sign in the plaints, affidavits, forms etc., on behalf of the Principals.

ATTORNEYS

M/s. B.M. MINES
Rep by Partners!-

PRINCIPALS

M/s. B.M. MINES
Rep by Partners!-

C. K. Nandhini
V. Vijayarani

Chitra

Document No.	26	of 2021 of Book	4
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: 4 :



2. The said Attorneys shall also be entitled to initiate proceedings or issue notices or prosecute or defend any suit, complaint or proceedings before any court or authorities or forums that may be necessary or expedient for such purpose, to appoint any pleader or agent on their behalf and to prosecute and defend such legal proceedings in or before any court or Officer or appellate or revision court on authority. And for such purpose, the said Attorneys may accept service of summons or notices issued by any lawful authority and also enter into any compromise or settlement on their behalf in respect of the suits initiated or to be initiated.

3. To apply to the Village Panchayaths or Municipal Corporation for Planning Permission, Sanction, DTCP etc. and do other necessary acts in this regard.

4. To apply to the Tamil Nadu Electricity Board, TANGEDCO, for power connection.

5. To apply to any authority or corporate body to get water and sewerage connections.

6. And generally to do all lawful acts, deeds and things necessary for the aforementioned purposes only. The Attorney are not empowered to directly sell and execute any sale deed or conveyance deeds pertaining to the schedule mentioned properties or any part thereof.

ATTORNEYS

M/s. B. M. MINES,
Rep by Partners:-


C. K. S. S. S.

PRINCIPALS

M/s. B. M. MINES,
Rep by Partners:-

C. K. S. S. S.
V. Vijayar

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: 5 :



7. That the Principals hereby agree that all acts, deeds, and things lawfully done by their Attorney shall be construed as acts, deeds and things done by them and they shall undertake to ratify and confirm all and whatsoever act that the said Attorneys shall lawfully to do and cause to be done for this purpose by virtue of the powers hereby given.

8. The Attorneys shall maintain proper accounts and submit whenever necessary. The Principals have also agreed to execute necessary receipts for the said purpose.

9. The principals hereby reiterates that the powers given under this General Power Of Attorneys are only to maintain and run the above said quarry and related business and not for any other purpose by the Attorneys.

IN WITNESSES WHERE OF THE PRINCIPALS AND ATTORNEY HAVE SET THEIR HANDS AND SIGNED THIS DEED OF SPECIAL POWER OF ATTORNEY ON THE DAY, MONTH AND YEAR FIRST ABOVE MENTIONED.

ATTORNEYS

M.L.B.M.MINES, Rep by Partners

PRINCIPALS

M.L.B.M.MINES, Rep by Partners.

c.k.vandhini

v.v.jagadees

k.Chirru

WITNESSES :-

1. **Mr. V.KRISHNAN**, S/o. Venkatachalam, aged about 54 years, residing at No.11/5-122A, AV Ilam, Mel Vellalar Street, Mecheri, Salem - 636 453, Tamil Nadu. **AADHAAR No. 2582 5263 0646**

2. **Mrs. NITHYA PRIYA MANI**, W/o. Kaarhi, aged about 35 years, residing at No.44/1, Chinnakaveri, Vellakalpatty Post, Rasipuram, Namakkal - 637 406, Tamil Nadu. **AADHAAR No. 7337 3878 4300**

DRAFTED BY :-



ROHIT LAKSHMI NARAYANAN, BBA., LLB., (Hons),
Advocate & Consultant,

Enrolment No. 2872/2019

Advocates & Consultants,

G1 & G2, Ground Floor, "AVS Towers",



Opp Court Complex,

HOSUR - 635 109.

Mobile No : 88833 96680

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Contains	16	Sheets	Sheet	
Register				



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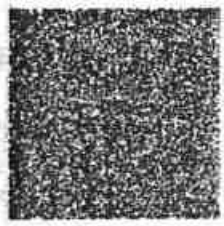
இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

பதிவேட்டு எண்/ Enrolment No.: 2007/14487/27487

Download Date: 27/04/2021 Issue Date: 08/09/2013



To
நந்தினி கிருஷ்ணன்
NANDHINI KRISHNAN
D/O: Krishnan
DNO.11/5-122a
MELVELALAR STREET
MECHARI POST METTUR TALUK
Mettur
Mecheri
Salem Tamil Nadu - 636453
9443899043

Signature Not Verified



உங்கள் ஆதார் எண் / Your Aadhaar No. :
6875 2629 0599
VID : 9190 1538 2404 5447

எனது ஆதார். எனது அடையாளம்

தகவல்

- ஆதார் அடையாளத்திற்கான சான்று குடியறிமைக்கு அல்ல.
- பாதுகாப்பான QR குறியீடு ஆப்லைன் XML / ஆன்லைன் அங்கீகாரத்தைப் பயன்படுத்தி அடையாளத்தை சரிபார்க்கவும்
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

INFORMATION

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- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
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- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- பல்வேறு அரசு மற்றும் அரசு சாரா சேவைகளை எளிதில் பெற ஆதார் உதவுகிறது.
- உங்கள் மொபைல் எண் மற்றும் மின்னஞ்சல் ஐடியை ஆதாரில் பூர்த்திக்கவும்
- mAadhaar செயல்படும் பயன்படுத்தி உங்கள் ஸ்மார்ட் போனில் ஆதாரை எடுத்துக் கொள்ளுங்கள்

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நந்தினி கிருஷ்ணன்
NANDHINI KRISHNAN
பிறந்த நாள்/DOB: 03/05/1995
பெண்/ FEMALE

6875 2629 0599
VID : 9190 1538 2404 5447

எனது ஆதார். எனது அடையாளம்

Unique Identification Authority of India

தகவல்:
D/O: கிருஷ்ணன், கனம் 11/5-122a,
மேல்வேலார் தெரு, மேச்சரி அஞ்சல்
மேட்டூர் வட்டம், மேட்டூர், சேலம்,
தமிழ் நாடு - 636453

Address:
D/O: Krishnan, DNO.11/5-122a,
MELVELALAR STREET, MECHARI POST
METTUR TALUK, Mettur, Salem,
Tamil Nadu - 636453





6875 2629 0599
VID : 9190 1538 2404 5447

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Unique Identification Authority of India

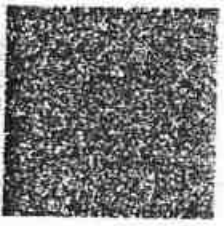
பதிவேட்டு எண்/ Enrolment No.: 2043/50643/00153

Download Date: 27/04/2021

To
விஜயகுமார் வெங்கடாஜலம்
Vijayakumar Venkatachalam
S/O: Venkatachalam
3/286
MALLIKUNDAM WEST KATTU VALAVU
MALLIKUNDAM POST
Mallikudam
Mallikuntham
Salem Tamil Nadu - 636458
9790613066

Issue Date: 24/01/2015

Signature Not Verified



உங்கள் ஆதார் எண் / Your Aadhaar No. :
9064 7345 6592
VID : 9145 5277 6395 3093

எனது ஆதார், எனது அடையாளம்

 
இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

Download Date: 27/04/2021





விஜயகுமார் வெங்கடாஜலம்
Vijayakumar Venkatachalam
பிறந்த நாள்/DOB: 22/05/1982
ஆண்/ MALE

Issue Date: 24/01/2015

9064 7345 6592
VID : 9145 5277 6395 3093

எனது ஆதார், எனது அடையாளம்

 
இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

தகவல்

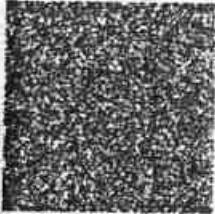
- ஆதார் அடையாளத்திற்கான எவ்வித குடிபறிமைக்கு அல்ல.
- பாதுகாப்பான QR குறியீடு ஆப்ளைன் XML / ஆப்ளைன் அங்கீகாரத்தைப் பயன்படுத்தி அடையாளத்தை சரிபார்க்கவும்
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.

■ ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
■ மல்வேறு அரசு மற்றும் அரசு சாரா சேவைகளை எளிதில் பெற ஆதார் உதவுகிறது.
■ உங்கள் மொபைல் எண் மற்றும் மின்னஞ்சல் ஐடியை ஆதாரில் புதுப்பிக்கவும்.
■ mAadhaar செயலியைப் பயன்படுத்தி உங்கள் எம்மார்ட் போஸில் ஆதாரை எடுத்துச் செல்லுங்கள்.

■ Aadhaar is valid throughout the country.
■ Aadhaar helps you avail various Government and non-Government services easily.
■ Keep your mobile number & email ID updated in Aadhaar.
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இந்திய அரசாங்கம்
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இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

Download Date: 27/04/2021

முகவரி:
தலை / தாய் பெயர்: வெங்கடாஜலம், 3/286,
மல்லிகுண்டம் மேற்கு கட்டுவலவு,
மல்லிகுண்டம் போஸ்ட், மல்லிகுண்டம், சேலம்,
தமிழ்நாடு - 636458

Address:
S/O: Venkatachalam, 3/286, MALLIKUNDAM
WEST KATTU VALAVU, MALLIKUNDAM
POST, Mallikudam, Salem,
Tamil Nadu - 636458

Issue Date: 24/01/2015

9064 7345 6592
VID : 9145 5277 6395 3093

எனது ஆதார், எனது அடையாளம்

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Contains 16 Sheets 7 Sheet.

Registering Officer





இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆணைய அமைதி
Unique Identification Authority of India

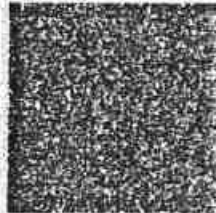
பதிவேட்டு எண்/ Enrolment No.: 0000/00379/95330

Download Date: 27/04/2021

To
சித்ரா
Chitra
W/O. Krishnan
DNO.11/5-122a
MELVELALAR STREET
MECHARI POST METTUR TALUK
Mettur
Mechari
Salem Tamil Nadu - 636453
9443899043

Issue Date: 14/04/2017

Signature Not Verified
Digitally signed by Chitra, DN: cn=Chitra, o=Unique Identification Authority of India, email=chitra@uidai.gov.in



உங்கள் ஆதார் எண் / Your Aadhaar No. :

8624 3709 0080

VID : 9172 2395 3295 2768

எனது ஆதார். எனது அடையாளம்



இந்திய அரசாங்கம்

Government of India



சித்ரா
Chitra
பிறந்த நாள்/DOB: 05/08/1974
பால்/ FEMALE

Issue Date: 14/04/2017

8624 3709 0080

VID : 9172 2395 3295 2768

எனது ஆதார். எனது அடையாளம்



Government of India



AADHAAR

தகவல்

- ஆதார் அடையாளத்திற்கான சான்று குடியறிமக்கு அல்ல.
- பாதுகாப்பான DR குறியீடு, ஆப்லைன் XML / ஆன்லைன் அங்கீகாரத்தைப் பயன்படுத்தி அடையாளத்தை சரிபார்க்கவும்
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

INFORMATION

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- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- பல்வேறு அரசு மற்றும் அரசு சாரா சேவைகளை எளிதில் பெற ஆதார் உதவுகிறது.
- உங்கள் மொபைல் எண் மற்றும் மின்னஞ்சல் இடையை ஆதாரில் புதுப்பிக்கவும்
- mAadhaar செயலியைப் பயன்படுத்தி உங்கள் ஸ்மார்ட் போனில் ஆதாரை எடுத்துச் செல்லுங்கள்

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- Carry Aadhaar in your smart phone – use mAadhaar App.



இந்திய அரசாங்கம்

Unique Identification Authority of India

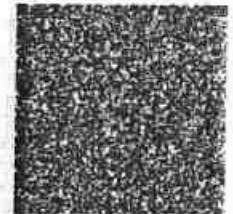


தகவல்:

W/O. சித்ரா, எண். 11/5-122a,
மெல்வேலார் தெரு, மெச்சரி ஆதார்
மேட்டூர் வட்டம், மேட்டூர், சேலம்,
தமிழ்நாடு - 636453

Address:

W/O. Krishnan, DNO.11/5-122a,
MELVELALAR STREET, MECHARI POST
METTUR TALUK, Mettur, Salem,
Tamil Nadu - 636453



8624 3709 0080

VID : 9172 2395 3295 2768

1847 | help@uidai.gov.in | www.uidai.gov.in

K. Chitra

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Contains 16 Sheets of 200

Registered Officer



भारत सरकार
Government of India

आधार

இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆளைய அமைப்பு
Unique Identification Authority of India

பதிவேட்டு எண்/ Enrolment No.: 0000/00331/46207

Download Date: 27/04/2021

To
கிருஷ்ணசுவாமி ராஜூ கவுண்டர்
Krishnaswamy Raju Gounder
S/O: Raju Gounder
7/14
dharamapuri road
Vellar
Salem Tamil Nadu - 636451
9751693055

Issue Date: 10/12/2016

Signature Not Verified

உங்கள் ஆதார் எண் / Your Aadhaar No. :
8624 4804 4640
VID : 9117 3143 4155 1142

எனது ஆதார், எனது அடையாளம்

भारत सरकार
Government of India

आधार

இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆளைய அமைப்பு
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Download Date: 27/04/2021



கிருஷ்ணசுவாமி ராஜூ கவுண்டர்
Krishnaswamy Raju Gounder
பிறந்த நாள்/DOB: 16/06/1948
ஆண்/ MALE

Issue Date: 10/12/2016

8624 4804 4640
VID : 9117 3143 4155 1142

எனது ஆதார், எனது அடையாளம்

भारत सरकार
Government of India

आधार

இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆளைய அமைப்பு
Unique Identification Authority of India

தகவல்

- ஆதார் அடையாளத்திற்கான சான்று குடியறிமம் அல்ல.
- பாதுகாப்பான QR குறியீடு ஆப்லைன் XML / ஆன்லைன் அங்கீகாரத்தைப் பயன்படுத்தி அடையாளத்தை சரிபார்க்கவும்.
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INFORMATION

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- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- பல்வேறு அரசு மற்றும் அரசு சார்பு சேவைகளை எளிதில் பெற ஆதார் உதவுகிறது.
- உங்கள் மொபைல் எண் மற்றும் மின்னஞ்சல் ஐடியை ஆதாரில் புதுப்பிக்கவும்.
- mAadhaar செயலியைப் பயன்படுத்தி உங்கள் எம்மர்டி போனில் ஆதாரை எடுத்துக் கொள்ளுங்கள்.

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- Carry Aadhaar in your smart phone – use mAadhaar App.

முடிவளி:
தகவல் / தாய் பெயர்: ராஜூ கவுண்டர், 7/14, தாமபுரி ரோடு, வெள்ளூர், சேலம், தமிழ்நாடு - 636451

Address:
S/O: Raju Gounder, 7/14, dharamapuri road, Vellar, Salem, Tamil Nadu - 636451

8624 4804 4640
VID : 9117 3143 4155 1142

எனது ஆதார், எனது அடையாளம்

[Handwritten signature]

Document No. 20 of 2021 of Book 4
Contains 16 Sheets 9 Shee.
Registering Officer





இந்திய அரண்மனை / Unique Identification Authority of India

இந்திய அரண்மனை
Unique Identification Authority of India
Government of India

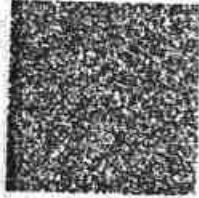
பதிவு எண் / Enrolment No.: 1110/81014/00584

Download Date: 12/11/2015

To
கார்த்தி சி.ந.
Kaarthi C N
S/O: Natarajan
44-1
Chinnakakaveri
Vellakalpatty (Post)
Rasipuram
Seerapalli(BO)
Namakkal Tamil Nadu - 637406
9566954420

Generation Date: 07/10/2015

Signature Not Verified



QR Code with Photograph

உங்கள் ஆதார் எண் / Your Aadhaar No. :

9967 7773 7105

VID : 9106 4251 5555 2428

எனது ஆதார். எனது அடையாளம்



இந்திய அரண்மனை
Government of India



கார்த்தி சி.ந.
Kaarthi C N
பிறந்த நாள்/DOB: 15/05/1983
ஆண் / MALE

9967 7773 7105

VID : 9106 4251 5555 2428

எனது ஆதார். எனது அடையாளம்



Government of India



தகவல்

- ஆதார் அடையாளத்திற்கான என்னுடைய அடையாளத்தை உறுதிப்படுத்துவதற்கு அடையாள சான்ற ஆன்லைன் ஆதாரிட்டுக் கொள்ள முடியும்.
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- To establish identity, authenticate online.
- This is electronically generated letter.

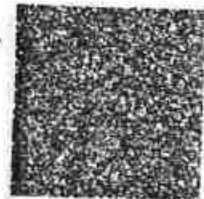
- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- வருங்காலத்தில் அரசு மற்றும் அரசு சாரா சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும்.
- Aadhaar is valid throughout the country.
- Aadhaar will be helpful in availing Government and Non-Government services in future.



இந்திய அரண்மனை / Unique Identification Authority of India

முயல்:
தகவல் / தாய் பெயர்: ந.நாராயண், 44-1,
சின்னக்காவேரி, வெல்கல்பட்டி (அரசூர்),
இராசிபுரம், தாமக்கல்,
தமிழ் நாடு - 637406

Address:
S/O: Natarajan, 44-1, Chinnakakaveri,
Vellakalpatty (Post), Rasipuram,
Namakkal,
Tamil Nadu - 637406



QR Code with Photograph

9967 7773 7105

VID : 9106 4251 5555 2428

Handwritten signature

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Contains 16 Sheets 10 Sheet.
Registering Officer





இந்திய அரசாங்கம்
Government of India



கிருஷ்ணன் வெ:
Krishnan V
பிறந்த நாள்/DOB: 25/06/1967
ஆண்/MALE



Unique Identification Authority of India

Address:
S/O Venkatachalam, 11/5-122A, AV S/O வெங்கடாச்சலம், 11/5-122அ,
Ilam, Met Vellalar Street, MECHERI, அமை இலம், மேல் வெள்ளர்
Salem, தெரு, மேச்சேரி, சேலம்,
Tamil Nadu - 636453 தமிழ்நாடு - 636453

2582 5263 0646



எனது ஆதார். எனது அடையாளம்


2582 5263 0646

(Handwritten signature)

No.	Sl. No.	20	of 2021 of Book 4
Contains	16	Sheets	11 Sheet.
Registering Officer			






இந்திய அரசாங்கம்
Government of India

இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

பதிவேட்டு எண் / Enrolment No.: 2193/00298/01217


To
தித்யபிரியா மணி
Nithya Priya Mani
W/O: Kaarthi
44-1
Chinna Kakkaveri
Vellakkalpatty (Post)
Rasipuram
Namakkal Tamil Nadu - 637406
7381015095

Signature Not Verified
Date: 20/10/2016 11:12:02 AM



உங்கள் ஆதார் எண் / Your Aadhaar No. :
7337 3878 4300
VID : 9126 9623 5707 3488



எனது ஆதார், எனது அடையாளம்

தித்யபிரியா மணி
Nithya Priya Mani
பிறந்த நாள்/DOB: 29/05/1987
பெண் / FEMALE

7337 3878 4300
VID : 9126 9623 5707 3488

எனது ஆதார், எனது அடையாளம்

தகவல்



- ஆதார் அடையாளத்திற்கான சான்று குடியரிமைக்கு அல்ல.
- பாதுகாப்பான QR குறியீடு ஆப்லைன் XML / ஆன்லைன் அங்கீகாரத்தைப் பயன்படுத்தி அடையாளத்தை சரிபார்க்கவும்.
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

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- Verify identity using Secure QR Code/ Offline XML/ Online Authentication.
- This is electronically generated letter.


- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- பல்வேறு அரசு மற்றும் அரசு சாரா சேவைகளை எளிதில் பெற ஆதார் உதவுகிறது.
- உங்கள் மொபைல் எண் மற்றும் மின்னஞ்சல் ஐடியை ஆதாரில் புதுப்பிக்கவும்.
- mAadhaar செயலியைப் பயன்படுத்தி உங்கள் எம்மார்டு பேனலில் ஆதாரை எடுத்துக் கொடுங்கள்.

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- Aadhaar helps you avail various Government and non-Government services easily.
- Keep your mobile number & email ID updated in Aadhaar.
- Carry Aadhaar in your smart phone – use mAadhaar App.

முகவரி:
கனகா பெயர்: கார்த்தி, 44-1, சின்ன
காக்காவேரி, வெள்ளக்கம்பட்டி (அஞ்சல்),
இராசிபுரம், நாமக்கல்,
தமிழ் நாடு - 637406

Address:
W/O: Kaarthi, 44-1, Chinna Kakkaveri,
Vellakkalpatty (Post), Rasipuram, Namakkal,
Tamil Nadu - 637406



7337 3878 4300
VID : 9126 9623 5707 3488

1047 | help@uidai.gov.in | uidai.gov.in

Document No. 20 of 2021 of Book 4
Contains 16 Sheets 12 Sheet.

Registering Officer

M. Nithya

R/Soolagiri/Book-4/20/2021



Presented in the office of the Sub Registrar of Soolagiri and fee of ₹ 300/- paid at 12:11 PM on the 17/12/2021 by

Left Thumb



C.K. Nandhini

Additions as per recitals of document

Execution admitted by
Left Thumb



C.K. Nandhini

Additions as per recitals of document

Execution admitted by
Left Thumb



V. Vijayan

Additions as per recitals of document

Execution admitted by
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K. Chirra

Additions as per recitals of document

Document No. 20 of 2021 of Book 4
Contains 16 Sheets 13 Sheet.
Registering Officer





17 FEB 2023

Claim admitted by
Left Thumb



Additions as per recitals of document

Claim admitted by
Left Thumb



Additions as per recitals of document

Identified by
Witness 1
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\$(dataMap.get("AS_PER_RECITAL"))

Identified by
Witness 2
Left Thumb



\$(dataMap.get("AS_PER_RECITAL"))

Document No. 20 of 2021 of Book 4
Contains 16 Sheets 14 Sheet.
Registering Officer



R/Soolagiri/Book-4/20/2021



17th day of December 2021

SARAVANKUMAR P
Sub Registrar
Soolagiri

Registered as Number R/Soolagiri/Book-4/20/2021.

Date: 17/12/2021
Soolagiri



SARAVANKUMAR P
Sub Registrar

Document No. 20 of 2021 of Book 4
Containing 16 Sheets 15 Sheet.

Registering Officer





தொடர் வரிசை எண்	எழுதிக்கொடுக்கப்பட்ட நாள்	சான்றொப்பமிட்ட நாள்
1.ATS/துளகிரி/2/2021	17/12/2021	17/12/2021
2.அதிகார ஆவணத்தை எழுதிக் கொடுக்கும் முதல்வரின் பெயர் மற்றும் கூடுதல் விவரங்கள்	MS B M MINES Survey No. 208-3, Allur Village, Hosur Taluk, Krishnagiri District - 635 109, Tamilnadu. SHOOLAGIRI Krishnagiri India	
3.அதிகார முகவரின் பெயர் மற்றும் கூடுதல் விவரங்கள்	MS B M MINES Survey No. 208-3, Allur Village, Hosur Taluk, Krishnagiri District - 635 109, Tamilnadu. SHOOLAGIRI Krishnagiri India	
4.முதல்வரை இன்னாரென்று நிரூபிப்பவர்களின் பெயர் மற்றும் கூடுதல் விவரங்கள்	V.KRISHNAN AV Illam, Mel Vellaia Street, Mecheri, Salem Salem India .NITHYA PRIYA MANI Chinnakaveri, Vellakalpaty Post, Rasipuram, Namakkal Namakkal India	
5.அளிக்கப்படும் அதிகாரத்தின் தண்மை		
6.விதி 52ன் கீழ் வரிபிளப்பு முதலியவைகள் தொடர்பான குறிப்பு		
7.எவ்வாறு மெய்பிக்கப்பட்டது		
அலுவலகம்: துளகிரி		
தேதி: 17/12/2021	பதிவு அலுவலரின் கையொப்பம்	

Document No. 20 of 2021 of Book 4
Contains 16 Sheets 16 Sheet.
Registering Officer





आधार

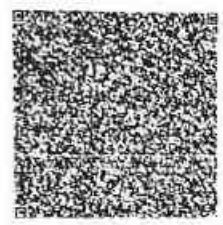
அடையாள அட்டை

இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India

உண்/ Enrolment No.: 1110/81014/00584

To
கார்த்தி சி ந
Karthi C N
S/O Natarajan
44-1
Chinnakaveri
Vellakalpaty (Post)
Rasipuram
Seerapalli (BO)
Namakkal Tamil Nadu - 637406
9566954420

Date: 02/03



Signature Not Verified

உங்கள் ஆதார் எண் / Your Aadhaar No. :

9967 7773 7105
VID - 9106 4251 5555 2428

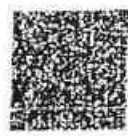
எனது ஆதார், எனது அடையாளம்

இந்திய அரசாங்கம்
Government of India

கார்த்தி சி ந
Karthi C N
பிறந்த நாள்/DOB: 15/05/1983
ஆண்/ MALE



9967 7773 7105
VID - 9106 4251 5555 2428



எனது ஆதார், எனது அடையாளம்



ANNEXURE 18



தகவல்

- ஆதார் அடையாளத்திற்கான சான்று, குடியரிமைக்கு ஆய்வு செய்யப்படும்.
- அடையாள சான்றை ஆன்லைன் ஆதாரங்களை மூலமாக பெறவும்.
- இது எலக்ட்ரானிக் செயல்முறை மூலம் தயாரிக்கப்பட்ட கடிதமாகும்.

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
- To establish identity, authenticate online.
- This is electronically generated letter.

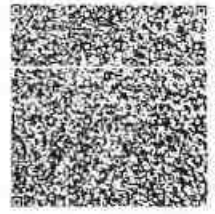
- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- வருங்காலத்தில் அரசு மற்றும் அரசு சாரா சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும்.
- Aadhaar is valid throughout the country.
- Aadhaar will be helpful in availing Government and Non-Government services in future.



இந்திய அடையாள அட்டை அமைப்பு
Unique Identification Authority of India

முகவரி:
ஆதார் / தாய் பெயர்: நாராயண, 44-1,
சின்னக்காவேரி, வேலக்கல்பட்டி (அஞ்சல்),
இராசிபுரம், தாமயம்,
தமிழ்நாடு - 637406

Address:
S/O Natarajan, 44-1, Chinnakaveri,
Vellakalpaty (Post), Rasipuram,
Namakkal,
Tamil Nadu - 637406



9967 7773 7105
VID - 9106 4251 5555 2428

எனது ஆதார், எனது அடையாளம்

கார்த்தி

Document No: 769/ of 2021 of Book...1..

Contains 25 Sheets 20 Sheet



அறிவியல் புலம்
FACULTY OF SCIENCE

பெரியார் பல்கலைக்கழக ஆட்சிக்குழு 2010 ஆம் ஆண்டு ஏப்ரல் மாதம்
நடந்த பயன்பாட்டுப்புவியமைப்பியல் தேர்வில்
அரசு கலைக் கல்லூரி, சேலம் - 636 007 (தன்னாட்சி) பயின்ற
P விஸ்வநாதன் என்பவர்

முதல் வகுப்பு A++ தரத்தில் தேர்ச்சி பெற்றார் என்று தக்க
தேர்வாளர்கள் சான்றளித்தபடி அறிவியல் நிறைஞர் என்னும்
பட்டத்தை அவருக்குப் பல்கலைக்கழக இலச்சினையுடன் வழங்குகிறது.

The Syndicate of the Periyar University hereby makes known
that **VISWANATHAN P** *has been*
admitted to the **DEGREE OF MASTER OF SCIENCE in**
APPLIED GEOLOGY
he/she having been certified by duly appointed Examiners to be qualified
to receive the same and was placed in the **FIRST CLASS**
WITH A++ GRADE *at the Examination held in* **APR-2010** *through*
GOVERNMENT ARTS COLLEGE, SALEM - 636 007 (AUTONOMOUS).



Given under the seal of this university

நாள்
Dated 28-02-2011
சேலம் 636011, தமிழ்நாடு, இந்தியா.
Salem 636011, Tamil Nadu, India.

பதிவாளர்
Registrar

துணைவேந்தர்
Vice-Chancellor

TIN. No. : 3312 2703755
C.S.T. No. : 880783 / 29.11.2005
Area Code : 142



ANNEXURE

Ph : Mines : 0427 - 2403645



SUDHARSHAAN MINING CORPORATION

Mfrs : Dead Burnt Magnesite, Lightly Calcined Magnesite, Dunite Chips & Powder.
S.F. No. 77, Kuduvampatty Road, Vinayagampatti, SALEM - 636 008.

Date : 28.12.2015.....

EXPERIENCE CERTIFICATE

This is to certify that **Shri.P.Viswanathan, S/o. P.Paramasivam, Geologist,** has worked in our Magnesite Mines from **13.09.2010 to 25.11.2015** as our company Geologist. During his service he used to maintain all records and returns submitted to Government Departments.


His nature of work in the mines was to show the plan of working and demarcate Magnesite reserve areas. He was looking after production of Magnesite and was maintaining quality of the Mineral as per the specifications given by the buyers.

During his tenor of his service he was very sincere and prompt in his duties.

I wish him the best of luck in all his future endeavours.

For M/s.SUDHARSHAAN MINING CORPORATION,

SUDHARSHAAN MINING CORPORATION
SF-77, KUDUVAMPATTI ROAD,
SALEM - 636 008, Tamilnadu.


G.PASUPATHY,
Proprietor

28 Dec 2015

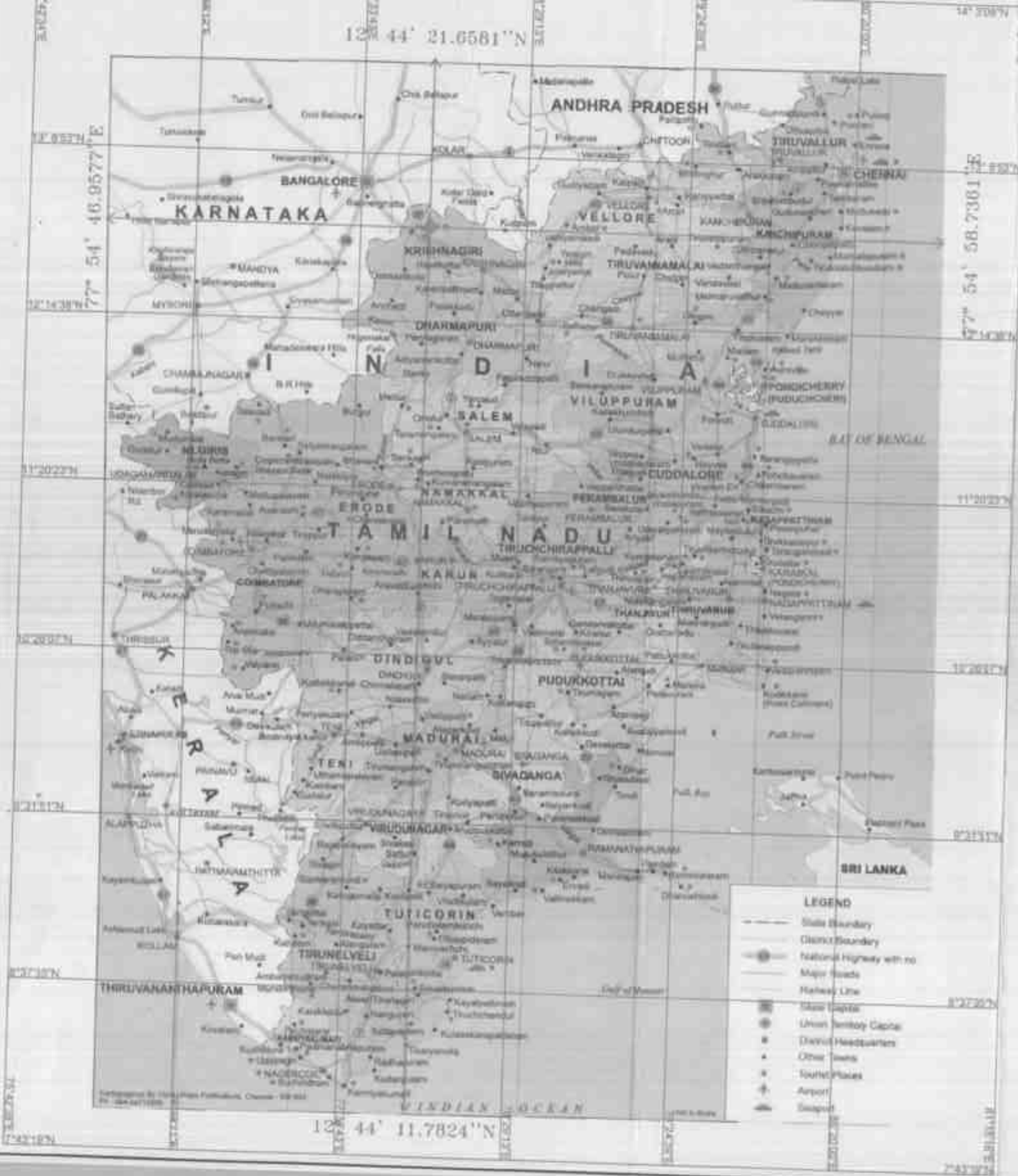


PLATE NO: I

DATE OF SURVEY : 23.01.2023

APPLICANT:

M/s.B.M.MINES
 C/O.C.N.KARTHI
 NO.23,VAKIL HOSUR HILLS,
 OFF RAYAKOTTAI ROAD,
 CHENNATHUR POST,HOSUR,
 KRISHNAGIRI-635 109.

**LOCATION OF QUARRY
 LEASE APPLIED AREA:-**

S.F.No : 207/1A,207/1A2A and 208/3(P),
 EXTENT : 4.50.0 HA,
 VILLAGE : AALUR
 TALUK : HOSUR
 DISTRICT : KRISHNA GIRI

INDEX

Q. L. A. AREA : ●
 TOPO SHEET NO. : 57 - H/14
 LATITUDE : 12° 44' 11.7824'' N to 12° 44' 21.6581'' N
 LONGITUDE : 77° 54' 46.9577'' E to 77° 54' 58.7361'' E

LOCATION PLAN

SCALE 1:24,00,000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
 PLATE IS TRUE AND CORRECT TO THE
 BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP
 AUTHENTICATED
 BY STATE GOVERNMENT
P. Vishwanathram
 P. VISWANATHARAM,
 QUALIFIED PERSON



APPLICANT:

M/s.B.M.MINES
 C/O.C.N.KARTHI
 NO.23,VAKIL HOSUR HILLS,
 OFF RAYAKOTTAI ROAD,
 CHENNATHUR POST,HOSUR,
 KRISHNAGIRI-635 109.



LOCATION OF QUARRY

LEASE APPLIED AREA:-

S.F.No : 207/1A1,207/1A2A and 208/3(P).
 EXTENT : 4.50.0 HA.
 VILLAGE : AALUR
 TALUK : HOSUR
 DISTRICT : KRISHNAGIRI

INDEX

CONVENTIONAL SYMBOLS

Topographic contour lines	—	—	—
Water bodies	—	—	—
...

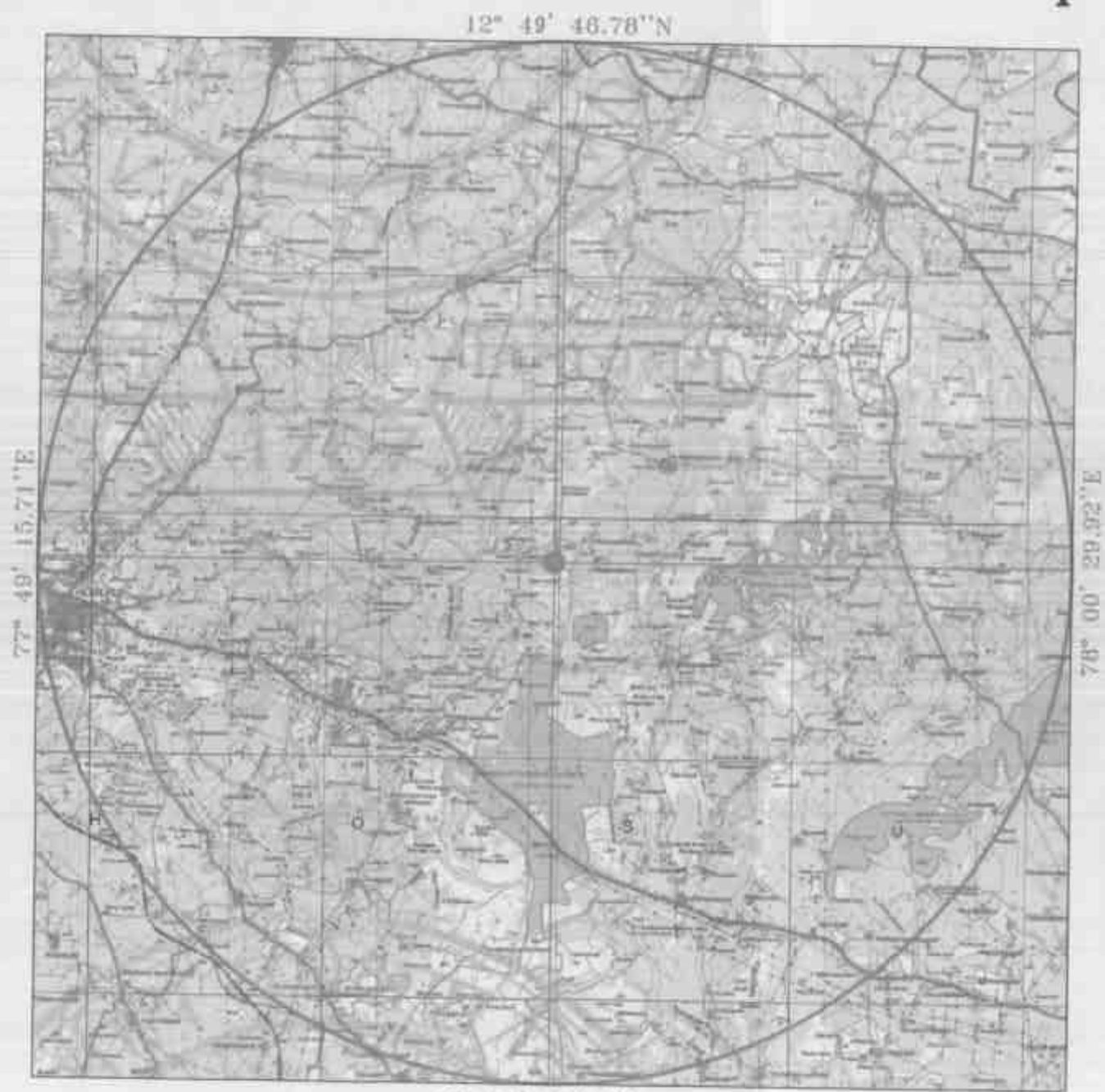
TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 10KM RADIUS



SCALE - 1:100000

PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEADSMAN AUTHENTICATED

BY STATE GOVERNMENT
P. Venkatesh
 P. VENKATESH, S.
 QUALIFIED PERSON



TOPO SHEET NO. : 57- H/14
 LATITUDE : 12° 44' 11.7824''N to 12° 44' 21.6581''N
 LONGITUDE : 77° 54' 46.9577'' E to 77° 54' 58.7361'' E
 10KM RADIUS : 
 Q.L.APPLIED AREA: 

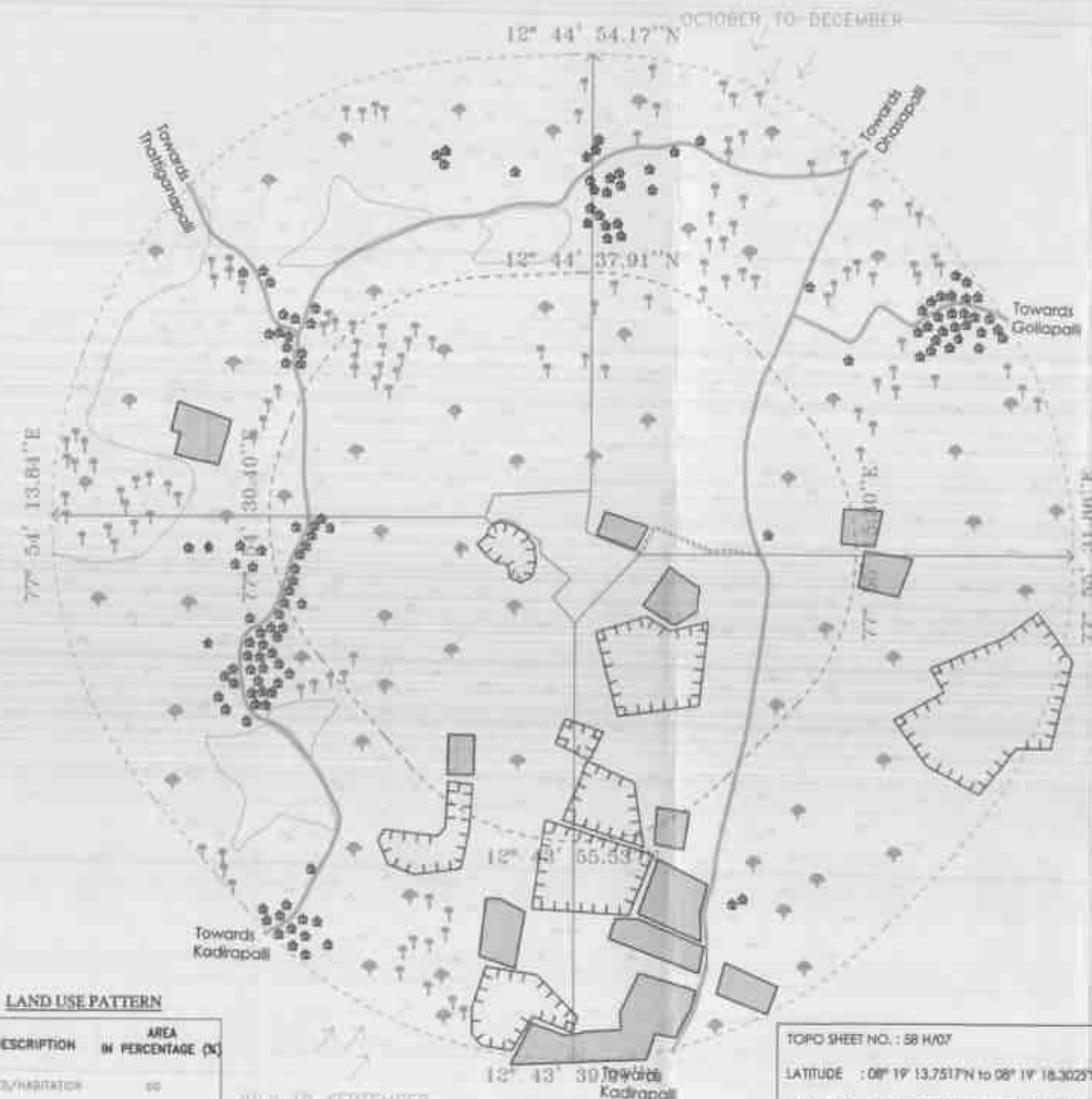


PLATE NO: B

DATE OF SURVEY : 23.01.2023

APPLICANT:
 M/L.B.M.MINES
 C/O.C.N.KARTHI
 NO.23,VAKIL HOSUR HILLS,
 OFF RAYAKOTTAI ROAD,
 CHENNATHUR POST,HOSUR,
 KRISHNAGIRI-635 109.

LOCATION OF QUARRY LEASE APPLIED AREA:-
 S.F.No : 207/1A1,207/1A2A & 208/3(P).
 EXTENT : 450.0 HA.
 VILLAGE : AALUR
 TALUK : HOSUR
 DISTRICT : KRISHNAGIRI

INDEX

APPROACH ROAD	
WIND DIRECTION	
TREES	
VILLAGE ROAD	
AGRICULTURE LAND	
RIVER	
CRUSHER PLANT	
HABITATION	
QUARRY PIT	

ENVIRONMENTAL & LAND USE PLAN (For 1Km Radius)
 SCALE 1:10,000

PREPARED BY:
 THIS IS TO CERTIFY THAT THE INFORMATION IN THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASMAP AUTHENTICATED BY STATE GOVERNMENT
P. Viswantharaj
 P. VISWANATHARAJ, S.D., QUALIFIED PERSON

LAND USE PATTERN

DESCRIPTION	AREA IN PERCENTAGE (%)
TREES/HABITATION	60
ROAD/CANAL/TANK	15
AGRICULTURAL LAND	20
CRUSHER/PIT	05

TOPO SHEET NO. : 58 H/07
 LATITUDE : 08° 19' 13.7517"N to 08° 19' 18.3025"N
 LONGITUDE : 77° 18' 39.8978"E to 77° 18' 49.3160"E
 1KM RADIUS :
 500M RADIUS :
 Q.LAPPLIED AREA:

JULY TO SEPTEMBER

PLATE NO: I-C

DATE OF SURVEY : 23.01.2023

APPLICANT:

M/s.B.M.MNES
C/O.C.N.KARTHI
NO.23,VAKIL HOSUR HILLS,
OFF RAYAKOTTAI ROAD,
CHENNATHUR POST,HOSUR,
KRISHNAGIRI-635 109.

**LOCATION OF QUARRY
LEASE APPLIED AREA:-**

S.F.No : 207/1A1,207/1A2A & 208/3(P).
EXTENT : 4.50.0 HA.
VILLAGE : AALUR
TALUK : HDSUR
DISTRICT : KRISHNAGIRI

INDEX

Q.L.APPLIED BOUNDARY	
APPROACH ROAD	
MAJOR ROAD	
PANCHAYAT ROAD	

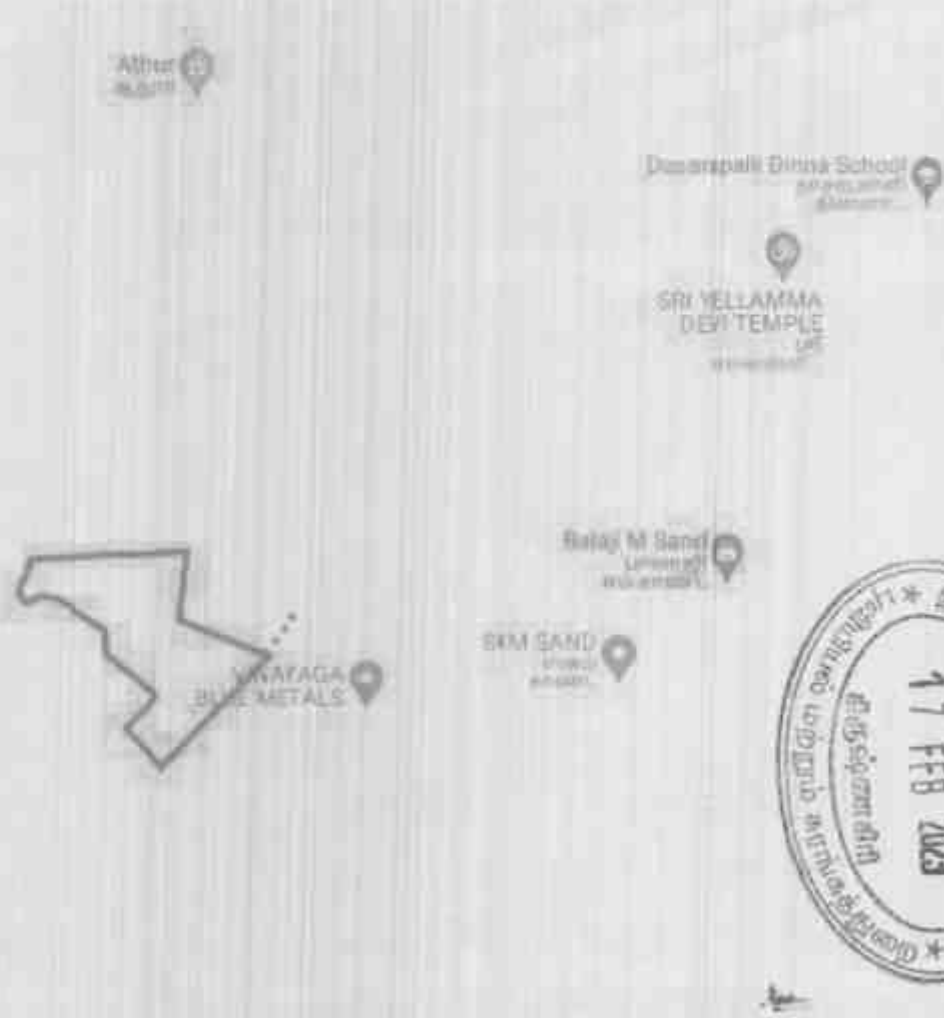
ROUTE MAP

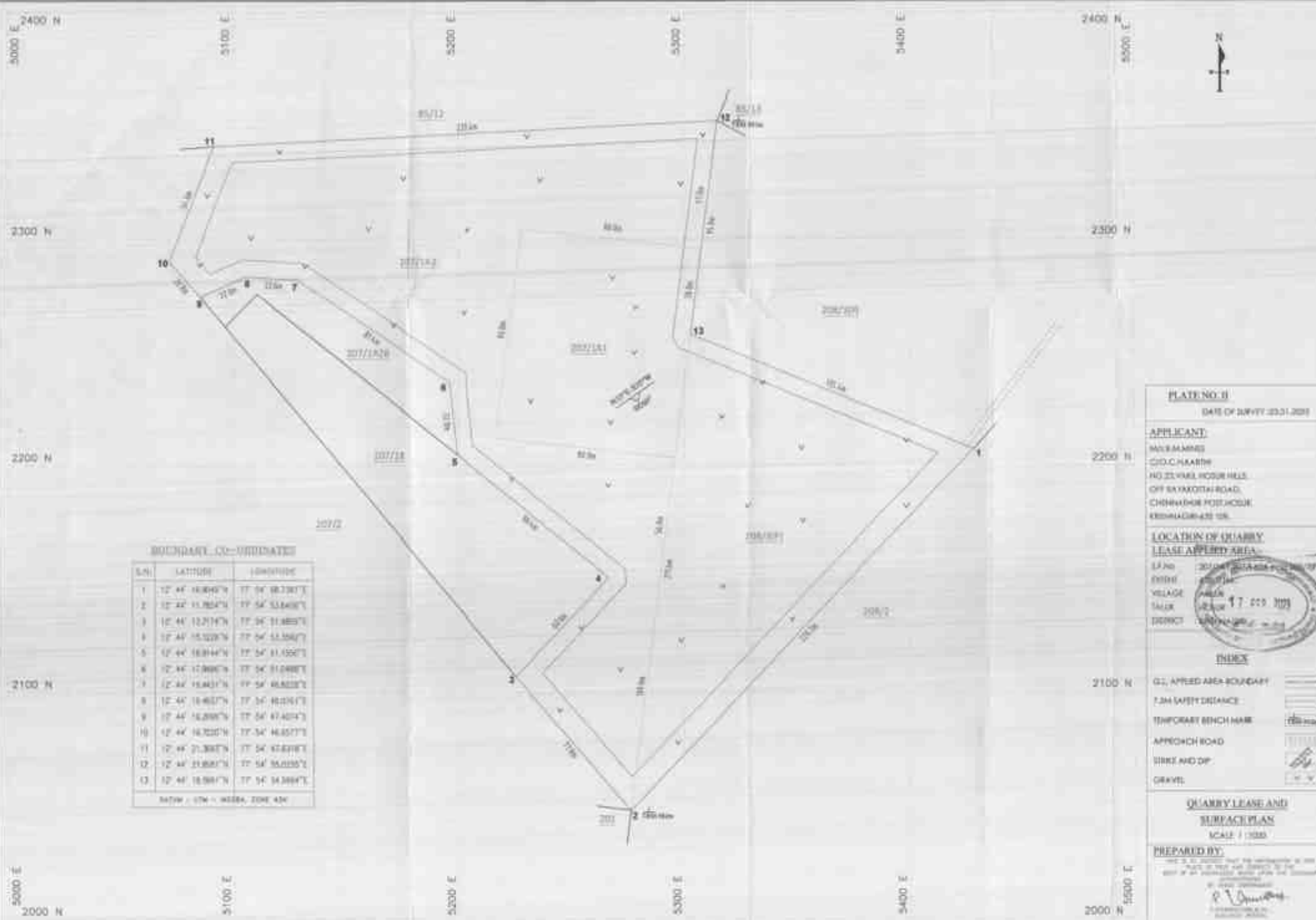
Not to Scale

PREPARED BY:

TO CERTIFY THAT THE INFORMATION IN THIS
PLATE IS TRUE AND CORRECT TO THE
BEST OF MY KNOWLEDGE BASED UPON THE LEASEMAP
AUTHENTICATED
BY STATE GOVERNMENT

P. Viswanathan
P. VISWANATHAN, M.Sc.,
QUALIFIED PERSON





BOUNDARY CO-ORDINATES

S.N.	LATITUDE	LONGITUDE
1	12° 44' 16.840"N	77° 54' 48.330"E
2	12° 44' 15.854"N	77° 54' 53.600"E
3	12° 44' 12.714"N	77° 54' 51.480"E
4	12° 44' 15.229"N	77° 54' 51.580"E
5	12° 44' 18.944"N	77° 54' 51.050"E
6	12° 44' 17.960"N	77° 54' 51.240"E
7	12° 44' 16.431"N	77° 54' 48.220"E
8	12° 44' 16.467"N	77° 54' 48.267"E
9	12° 44' 16.288"N	77° 54' 47.424"E
10	12° 44' 16.700"N	77° 54' 46.571"E
11	12° 44' 21.387"N	77° 54' 47.816"E
12	12° 44' 24.881"N	77° 54' 50.250"E
13	12° 44' 18.981"N	77° 54' 54.388"E

SCALE: 1 CM = 4000 M

PLAT NO. 8
DATE OF SURVEY: 20/11/2011

APPLICANT:
M/S. SANKAR
C/O. CHAMBI
NO. 22, VILAS HOUSING
OFF SAAYODAI ROAD,
CHENNAI-600 038
KEDHAR-433 018

LOCATION OF QUARRY
LEASE AREA

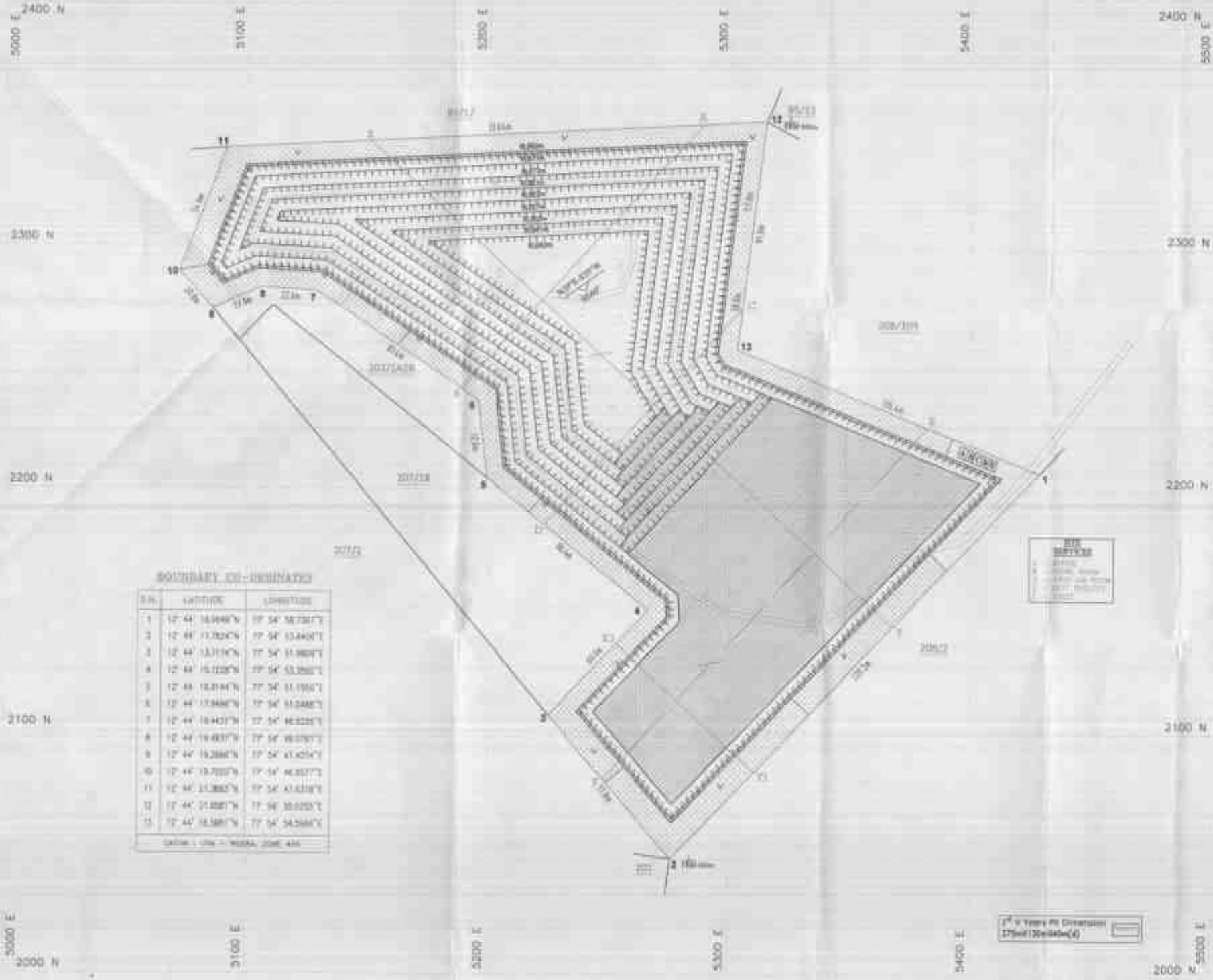
S.F. NO. 20/11/2011
VILLAGE: PULI
TALEUK: KEDHAR
DISTRICT: CHENNAI



- INDEX
- GL APPVED AREA BOUNDARY
 - 7.5M SAFETY DISTANCE
 - TEMPORARY BENCH MARK
 - APPROACH ROAD
 - DIRTY ROAD DP
 - GRAVEL

QUARRY LEASE AND
SURFACE PLAN
SCALE: 1:1000

PREPARED BY:
S. V. Srinivasan
SURVEYOR



BOUNDARY CO-ORDINATES

S.N.	EASTING	NORTHING
1	12.44 18.9487N	77.54 58.7367E
2	12.44 17.7024N	77.54 53.4407E
3	12.44 13.7117N	77.54 51.9807E
4	12.44 15.0227N	77.54 53.2867E
5	12.44 18.0147N	77.54 51.1907E
6	12.44 17.8467N	77.54 51.2887E
7	12.44 18.4017N	77.54 48.8287E
8	12.44 18.4817N	77.54 48.0717E
9	12.44 18.2867N	77.54 47.4017E
10	12.44 18.7007N	77.54 46.8377E
11	12.44 18.3807N	77.54 47.8217E
12	12.44 21.8877N	77.54 50.0207E
13	12.44 18.5817N	77.54 54.5867E

SCALE: 1:500 - NORTH ZONE 41N

THE SURVEYOR
 1. Survey
 2. Boundary
 3. Topography
 4. Planimetry
 5. Hydrography
 6. Photogrammetry
 7. Remote Sensing
 8. GIS
 9. CAD
 10. GPS

- 1st-yr Proposed area to be Plotted
- 2nd-yr Proposed area to be Plotted
- 3rd-yr Proposed area to be Plotted
- 4th-yr Proposed area to be Plotted
- 5th-yr Proposed area to be Plotted
- 6th-yr Proposed area to be Plotted
- 7th-yr Proposed area to be Plotted
- 8th-yr Proposed area to be Plotted
- 9th-yr Proposed area to be Plotted
- 10th-yr Proposed area to be Plotted

PLATE NO. III-A
 DATE OF SURVEY: 10/01/2023

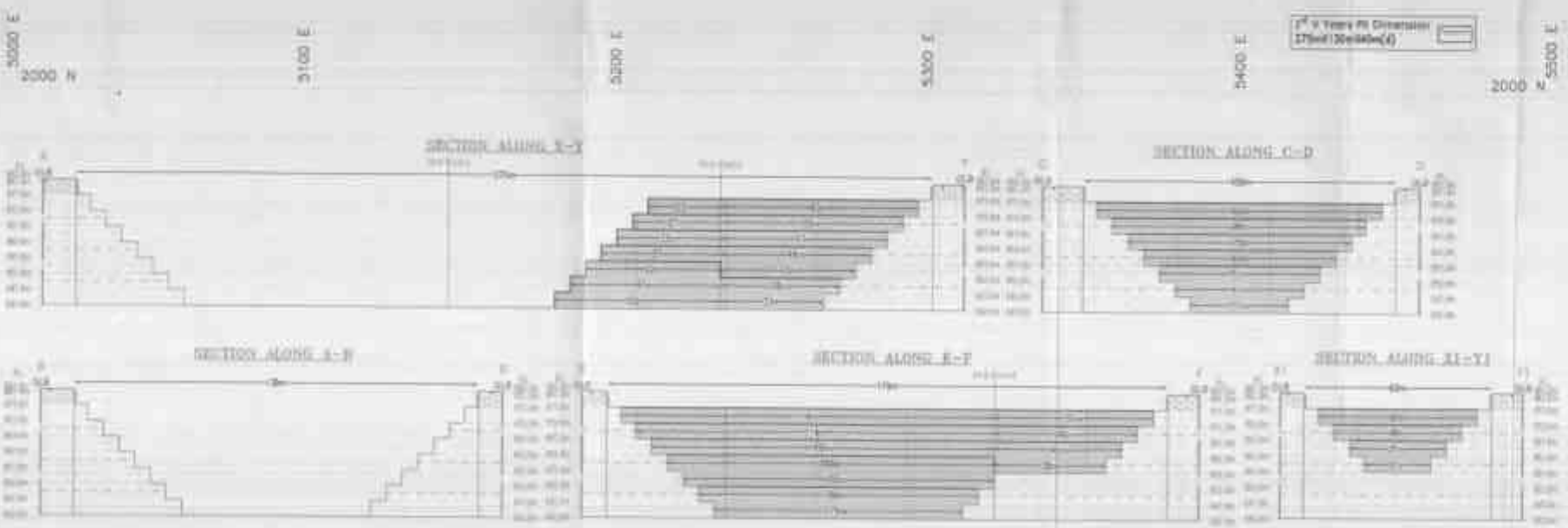
APPLICANT:
 MURAMAH
 CHOLNARATH
 NO.23 VASU HOUR HILL
 OFF BAYKOTTA ROAD
 CHENNANUR POSTHOLE
 BRINHAGUR-632 10P

LOCATION OF QUARRY LEASE APPLIED AREA:
 T.P. No. 2021A/2022A/2023A/2024A/2025A/2026A/2027A
 GRAM - 4,800 HA
 VILLAGE - AALUR
 TALUK - HOSEUR
 DISTRICT - KANNUR

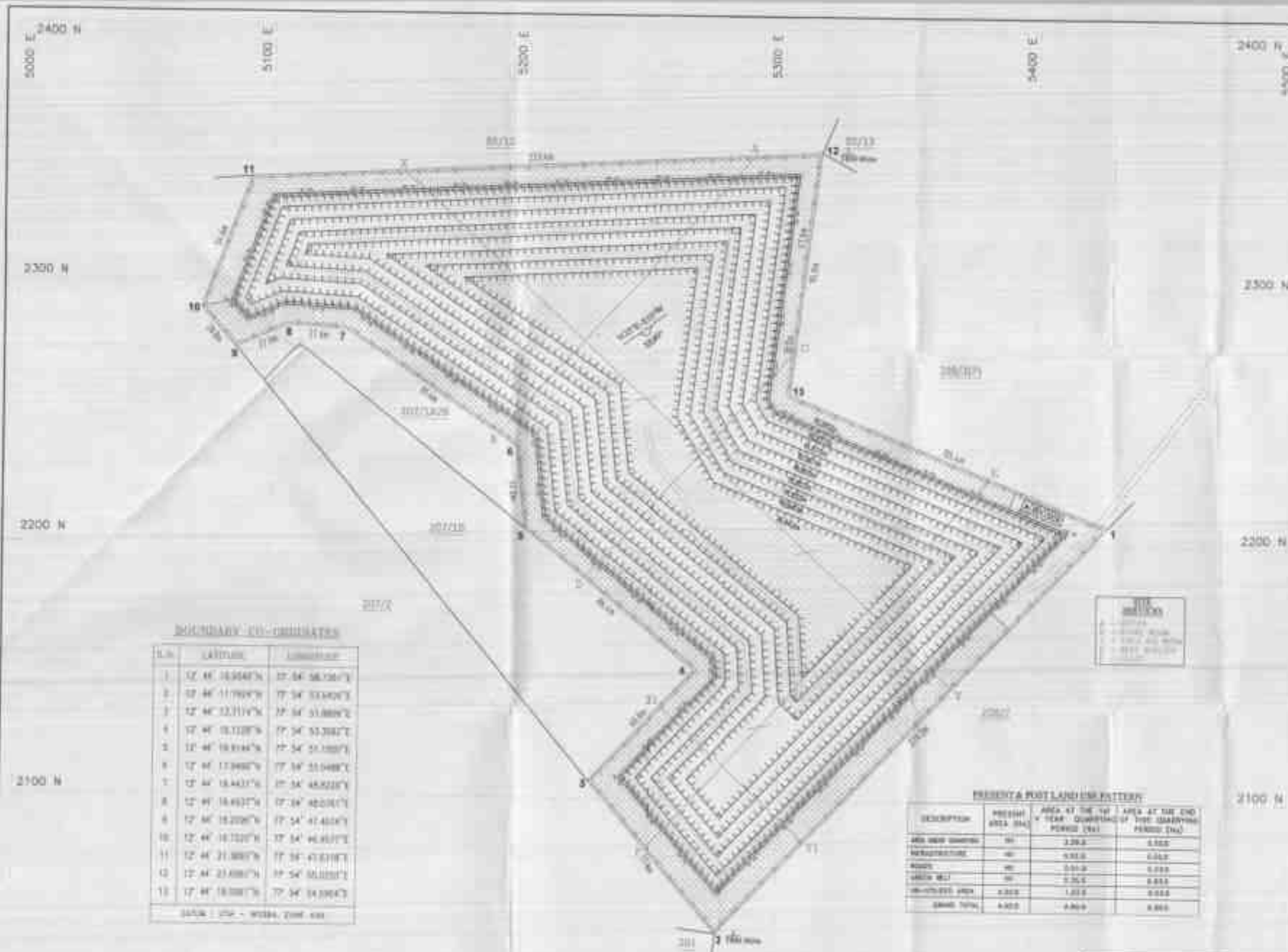
- INDEX**
- QL APPLIED AREA BOUNDARY
 - 1.5M SAFETY DISTANCE
 - TEMPORARY BENCH MARK
 - APPROACH ROAD
 - DRAIN AND DCP
 - TOPICAL
 - ROCKSTONE
 - QUARRY PIT
 - QUARRY ROAD
 - GRAVE

TOPOGRAPHY GEOLOGICAL, YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTIONS V-X YEAR SCALE 1:1000

PREPARED BY:
 P. V. Venkatesh
 Surveyor
 Survey Department
 Government of Karnataka



1st Year Pit Dimension
 175m x 30m x 4m



BOUNDARY CO-ORDINATES

LINE	EASTING	NORTHING
1	12 46 18.9487N	17 34 58.7207E
2	12 46 11.7907N	17 34 53.9407E
3	12 46 12.1117N	17 34 51.8807E
4	12 46 18.1287N	17 34 53.2887E
5	12 46 18.9347N	17 34 51.1007E
6	12 46 12.9407N	17 34 51.0487E
7	12 46 18.4317N	17 34 48.2287E
8	12 46 18.6917N	17 34 48.0117E
9	12 46 18.2097N	17 34 41.4817E
10	12 46 18.7207N	17 34 46.8117E
11	12 46 21.8807N	17 34 43.2117E
12	12 46 21.8807N	17 34 50.0117E
13	12 46 18.0007N	17 34 54.2647E

SCALE 1:500 - WGS84 2011 GRS

PRESBYTERIAN QUARRY

DESCRIPTION	PRESBYTERIAN AREA (HA)	AREA AT THE END OF YEAR QUARRYING PERIOD (HA)	AREA AT THE END OF QUARRYING PERIOD (HA)
AREA UNDER QUARRY	11	2.20	2.20
INFRASTRUCTURE	11	0.10	0.10
ROADS	11	0.10	0.10
GREEN BELT	11	0.10	0.10
UNDEVELOPED AREA	2.20	1.20	0.20
TOTAL TOTAL	4.20	4.20	4.20

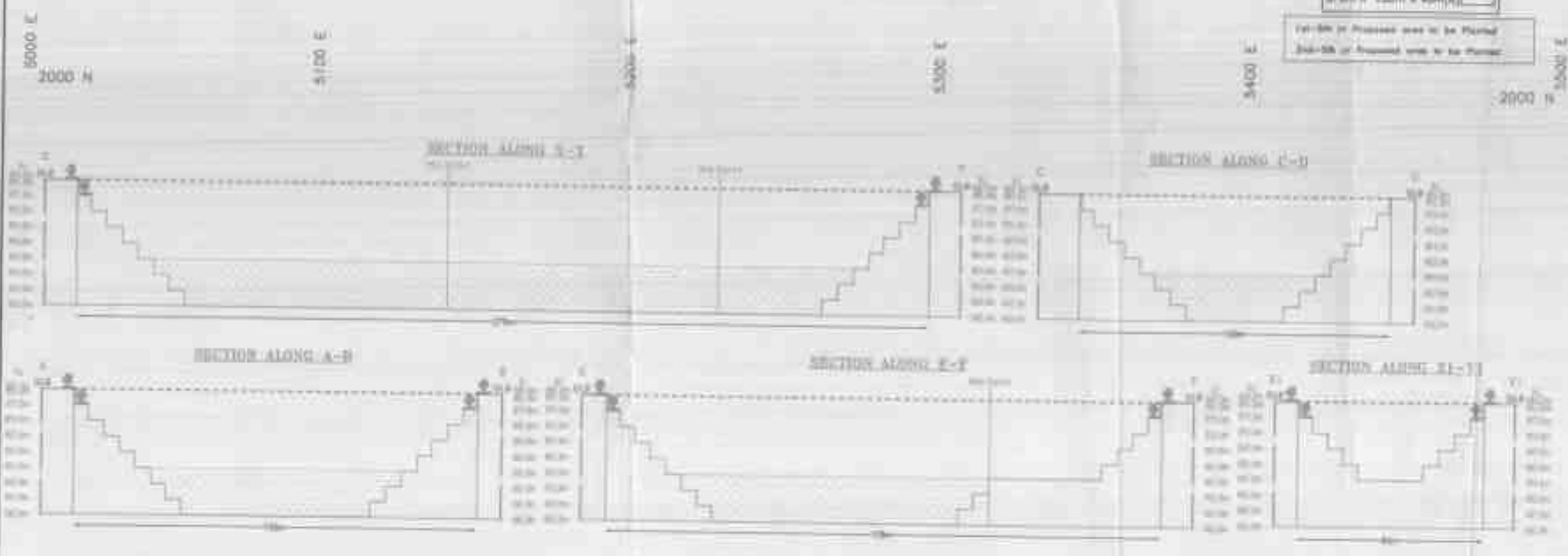


PLATE NO. IV
DATE OF SURVEY 22-01-2017

APPLICANT:
MUSMANN
C/O C. HEWITT
HOUSE NO. 108, HILL
OFF. BAYAN, BANGALORE
CHENNAI 600 088
KARNATAKA INDIA

LOCATION OF QUARRY LEASE APPLIED AREA:
17th Mile, 20th/21st/22nd/23rd/24th/25th/26th/27th/28th/29th/30th/31st/32nd/33rd/34th/35th/36th/37th/38th/39th/40th/41st/42nd/43rd/44th/45th/46th/47th/48th/49th/50th/51st/52nd/53rd/54th/55th/56th/57th/58th/59th/60th/61st/62nd/63rd/64th/65th/66th/67th/68th/69th/70th/71st/72nd/73rd/74th/75th/76th/77th/78th/79th/80th/81st/82nd/83rd/84th/85th/86th/87th/88th/89th/90th/91st/92nd/93rd/94th/95th/96th/97th/98th/99th/100th/101st/102nd/103rd/104th/105th/106th/107th/108th/109th/110th/111th/112th/113th/114th/115th/116th/117th/118th/119th/120th/121st/122nd/123rd/124th/125th/126th/127th/128th/129th/130th/131st/132nd/133rd/134th/135th/136th/137th/138th/139th/140th/141st/142nd/143rd/144th/145th/146th/147th/148th/149th/150th/151st/152nd/153rd/154th/155th/156th/157th/158th/159th/160th/161st/162nd/163rd/164th/165th/166th/167th/168th/169th/170th/171st/172nd/173rd/174th/175th/176th/177th/178th/179th/180th/181st/182nd/183rd/184th/185th/186th/187th/188th/189th/190th/191st/192nd/193rd/194th/195th/196th/197th/198th/199th/200th/201st/202nd/203rd/204th/205th/206th/207th/208th/209th/210th/211st/212nd/213th/214th/215th/216th/217th/218th/219th/220th/221st/222nd/223rd/224th/225th/226th/227th/228th/229th/230th/231st/232nd/233rd/234th/235th/236th/237th/238th/239th/240th/241st/242nd/243rd/244th/245th/246th/247th/248th/249th/250th/251st/252nd/253rd/254th/255th/256th/257th/258th/259th/260th/261st/262nd/263rd/264th/265th/266th/267th/268th/269th/270th/271st/272nd/273rd/274th/275th/276th/277th/278th/279th/280th/281st/282nd/283rd/284th/285th/286th/287th/288th/289th/290th/291st/292nd/293rd/294th/295th/296th/297th/298th/299th/300th/301st/302nd/303rd/304th/305th/306th/307th/308th/309th/310th/311st/312nd/313th/314th/315th/316th/317th/318th/319th/320th/321st/322nd/323rd/324th/325th/326th/327th/328th/329th/330th/331st/332nd/333rd/334th/335th/336th/337th/338th/339th/340th/341st/342nd/343rd/344th/345th/346th/347th/348th/349th/350th/351st/352nd/353rd/354th/355th/356th/357th/358th/359th/360th/361st/362nd/363rd/364th/365th/366th/367th/368th/369th/370th/371st/372nd/373rd/374th/375th/376th/377th/378th/379th/380th/381st/382nd/383rd/384th/385th/386th/387th/388th/389th/390th/391st/392nd/393rd/394th/395th/396th/397th/398th/399th/400th/401st/402nd/403rd/404th/405th/406th/407th/408th/409th/410th/411st/412nd/413th/414th/415th/416th/417th/418th/419th/420th/421st/422nd/423rd/424th/425th/426th/427th/428th/429th/430th/431st/432nd/433rd/434th/435th/436th/437th/438th/439th/440th/441st/442nd/443rd/444th/445th/446th/447th/448th/449th/450th/451st/452nd/453rd/454th/455th/456th/457th/458th/459th/460th/461st/462nd/463rd/464th/465th/466th/467th/468th/469th/470th/471st/472nd/473rd/474th/475th/476th/477th/478th/479th/480th/481st/482nd/483rd/484th/485th/486th/487th/488th/489th/490th/491st/492nd/493rd/494th/495th/496th/497th/498th/499th/500th/501st/502nd/503rd/504th/505th/506th/507th/508th/509th/510th/511st/512nd/513th/514th/515th/516th/517th/518th/519th/520th/521st/522nd/523rd/524th/525th/526th/527th/528th/529th/530th/531st/532nd/533rd/534th/535th/536th/537th/538th/539th/540th/541st/542nd/543rd/544th/545th/546th/547th/548th/549th/550th/551st/552nd/553rd/554th/555th/556th/557th/558th/559th/560th/561st/562nd/563rd/564th/565th/566th/567th/568th/569th/570th/571st/572nd/573rd/574th/575th/576th/577th/578th/579th/580th/581st/582nd/583rd/584th/585th/586th/587th/588th/589th/590th/591st/592nd/593rd/594th/595th/596th/597th/598th/599th/600th/601st/602nd/603rd/604th/605th/606th/607th/608th/609th/610th/611st/612nd/613th/614th/615th/616th/617th/618th/619th/620th/621st/622nd/623rd/624th/625th/626th/627th/628th/629th/630th/631st/632nd/633rd/634th/635th/636th/637th/638th/639th/640th/641st/642nd/643rd/644th/645th/646th/647th/648th/649th/650th/651st/652nd/653rd/654th/655th/656th/657th/658th/659th/660th/661st/662nd/663rd/664th/665th/666th/667th/668th/669th/670th/671st/672nd/673rd/674th/675th/676th/677th/678th/679th/680th/681st/682nd/683rd/684th/685th/686th/687th/688th/689th/690th/691st/692nd/693rd/694th/695th/696th/697th/698th/699th/700th/701st/702nd/703rd/704th/705th/706th/707th/708th/709th/710th/711st/712nd/713th/714th/715th/716th/717th/718th/719th/720th/721st/722nd/723rd/724th/725th/726th/727th/728th/729th/730th/731st/732nd/733rd/734th/735th/736th/737th/738th/739th/740th/741st/742nd/743rd/744th/745th/746th/747th/748th/749th/750th/751st/752nd/753rd/754th/755th/756th/757th/758th/759th/760th/761st/762nd/763rd/764th/765th/766th/767th/768th/769th/770th/771st/772nd/773rd/774th/775th/776th/777th/778th/779th/780th/781st/782nd/783rd/784th/785th/786th/787th/788th/789th/790th/791st/792nd/793rd/794th/795th/796th/797th/798th/799th/800th/801st/802nd/803rd/804th/805th/806th/807th/808th/809th/810th/811st/812nd/813th/814th/815th/816th/817th/818th/819th/820th/821st/822nd/823rd/824th/825th/826th/827th/828th/829th/830th/831st/832nd/833rd/834th/835th/836th/837th/838th/839th/840th/841st/842nd/843rd/844th/845th/846th/847th/848th/849th/850th/851st/852nd/853rd/854th/855th/856th/857th/858th/859th/860th/861st/862nd/863rd/864th/865th/866t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TOPOGRAPHICAL VIEW OF ALUR ROUGH STONE
AND GRAVEL QUARRY LEASE APPLIED AREA



Name of the Applicant : **M/s. B.M. Mines,**
Address : **C/o. C.N. Kaarthy.,**
Villa No.23, Vakil Hosur Hills,
Off Rayakottai Road, Chennathur Post,
Hosur, Krishnagiri District,
Tamil Nadu State – 635 109.

LOCATION DETAILS

Extent : 4.50.0 Ha
S.F.Nos. : 207/1A1, 207/1A2A and 208/3 (Part)
Village : Alur
Taluk : Hosur
District : Krishnagiri
State : Tamil Nadu

Signature of the Applicant
For M/s. B.M. Mines,

C.N. Kaarthy

(C.N. Kaarthy)
Authorized Signatory

[Signature]
(Village Administrative officer)
Attestation

S.RATHINAVEL

Mallapuram
Somanahalli - 636 803,
Nallampalli Taluk,
Dharmapuri District.

GSTIN : 33ARDPR7670M1Z8
Mobile : 99654 94172
Office : 04342 - 294007
E-mail : srathinavel145@gmail.com

Date-22/02/2023

To:

M/s. B.M Mines C/o. C.N. Kaarathi,
Villa No. 23, Vakil Hosur Hills,
Off Rayakottai Road,
Chennathur Post
Hosur, Krishnagiri District.

Sub: Willingness to do Explosives Blasting Works regarding/-

Dear Sir,

I have Respect To The Above Subject, We Would Like To Introduce Our Self As The EXPLOSIVES BLASTING CONTRACTORS, For Which Our Form 22 (LE-3) Magazine Is Situated In SF.No: 119/1B Of Nekkundhi Village, Nallampalli Taluk Dharmapuri District Of Tamilnadu.

Details of our Explosives Licences are as below.

1. E/HQ/TN/22/406 (E77451)

We are engaged in Professional Blasting Contract works with all all facilities and Licence Holders to carry out blasting works in specified time and period covered under Explosives Rules, 2008.

We kindly request yourself to engage us to do Explosives Blasting works in Your Quarry Situated at SF.No:207/1A1 (0.74.00),207/1A2A (2.37.00) and 208/3(p) (1.39.00) (Comprising 4.50.00.Hectares) Alur Village, Hosur Taluk, Krishnagiri District.

SERVING BEST AT ALL TIMES

Thanking you

For S.RATHINAVEL EXPLOSIVES.



Authorized Signatory

Enclosure

1. Explosive License Copy.

अनुज्ञप्ति प्ररूप एल.ई.-3 | LICENCE FORM LE-3
(विस्फोटक नियम, 2008 की अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) देखिए।)
(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

(ग) उपयोग के लिए एक समय पर वर्ग 1,2,3,4,5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने के लिए

अनुज्ञप्ति
Licence to possess : (c) for use, explosives of class 1, 2,3,4,5,6 or 7 in a maga

अनुज्ञप्ति सं. (Licence No.) : E/HQ/TN/22/406(E77451)
वार्षिक फीस रूप (Annual Fee Rs): 25000/-



1. Licence is hereby granted to

Shri S. Rathinavel S/o. Subramani Mallapuram (अधिभोगी / Occupier : Shri S. Rathinavel S/o. Subramani), Door No. 99/3, Mallapuram, P.O. Somenahalli, Indur (Via), Town/Village - Dharmapuri, District-DHARMAPURI, State-Tamil Nadu, Pincode - 636803

को अनुज्ञप्ति अनुदत्त की जाती है।

2. अनुज्ञप्तिधारी की प्रास्थिति | Status of licensee : Individual

3. अनुज्ञप्ति निम्नलिखित प्रयोजनों के लिए विधिमान्य है।

possess for use of Nitrate Mixture, Safety Fuse, Detonating

Licence is valid only for the following purpose.

Fuse, Electric and/or Ordinary Detonators, - के उपयोग के लिए

4. अनुज्ञप्ति विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमान्य है।

Licence is valid for the following kinds and quantity of explosives: - (क) (a)

क्र. सं. Sr. No.	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा किसी एक समय में Quantity at any one time
1.	Nitrate Mixture	2,0	0	22500 Kg.
2.	Safety Fuse	6,1	0	25000 Mtrs
3.	Detonating Fuse	6,2	0	90000 Mtrs
4.	Electric and/or Ordinary Detonators	6,3	0	44000 Nos.

(ख) किसी एक कलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा [अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञप्ति के लिए] 20 times as above.

(b) Quantity of explosives to be purchased in a calendar month [applicable for licence under article 3(b) and (c)]:

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञप्ति परिसर की पुष्टि होती है।

रेखाचित्र क्र. (Drawing No.) E/HQ/TN/22/406(E77451)

The licensed premises shall conform to the following drawing(s):

दिनांक (Dated) 30/05/2014

6. अनुज्ञप्ति परिसर निम्नलिखित पते पर स्थित है। The licensed premises are situated at following address:

Survey No. 119/1B, ग्राम (Town/Village) : Nekkundhi, Indur (Via), तालुका (Taluk) : Penuagar Station) : Penuagar
जिला (District) DHARMAPURI राज्य (State) Tamil Nadu पिनकोड (Pincode) 636803
दूरभाष (Phone) 9965494172 ई.मेल (E-Mail) srathinavel45@gmail.com फैक्स (Fax)

7. अनुज्ञप्ति परिसर में निम्नलिखित सुविधाएं अंतर्विष्ट हैं।

a main high explosives magazine storage room, a lobby & a detonators storage room

The licensed premises consist of following facilities.

8. अनुज्ञप्ति समय - समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपाबंधों के अधीन रहते हुए अनुदत्त की जाती है।

The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed there under and the conditions, additional conditions and the following Annexures.

1. उपर्युक्त क्रम सं. 5 में यथा कथित रेखाचित्र (स्थान, सन्निर्माण संबंधी और अन्य विवरण दर्शित करते हुए)।
Drawings (showing site, constructional and other details) as stated in serial No. 5 above.

2. अनुज्ञप्ति प्राधिकारी व्दारा हस्ताक्षरित इस अनुज्ञप्ति की शर्तों और अतिरिक्त शर्तों।
Conditions and Additional Conditions of this licence signed by the licensing authority.

3. दूरी प्ररूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञप्ति तारीख 31 मार्च 2019 तक विधिमान्य रहेगी। This licence shall remain valid till 31st day of March 2019.

यह अनुज्ञप्ति, अधिनियम-या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपवर्णित इस अनुज्ञप्ति की शर्तों का अधिक्रमण करने या यदि अनुज्ञप्ति परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिसंहत की जा सकती है, जहां वह लागू हो।

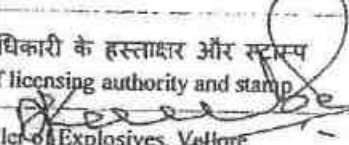
This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto.

तारीख | The Date - 30/05/2014.

मुख्य विस्फोटक नियंत्रक | Chief Controller of Explosives

Amendments :

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 25/08/2014
 - Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 08/10/2014
- नवीनीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewal

नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of licensing authority and stamp
29/01/2019	31/03/2024	 Controller of Explosives, Vellore विस्फोटक नियंत्रक, वेल्लूर Controller of Explosives, Vellore

कानूनी चेतावनी : विस्फोटकों को गलत ढंग से चलाने या उनका दुरुपयोग विधि के अधीन गंभीर दंडित अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.

From
Thiru L.Suresh, M.Sc.,
Deputy Director,
Geology and Mining,
Krishnagiri

To
Tmt.B.G.Manjula,
W/o Late Baskar,
No.77E Indira Nagar,
Bagalur Road, Hosur 635 109.

Roc.No.680/2013/Mines-1

dated: 06.04.2018

Sir,

Sub: Mines and Minerals - Minor Mineral - Rough Stone-
Krishnagiri District - Hosur Taluk - Alur Village -Patta
Land S.F.No.208/1 over an extent of 3.03.5 Hects. - precise
area communicated for the proposed grant of Rough Stone
Quarry lease to Tmt.B.G.Manjula, W/o Late Baskar, No.77E
Indira Nagar, Bagalur Road, Hosur 635 109- Draft Mining
Plan submitted for approval - reg .

Ref: 1) The District Collector Krishnagiri Lr.in Roc. No. 680/2013/
Mines-2 dated 10.03.2018
2) Tmt.B.G.Manjula, W/o Late Baskar, No.77E Indira Nagar,
Bagalur Road, Hosur 635 109representation dt: Nil received
on dt: 28.03.2018

Tmt.B.G.Manjula, W/o Late Baskar, No.77E Indira Nagar, Bagalur
Road, Hosur 635 109 had been issued precise area over an extent of 3.03.5
hects in patta land S.F. No. 208/1 of Alur Village Hosur Taluk Krishnagiri
District for the proposed grant of quarry lease for routh stone for a period of
5 years from the date of execution of lease deed and she has been directed
to submit approved mining plan vide in the reference 1st cited.

2. Tmt.B.G.Manjula had submitted 3 copies of draft mining plan for
approval.

3. The Draft Mining Plan submitted by Tmt.B.G.Manjula, W/o Late
Baskar, has been scrutinized as per the guide lines/ Instructions issued by
the Commissioner of Geology and Mining, Chennai-32 in the reference first
cited. The mining plan is prepared in accordance with the guidelines /
instructions issued and tallies with the field conditions. The special
conditions imposed in the precise area letter had been incorporated in the
Mining Plan.

4. The details of quarries situated within 500 mts radial distance from the
proposed area is as follows:

Name of the lessee	Village	S.F.No. Extent in Hect	Collector's ProceedingNo. & date	Lease period
Thiru.M.Durai,	Alur	207/1B 0.81.0	324/2008Mines-2 dated 27.11.2008	23.11.2009 to 22.11.2014
Thiru.K.Prasanna kumar	Alur	209 4.21.5	641/2009/Mines-2 dated 27.10.2009	19.10.2010 to 18.11.2015
M/s.Chennai Mines	Alur	211 3.46.5	276/2013/Mines-2 dated 11.03.2015	20.03.2015 to 19.03.2020
M/s Chennai Mines	Alur	212/2 2.02.5	----	Precise area given
Tmt.B.G.Manjula	Alur	208/1 3.03.5	----	Instant proposal
	Total	13.55.0		

5. Hence, as per the guidelines / instructions issued by the Commissioner of Geology and Mining, Chennai, the said mining plan is hereby approved subject to the following conditions.

- i) 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.
- ii) This approval of the mining plan does not in any way imply the approval of the Government in terms of any other provisions of Mines and Minerals Development and Regulation) Act 1957, or any other connected laws including Forest (Conservation) Act 1957, or any other connected Laws industry Forest (Conservation) Act 1980, Forest Conservation Rules 1981 Environment protection Act 1980, Indian Explosive Act 1884 (Central Act IV of 1884) and the rules made there under, Minor Mineral Conservation and Development Rules, and The Tamil Nadu Minor Mineral Concession rules, 1959.
- iii) That the mining plan is approved without prejudice to any other order or directions from any court of competent jurisdiction.
- iv) The following special conditions imposed in the District Collector, Krishnagiri letter in Roc.No.412/2017/Mines-1 dated 11.12.2017 should be adhered without any deviation while quarrying.
 - (a) A safety zone of 10.0 mts. should be left out for the Government land situated on the North and East side of the applied area.
 - (b) A safety zone distance 10 mts should be left out for the Vari porambokku situated on the South and West side of the applied area and the boundary stones should be maintained properly.
 - (c) A safety zone distance of 50.0 Mts should be left out for the Building situated on the East side of the applied area.
 - (d) The L.T.EB line situated on the East side of the applied area should be shifted 50 Mts. away from the applied area before execution of lease deed.
 - (e) No hindrance should be caused and no encroachment should be made in the adjacent vari course situated in S.F.No.209 and Meichal tharai porambokku situated in 208/2.
 - (f) The waste material generated during quarrying should not be dumped in the odai.
 - (g) No hindrance should be caused to any part of the odai during proposed quarrying activity.
 - (h) The water course of the odai should not be deviated and no hindrance should be caused to the flow of water in the odai and no hindrance should be caused to the Government lands and general public.
 - (i) Compound wall or barbed wire fencing should be erected all along the boundary of the applied area.
 - (j) Quarrying activity should be carried out from 7.00 A.M. to 5.00 P.M. only.
 - (k) When quarried material are transported necessary permits had been produced before the forest check post officials and necessary entries should be made in the register.

6. The applicant should get prior clearance from the District level Environment Impact Assessment Authority, Krishnagiri District and should submit it to the District Collector, Krishnagiri.

Deputy Director,
Geology and Mining,
Krishnagiri.

Copy submitted to

1. The Chairman, Krishnagiri District Level Environment Impact Assessment Authority, Collectorate, Krishnagiri
2. The Commissioner of Geology and Mining, Guindy, Chennai-32



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

Jothi Complex, 83, M.K.N. Road, Guindy, Chennai - 600 032, Tamil Nadu, INDIA
Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN: U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha

S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)

Alur Village, Hosur Taluk, Krishnagiri District.

Test Certificate No : CML/23-24/18135

Test Certificate Date : 06.06.2023

Sample Description : Ambient Air Monitoring

Location of Sampling : AAQ1 Core Zone - 12°44'19.88"N 77°54'54.10"E

Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07

Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/38& 29.11.2023

Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/39& 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period:hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	66.3	22.3	46.2	8.1	26.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	67.2	22.4	45.3	8.3	24.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	65.2	23.6	47.2	8.4	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	66.2	23.4	46.3	7.2	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	66.5	22.1	44.2	7.6	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	67.3	23.1	46.3	7.1	23.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	68.3	21.3	45.2	9.5	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	68.2	22.2	43.2	9.6	24.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	68.3	23.5	45.6	8.3	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	65.3	24.5	47.5	8.2	23.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	67.2	23.6	46.3	8.4	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	65.5	22.5	45.2	7.2	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	66.3	22.3	43.2	7.1	24.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	64.5	21.0	42.1	7.5	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	63.5	22.5	43.1	8.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	66.9	23.6	47.5	8.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	65.3	22.4	48.6	9.1	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	64.2	22.5	48.5	8.3	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	65.3	24.3	45.6	9.2	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	66.3	25.3	43.2	9.5	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.05.2023	7:00-7:00	67.3	26.5	42.5	9.8	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	68.3	24.2	44.5	7.1	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	69.3	23.2	45.5	7.6	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	67.5	22.5	46.3	8.3	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	66.3	21.5	44.2	9.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	67.9	22.3	43.5	8.5	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note:BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorized By

P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN: U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

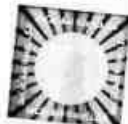
Test Certificate No : CML/23-24/18136 Test Certificate Date : 06.06.2023
Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ 2 – Dinnur - 12°44'19.84"N 77°54'33.68"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/40 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/41 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	67.2	23.1	46.2	8.2	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	68.2	22.5	46.3	6.3	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	68.3	24.3	46.2	8.4	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	67.5	21.2	44.2	7.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	68.2	21.3	45.2	7.5	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	68.3	20.5	44.7	6.3	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	67.5	21.3	45.6	8.4	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	66.2	22.3	46.3	7.8	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	65.3	23.5	47.2	7.6	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	66.2	22.4	45.3	8.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	65.4	20.4	46.2	8.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	66.5	22.3	44.6	6.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	67.8	24.2	44.9	6.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	68.3	23.5	48.5	7.5	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	68.2	24.5	44.2	7.8	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	69.5	23.3	45.3	7.3	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	67.3	22.7	47.6	6.2	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	67.2	25.5	46.2	8.4	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	68.5	23.6	45.3	7.2	23.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	68.3	22.1	46.2	8.3	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	67.2	23.3	47.2	6.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	68.3	23.4	45.2	7.2	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	68.2	23.5	44.2	6.3	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	67.2	24.5	43.6	8.2	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	68.2	22.3	45.2	7.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	69.2	22.5	42.5	8.3	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN: U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

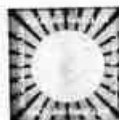
Test Certificate No : CML/23-24/18137 Test Certificate Date : 06.06.2023
Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ3 – Bukkasagaram - 12°43'34.67"N 77°56'6.75"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/42 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/43 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	61.2	22.1	43.2	5.5	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	60.3	20.3	42.2	5.3	19.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	61.3	21.3	43.5	6.2	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	63.3	22.5	42.6	7.0	19.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	61.2	23.6	43.5	5.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	61.3	22.5	42.6	6.8	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	62.9	22.3	44.5	7.2	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	62.5	22.6	44.3	6.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	61.3	22.5	45.6	8.4	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	61.7	23.4	44.2	7.6	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	64.2	24.5	46.5	6.3	18.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	60.2	23.0	46.3	6.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	60.3	22.4	45.5	7.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	61.4	21.4	42.3	7.6	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	61.8	20.3	44.3	6.3	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	62.5	22.5	46.5	6.5	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	63.5	23.6	43.5	7.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	63.4	22.1	43.8	7.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	64.2	22.5	42.1	8.2	20.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	65.3	21.3	43.5	7.0	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	65.2	21.1	42.3	8.3	20.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	65.3	22.5	42.5	6.0	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	65.2	21.9	43.6	8.2	29.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	65.9	20.9	44.2	7.3	28.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	63.5	20.5	42.5	6.5	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	63.9	20.3	43.5	5.5	20.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ; DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



P. Kavitha
Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN: U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

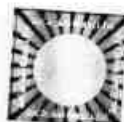
Test Certificate No : CML/23-24/18138 Test Certificate Date : 06.06.2023
Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ4 – Venkatesapuram - 12°45'28.45"N 77°56'10.56"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/44 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/45 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period, hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	62.4	22.3	42.3	6.2	19.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	63.2	20.1	41.2	6.3	19.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	62.5	23.6	43.5	6.4	19.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	63.5	22.5	40.2	6.5	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	62.4	19.0	43.2	6.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	64.5	20.3	41.5	6.2	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	63.7	21.3	40.5	6.8	18.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	64.5	19.2	43.2	6.2	18.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	62.3	20.3	45.1	6.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	62.3	22.5	44.2	6.4	20.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	62.5	23.6	43.1	6.5	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	63.5	22.3	42.6	6.3	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	63.7	22.4	44.3	6.5	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	64.4	19.0	44.2	6.8	18.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	65.5	19.5	42.6	6.7	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	61.2	20.6	42.8	6.2	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	62.8	19.4	43.7	6.3	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	63.5	19.8	42.1	6.4	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	64.2	19.7	43.0	5.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	61.3	20.6	42.1	5.8	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	63.2	20.3	43.5	6.4	20.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	62.2	19.8	44.0	6.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	64.3	18.8	42.5	5.9	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	62.3	21.3	41.8	6.2	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	61.2	21.5	42.7	6.5	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	61.8	20.6	45.9	6.3	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ; DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

Test Certificate No : CML/23-24/18139 Test Certificate Date : 06.06.2023
Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ5 – Gollapalli - 12°42'38.06"N 77°52'36.95"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/46 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/47 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	63.2	19.3	42.3	6.3	18.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	64.2	19.2	43.2	7.2	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	64.3	19.2	44.5	5.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	63.2	18.3	42.6	6.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	65.2	17.2	43.5	5.9	18.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	63.4	18.6	42.5	6.6	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	65.3	19.2	44.6	5.6	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	62.3	17.3	42.0	6.3	18.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	63.7	18.0	43.0	5.4	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	63.8	19.6	44.1	6.2	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	65.4	17.0	43.5	5.3	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	64.3	18.2	42.6	6.2	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	64.5	18.3	42.8	5.6	21.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	66.3	18.5	42.0	6.8	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	62.5	19.4	43.0	6.4	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	64.5	18.0	42.9	6.8	18.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	64.8	19.6	43.8	6.9	19.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	64.8	18.0	42.5	6.8	18.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	65.5	19.0	42.3	6.0	18.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	65.3	18.2	44.5	6.5	17.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	65.2	18.4	43.6	7.2	17.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	66.3	19.6	43.5	6.3	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	62.7	18.4	42.1	6.2	18.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	65.3	19.6	42.5	6.4	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	64.2	19.0	44.6	6.5	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	64.8	18.8	44.5	6.7	17.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit; DL: Detection Limit; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorized By

P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

Test Certificate No : CML/23-24/18140 Test Certificate Date : 06.06.2023
Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ 6 - Kelavarapalli - 12°45'17.72"N 77°52'21.39"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/48 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/49 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	64.2	22.2	41.2	7.5	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	65.3	21.2	41.3	7.3	19.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	66.5	23.2	42.5	7.2	20.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	67.2	22.1	42.2	8.2	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	68.2	21.5	40.2	7.6	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	67.2	22.5	43.2	8.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	67.3	20.3	42.1	7.2	17.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	65.2	19.2	42.1	8.3	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	64.2	19.5	42.3	7.3	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	65.2	21.2	43.2	8.2	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	64.2	18.5	43.5	8.6	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	63.4	18.6	43.3	7.3	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	64.2	18.5	42.6	7.4	18.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	65.5	20.3	42.9	7.5	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	65.8	21.2	42.3	7.6	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	64.2	22.3	43.3	7.2	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	65.8	22.4	40.2	7.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	65.9	23.5	40.2	7.2	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	66.4	23.6	42.6	7.1	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	67.5	23.5	43.5	8.3	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	67.8	22.7	42.1	8.6	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	67.9	22.5	43.2	8.8	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	65.8	22.8	42.1	7.6	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	66.5	22.6	42.3	7.5	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	68.5	22.4	42.3	7.3	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	68.2	22.5	43.2	7.4	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ; DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)

Remarks: The values observed for the pollutants given above are within the CPCB standards

End of Report

For Chennai Mettex Lab Private Limited



P. Kavitha
Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

Test Certificate No : CML/23-24/18141 Test Certificate Date : 06.06.2023
Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ7 – Alur - 12°43'47.05"N 77°54'33.26"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/01 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/02 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	60	100	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	65.5	23.2	45.2	8.2	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	65.3	22.1	43.2	8.3	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	66.2	24.5	45.2	8.1	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	66.3	25.3	43.1	7.2	22.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	67.5	23.6	45.6	7.5	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	68.3	24.2	43.5	9.2	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	68.5	25.2	43.0	8.3	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	67.5	24.1	45.2	9.5	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	68.3	23.2	44.2	8.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	66.4	23.5	43.5	9.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	68.3	25.4	44.3	7.2	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	66.4	25.4	45.6	8.0	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	68.5	24.8	44.9	9.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	67.3	23.6	44.2	8.3	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	65.3	24.1	44.2	9.4	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	66.5	23.5	43.0	8.0	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	67.2	24.5	45.2	9.2	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	68.3	25.6	44.6	8.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	68.5	23.0	43.2	9.4	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	68.5	24.1	44.1	9.7	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:00-7:00	67.2	24.3	43.5	8.6	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	67.3	24.5	45.6	9.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	67.5	24.5	45.8	8.3	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	66.3	24.5	43.6	9.2	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	66.2	25.6	43.8	8.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	65.3	25.3	44.2	8.3	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ; DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)

Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorized By

P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

Test Certificate No : CML/23-24/18142 Test Certificate Date : 06.06.2023
Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ8 – Devichettipatti - 12°47'34.39"N 77°54'41.83"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/03 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/04 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period:hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
03.03.2023	7:00-7:00	60.2	22.3	40.7	5.2	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2023	7:15-7:15	60.3	23.2	40.2	6.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:00-7:00	61.2	24.1	41.3	5.2	18.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.03.2023	7:15-7:15	62.3	22.0	42.5	6.0	18.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:00-7:00	63.2	23.1	41.3	5.3	19.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.03.2023	7:15-7:15	64.0	22.0	42.0	5.8	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:00-7:00	62.3	23.1	41.0	5.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.03.2023	7:15-7:15	63.5	24.0	41.1	6.3	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:00-7:00	61.0	23.1	42.3	5.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01.04.2023	7:15-7:15	60.2	22.5	42.5	5.9	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:00-7:00	60.2	21.3	41.5	6.2	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.04.2023	7:15-7:15	60.3	22.7	42.6	5.8	19.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:00-7:00	61.2	23.5	41.2	6.1	8.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.04.2023	7:15-7:15	63.2	24.1	40.2	6.2	18.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:00-7:00	64.2	23.4	41.3	5.3	19.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.04.2023	7:15-7:15	60.2	22.5	41.6	6.4	20.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:00-7:00	64.0	22.3	40.2	5.2	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.04.2023	7:15-7:15	63.2	23.2	41.3	6.0	19.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:00-7:00	62.1	22.8	42.3	5.3	18.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.05.2023	7:15-7:15	63.0	23.6	42.5	6.4	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.05.2023	7:00-7:00	62.0	23.5	41.2	5.0	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.05.2023	7:15-7:15	61.0	22.4	42.3	6.8	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:00-7:00	62.3	21.5	42.5	6.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.05.2023	7:15-7:15	63.0	22.3	41.5	6.8	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:00-7:00	64.0	22.5	41.6	5.2	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.05.2023	7:15-7:15	61.0	23.8	40.2	6.9	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ; DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorized By

P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN: U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

Test Certificate No : CML/23-24/18143 Test Certificate Date : 06.06.2023
Sample Description : Ambient Noise Monitoring
Location of Sampling : N1 – Core zone - 12°44'17.82"N 77°54'54.26"E
Location of Sampling : N2 – Dinnur - 12°44'20.22"N 77°54'33.67"E
Sampling Plan & Procedure: IS 9989:1981 & CML/LAB/ENV/SOP/10
Sampling Instrument : CML/ENV/SLM/001 & CML/ENV/SLM/002

Sampling Date: 03.04.2023

Location Parameter	N1 – Core zone			N2 – Dinnur		
	Min dB(A)	Max dB(A)	Result dB(A)	Min dB(A)	Max dB(A)	Result dB(A)
Time						
06:00-07:00	40.2	42.1	41.3	40.2	42.1	41.3
07:00-08:00	40.3	42.2	41.4	41.2	44.2	43.0
08:00-09:00	42.3	44.5	43.5	40.5	42.5	41.6
09:00-10:00	40.5	42.6	41.7	41.2	43.5	42.5
10:00-11:00	40.3	42.3	41.4	40.5	42.6	41.7
11:00-12:00	41.5	43.7	42.7	42.3	44.5	43.5
12:00-13:00	41.6	43.6	42.7	41.6	43.1	42.4
13:00-14:00	40.5	42.5	41.6	40.7	42.8	41.9
14:00-15:00	41.3	43.1	42.3	40.8	42.1	41.5
15:00-16:00	40.7	42.6	41.8	41.2	43.5	42.5
16:00-17:00	40.5	42.3	41.5	41.6	43.2	42.5
17:00-18:00	40.6	42.5	41.7	40.9	42.6	41.8
18:00-19:00	41.5	43.7	42.7	41.3	43.1	42.3
19:00-20:00	41.3	43.6	42.6	40.1	42.5	41.5
20:00-21:00	40.2	42.8	41.7	41.2	43.1	42.3
21:00-22:00	39.2	42.5	41.2	36.5	38.5	37.6
22:00-23:00	38.7	40.3	39.6	34.5	36.6	35.7
23:00-00:00	35.6	37.4	36.6	37.5	39.4	38.6
00:00-01:00	36.2	38.6	37.6	36.2	38.2	37.3
01:00-02:00	34.2	36.4	35.4	34.2	36.4	35.4
02:00-03:00	33.5	35.9	34.9	35.6	38.4	37.2
03:00-04:00	32.6	33.8	33.2	36.6	38.2	37.5
04:00-05:00	36.4	38.9	37.8	35.5	37.2	36.4
05:00-06:00	35.5	38.2	37.1	33.2	36.4	35.1
Result	Day Means		41.8	Day Means		41.5
	Night Means		36.1	Night Means		36.8

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB

End of Report

For Chennai Mettex Lab Private Limited



Reviewed & Authorized By

P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN: U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

Test Certificate No : CML/23-24/18144 Test Certificate Date : 06.06.2023
Sample Description : Ambient Noise Monitoring
Location of Sampling : N3 – Bukkasagaram - 12°43'35.27"N 77°56'5.15"E
Location of Sampling : N4 – Venkatesapuram - 12°45'28.99"N 77°56'9.07"E
Sampling Plan & Procedure: IS 9989:1981 & CML/LAB/ENV/SOP/10
Sampling Instrument ID : CML/ENV/SLM/001 & CML/ENV/SLM/002

Sampling Date : 03.04.2023						
Location	N3 – Bukkasagaram			N4 – Venkatesapuram		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	40.2	42.1	41.3	40.2	42.1	41.3
07:00-08:00	41.1	43.2	42.3	40.2	44.3	42.7
08:00-09:00	42.1	44.2	43.3	40.6	42.1	41.4
09:00-10:00	40.3	42.1	41.3	40.2	42.3	41.4
10:00-11:00	41.5	43.1	42.4	42.3	44.5	43.5
11:00-12:00	40.6	42.3	41.5	40.5	42.3	41.5
12:00-13:00	41.3	43.5	42.5	41.6	43.1	42.4
13:00-14:00	42.1	44.1	43.2	40.1	42.2	41.3
14:00-15:00	40.2	42.1	41.3	42.3	44.3	43.4
15:00-16:00	41.3	43.3	42.4	41.2	42.1	41.7
16:00-17:00	39.4	41.3	40.5	40.3	42.5	41.5
17:00-18:00	38.2	40.5	39.5	42.1	44.1	43.2
18:00-19:00	38.6	41.2	40.1	40.1	42.1	41.2
19:00-20:00	33.2	35.2	34.3	38.2	42.6	40.9
20:00-21:00	34.5	36.6	35.7	37.5	39.6	38.7
21:00-22:00	37.8	39.2	38.6	36.6	38.5	37.7
22:00-23:00	36.1	38.4	37.4	35.2	36.5	35.9
23:00-00:00	33.2	36.1	34.9	34.2	38.5	36.9
00:00-01:00	36.2	38.2	37.3	36.7	38.2	37.5
01:00-02:00	33.8	35.4	34.7	36.5	38.6	37.7
02:00-03:00	36.9	38.2	37.6	34.2	36.8	35.7
03:00-04:00	34.6	37.5	36.3	35.2	38.5	37.2
04:00-05:00	35.5	38.5	37.3	33.6	39.4	37.4
05:00-06:00	36.4	38.4	37.5	34.5	38.2	36.7
Result	Day Means		40.4	Day Means		41.2
	Night Means		36.5	Night Means		37.0

Note: CPCB Norms Residential Area Day Time:55 dB(A); Night Time:45 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

End of Report

For Chennai Mettex Lab Private Limited



P. Kavitha
Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN: U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

Test Certificate No : CML/23-24/18145 Test Certificate Date : 06.06.2023
Sample Description : Ambient Noise Monitoring
Location of Sampling : N5 – Gollapalli - 12°42'38.18"N 77°52'36.75"E
Location of Sampling : N6 – Kelavarapalli - 12°45'17.63"N 77°52'21.32"E
Sampling Plan & Procedure: IS 9989:1981 & CML/LAB/ENV/SOP/10
Sampling Instrument : CML/ENV/SLM/003 & CML/ENV/SLM/004

Sampling Date : 17.05.2023						
Location	N5 – Gollapalli			N6 – Kelavarapalli		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	40.2	40.2	40.2	40.2	40.3	40.3
07:00-08:00	37.5	42.3	40.5	39.2	43.2	41.6
08:00-09:00	36.9	41.1	39.5	37.2	42.1	40.3
09:00-10:00	35.4	38.2	37.0	36.4	41.3	39.5
10:00-11:00	32.2	36.5	34.9	35.1	40.2	38.4
11:00-12:00	35.6	38.2	37.1	33.2	43.2	40.6
12:00-13:00	35.4	37.2	36.4	32.1	42.1	39.5
13:00-14:00	39.5	40.2	39.9	31	40.5	38.0
14:00-15:00	36.2	42.3	40.2	32.4	39.2	37.0
15:00-16:00	35.4	37.6	36.6	35.6	34.2	35.0
16:00-17:00	36.5	38.2	37.4	35.2	38.9	37.4
17:00-18:00	38.9	40.2	39.6	34.2	39.2	37.4
18:00-19:00	39.5	41.3	40.5	32.6	46.3	43.5
19:00-20:00	37.8	40.5	39.4	33.6	47.2	44.4
20:00-21:00	36.5	38.6	37.7	34.2	43.6	41.1
21:00-22:00	36.2	39.6	38.2	38.6	42.3	40.8
22:00-23:00	34.5	36.5	35.6	36.5	40.2	38.7
23:00-00:00	36.2	38.2	37.3	35.5	39.2	37.7
00:00-01:00	32.1	34.6	33.5	34.2	36.5	35.5
01:00-02:00	33.2	35.6	34.6	36.6	38.2	37.5
02:00-03:00	31.2	33.6	32.6	34.2	37.5	36.2
03:00-04:00	33.2	35.6	34.6	33.2	36.2	35.0
04:00-05:00	31.2	34.2	33.0	32.5	35.2	34.1
05:00-06:00	30.2	32.6	31.6	31.2	33.6	32.6
Result	Day Means		38.3	Day Means		39.6
	Night Means		33.9	Night Means		35.5

Note: CPCB Norms Residential Area Day Time:55 dB(A); Night Time:45 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

End of Report

For Chennai Mettex Lab Private Limited



Reviewed & Authorized By

P. KAVITHA
Technical Manager
Authorised Signatory



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(Approved by AAI, AGMARK, APEDA, BIS, EIC, FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD)

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN: U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: M/s. B.M. Mines., Extent : 4.50.0 Ha

S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)

Alur Village, Hosur Taluk, Krishnagiri District.

Test Certificate No : CML/23-24/18146

Test Certificate Date : 06.06.2023

Sample Description : Ambient Noise Monitoring

Location of Sampling : N7 - Alur - 12°43'47.09"N 77°54'33.40"E

: N8 - Devichettipatti - 12°47'34.82"N 77°54'41.68"E

Sampling Plan & Procedure: IS 9989:1981 & CML/LAB/ENV/SOP/10

Sampling Instrument ID : CML/ENV/SLM/003 & CML/ENV/SLM/004

Sampling Date : 17.05.2023						
Location	N7 - Alur			N8 - Devichettipatti		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	40.2	42.3	41.4	40.2	42.3	41.4
07:00-08:00	41.3	43.5	42.5	42.3	44.1	43.3
08:00-09:00	42.3	44.1	43.3	44.2	46.6	45.0
09:00-10:00	43.2	45.2	44.3	41.2	44.2	43.0
10:00-11:00	41.2	43.2	42.3	40.3	42.1	41.3
11:00-12:00	40.3	42.5	41.5	38.6	40.2	39.5
12:00-13:00	42.1	44.3	43.3	39.2	41.3	40.4
13:00-14:00	41.2	44.1	41.8	37.2	39.6	38.0
14:00-15:00	43.5	45.1	44.4	36.1	38.4	37.4
15:00-16:00	42.1	44.3	43.3	35.4	37.2	36.4
16:00-17:00	40.1	42.1	41.2	38.2	40.2	39.3
17:00-18:00	41.2	43.5	41.9	36.1	38.6	37.5
18:00-19:00	40.1	43.1	41.9	33.2	35.2	34.3
19:00-20:00	32.4	34.2	33.4	34.5	36.4	35.6
20:00-21:00	31.2	36.2	34.4	36.9	38.2	37.6
21:00-22:00	34.5	36.8	35.8	34.2	36.5	35.5
22:00-23:00	35.6	37.2	36.5	35.2	38.2	37.0
23:00-00:00	36.8	38.6	37.8	36.4	38.9	37.8
00:00-01:00	33.2	40.2	38.0	35.2	37.5	36.5
01:00-02:00	34.2	36.2	35.3	34.8	36.6	35.8
02:00-03:00	36.5	38.1	37.4	37.5	38.4	38.0
03:00-04:00	35.8	37.2	36.6	36.2	39.5	38.2
04:00-05:00	34.2	36.1	35.3	32.1	34.5	33.5
05:00-06:00	33.2	35.2	34.3	31.6	36.2	34.5
Result	Day Means		40.8	Day Means		39.0
	Night Means		36.4	Night Means		36.3

Note: CPCB Norms Residential Area Day Time:55 dB(A); Night Time:45 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorized By

P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED

Jothi Complex, 83, M.K.N. Road, Guindy, Chennai - 600 032.

(Approved/Recognized by APEDA, AGMARK, GAFTA, EIC, FSSAI, BIS & MoEF)

TEST REPORT

Page No.1 of 2

ISSUED TO : M/s. B.M. Mines., Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18147

Date Of Receipt : 29.05.2023

Cust. Ref : SRF Dated : 27.05.2023.

Analysis Commenced On: 29.05.2023

Lab No : 24017975

Analysis Completed On : 06.06.2023

Sample Description : Surface Water (SW-1) - Tank Near Dinnur
(as stated by customer)

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:1983 (Reaff.2017)	6 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:1983 (Reaff.2017)	7.67
Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff.2019)	1380µmhos/cm
Turbidity	IS 3025 Part 10:1984 (Reaff.2017)	3.5 NTU
Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff.2017)	814 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff.2019)	272 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (Reaff.2019)	73.7 mg/l
Magnesium as Mg	IS 3025 Part 46:1994 (Reaff.2019)	21.4 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff.2019)	232 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Reaff.2019)	283.9 mg/l
Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff.2019)	49.2 mg/l
Iron as Fe	IS 3025 Part 53:2003 (Reaff.2019)	0.61 mg/l
Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff.2019)	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 23 rd Edn. 2017:4500 F.D	0.54mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff.2019)	14.8mg/l
Copper as Cu	IS 3025 Part 65:2014 (Reaff.2019)	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2014 (Reaff.2019)	BDL (DL:0.02 mg/l)
Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2014 (Reaff.2019)	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2014 (Reaff.2019)	BDL (DL:0.005 mg/l)

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NOTE: Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders will be liable for legal action. Unless otherwise stated the submitted results in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only from the completion date of testing., except in case of regulatory samples, which will be retained for a specific period as per statutory requirement; while perishable & environmental testing related remnant samples will be discarded consequent upon completion of testing. Samples are not drawn by us unless otherwise stated. This document cannot be reproduced except in full, without prior written approval of the laboratory. This report is for the exclusive use of Chennai Mettex Lab's customer, and is provided in accordance with the agreement between Chennai Mettex Lab and its Customer.



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Jothi Complex, 83, M.K.N. Road, Guindy, Chennai - 600 032.

(Approved/Recognized by APEDA, AGMARK, GAFTA, EIC, FSSAI, BIS & MoEF)

TEST REPORT

Page No. 1 of 2

ISSUED TO : M/s. B.M. Mines. Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18149

Cust. Ref : SRF Dated : 27.05.2023.

Date Of Receipt : 29.05.2023

Lab No : 24017977

Analysis Commenced On: 29.05.2023

Sample Description : Ground Water (WW-1) - Bukkasagaram
(as stated by customer)

Analysis Completed On : 06.06.2023

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:1983 (Reaff:2017)	5 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.32
Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	1092µmhos/cm
Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1.8 NTU
Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	664 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	236 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	49.6 mg/l
Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	27.2 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	216 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	188.9 mg/l
Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	47.8 mg/l
Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.31 mg/l
Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.25mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	8.2 mg/l
Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)

...Contd....2

NOTE: Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders will be liable for legal action. Unless otherwise stated the submitted results in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only from the completion date of testing, except in case of regulatory samples, which will be retained for a specific period as per statutory requirement; while perishable & environmental testing related remnant samples will be discarded consequent upon completion of testing. Samples are not drawn by us unless otherwise stated. This document cannot be reproduced except in full, without prior written approval of the laboratory. This report is for the exclusive use of Chennai Mettex Lab's customer, and is provided in accordance with the agreement between Chennai Mettex Lab and its Customer.



CHENNAI METTEX LAB PRIVATE LIMITED

Jothi Complex, 83, M.K.N. Road, Guindy, Chennai - 600 032.

(Approved/Recognized by APEDA, AGMARK, GAFTA, EIC, FSSAI, BIS & MoEF)

TEST REPORT

Page No.1 of 2

ISSUED TO : M/s. B.M. Mines. Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18151

Cust. Ref : SRF Dated : 27.05.2023.

Date Of Receipt : 29.05.2023

Analysis Commenced On: 29.05.2023

Lab No : 24017979

Analysis Completed On : 06.06.2023

Sample Description : Ground Water (BW-1) – Near Project Area
(as stated by customer)

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:1983 (Reaff.2017)	5 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:1983 (Reaff.2017)	7.47
Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff.2019)	966µmhos/cm
Turbidity	IS 3025 Part 10:1984 (Reaff.2017)	2.2 NTU
Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff.2017)	570 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff.2019)	196 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (Reaff.2019)	48.0 mg/l
Magnesium as Mg	IS 3025 Part 46:1994 (Reaff.2019)	18.4 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff.2019)	184 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Reaff.2019)	169.9mg/l
Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff.2019)	42.7 mg/l
Iron as Fe	IS 3025 Part 53:2003 (Reaff.2019)	0.24 mg/l
Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff.2019)	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 23 rd Edn. 2017:4500 F.D	0.17 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff.2019)	7.8 mg/l
Copper as Cu	IS 3025 Part 65:2014 (Reaff.2019)	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2014 (Reaff.2019)	BDL (DL:0.02 mg/l)
Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2014 (Reaff.2019)	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2014 (Reaff.2019)	BDL (DL:0.005 mg/l)

...Contd....2

NOTE: Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders will be liable for legal action. Unless otherwise stated the submitted results in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only from the completion date of testing., except in case of regulatory samples, which will be retained for a specific period as per statutory requirement; while perishable & environmental testing related remnant samples will be discarded consequent upon completion of testing. Samples are not drawn by us unless otherwise stated. This document cannot be reproduced except in full, without prior written approval of the laboratory. This report is for the exclusive use of Chennai Mettex Lab's customer, and is provided in accordance with the agreement between Chennai Mettex Lab and its Customer.



CHENNAI METTEX LAB PRIVATE LIMITED

Jothi Complex, 83, M.K.N. Road, Guindy, Chennai - 600 032.

(Approved/Recognized by APEDA, AGMARK, GAFTA, EIC, FSSAI, BIS & MoEF)

Page No.1 of 1

TEST REPORT

ISSUED TO : M/s. B.M. Mines.. Extent : 4.50.0 Ha
S.F. No : 207/1A1, 207/1A2A and 208/3 (Part)
Alur Village, Hosur Taluk, Krishnagiri District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18158

Date Of Receipt : 29.05.2023

Analysis Commenced On: 29.05.2023

Analysis Completed On : 06.06.2023

Cust. Ref : SRF Dated : 27.05.2023.

Lab No : 24017986s

Sample Description : Soil - 6 Devichettipatti
(as stated by customer)

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff 2016)	7.86
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	538 µmhos/cm
03	Texture :		35.6 %
	Clay	Gravimetric Method	32.9 %
	Sand		31.5 %
	Silt		43.4 %
04	Water Holding Capacity		By Gravimetric Method	1.42 g/cm^{3}
05	Bulk Density	By Cylindrical Method	45.3 %
06	Porosity	By Gravimetric Method	178.3 mg/kg
07	Calcium as Ca	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	78.6 mg/kg
08	Magnesium as Mg		26.3 mg/kg
09	Manganese as Mn		1.20 mg/kg
10	Zinc as Zn		1.32 mg/kg
11	Boron as B		141 mg/kg
12	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	0.020 %
13	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	43.4 mg/kg
14	Potassium as K	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	1.53 mg/kg
15	Total Phosphorus as P	IS 10158 : 1982 (Reaff. 2019)	361 mg/kg
16	Total Nitrogen as N	IS 14684 : 1999 (Reaff.2019)	BDL (DL : 1.0 mg/kg)
17	Cadmium as Cd	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
18	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
19	Copper as Cu		1.03 mg/kg
20	Lead as Pb		2.51 mg/kg
21	Iron as Fe		2.86 %
22	Organic Matter	IS : 2720 Part 22: 1972 (Reaff. 2015)	1.66 %
23	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff. 2015)	34.6 meq/100g of soil
24	Cation Exchange Capacity	USEPA 9080 - 1986	

End of Report

For Chennai Mettex Lab Private Limited



Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Laboratory

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National Accreditation Board for Education and Training

Certificate of Accreditation

Geo Exploration & Mining Solutions, Salem

No. 17, Advaita Ashram Road, Fairlands, Salem – 636 004, Tamilnadu, India.

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S.No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals opencast only	1	1 (a) (i)	A
2	Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes	31	7 (c)	B
3	Building and construction projects	38	8(a)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Jan 06, 2023 and posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2684 dated Feb 20, 2023. The accreditation needs to be renewed before the expiry date by Geo Exploration & Mining Solutions, Salem following due process of assessment.



Sr. Director, NABET
Dated: Feb 20, 2023

Certificate No.
NABET/EIA/2225/RA 0276

Valid up to
August 06, 2025

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