
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
&
ENVIRONMENT MANAGEMENT PLAN
“B1” CATEGORY – MINOR MINERAL – PATTA LAND – NON-FOREST LAND
M/s. SRI BLUE METALS ROUGH STONE & GRAVEL QUARRY
IN CLUSTER OVER AN EXTENT OF 17.38.15 Ha

At
Belladhi & Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu
State

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

Project Proponent	Proposed Project	Extent
M/s. Sri Blue Metals, Prop. Thiru S. Gnanasekaran No. 2/241, Kannarpalayam, Karamadai, Mettupalayam Taluk, Coimbatore District – 641 104.	S.F. Nos: 343, 344/4 - Belladhi, 65/1A(P) – Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District.	3.63.65 ha
Production Details: 6,88,975 m ³ of Rough Stone 55,218 m ³ of Gravel Depth : 67m BGL (2m Gravel + 65m RoughStone)		
ToR obtained vide File No. 11986ToR Identification No.TO25B0108TN5806008N Dated.18.06.2025		

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 Category ‘B’ & 38 Category ‘B’ Certificate No : NABET/EIA/2225/RA 0276 Dated: 06.08.2025 Phone: 0427-2431989, Email: ifthiahmed@gmail.com, geothagam@gmail.com Web: www.gemssalem.com 	Laboratory ENVIRONMENTAL LAB 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 

Baseline Monitoring Season – March 2025 to May 2025

OCTOBER 2025

For the easy representation the proposed quarry and existing quarry are designated as below –

உத்தேசிக்கப்பட்டுள்ள குவாரிகள்				
குறியீடு	Name of the Proponent and Address	புல எண்கள் & கிராமம்	பரப்பளவு (ஹெக்டேர்)	நிலை
P1	M/s. Sri Blue Metals.	65/1A(P) - Chickkarampalayam – 343 & 344/1 - Bellathi Village	3.63.65	File No. 11986 ToR Identification No.TO25B0108TN5806008N Dated.18.06.2025
P2	Tvl. Saravana Blue Metals	69 & Chikkaramapalayam	7.51.50	Pending with SEIAA
P3	Tvl. Saravana Blue Metals	68/2C(P) & Chikkaramapalayam	1.30.00	Pending with SEIAA
மொத்தம்			12.45.15	
தற்போதுள்ள குவாரிகள்				
CODE	Name of the Proponent and Address	S.F. Nos	Extent in Ha	Lease Period
E-1	Tvl. Sri Blue Metals	77/1B & 421/2B (Part) & Chikkaramapalayam	3.11.0	14.02.2023 to 13.02.2028
E-2	M. Muthammal	77/2E(P), 77/2F(P) & 79/1A (P)	1.82.0	27.03.2023 to 26.03.2028
மொத்தம்			3.11.0	
காலாவதியான குவாரிகள்				
EX-1	Thiru. S. Gnanasekaran	77/2D(P) & Chikkaramapalayam	1.01.2	01.10.2018 to 30.09.203
EX-2	Tmt.Kaveriammal	77/2B(P) & Chikkaramapalayam	0.99.0	24.12.2018 to 24.12.2018
மொத்த குழும்பு பரப்பளவு			17.38.15	

Note: -

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

As per above notification S.O.2269(E) dated : 01.07.2016 in para (b) in Appendix XI,- (ii) (5): The lease not operative for three years or more and leases which have got environmental clearance as on 15th January, 2016 shall not be counted for calculating the area of cluster, but shall be included in the Environment Management Plan and the Regional Environmental Management Plan”

UNDERTAKING

I, S. Gnanasekaran – Proprietor of M/s. Sri Blue Metals given undertaking that this EIA & EMP report prepared for our Rough Stone and Gravel Quarry situated in S.F. Nos. 343, 344/1 and 65/1A(P) over an extent of 3.63.65 Ha in Belladhi & Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu State based on the ToR issued by the State Level Environmental Impact Assessment Authority (SEIAA), Tamil Nadu vide File No. 11986 ToR Identification No.TO25B0108TN5806008N Dated.18.06.2025.

I hereby assured that the Data's submitted and information given by me is true and correct to the best of my knowledge.

Signature of the Project Proponent

S. Gnanasekaran
(M/s. Sri Blue Metals)

Place: Coimbatore

Date:

DECLARATION

I, Dr. M. Ifthikhar Ahmed – EIA Co Ordinator declare that the Draft EIA & EMP report for the Rough Stone and Gravel Quarry in S.F. Nos. 343, 344/1 and 65/1A(P) over an extent of 3.63.65 Ha in Belladhi & Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District has been prepared by Geo Exploration and Mining Solutions, Salem, Tamil Nadu.

The Data's provided in the EIA report are true and correct to the best of my knowledge.

Signature of the EIA Co Ordinator

Dr. M. Ifthikhar Ahmed

EIA Coordinator

M/s. Geo Exploration and Mining Solutions

TERMS OF REFERENCE (ToR) COMPLIANCE

P1- M/s. Sri Blue Metals Roughstone & Gravel Quarry

File.No.11986, TO25B0108TN5806008N Dated.18.06.2025

SPECIFIC CONDITIONS		
1	A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities.	Noted and Agreed Cluster Management committee has been detailed in the chapter - 7
2.	The Boundary pillars to be erected as per the mine rules and the evidence should be submitted along with the EIA report.	Noted and Agreed. Boundary pillars has been erected in all the boundaries of the proposed quarry.
3.	The details of enumeration of structures including schools, colleges, primary health centres should be submitted along with the EIA report	Noted and Agreed The structure study has been detailed in the chapter - 3
4.	The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km 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. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations.	Noted and Agreed The structure study has been carried out within the radius of 300m. There is no habitation within the radius of 300m from the project site the details of the structures is given in the EIA report, Chapter No.III
5.	The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Noted and Agreed PP erected wire fencing around the quarry lease area and planted 1820 indigenous tree species. The safety distance is maintained as per the conditions given in the precise area communication letter in the mining plan.
6.	The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.	Noted and Agreed The Bio diversity study has been conducted by the Functional Area Expert approved by the NABET.The same has been detailed in the Chapter No. 3
7.	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.	Noted and Agreed The EMP has been detailed in Chapter - 10
8	The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures	Noted and Agreed The Cumulative impact study has been carried out covering the cluster quarries with reference to the drilling & blasting, loading & hauling on

		the surrounding village and structures. The details are given in the Chapter No.7
9	The PP shall install the CCTV camera for the continuous surveillance of mining activity & furnish the photographic/videographic evidence along with the EIA report.	Noted and Agreed We have installed CCTV cameras around the proposed quarry area
2.SEAC STANDARD CONDITIONS		
1	In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.	Not Applicable It is a fresh quarry
2	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	Noted and agreed. Letter obtained from the VAO regarding surface features within 300m radius
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.	Noted and agreed The structure study has been carried out within the radius of 300m. There is no habitation within the radius of 300m from the project site the details of the structures is given in the EIA report, Chapter No.III
4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	Noted and agreed. The hydro-geological assessment was carried out to assess the potential effects on the groundwater table. It is expected that there will be no major impacts on the water bodies in the vicinity of the project site. Further information is given in Chapter 3.
5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	Noted and agreed The Bio diversity study has been conducted by the Functional Area Expert approved by the NABET. The same has been detailed in the Chapter No. 3.
6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.	Request to consider the secondary source data detailing the nearest reserve forest from Tamil Nadu Geographical Information System (TNGIS). The Nearest Reserve Forest Nellimalai RF – 7.55km – North West

7	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	Noted and agreed. It is a fresh quarry. The slope stability report will be submitted together with the half-yearly compliance report once the depth reaches 30 meters.
8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.	Noted and agreed. It is a fresh quarry. The slope stability report will be submitted together with the half-yearly compliance report once the depth reaches 30 meters.
9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	Noted and agreed The Proponent given affidavit stating that the blasting operation will be carried out by the competent person as per the MMR 1961.
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	Noted and agreed The details of design for carrying out controlled blasting operation involving line drilling and muffle blasting to minimize blast-induced ground vibrations and controlled fly rock travel beyond 30 m from the blast site is detailed in Chapter 4.
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences	Noted and agreed. The Existing Quarry is in name of Tvl. Sri Blue Metals Building Materials Company, S.F.No. 77/1B & 421/2B, Extent – 3.11.0 Ha 14.02.2023 – 13.02.2028
12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,	Noted and agreed
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	It is a fresh quarry
14	Quantity of minerals mined out. · Highest production achieved in any one year · Detail of approved depth of mining. · Actual depth of the mining achieved earlier. · Name of the person already mined in that leases area. · If EC and CTO already obtained, the copy of the same shall be submitted. · Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated	It is a fresh quarry

	benches.	
15	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Noted and agreed The project site has been superimposed on the high resolution imagery. The Satellite imagery of the project site is enclosed in Chapter II Geomorphology map of the area is enclosed in Chapter II. Lithology and Geology Map of the area is enclosed in Chapter II.
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,	Noted and agreed The Drone Video of the project site is taken covering the Greenbelt and Fencing around the Project site.
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 As per the recommendations during SEAC ToR Presentation of the proposal and commitment of PP a count of 1820 Nos of trees were planted as a part of greenbelt development programme all along the periphery of the lease applied area and approach roads and village roads. As well the pp has provided wire fencing as recommended all along the boundary of the lease applied area.
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.	Noted and agreed Details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology justifications are provided in Chapter 2. The anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same are provided in Chapter 4.
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act' 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Noted and agreed 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 groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.	Noted and agreed 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.
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to	Noted and agreed

	surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study	Baseline Data were collected for Summer season Mar 2025 – May 2025 The Details of the Baseline Monitoring is given in the Chapter No. 3.
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.	Noted and agreed Cumulative impact study has been carried out covering proposed and existing quarries in the cluster and results related to air pollution, water pollution, & health impacts have been given in chapter No. 7, Based on the results, environmental management plan has been prepared and given in Chapter No. 10.
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Noted and agreed The lower part of the mine pit will be utilized as rain water harvesting structure (Temporary) and the water will be used for the water sprinkling on haul roads and Greenbelt development purpose. Rainwater harvesting structure will be constructed near the mine office.
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.	Noted and Agreed 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. 3, Table No 3.3
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.
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.	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.
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.	Noted and agreed The lower part of the mine pit will be utilized as rain water harvesting structure (Temporary) and the water will be used for the water sprinkling on haul roads and Greenbelt development purpose. Rainwater harvesting structure will be constructed near the mine office.
28	Impact on local transport infrastructure due to the Project should be indicated.	Noted and agreed Traffic density survey was carried out to analyze 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 have been provided in Chapter No. 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.	Noted and agreed

30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific	Noted & agreed. Mine closure plan is detailed in Chapter No. 4.
31	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible	Noted and agreed
32	The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the Appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	Noted and agreed As per the recommendations during SEAC ToR Presentation of the proposal and commitment of PP a count of 1820 Nos of trees were planted as a part of greenbelt development program all along the periphery of the lease applied area and approach roads and village roads.
33	Taller/one-year-old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner	Noted and agreed As per the recommendations during SEAC ToR Presentation of the proposal and commitment of PP a count of 1820 Nos of trees were planted as a part of greenbelt development program all along the periphery of the lease applied area and approach roads and village roads.
34	A Disaster Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period	Noted and agreed. Disaster management Plan is explicated in chapter 7.
35	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period	Noted and agreed. Risk Assessment and management Plan is explicated in chapter 7.
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Noted and agreed Occupational Health impacts of the project elaborately discussed in chapter 10.
37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Noted and agreed No Public Health Implications anticipated due to this project. The anticipated impact and effective mitigation measures are discussed in the Chapter No. 4
38	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Noted and agreed Socio-economic studies were conducted within a 5-kilometer radius of the quarry site. Details of report given in Chapter 3.
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No Litigation is pending against this project

40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Noted and agreed. The details of the Project benefits are given in the Chapter No. 8.
41	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.	Noted and agreed.
42	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	Noted and agreed The EMP has been prepared for the entire life of the mine i.e., up to the lease period.
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted and agreed

SEIAA STANDARD CONDITIONS		
Cluster Management Committee		
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	Noted and agreed The Cluster management committee has been formed covering the existing and proposed quarries in the cluster
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.,	Noted and agreed The information will be shared to the cluster management committee during the monthly meeting.
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.	Noted and agreed The list of members of the committee formed will be submitted to AD/Mines before resuming the mining operation.
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.	Noted and agreed It is a Fresh Quarry the blasting will be used for the removal of Rough Stone and Overburden only the blasting frequency and usage of haul roads are discussed.
5	The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation	Noted and agreed The risk management plan and disaster management plan has been prepared and enclosed in this EIA report, Chapter No. 7.

	measures considering the inundation of the cluster and evacuation plan.	
6	The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail in the EIA Report.	Noted and agreed Environmental policy of the cluster management committee is detailed in the EIA Report Chapter No. 6
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 and agreed The Restoration strategy is discussed in the progressive mine closure plan and enclosed in the Scheme of Mining plan.
8	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity.	Noted and agreed The information on the health of the workers and the local people will be updated periodically along with medical examination.
Agriculture & Agro-Biodiversity		
9	Impact on surrounding agricultural fields around the proposed mining Area.	As the proposed lease area is dominantly surrounded by mining land, barren land, and fallow land, the impact on the surrounding agricultural fields if present is considerably low. The Mining operation will be carried out to reduce the impact further to the level of negligence.
10	Impact on soil flora & vegetation around the project site.	The vegetation details have been provided in chapter III. There is no schedule I species of animals observed within study area as per Wildlife Protection Act, 1972 and no species falls in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.
11	Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP.	Noted and agreed There are no trees within the Fresh quarry site, and therefore, no proposal for tree felling or removal is anticipated during the quarrying operations.
12	The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horticultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	Noted and agreed The details of the soil analysis and the impacts are given in the Chapter No 3 & 4.

13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted and agreed The Eco System of the area will be retained during the mining operation by the way of planting trees in the boundary barrier and un utilized areas. After completion of mining operation, the quarried-out pit will be facilitated to collect the rainwater to pit act as temporary reservoir
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock	Noted and agreed The project area is situated centre part of the quarry lands. The proposed Rough Stone quarrying operation will employ the wet drilling method, which is expected to have negligible impacts on nearby agricultural lands.
Forests		
15	The project proponent shall detail study on impact of mining on Reserve forests and free ranging wildlife	Noted and agreed. There is no Reserve Forest within 1km radius from the project area. The mining operation will not cause any significant impact to the Reserve Forest and Wild life Sanctuaries
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	There is no forest/wildlife within 10km radius, chapter 3 details of Ecology and Biodiversity, and 4 endemic vulnerable and endangered indigenous flora and fauna.
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection	Details are discussed in the Chapter No.3
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site	Anticipated Environment Impact and Mitigation measures are detailed in Chapter No.4
Water Environment		
19	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby 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	There are 07 open wells and 09 bore wells within the radius of 1km from the project area, Hydrogeological study has been conducted by the resistivity method.
20	Erosion Control measures	Details discussed in the chapter No.4

21	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	Details in Chapter 3
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir	Food webs describe who eats whom in an ecological community. Made of interconnected food chains, food webs help us understand how changes to ecosystems — say, removing a top predator or adding nutrients — affect many different species, both directly and indirectly. Whereas in this proposed project is for quarrying of Rough Stone and Gravel and is on a hard batholith formation where no diversion of any water bodies is proposed of there is no intersection of ground water table anticipated.
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	Details are given in the Chapter No 4.
24	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	Details in Chapter 4 impact of bio diversity.
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components	Details of impact on soil environment is detailed in Chapter No.4
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites	Nellimalai RF – 7.55km – North West There is, National Parks, Eco sensitive areas, Wild life sanctuaries within the radius of 10km. An ecological survey of the study area was conducted particularly with reference to the listing of species and assessment of the existing baseline ecological (terrestrial) condition in the study area. Ecological Environment is discussed under Chapter 3
27	The EIA shall include the impact of mining activity on the following: a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams.	There are 07 open wells and 09 bore wells within the radius of 1km from the project area, Hydrogeological study has been conducted by the resistivity method.
Energy		

28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished.	Noted and agreed. Control measures of Noise, Air Water, Dust discussed in chapter 4
Climate Change		
29	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities	Noted and agreed. Details discussed in chapter 4.
30	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features	Noted and agreed. Details are discussed in chapter 3.
31	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	A greenhouse gas (GHG) is a gas that absorbs and emits radiant energy within the thermal infrared range, causing the greenhouse effect. The primary greenhouse gases in Earth's atmosphere are carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), and ozone (O ₃) Carbon dioxide (CO ₂): Carbon dioxide enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and other biological materials. Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle. Methane (CH ₄): Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices, land use and by the decay of organic waste in municipal solid waste landfills. Nitrous oxide (N ₂ O): Nitrous oxide is emitted during agricultural, land use, and industrial activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.
Mine Closure Plan		
32	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Progressive Mine closure plan has been prepared considering the entire lease period in the mining plan and the same has been approved.
EMP		
33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering	Noted and agreed

	the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs	Detailed EMP discussed in chapter 10.
34	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	Noted and agreed. Detailed EMP discussed in chapter 10.
Risk Assessment		
35	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Noted and agreed. Risk Assessment and management Plan explicated in chapter 7.
Disaster Management Plan		
36	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	Noted and agreed. Disaster management Plan details given in Chapter-7
Others		
37	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.	Letter obtained from the VAO regarding surface features within 300m radius
38	As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.	Noted and agreed. It will be updated in final EIA/EMP report.
39	The project proponent shall study and furnish the possible pollution due to plastic and micro plastic on the environment. The ecological risks and impacts of plastic & micro plastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported	Noted and agreed. Plastic waste management of the proposed project explicated in chapter 7.

Standard Terms of Reference for (Mining of minerals)		
S.N	Terms of Reference	Reply
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA) operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.	Peak Production – 75250m ³ Depth – 67m bgl Mine Lease area – 3.63.65 Ha
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for.... MTPA of mineral production based on approved project/Mining Plan for.... MTPA. Baseline data collection can be for any season (three months) except monsoon.	Noted and agreed Peak capacity of 75250m ³ operation to cover the impacts and environment management plan in chapter- IV and Chapter 10 covered in project specific activities. Baseline Data were collected for Post Monsoon Season Mar– May 2025 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. III
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided.	Noted, Google earth image showing lease area with Coordinates of pillars in chapter-II.
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines, and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also.	Noted and agreed Land use and land cover of the 10km Radius of study area is discussed in Chapter No. III. Geology map of the project area covering 10km radius Figure No. 2.8, page No.22 Geomorphology of the area is given in Chapter No 2 Figure No 2.9, page no.23 There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.	Noted and agreed Land use and land cover of the study area is discussed in Chapter No. III with Physical features such as waterbodies, odai, canal etc.,
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.	Noted and agreed DEM data using Drainage pattern around 10km radius showing streams and lakes etc., discussed in Chapter No. 3.

1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ river let system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of length, quantity and quality of water to be	Noted and agreed Drainage pattern around 10km radius showing streams and lakes etc., is discussed in Chapter No. 3.
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.	Noted and agreed Details in chapter-2 showing the land features. And also enclosed Approved 3rd Scheme of mining plan in annexure.
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	Noted and agreed It is an opencast quarrying operation proposed to operate in Mechanized method. The height and width of the bench will be maintained as 5m with 90⁰ 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.
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	Noted and agreed Impact Studies and Mitigation Measures of Water Environment including Surface Water and Ground Water are discussed in Chapter 4.

1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channeling of the water courses, etc.,	Not Applicable. The details of waste dump management are given in the Chapter No. 4																																																																					
1.12	Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area should be provided as per the tables given below. Impacts of project, if any on the land use, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations should be analyzed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights <table><tr><th>Sno</th><th>ML. project Land use</th><th>Area under Surface Rights(ha)</th><th>Area Under Mining Rights(ha)</th><th>Area under Both (ha)</th></tr><tr><td>1</td><td>Agriculture Land</td><td></td><td></td><td></td></tr><tr><td>2</td><td>Forest Land</td><td></td><td></td><td></td></tr><tr><td>3</td><td>Grazing Land</td><td></td><td></td><td></td></tr><tr><td>4</td><td>Settlements</td><td></td><td></td><td></td></tr><tr><td>5</td><td>Others (Specify)</td><td></td><td></td><td></td></tr></table> <table><tr><th>S.No</th><th>Details</th><th>Area (Ha)</th></tr><tr><td>1</td><td>Buildings</td><td></td></tr><tr><td>2</td><td>Infrastructure</td><td></td></tr><tr><td>3</td><td>Roads</td><td></td></tr><tr><td>4</td><td>Others (Specify)</td><td></td></tr><tr><td></td><td>Total</td><td></td></tr></table>	Sno	ML. project Land use	Area under Surface Rights(ha)	Area Under Mining Rights(ha)	Area under Both (ha)	1	Agriculture Land				2	Forest Land				3	Grazing Land				4	Settlements				5	Others (Specify)				S.No	Details	Area (Ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (Specify)			Total		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 2.5. <table><tr><th>Description</th><th>Present area in (Ha)</th><th>Area at the end of this quarrying period (Ha)</th></tr><tr><td>Area under Quarrying</td><td>Nil</td><td>2.97.00</td></tr><tr><td>Site Services</td><td>Nil</td><td>0.01.00</td></tr><tr><td>Roads</td><td>Nil</td><td>0.02.00</td></tr><tr><td>Green Belt</td><td>Nil</td><td>0.36.00</td></tr><tr><td>Un-utilized Area</td><td>3.63.65</td><td>0.27.65</td></tr><tr><td>Grand Total</td><td>3.63.65</td><td>3.63.65</td></tr></table>	Description	Present area in (Ha)	Area at the end of this quarrying period (Ha)	Area under Quarrying	Nil	2.97.00	Site Services	Nil	0.01.00	Roads	Nil	0.02.00	Green Belt	Nil	0.36.00	Un-utilized Area	3.63.65	0.27.65	Grand Total	3.63.65	3.63.65
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1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and	Noted and agreed 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.																																																																					

1.14	One-season (other than monsoon) primary baseline data on environmental quality - air (PM10, PM2.5, SOx, NOx and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil - along with one-season met data coinciding with the same season for AAQ collection period should be provided. The detail of NABL/ MoEF&CC certification of the respective laboratory and NABET accreditation	Noted and agreed Baseline Data were collected for Summer Season Mar– May 2025 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.
1.15	Map (1: 50, 000 scale) of the study area (core and buffer zone) showing the location of various sampling stations superimposed with location of habitats, other industries/mines, polluting sources, should be provided. The number and location of the sampling stations in both core and buffer zones should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air) / downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water	Noted and agreed Details in chapter-3 showing the various sampling stations As per CPCB guidelines.
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10km buffer zone i.e., dispersed in 10 km buffer area. In case of	Noted and agreed Air Quality Modelling and wind rose pattern for prediction of incremental GLC's of pollutant was carried out using AERMOD view 13 Model. Details in Chapter No. 4.
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.	Noted and agreed Traffic density survey was carried out to analyses 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-II.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of	Noted and agreed Detailed in chapter-3 socio-economic study with occupational status & economic status of the study area. The study should also include the status of infrastructural facilities and amenities present in the study area CSR are discussed under Chapter 8.

1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.	Noted and agreed Detailed Ecology and biodiversity study in chapter-3
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.	Detailed in chapter-4 population in the impact zone and measures for occupational health and safety and proposed occupational health in chapter-X
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015	Noted and agreed
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.	Noted and agreed The ground water table is at 70-75m below ground level. In this project, ultimate depth is 67m Bgl It is inferred the quarrying activities in the Cumulative EIA project (Quarry) will not intersect the Ground water table.
1.23	Study on land subsidence including modelling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.	Noted and agreed Detailed in Chapter-IV Anticipated and mitigation measures of in the study area.
1.24	Detailed water balance should be provided. The breakup of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.	Noted and agreed Total Water Requirement: 3.0 KLD Discussed under Chapter 2, Table No 2.15, The required water will be met from rainwater accumulated in mine pit (when available) and from the approved water vendors.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs	Noted and agreed Methodology And Instrument Used for Air Quality Analysis in chapter-3and Air Pollution control equipment (APCEs) in chapter-10 sub 10.2 Environmental policy.
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be	Noted and agreed Details in Machinery and equipment details in Chapter-2 Table No 2.16
1.27	PP to evaluate the green house emission gases from the mine operation/ washery plant and corresponding carbon absorption plan.	Noted and agreed Noted and agreed

1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.	Noted and agreed A Risk Assessment and Disaster Preparedness and management Plan
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	Detailed in Machinery and technology used Chapter-3 Table 3.17 – Methodology and Instrument Used for Air Quality Analysis Detailed study in chapter-4 Impact of choice of mining method and impact on air quality and blasting and noise and vibrations.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from	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 much significant impact due to the proposed transportation from the project area. Details in Chapter 2. 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.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.	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
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.	Detailed in chapter-2 for mineral transportation route with approach roads etc., and impacting air quality detailed given chapter-4
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre-mining status should be provided. A Plan for the ecological restoration of the mined-out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and	Discussed under Chapter 2. Mine Closure Plan is a part of Approved Mining Plan enclosed as Annexure Volume – 1.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.	Greenbelt Development Plan is discussed under Chapter 4
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.	The total cost and the details are given in the Chapter No. 10

1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc. and costs along with the schedule of the implementation of the R&R Plan should be given.	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.
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.	CSR are discussed under Chapter 8. And specific budgetary provisions (capital and recurring) for specific activities over the life of the project in chapter-10
1.38	Corporate Environment Responsibility:	CER are discussed under Chapter 8.
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.	Detailed in chapter-10 The Environment Policy
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.	
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.	The Environment Monitoring Cell discussed under Chapter 6
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or	The Environment Monitoring Cell discussed under Chapter 6
1.43	e) Environment Management Cell and its responsibilities to be clearly spell out in EIA/ EMP	The Environment Monitoring Cell discussed under Chapter 6
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be	The Environment Monitoring Cell discussed under Chapter 6
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.	No litigation is pending in any court against this project
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.	Sathiyamangalam Tiger Reserve– 22km – North
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable	Noted and agreed

1.48	Details on the Forest Clearance should be given as per the format given: Total Mine lease area (ha): Total Forest Land (Ha) : Date of FC : Extent of Forest Land : Balance area for which FC is yet to be obtained: Status of application for diversion of forest Land:	Nellimalai R.F. 7.55km- NW Total Mine Lease area 3.63.65 Ha
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report.	Noted and agreed.
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English	The outcome of public hearing is updated in this Final EIA/EMP report in Chapter-7.
1.51	PP shall carry out survey through drone highlighting the ground reality for at least 10 minutes.	Noted and agreed
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.	It is Fresh Lease
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)	Noted and agreed. As per detailed in front page of Final EIA/EMP, NABET, NABL certification detailed given in the report.
1.54	The compliances of Tor must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapters	Noted and agreed. As per Tor compliance each chapter wise page and table, figure no given in the EIA/EMP report.

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. The projects is Not a violation category. This proposal falls under B1 Category (Cluster situation)
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	Document is enclosed along with Approved Mining Plan as Annexure Volume 1 for the respective projects.
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/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Satellite imagery of the project area along with boundary co-ordinates is given in the Chapter No 1 Geomorphology of the area is given in Chapter No 2 Land use pattern of the project area is tabulated in the Chapter No.2. Land use pattern of the Study area is tabulated in the Chapter No.3
5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	Map showing – Geology map of the project area covering 10km radius - Geomorphology of the area is given in Chapter No 2.
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 10.1.
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	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° 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.
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.
12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	Not Applicable. There is no Forest Land involved in the proposed project area. The proposed project area is a government 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 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.	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.

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. Detailed in Chapter No. 3.
19	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli 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 w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	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 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	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.

	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.	Baseline Data were collected for One Season Dec-Feb 2023 (Winter Season) as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.
23	Air quality modelling 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 modelling 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 for this project is given in the chapter No 2, Table No 2.13.
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water for dust suppression, greenbelt development and domestic use will be obtained from accumulated rainwater/seepage water in mine pits. Drinking water will be sourced from the approved water vendors, No 2, Table No 2.13.
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.	The rain water collected in the pits after spell of rain will be used for greenbelt development and dust suppression.
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 Quality discussed in Chapter No. 4.
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	The ground water table is at 60-65m below ground level. In these projects, ultimate depth is 50m Maximum from the general ground profile. It is inferred the quarrying activities in the Cumulative EIA project (Quarry) will not intersect the Ground water table.

	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.	Highest elevation of the project area is 426m AMSL Ultimate depth of the mine is 42m Bgl Water level in the area is 83m BGL to 88m BGL
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.	Progressive greenbelt development plan has been prepared and discussed along with Recommended Species details are given in the Chapter 4,
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.	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 much significant impact due to the proposed transportation from the project area. Details in Chapter 2.
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.	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.
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Discussed in 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.	Details in Chapter 10.
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impact and details of the medical examination to the workers given in the Details in Chapter 10.

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.	Details in Chapter No. 4
37	Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Details of Socio Economic is given in the Chapter No 3.
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.	Environment Management Plan 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.	Public hearing points and commitment of the project proponent will be updated in the final EIA & EMP 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 given in the Chpater No 2,
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Detailed under Chapter 7
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.	Total Water Requirement for this project is given in the chapter No 2,
44	Besides the above, the below mentioned general points are also to be followed: -	
A	Executive Summary of the EIA/EMP Report	Encloses as separate volume
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 given properly.
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	Copy of Baseline monitoring reports are enclosed with this draft as annexure
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.	Questionnaire of the project will be submitted in final EIA report after complying the public hearing points.
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,	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) Dated: 4th August, 2009 are followed.

	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	There is no changes in Form-I, Mining plan and Pre-feasibility report for all the projects.
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.	Satellite imagery of the project area along with boundary co ordinates is given in the Chapter No 1 Geomorphology of the area is given in Chapter No 2

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1. INTRODUCTION

1.0 PREAMBLE

The project proponent M/s. Sri Blue Metals has applied for rough stone and Gravel quarry over an extent of 3.63.65 Ha in S.F.Nos. 343, 344/1 of Belladhi & 65/1A (P) Chickkarampalayam Village, Mettupalayam Taluk & Coimbatore District.

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 25.11.2024 & 20.01.2025
- Precise Area Communication Letter was issued by the District Collector, Coimbatore R.C. No: 1262/Kanimam/2024, Dated: 28.01.2025
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide R.C.No: 1262/Mines/2024, Dated: 25.02.2025
- 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/530707/2025 Dated: 22.03.2025
- The proposal was placed in 569th SEAC meeting held on 22.05.2025 and the committee recommended for issue of ToR.
- The proposal was considered in 837th SEIAA meeting held on 12.06.2025 and issued ToR vide File No.11986 TOR Identification No. TO25B0108TN5806008N Dated:18.06.2025
- As per the EIA Notification, 2006 and subsequent amendments and OM The proposal falls in the B1 Category (Cluster quarries – 3 proposals, 2 Existing quarry forming Cluster Category {Total Extent of the Cluster is 17.38.15 Ha}- Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016).

Based on the ToR Baseline Monitoring study has been carried out for one season (Pre Monsoon) i.e., **March – May 2025** and this EIA and EMP report is prepared for considering cumulative impacts arising out of these projects, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) to minimize those adverse impacts.

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.

1.1 PURPOSE OF THE REPORT

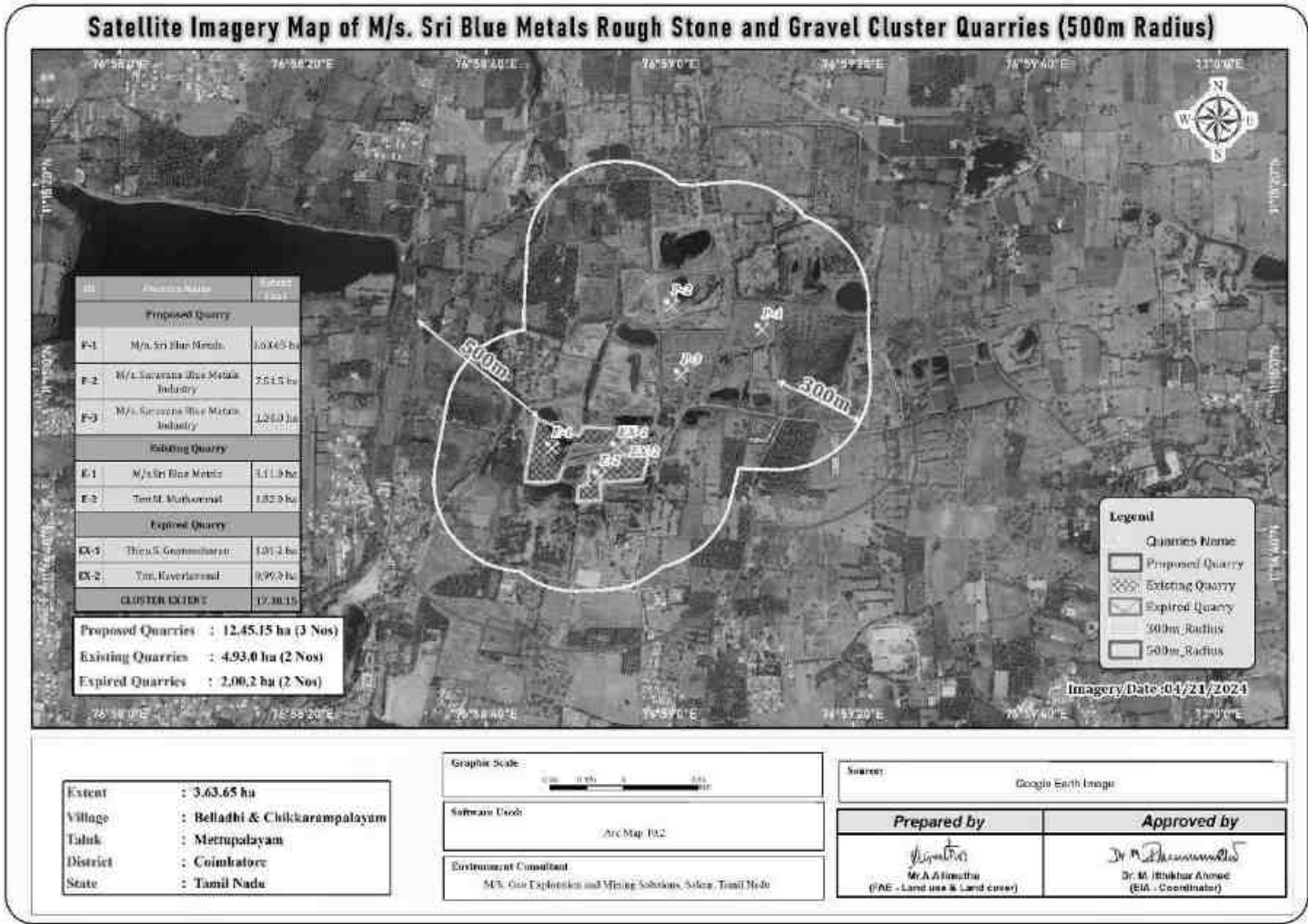
The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14thSeptember 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14thAugust 2018, Mining Projects are classified under two categories i.e. A (> 100 Ha) and B ($\leq$ 100 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.

The 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 ToR for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu”

FIGURE.1.1SATELLITE IMAGERY CLUSTER QUARRY



1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT

1.2.1 Identification of Project

TABLE 1.1: SALIENT FEATURES OF THE PROPOSED PROJECT

Name of the Project	M/s. Sri Blue Metals Rough Stone & Gravel Quarry
S.F. No.	343, 344/1 & 65/1A(Part)
Extent	3.63.65 ha
Land Type	Patta Land
Village Taluk and District	Belladhi & Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District

Source: Approved Mining Plan.

1.2.2 Identification of Project Proponent

TABLE 1.2: DETAILS OF PROJECT PROPONENT

Name of the Company	M/s. Sri Blue Metals (Thiru S. Gnanasekaran is a Proprietor)
Address	No. 2/241, Kannarpalayam, Karamadai Post, Mettupalayam Taluk, Coimbatore District - 641 104.
Mobile	99763 64777, 86673 84540 & 90959 15146
Status	Individual

Source: Approved Mining Plan.

1.3 BRIEF DESCRIPTION OF THE PROJECT

1.3.1 Nature and Size of the Project

The quarrying operation is to be carried out by Opencast Mechanized Mining method with 5.0m bench height and 5.0m bench width by deploying Jack Hammer Drilling & Slurry Explosive during blasting. Hydraulic Excavator and tippers are used for Loading and transportation. Rock Breakers are deployed to avoid secondary blasting.

TABLE 1.3: BRIEF DESCRIPTION OF THE PROJECT

Name of the Quarry	M/s. Sri Blue Metals Rough Stone & Gravel Quarry	
Toposheet No	58-A/15 and 58-A/16	
Land Classification	It is a Patta Land, Jointly Registered in the name of the Tmt.G. Chandra and Tmt. P. Jayalakshmi, vide Patta Nos.1236, 3819 and 2949. The Applicant has obtained consent from the Pattadhars.	
Latitude between	11°14'59.04"N to 11°15'07.61"N	
Longitude between	76°59'05.01"E to 76°59'11.83"E	
Highest Elevation	352m AMSL	
Proposed Depth of Mining as per Tor	67m (2m Gravel + 65m Rough Stone)	
Geological Resources	Rough Stone in m ³	Gravel m ³

	23,63,725	72,730
Mineable Reserves	Rough Stone in m ³	Gravel m ³
	6,88,975	55,218
Yearwise production for first five years	Rough Stone in m ³	Gravel m ³
	3,65,250	55,218
Yearwise production for Second five years	Rough Stone in m ³	Gravel m ³
	3,23,725	-
Ultimate Pit Dimension	XY-AB = 147m (L) x 141m (W) x 67m (D) Bgl X1Y1 - CD = 93m (L) x 74m (W) x 32m (D) Bgl	
Water Level in the surrounds area	70 - 75 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is plain terrain. The area has gentle sloping towards Northeastern side and altitude of the area is 352m (max) above from Mean Sea level. The area is covered by 2m thickness of Gravel and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pits. The Water level in the surrounding area is 70m in summer and at 75m in rainy seasons below general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 1205.8 mm.	
	Jack Hammer	8 Nos
	Compressor	2 Nos
	Excavator with bucket and rock breaker	2 Nos
	Truck	4 Nos
	Water Sprinkling Tanker	1 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	
Project Cost	Rs.2,98,38,000/-	
CER Cost	Rs 5,00,000/-	
Nearby Water Bodies	Water bodies	Distance & Direction
	Odai	670m NW
	Tank	700m NE
	Belladhi Lake	1.1km West
	Odai	1km West

	Odai	1.3km SE
	Bhavani River	6.8km NE
Greenbelt Development Plan	Proposed to plant 1820 trees in the 7.5m Safety Zone, Village Road and panchayat roads.	
Proposed Water Requirement	3.0 KLD	
Nearest Habitation	730m South	

Source: Approved Mining Plan

1.3.2 Location of the Project

- The proposed quarry project falls in Belladhi & Chickkarampalayam Village, Mettupalayam Taluk and Coimbatore District.
- M/s. Sri Blue Metals is located about 1.0km South Eastern side of Belladhi Village
- M/s. Sri Blue Metals is located about 730m Northern side of Chickkarampalayam Village.
- The Chickkarampalayam Village is located about 8.4km South Eastern side of Mettupalayam Taluk.
- The area is marked in the Survey of India, Toposheet No. 58-A/15 & 58-A/16. The area lies between the Latitudes of 11°14'59.04"N to 11°15'07.61"N and Longitudes of 76°59'05.01"E to 76°59'11.83"E.

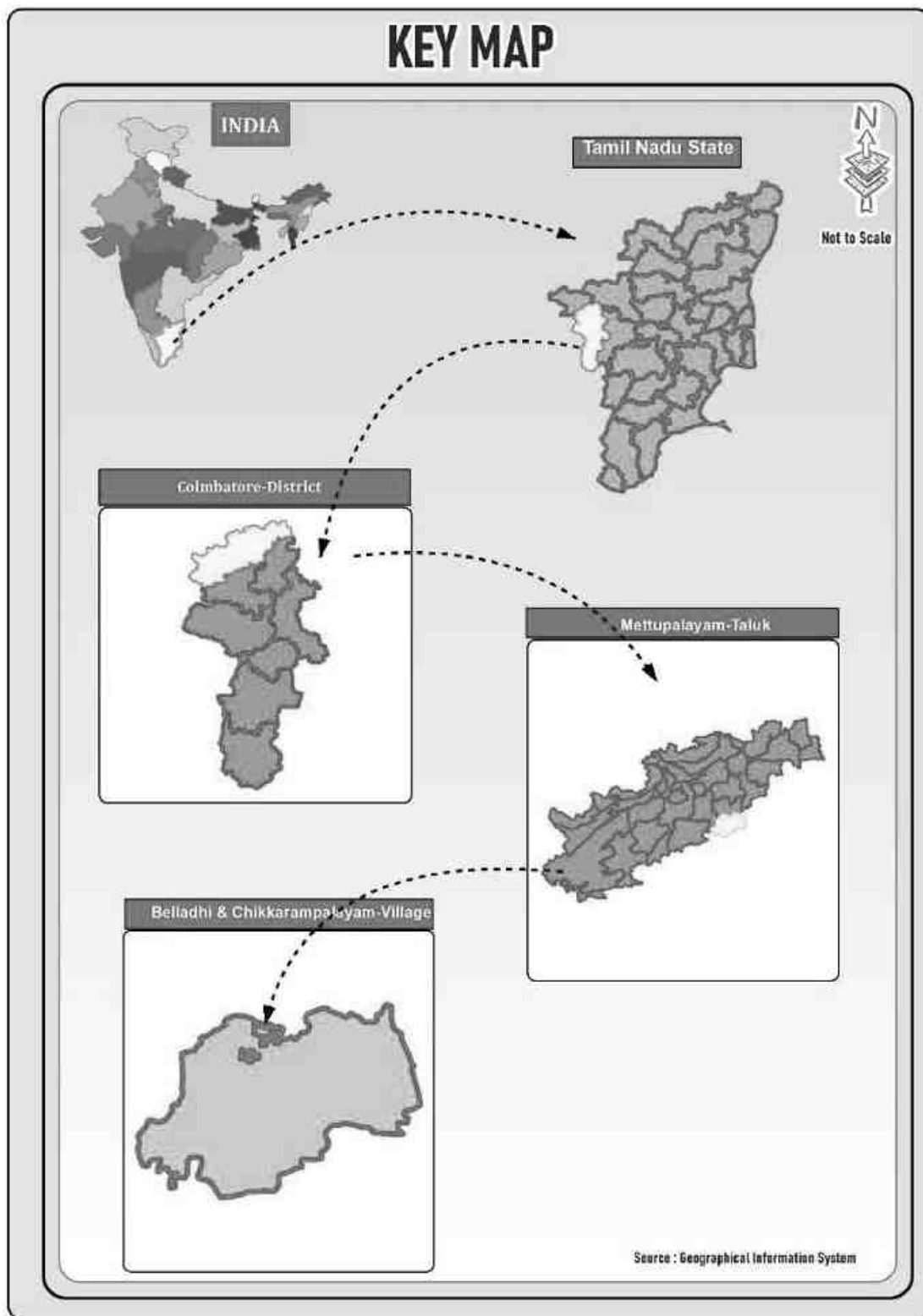
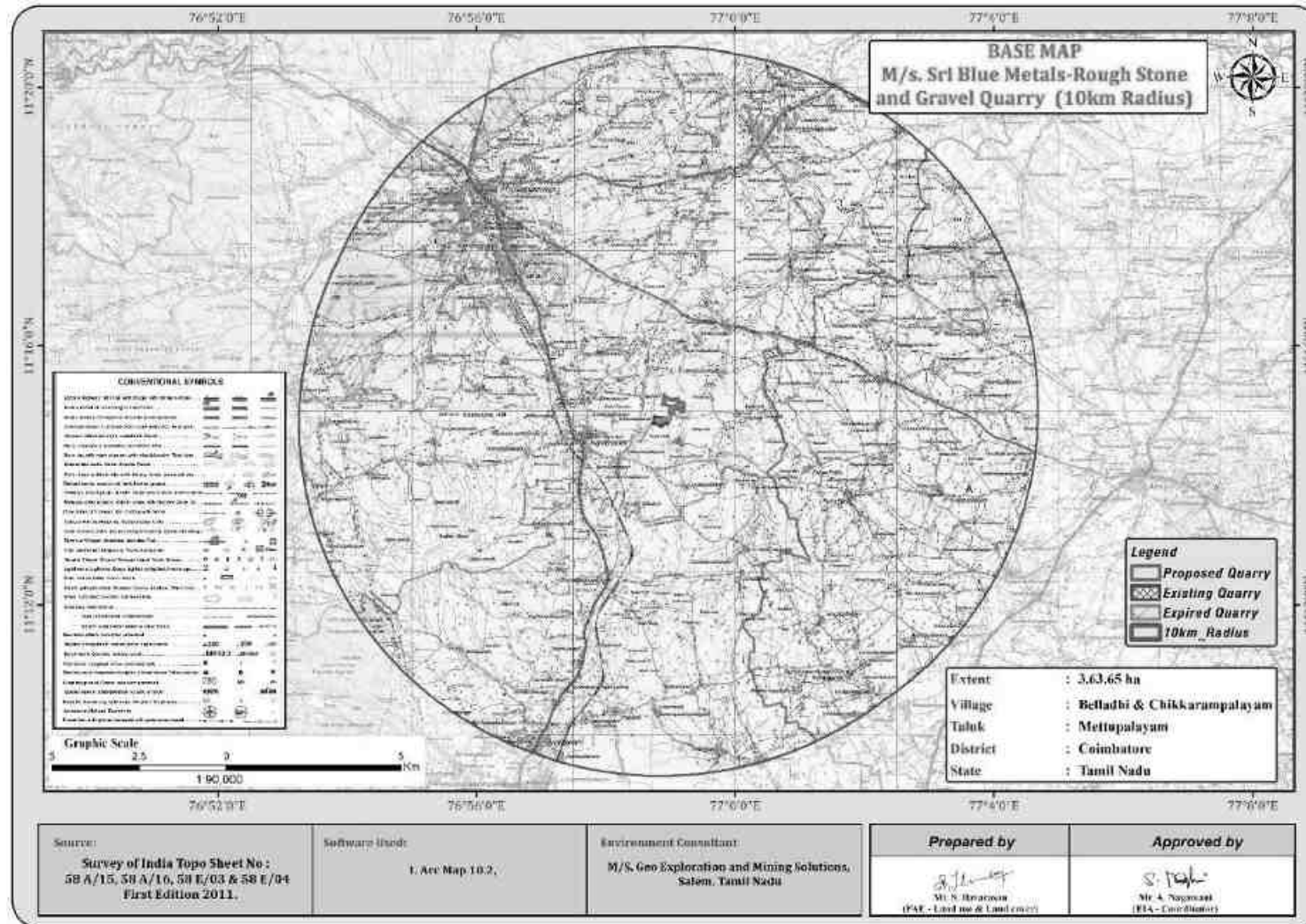
FIGURE 1.1A KEY MAP SHOWING THE LOCATION OF THE PROJECT SITE

FIGURE 1.2: TOPOSHEET SHOWING LOCATION OF THE PROJECT SITE AROUND 10 KM RADIUS

1.4 Environmental Clearance

The Environmental Clearance process for the 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 proponent applied for Rough Stone and Gravel Quarry Lease Dated: 25.11.2024 & 20.01.2025.
- Precise Area Communication was issued by the Assistant Director, Department of Geology and Mining, Coimbatore District vide Rc.No. 1261/Mines/2024, Dated: 28.01.2025
- The mining plan was approved by the Assistant Director, Department of Geology and Mining, Coimbatore District vide Rc.No. 1262/Mines/2024, Dated: 25.02.2025.
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/530707/2025, Dated: 22.03.2025.

SCOPING

- The proposal was placed in 569th SEAC meeting held on 22.05.2025 and the committee recommended for issue of ToR.
- The proposal was considered in 837th SEIAA meeting held on 12.06.2025 and issued ToR Identification No. File.No.11986 ToR Identification No. TO25B0108TN5806008N Dated. 18.06.2025

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, 2010
- EIA Notification, 14th September, 2006
 - File.No.11986 ToR Identification No. TO25B0108TN5806008N Dated. 18.06.2025.
 - Approved Mining Plan.

1.5 TERMS OF REFERENCE (ToR)

ToR issued vide –

- ToR No. File.No.11986 ToR Identification No. TO25B0108TN5806008N Dated. 18.06.2025 Area detailed in Page No. I – XLIX.

1.6 POST ENVIRONMENT CLEARANCE MONITORING

The proposed 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 Quarry 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 Winter season (Dec 2022 to Feb 2023) for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the 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 9 locations (1 Core & 6 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)	7 locations – data monitored once for 24 hours during EIA study
6	Soil Characteristics	Physical and Chemical Parameters	Once at 5 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: Field Monitoring Data

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 Mining Plan has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959
- File.No. 11986 ToR Identification No. TO25B0108TN5806008N Dated. 18.06.2025.

CHAPTER – 2: PROJECT DESCRIPTION

2.0 GENERAL

The Proposed Rough Stone Quarry requires Environmental Clearance. Three proposed and Two existing quarries forming a cluster; calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016 and the total extent of cluster is **17.38.15 ha.**

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 proposed Quarry.

Method is mining is common for all the proposed Quarry in the cluster. 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 proposed quarry project falls in Belladhi & Chickkarampalayam Village, Mettupalayam Taluk and Coimbatore District.
- M/s. Sri Blue Metals is located about 1.0km South Eastern side of Belladhi Village
- M/s. Sri Blue Metals is located about 730m Northern side of Chickkarampalayam Village.
- The Chickkarampalayam Village is located about 8.4 km South Eastern side of Mettupalayam Taluk.
- The area is marked in the Survey of India, Toposheet No. 58-A/15 & 58-A/16. The area lies between the Latitudes of 11°14'59.04"N to 11°15'07.61"N and Longitudes of 76°59'05.01"E to 76°59'11.83"E.

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-181 Coimbatore – Ooty - 4km -Southwestern side SH-168 Karamadai – Kariyampalayam - 2km -Southern side
Nearest Village	Chikkarampalayam – 1.0 Km South West
Nearest Town	Karamadai – 4.0 km – South West
Nearest Railway	Karamadai Railway station – 4.0Km – SW
Nearest Airport	Coimbatore –26.0 km – South West
Seaport	Kochi- 165 km – South West

Source: Prefeasibility Report and Approved Mining Plan.

TABLE 2.2: BOUNDARY CO-ORDINATES OF PROPOSED PROJECT

Boundary Pillar No.	Latitude	Longitude
1	11°15'01.45" N	76°59'05.01" E
2	11°15'04.61" N	76°59'06.30" E
3	11°15'07.53" N	76°59'06.43" E
4	11°15'07.53" N	76°59'06.60" E
5	11°15'07.41" N	76°59'10.73" E
6	11°15'07.61" N	76°59'10.96" E
7	11°15'07.53" N	76°59'11.55" E
8	11°15'02.77" N	76°59'11.59" E
9	11°15'02.77" N	76°59'11.64" E
10	11°14'59.04" N	76°59'11.83" E
11	11°14'59.10" N	76°59'08.74" E
12	11°15'02.09" N	76°59'08.78" E

Source: Approved Mining Plans

FIGURE 2.1: TOPOGRAPHICAL VIEW OF THE PROJECT SITE

FIGURE 2.2A: GREEN BELT AND FENCING PHOTOS



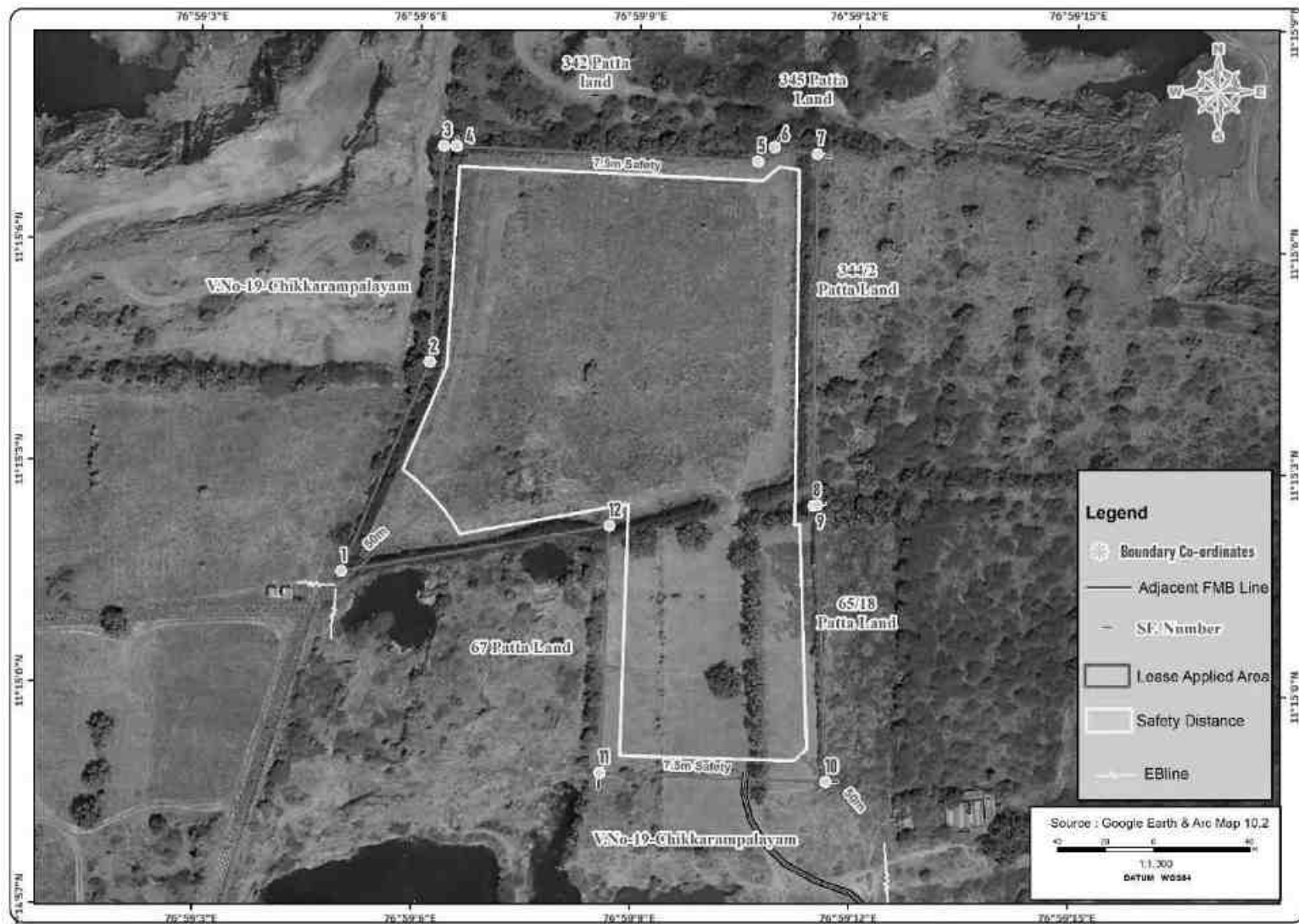
FIGURE 2.2: GOOGLE IMAGE ROUGH STONE AND GRAVEL QUARRY PROJECT AREAS

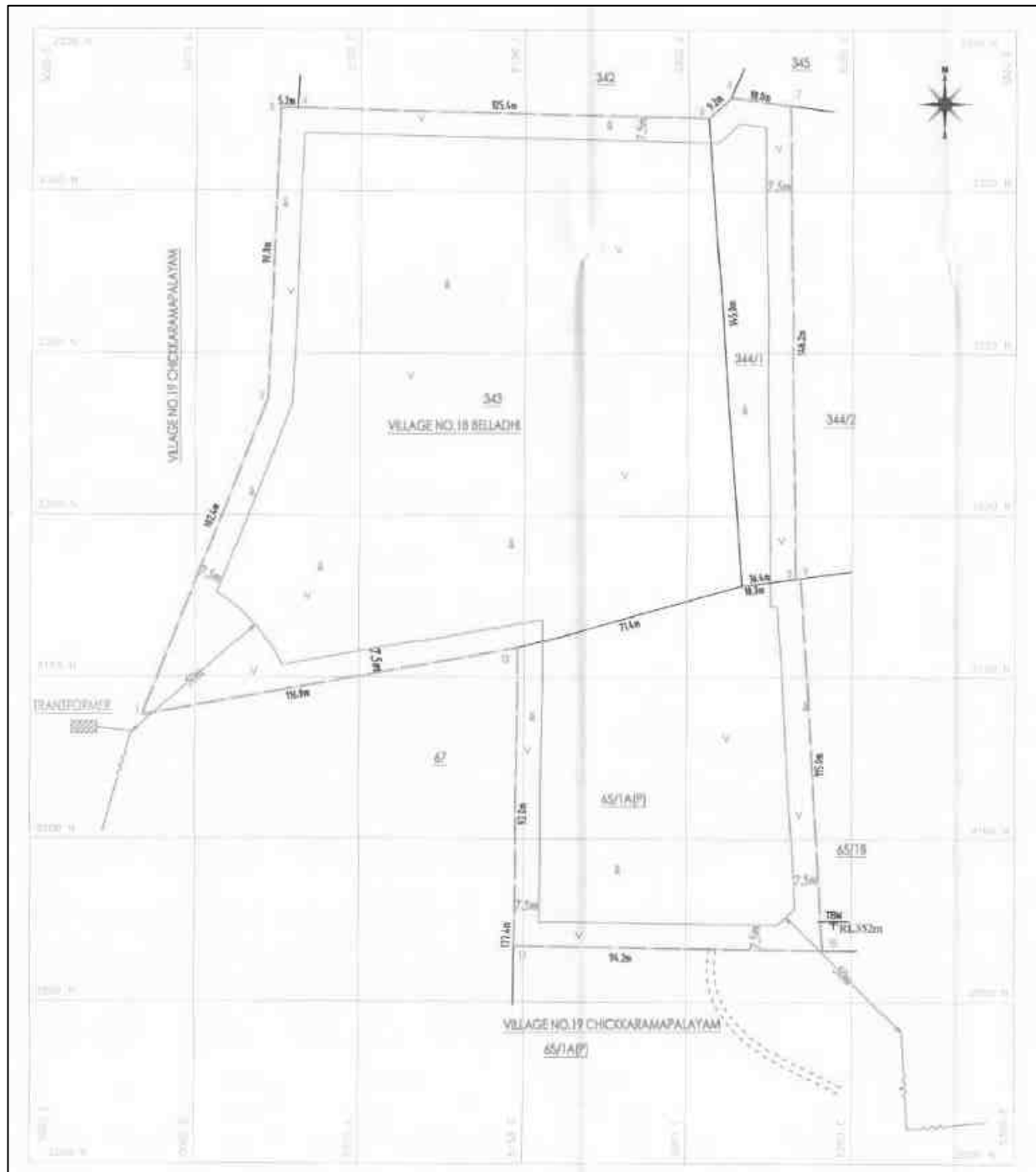
FIGURE 2.3: QUARRY LEASE PLAN / SURFACE PLAN

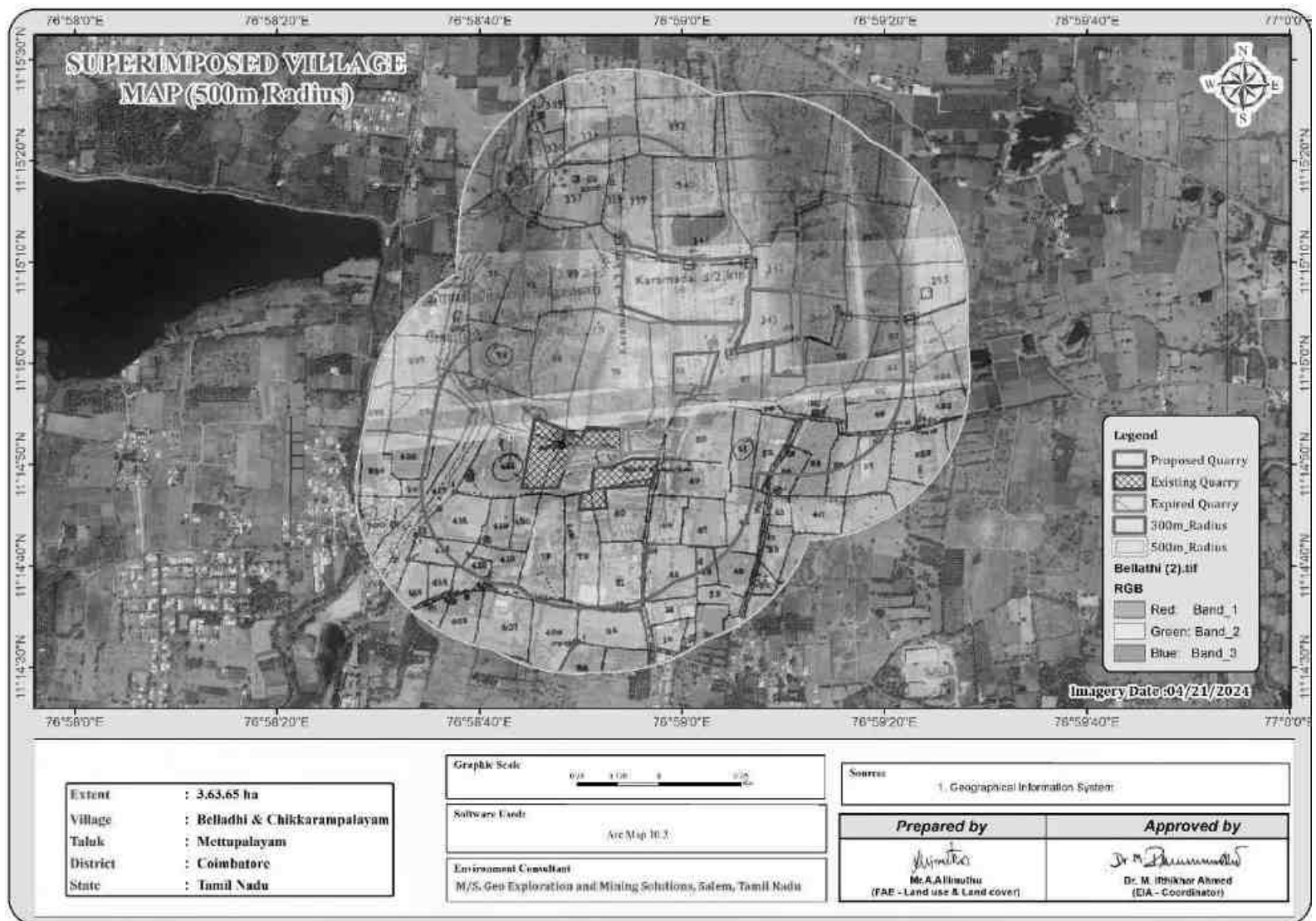
FIGURE 2.4: SATELLITE IMAGERY OF CLUSTER QUARRY

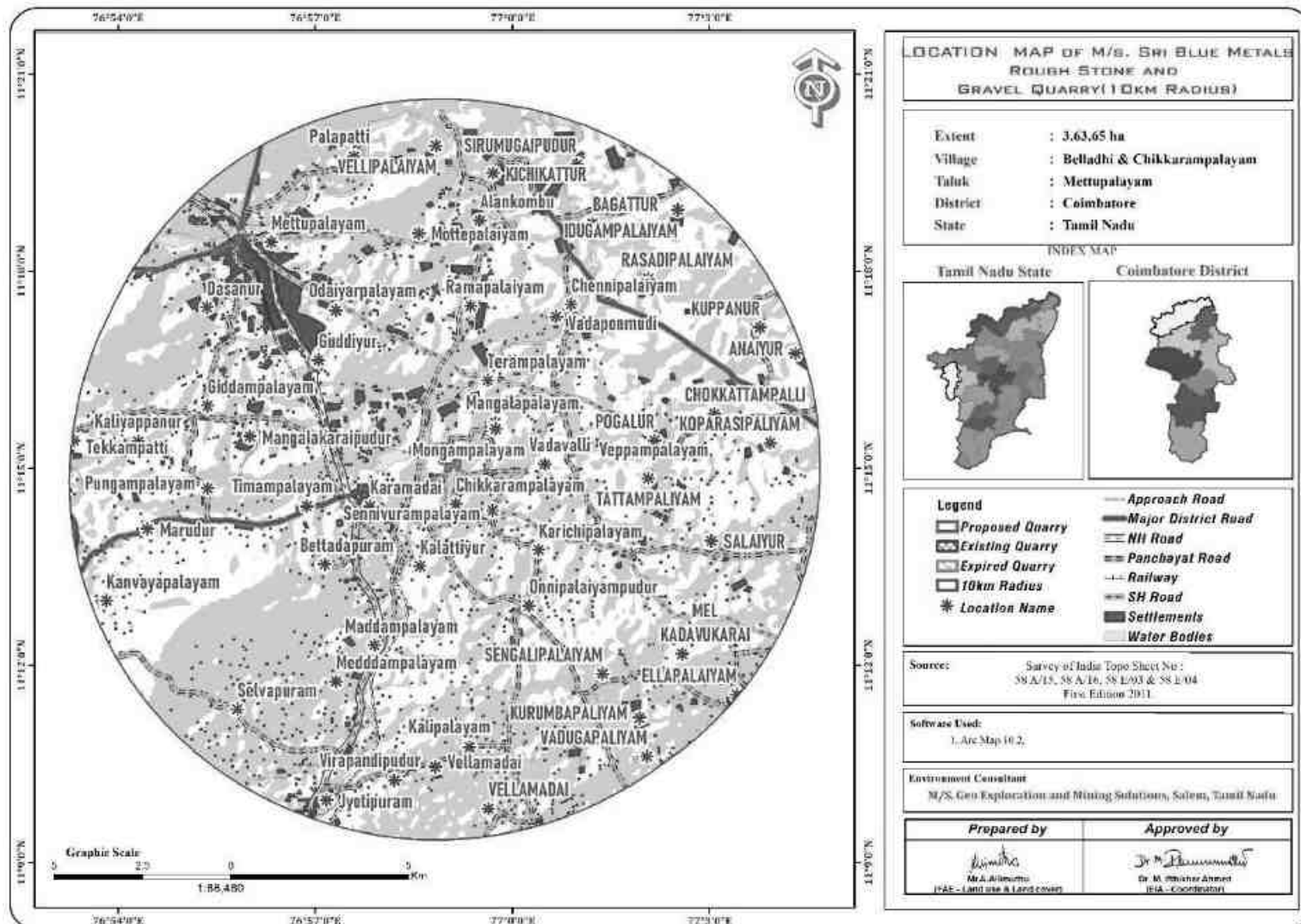
FIGURE 2.5: DIGITIZED MAP OF THE STUDY AREA (10 KM RADIUS FROM PROJECT SITE)

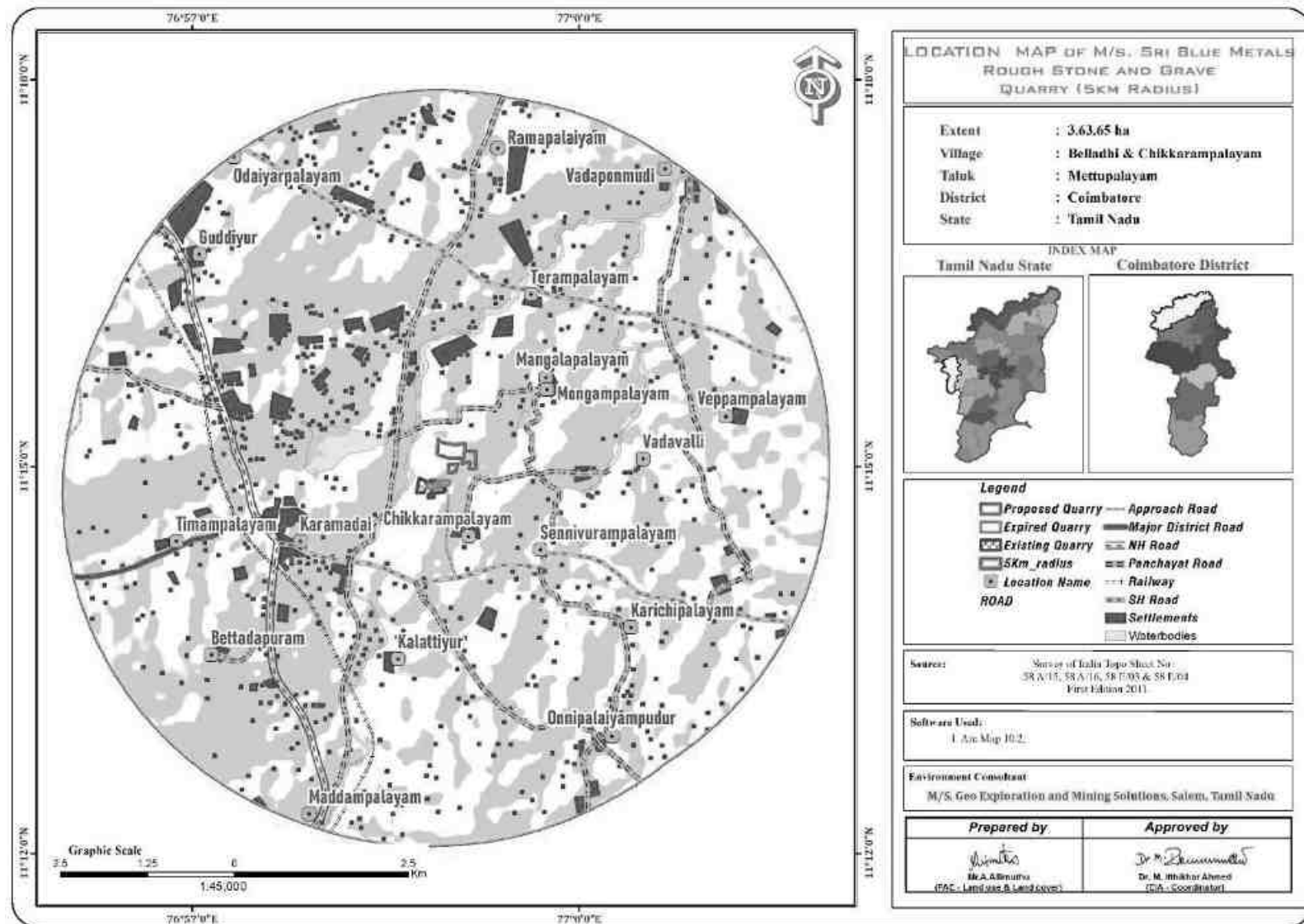
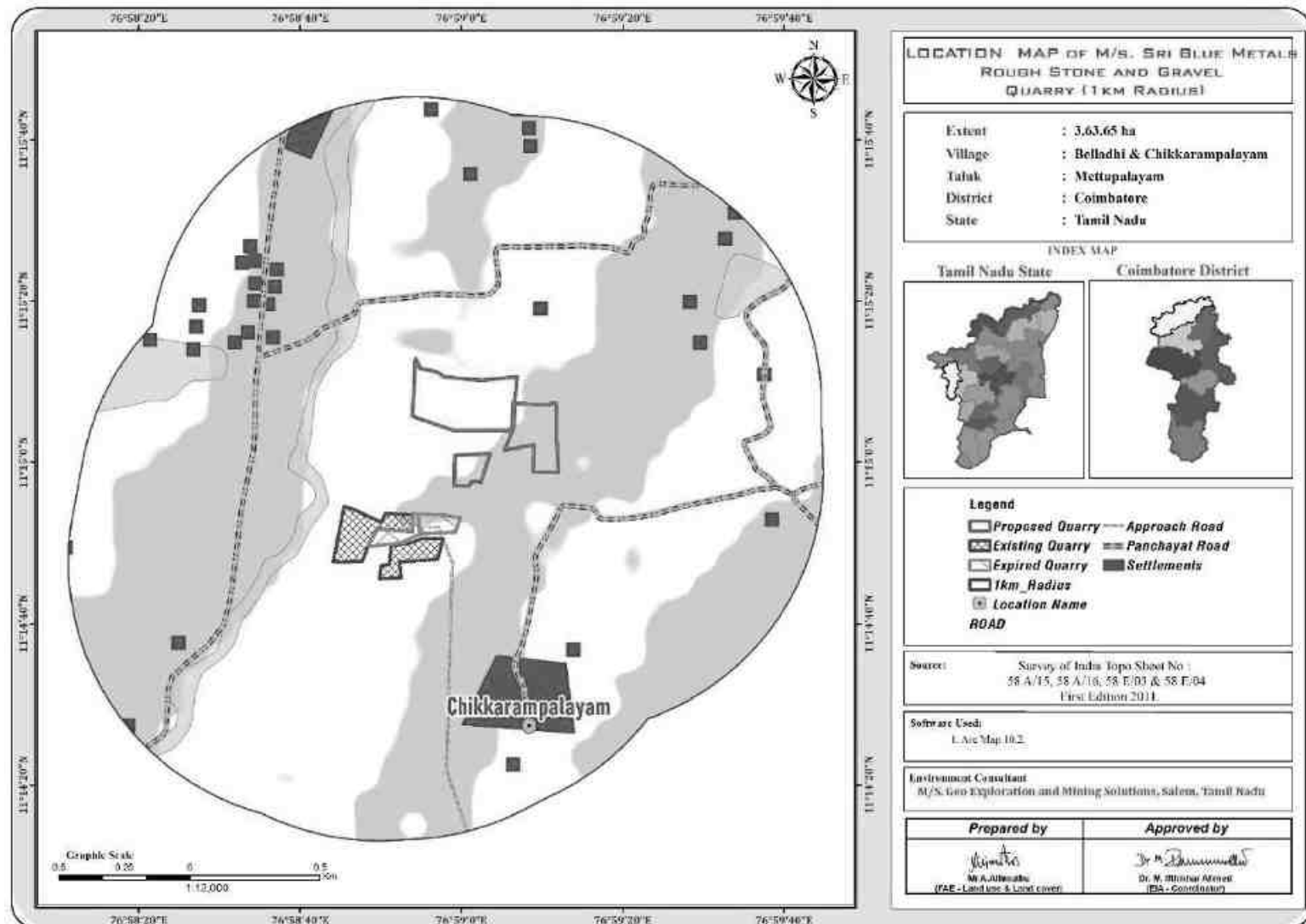
FIGURE 2.6: DIGITIZED MAP OF THE STUDY AREA (5 KM RADIUS FROM PROJECT SITE)

FIGURE 2.7: DIGITIZED MAP OF THE STUDY AREA (1 KM RADIUS FROM PROJECT SITE)

2.2.1 Project Area

- (i) The project under cluster are site specific, there is No beneficiation or processing proposed inside the project area.
- (ii) There is no forest land involved in the proposed project area and is devoid of major vegetation and trees.

TABLE 2.3 – LAND USE PATTERN

Description	Present area in (ha)	Area required during the first five years of plan period (ha)	Area at the end of lease period (ha)
Quarrying Pit	Nil	2.97.00	2.97.00
Infrastructure	Nil	0.01.00	0.01.00
Roads	Nil	0.02.00	0.02.00
Green Belt	Nil	0.18.00	0.36.00
Unutilized Area	3.63.65	0.45.65	0.27.65
Grand Total	3.63.65	3.63.65	3.63.65

Source: Approved Mining Plan

2.2.2 Size or Magnitude of Operation

TABLE 2.4: OPERATIONAL DETAILS FOR PROPOSED PROJECT

PARTICULARS	DETAILS	
	Rough Stone (10 Year Plan period)	Gravel (3 Year Plan period)
Geological Resources in m ³	23,63,725	72,730
Mineable Reserves in m ³	6,88,975	55,218
First Five Yearwise Production in m ³	3,65,250	55,218
Second Five Yearwise Production in m ³	3,23,725	-
Mining Plan Period	10 Years	3 Years
Number of Working Days	300 Days	
Production per day in m ³	230	62
No of Lorry loads (12m ³ per load)	20	5
Total Depth of Mining as per ToR	67m (2m Gravel + 65m Rough Stone)	

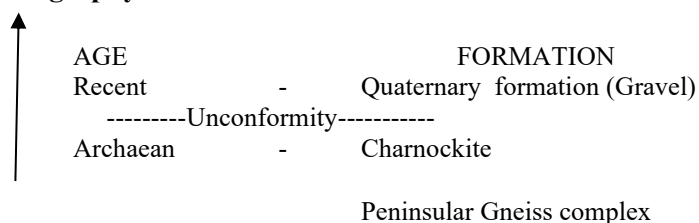
Source: Approved mining plan

2.3 Geology

2.3.1 Regional Geology

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 scale the Charnockite body N45°E to S45°W with dipping Vertical almost.

Stratigraphy of the area –



Geologically, the district is covered by rocks belonging to Archean age comprising the khondalite group, Charnockite Group, migmatite group, Sathayamangalam group, Bhavani Group and Alkali complex of Proterozoic age and Recent to Late Pleistocene rocks of Cainozoic age.

The Charnockite Group of rocks consisting of Charnockite, pyroxene granulites and associated magnetite quartzite, the Knodalite Group comprising gametiferous – sillimanite gneiss, calc-granulite, crystalline limestone, sillimanite quartzites and associated migmatitic gneisses. The rocks are restricted to the central and southern portions of the district, especially around Sulur, Madukkarai and Pollachi taluks.

The fissile homblende gneisses (Peninsular gneiss – younger phase) of Bhavani Group with enclaves of schistose, micaceous and amphibolitic rocks, fuchsite – kyanite quartzites, ferruginous quartzite (Satyamangalam Group) intruded by a number of ultramafic and basic rocks and granites are seen in the Northern portions of the district especially around Mettupalayam and Northern areas of Coimbatore. The granites are Proterozoic age and occupy the Western end and Eastern Part of the District as separate bodies and are recognized as Maruthamalai Granite and Punjapuliampatti Granites respectively. The quaternary alluvium is seen in the Western areas of Coimbatore town. The alluvium is more than 30m thick in the Chinnathadagam valley northwest of Coimbatore and in the Siruvani valley west of Coimbatore. Source: District Survey Report for Minor Minerals Coimbatore District – May 2019

2.3.2 Local Geology:-

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, all the project areas is covered with Gravel 2m of thickness; Massive Charnockite formation is found after 2 m of gravel which is clearly inferred from the existing quarry pit.

2.3.3 Hydrogeology

Coimbatore District is underlain by crystalline metamorphic complex in the western parts of district and sedimentary tract in eastern side. An area of 4551 Sq.km is covered by crystalline rocks (63%) and 2671 Sq.km is covered by sediments (37%). The general geological sequence of formation is given below:

Quaternary - Laterites, Sands and Clays

Tertiary - Sandstone, Gravels and Clays

Cretaceous - Limestone, Calcareous Sandstone and Clay unconformity.

Archaean - Charnockites, Gneisses, Granites, Dolerites and Pegmatite

- The major part of the area is covered by metamorphic crystalline rocks of charnockite, granitic gneiss of Archaean age intruded by dolerite dykes and pegmatite veins. These rocks are highly metamorphosed and have been subjected to very severe folding, crushing and faulting.
- Ground Water occurs under the phreatic condition and wherever there are deep seated fractures, it occurs under semi-confined to confined conditions.
- Occurrence of Ground Water in hard rock depends upon the intensity and depth of weathering, fractures and fissures present in the rocks.
- Granites and gneisses yield moderately compared to the yield in Charnockites.
- Depth of well in hard rock generally ranges between 8 and 15m below ground level.
- Generally yield in open wells ranges from 30 to 250m³ /day and in bore well between 260 and 430 m³ /day. The weathered thickness varies from 2.5 m to 42m in general there are 3 to 5 fracture zones within 100 m and 1 to 4 fracture zones between 100 and 200 m.

Aquifer Systems:

Occurrence and storage of groundwater depend upon three factors viz., Geology, Topography and rainfall in the form of precipitation. Apart from Geology, wide variation in topographic profile and intensity of rainfall constitutes the prime factors of groundwater recharge. Aquifers are part of the more complex hydro geological system and the behaviour of the entire system cannot be interpreted easily. In hard rock terrain the occurrence of Ground Water is limited to top weathered, fissured and fractured zone which extends to maximum 30 m on an average it is about 10-15 m in Coimbatore District.

In Sedimentary formations, the presence of primary inter granular porosity enhances the transmitting capacity of groundwater where the yield will be appreciable. The sedimentary area which occupies the eastern part of the District along the coastal tract is more favourable for groundwater recharge. Ground Water occurs both in semi confined and confined conditions. A brief description of occurrence of groundwater in each formation is furnished below.

Alluvial Formations

In the river alluvium groundwater occurs under water table condition. The maximum thickness is 37 m and the average thickness of the aquifer is approximately 12 m. These formations are porous and permeable which have good water bearing zones.

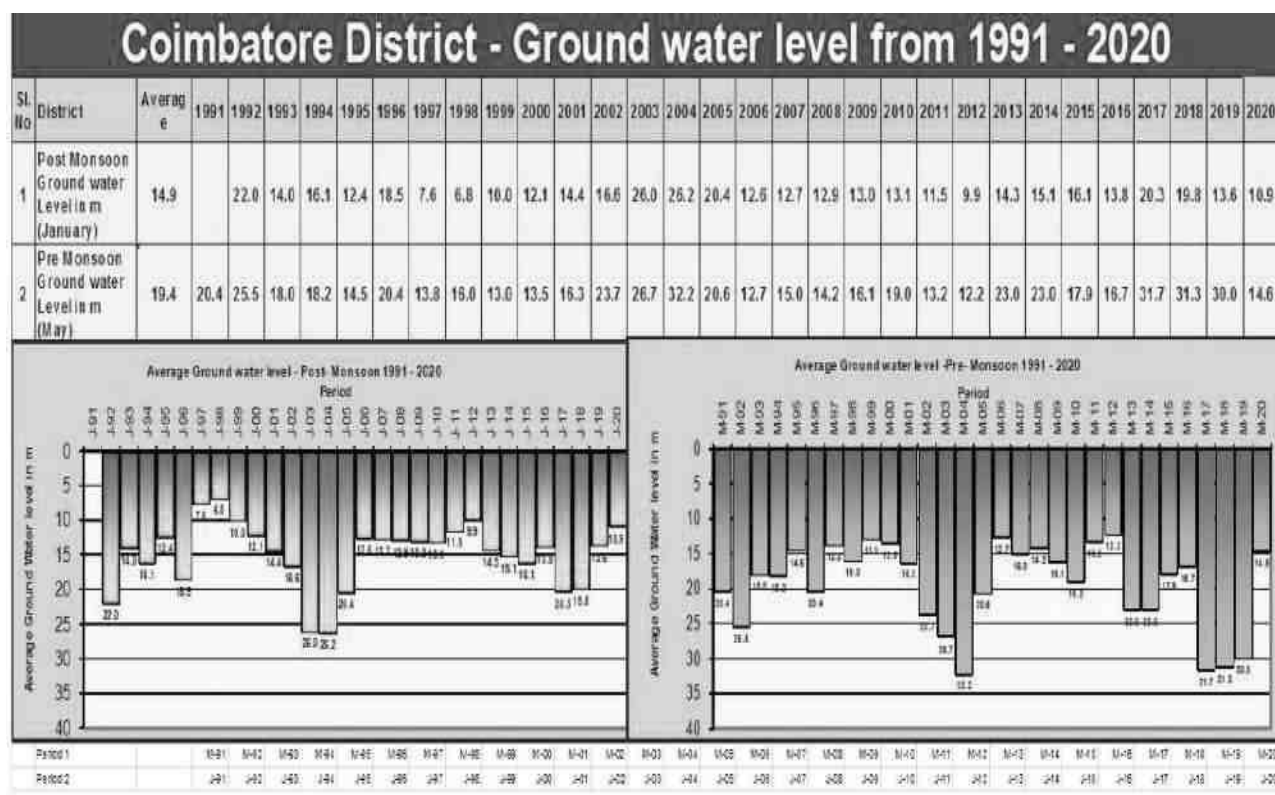
Aquifer Parameters

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

Parameters	Range
Well yield in LPM	50-300 lpm
Transmissivity (T) m ² /day	1.49-164.18 m ² /day
Permeability (K) m/day	0.25-26.75 m/day

Source: <http://nwm.gov.in/sites/default/files/Notes%20on%20Coimbatore%20District.pdf>

FIGURE 2.7: GROUND WATER LEVEL VARIATIONS OF COIMBATORE DISTRICTSource: <https://www.twadboard.tn.gov.in/content/coimbatore>**TABLE 2.6: GROUND WATER LEVEL VARIATIONS OF COIMBATORE DISTRICT**

Jan 2013	May 2013	Jan 2014	May 2014	Jan 2015	May 2015	Jan 2016	May 2016	Jan 2017	May 2017	Jan 2018	May 2018	Jan 2019	May 2019	5 Years Pre Monsoon Average	5Years Post Monsoon Average
14.3	16.7	15.1	23.0	16.11	16.0	13.79	16.7	20.36	29.7	19.8	22.3	13.6	17.6	16.1	20.3

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

76°34'0"E 76°52'30"E 77°10'0"E 77°27'30"E

Graphic Scale
0 2.5 5
1:90,000

**GEOLOGY MAP OF M/S. SRI BLUE METALS
ROUGH STONE AND GRAVEL
QUARRY (10KM RADIUS)**

Extent : 3.63,65 ha
Village : Beltadhi & Chikkarampalayam
Taluk : Mettupalayam
District : Coimbatore
State : Tamil Nadu

INDEX MAP

Tamil Nadu State

Coimbatore District

Legend

- Proposed Quarry
- Existing Quarry
- Expired Quarry
- 10km Radius

Tamilnadu, Geology
Rock Type

- Acid Intrusives
- Alkali Rocks
- Alkali Rocks
- Anaijadi Formation - Trichinopoly Group
- Peninsular Gneiss (Bhavani Group)
- Satyavedu Formation-Upper Gondwana

Source:
Geological Survey of India

Software Used:
1. Arc Map 10.2

Environment Consultant
M/S. Geo Exploration and Mining Solutions,
Salem, Tamil Nadu

Prepared by Dr. A. Arunachalam JAS - Lead Geologist	Approved by Dr. M. Ramesh Kumar JGA - Coordinator

76°34'0"E 76°52'30"E 77°10'0"E 77°27'30"E

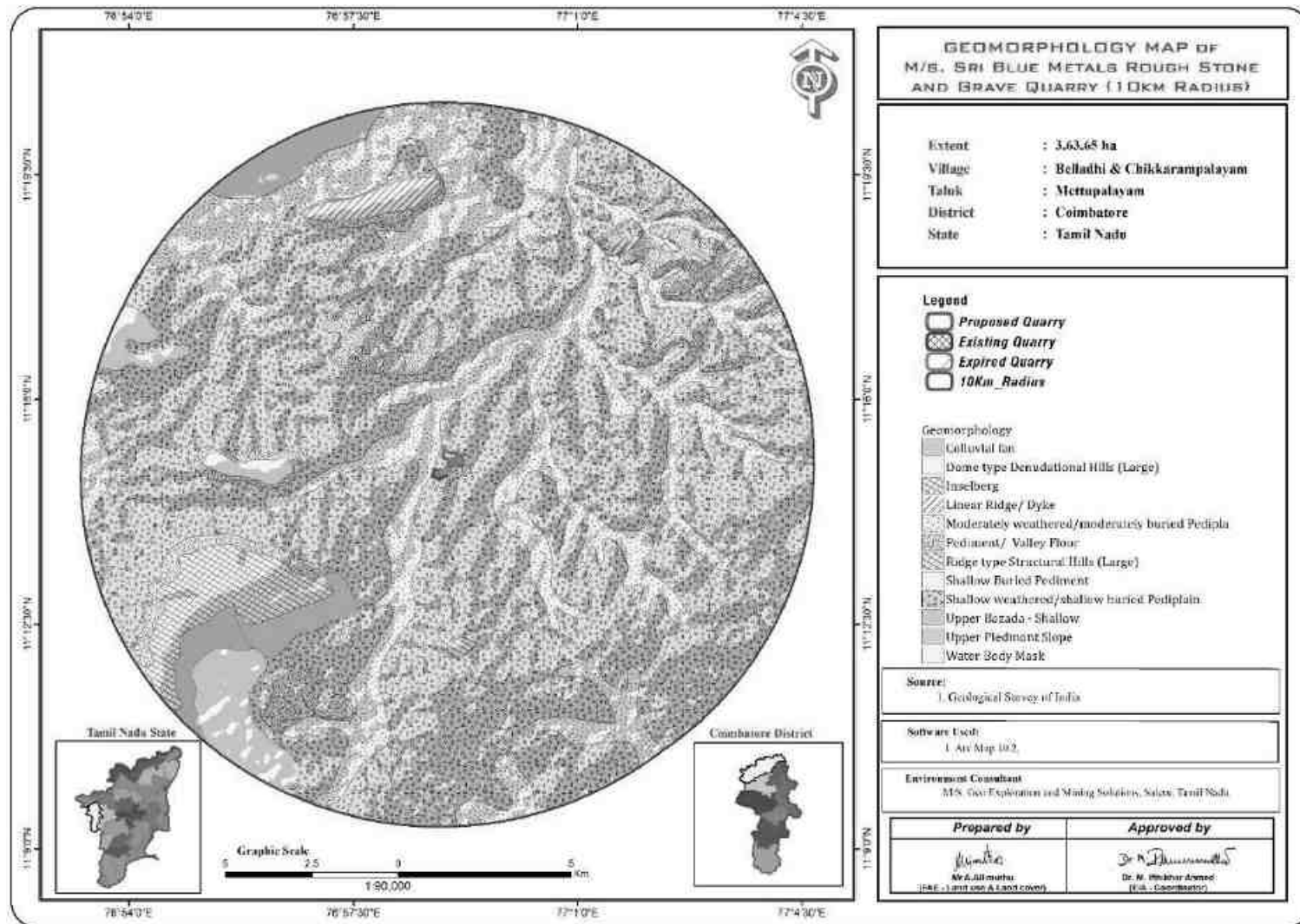
FIGURE 2.10: GEOMORPHOLOGY MAP

FIGURE 2.11: TOPOGRAPHY, GEOLOGICAL, YEARWISE DEVELOPMENT PRODUCTION PLAN AND SECTION FIRST FIVE YEARS

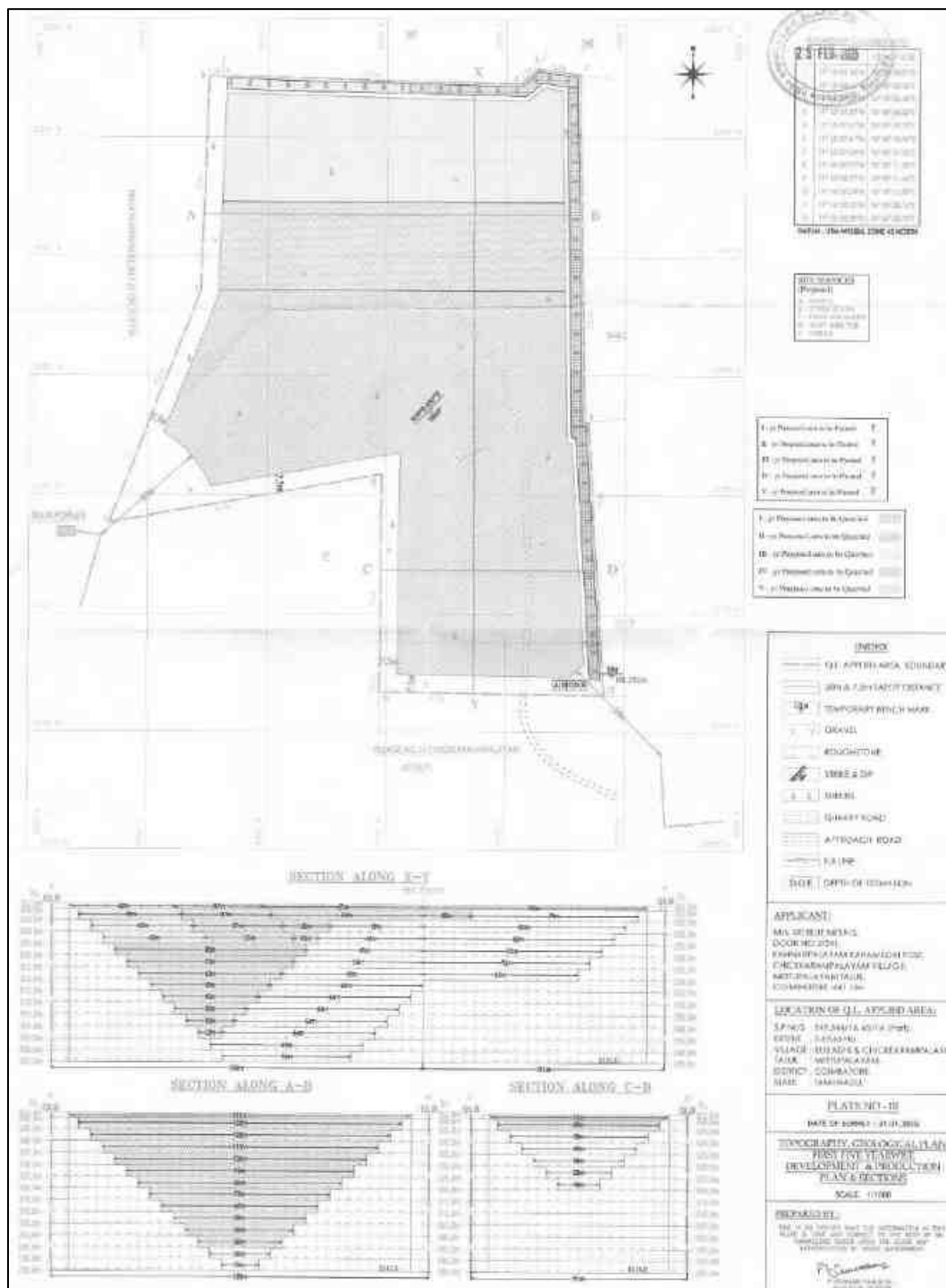
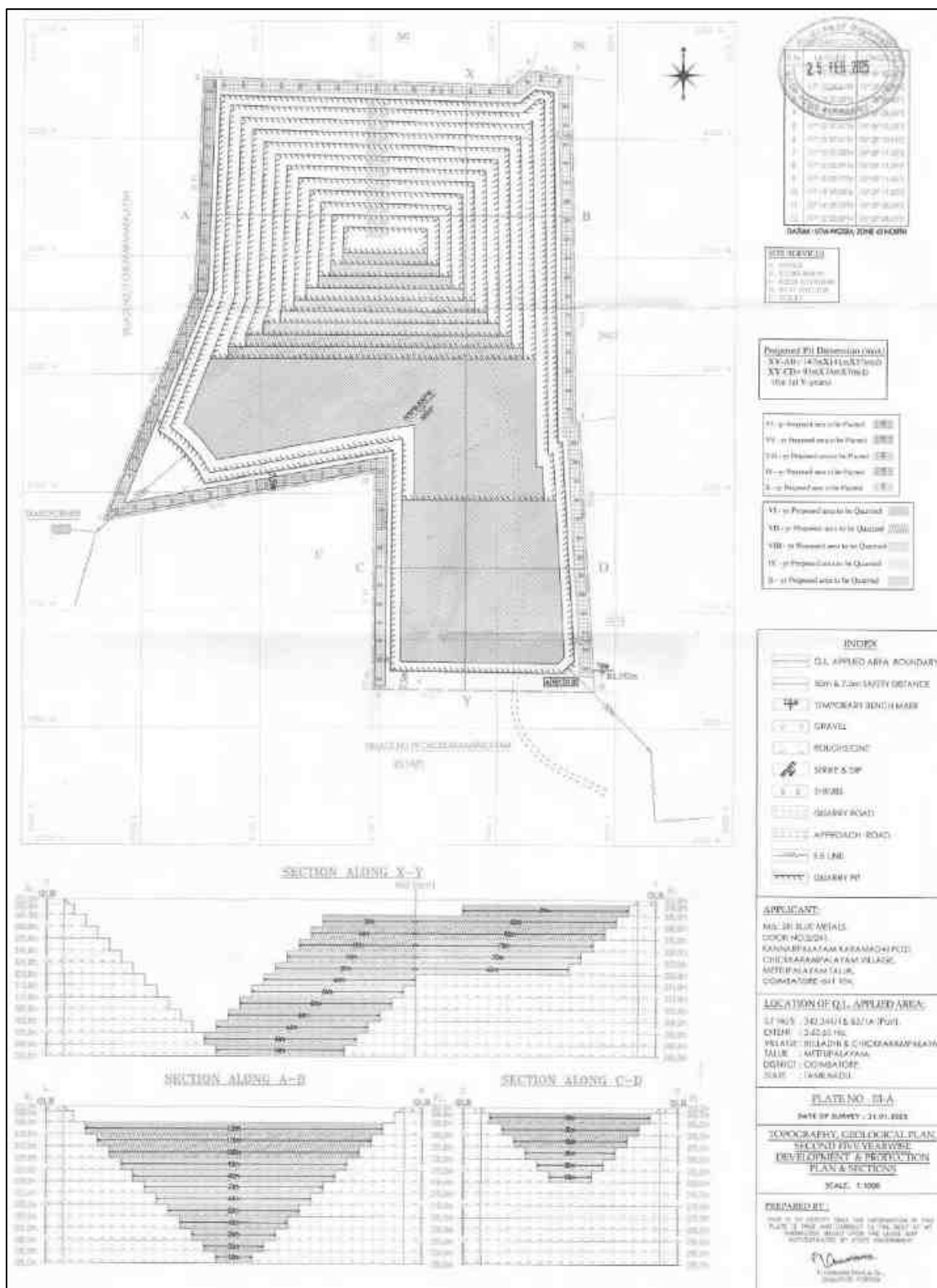


**FIGURE 2.11A: TOPOGRAPHY, GEOLOGICAL, YEARWISE DEVELOPMENT
PRODUCTION PLAN AND SECTION SECOND FIVE YEARS**



2.4 Resources and Reserves of the proposed Quarry

The available mineable reserves are calculated after leaving necessary safety distances, reduced depth considering bench width.

TABLE 2.7: YEARWISE PRODUCTION FROM THE PROPOSAL FOR FIRST FIVE YEARS

YEARWISE Reserves	Rough Stone in m³	Gravel m³
I	68,250	32,658
II	69,375	10,434
III	80,625	12,126
IV	75,250	-
V	71,750	-

TABLE 2.8: YEARWISE PRODUCTION FROM THE PROPOSAL FOR SECOND FIVE YEARS

YEARWISE Reserves	Rough Stone in m³
VI	72,825
VII	70,225
VIII	64,975
IX	60,450
X	55,250

Source: Approved Mining Plan

Disposal of Waste

In the entire cluster Quarry no waste is anticipated, quarried out materials (Rough stone and Gravel) will be utilized (100%).

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 top layer of overburden (Gravel) will be excavate directly by Hydraulic Excavators and loaded into tippers directly and sold to needy customers. The Rough Stone is a batholith formation and 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 and 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

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

Spacing – 1.2m, Burden –1.0, Depth of hole - 1.5m

2.5.2 Blasting

Blasting will be done as per details below: -

- Controlled blasting parameter: -

Spacing – 1.2m

Burden – 1.0 m

Depth of hole – 1.5 m

Charge per hole – 0.5Kg

Powder factor – 6 tonnes/kg

Dia of hole – 32 mm

Details of blasting design and parameters are discussed in approved mining plan.

No of Holes to be drilled per day: -

Volume of Rough Stone will be excavated from

one Kg of explosive

= 6Tonnes

Total Volume from one proposed quarry

= 6,88,725 m³

= 6,88,725/10

= 68,872/300

= 230* 2.6

= 598 Tonnes per day

Therefore, Number of Holes per day

= 598 /6

= 100 Holes per day

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

2.5.3 Extent of Mechanization

TABLE 2.9 PROPOSED MACHINERY DEPLOYMENT

S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	8	1.2m to 2.0m	Compressed air
2	Compressor	2	400psi	Diesel Drive
3	Excavator with Bucket / Rock Breaker	2	300 HP	Diesel Drive
4	Tippers	4	20 Tonnes	Diesel Drive
5	Water Sprinkling Tanker	1	10,000 litres	Diesel Drive

Source: Approved Mining Plan of the project.

2.6 General Features

2.6.1 Existing Infrastructures

Infrastructures like Mine office, Temporary Rest shelters for workers, Latrine and Urinal Facilities are available in the Existing Quarry and the same infrastructure as per the Mine Rule will be arranged after the grant of quarry lease in the proposed Quarry.

2.6.1 Drainage Pattern

The general drainage pattern of the area is dendritic. There are no streams, canals or water bodies crossing within the project area, hence there is no requirement of stream or canals diversion in the near future.

2.6.2 Traffic Density

Traffic density measurements were performed as per IRC 1960 Guidelines at three locations based on the transportation route. The monitoring was carried out on 26-12-2022. Traffic density measurement were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., heavy motor

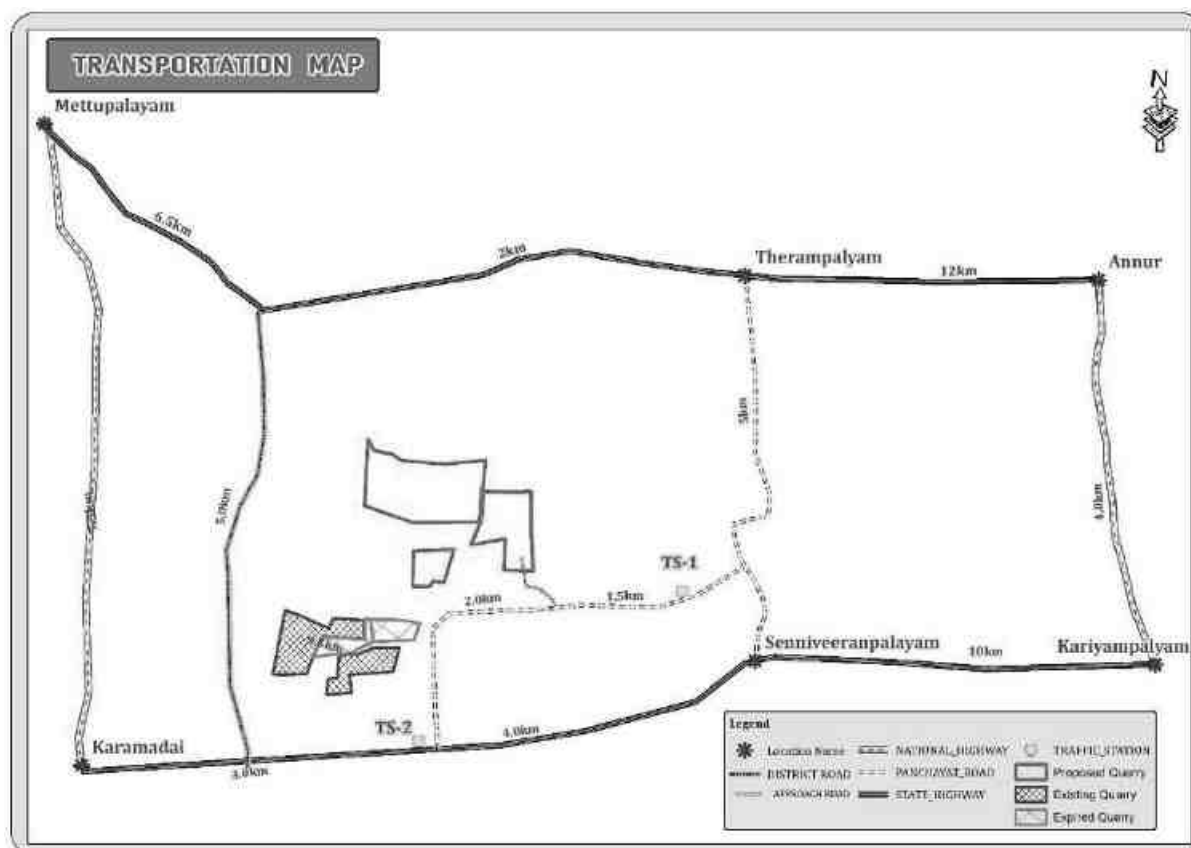
vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift- one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

TABLE 2.10 – TRAFFIC SURVEY LOCATION'S

Station code	Station location	Distance and Direction	Type of Road
TS1	Kodangipalayam Panchayat Road	450m- SE	Panchayat road
TS2	SH Road-168	1.5Km-SW	State Highway road

Source: On-site monitoring by GEMS FAE & TM.

FIGURE 2.12: TRAFFIC SURVEY LOCATIONS & TRANSPORTATION ROUTE MAP



(Source: Survey of India Toposheet)

TABLE 2.10A – EXISTING TRAFFIC VOLUME

Station code	HMV (Hourly Average)		LMV hourly average		2/3 Hourly average		Total PCU per hour
	No	PCU	No	PCU	No	PCU	
TS1	40	120	60	60	30	15	195
TS2	55	165	80	80	46	23	263

Source: On-site monitoring by GEMS FAE & TM

- PCU conversion factor for HMV (Trucks and Bus) = 3, LMV (Car, Jeep and Auto) = 1 and 0.5 for Motor Vehicles (2/3 Wheelers)

TABLE 2.11 – ANTICIPATED TRAFFIC DUE TO THIS PROPOSED PROJECT

Transportation of Rough stone per day		
Capacity of trucks	Cumulative Trips	Volume in PCU
10/20 tonnes	20 per day	60

Source: Anticipated based on Approved Mining Plan Production

TABLE 2.12 – SUMMARY OF TRAFFIC VOLUME

Route	Existing traffic value in PCU	Incremental traffic from the quarry in PCU	Total traffic volume	Hourly Capacity in PCU as per IRC guidelines
Panchayat Road	195	60	255	1200
State Highway Road	263	60	323	1500

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

Rough stone from the project site mainly will be supplied to the needy crushers located within the radius of 2 km from the project site.

- No villages in the proposed mineral transportation route
- Mineral loaded Vehicles will not allow during school hours (Morning 8AM to 10AM & Evening 4.30PM to 5.30PM)

As per the IRC 1960 this existing 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 transportation.

2.6.3 Mineral Beneficiation and Processing

There is no mineral beneficiation processing or ore beneficiation in this project within the lease area.

2.6.4 Existing Infrastructure

The project area is new and Existing Quarry for the existing Quarry infrastructures are already available within the project area. The infrastructural facilities to be made after the start of the quarrying operations will be prepared outside limit as per the rules and safe distance to be adopted.

2.6.2 Drainage Pattern

The drainage pattern of the area is dendritic – sub dendritic.

2.7 Project Requirement

2.7.1 Water Source & Requirement

Detail of Total water requirements in KLD as given below:

TABLE 2.13 – WATER REQUIREMENT FOR THE INDIVIDUAL PROJECT

*Purpose	Quantity	Source
Dust Suppression	1.0 KLD	From Nearby Existing bore well
Green Belt development	1.4 KLD	From Nearby Existing bore well
Domestic purpose	0.6 KLD	Water Tankers
Total	3.0 KLD	

Source: Prefeasibility Report

For the water conservation point of view about 50% water will be required for the suspension of the dust, Water shall be obtained from accumulated rainwater/seepage water in quarry pits. Packaged Drinking Water is available from the nearby approved water vendors.

2.7.2 Power and Other Infrastructure Requirement

The project's does not require power supply for the quarry operation. 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. For the quarrying operation like compressor for drilling Diesel will be utilized.

The temporary infrastructures such as Mine Office, First Aid Room, Rest Shelter etc., will be constructed within the project area before commencing the quarry operation. No workshops are proposed 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.

2.7.3 Fuel Requirement

Gravel:

Per hour Excavator will consume	=	10 liters / hour
Per hour Excavator will excavate	=	60m ³ of Gravel
Gravel quantity	=	55,218/60 = 920 hours
Diesel consume	=	920 hours x 10 liters
Total diesel consumption	=	9,200 Liters of HSD will be utilized for Gravel

Rough stone:

Per hour Excavator will consume	=	16 liters / hour
Per hour Excavator will excavate	=	20m ³ of Rough Stone
Rough stone quantity	=	6,88,975/20 = 34,448 hours
Diesel consume	=	34,448 hours x 16 liters
Total diesel consumption	=	5,51,168 Liters of HSD will be utilized for Rough Stone
Total diesel consumption	=	5,60,368 Liters of HSD will be utilized for entire life of the mine

2.7.4 Employment Requirement:

The skilled, competent qualified statutory persons will be engaged for quarrying operation, preference will be given to the local community.

TABLE 2.14: EMPLOYMENT POTENTIAL FOR PROPOSED QUARRY

Mines Manager/	1
Geologist	1
Mines Foreman	1
Mate/Blaster	1
Excavator operator	2
Truck Drivers	4
Water Sprinkler Driver	1
Jack Hammer Drillers	16
Security	1
Labour Helper	4
Co-Operator and Cleaner	7
Total	39

A total of 39 people will get employment due to these proposal Quarry.

2.7.5 Project Cost

TABLE 2.15 – PROJECT COST OF PROPOSED PROJECT

Project Cost	Rs.2,98,38,000/-

Source: Approved Mining Plan & Prefeasibility Report of the project

2.8 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 2.16 – EXPECTED TIME SCHEDULE FOR THE PROPOSED QUARRY

S. No	Particulars lease execution	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

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

CHAPTER – 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 and May 2025 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, EIC FSSAI, GAFTA, IOPEPC, MOEF & TEA BOARD Notified Laboratory, 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 Summer Season i.e., March 2025 – May 2025.

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	5 (1 core & 4 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/Auto matic 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 (December 2022 – February 2023)	7 (1 core & 6 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	7 (1 core & 6 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 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 that temporal changes due to the mining activities on the surroundings can be assessed in future.

3.1.1 Land Use/ Land Cover

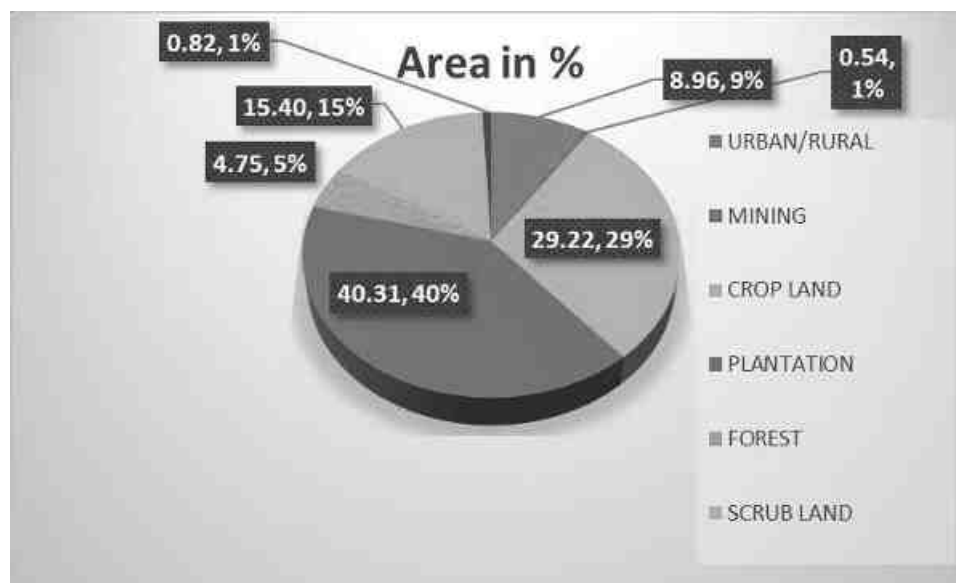
A visual interpretation technique has been adopted for land use classification based on the keys suggested in the chapter – V of the guidelines issued by NNRMS Bangalore & Level III classification with 1:50,000 scale for the preparation of land use mapping. Land use pattern of the area was studied through 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_%	AREA_HA	AREA_%
BUILTUP					
1	URBAN/RURAL	3055.78	8.96	236.80	12.93
2	MINING	183.29	0.54	97.10	5.30
AGRICULTURAL LAND					
3	CROP LAND	9970.24	29.22	686.87	37.51
4	PLANTATION	13755.20	40.31	632.44	34.54
FOREST					
5	FOREST	1621.51	4.75	0.00	0.00
BARREN/WASTE LANDS					
6	SCRUB LAND	5254.91	15.40	110.03	6.01
WETLANDS/ WATER BODIES					
7	WATER BODIES/LAKE/ RIVER	279.52	0.82	67.75	3.70
TOTAL		34120.45	100.00	1830.99	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

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 and fallow land (includes crop land) 69.53% followed by Built-up Lands – 8.96%, Scrub & Forest land – 20.15%, and Water bodies 0.82%.

The total mining area within the study area is 183.29 ha i.e., 0.54%. The cluster area of 17.38.15 ha contributes about 9.48% 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 proposed project area is flat terrain, covered with gravel formation of 2m thickness; Massive Charnockite formation is found after 2 m gravel ed formation which is clearly inferred from the existing 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.

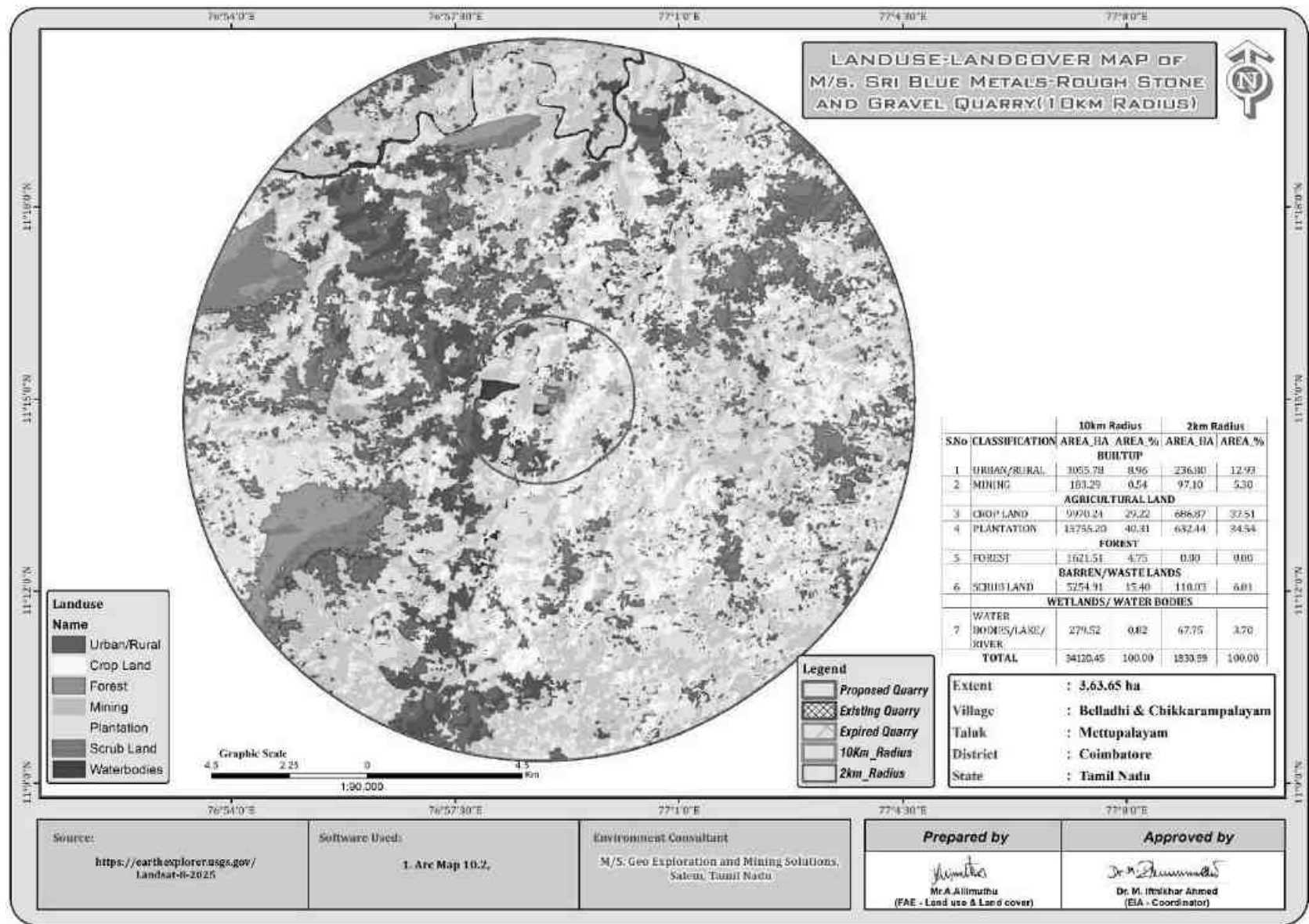
FIGURE 3.2: LAND USE LAND COVER MAP 10KM RADIUS

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	Sathyamangalam Tiger Reserve– 22.0km – North
2	Reserve Forest	Nellimalai R. F	7.5 Km - North west
3	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	None	Nil within 10Km Radius
4	Critically Polluted Areas	None	Nil within 10km Radius
5	Mangroves	None	Nil within 10km Radius
6	Mountains/Hills	None	Nil within 10km Radius
7	Notified Archaeological Sites	None	Nil within 10km Radius
8	Industries/ Thermal Power Plants	None	Nil within 10km Radius
9	Defence Installation	None	Nil within 10km Radius

Source: Survey of India Toposheet

TABLE 3.4: NEARBY WATER BODIES FROM THE PROPOSED PROJECT SITE

Sl.No	NAME	DISTANCE & DIRECTION
1	Odai	670m NW
2	Tank	700m NE
3	Belladhi Lake	1.1km West
4	Odai	1km West
5	Odai	1.3km SE
6	Bhavani River	6.8km NE

Source: 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 3.5 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 3.5: SOIL SAMPLING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	S-1	Project Area	Core Zone	11°15'5.31"N 76°59'8.82"E
2	S-2	Near Existing Quarry	440m SW	11°14'51.05"N 76°59'1.11"E
3	S-3	Mongampalayam (Residential)	1.3km NE	11°15'37.18"N 76°59'43.93"E
4	S-4	Koodathasanur (Agriculture)	4.8km NW	11°15'44.54"N 76°56'29.18"E
5	S-5	Onnipalayam (Agriculture)	5.0km SE	11°12'26.97"N 77° 0'4.27"E

Source: On-site monitoring/sampling by Chennai Mettex 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. Five (5) 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 3.6.

TABLE 3.6: 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 Mettlex 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 is presented below in Figure 3.4 and the physico-chemical characteristics of the soil & Test Results in Table 3.7.

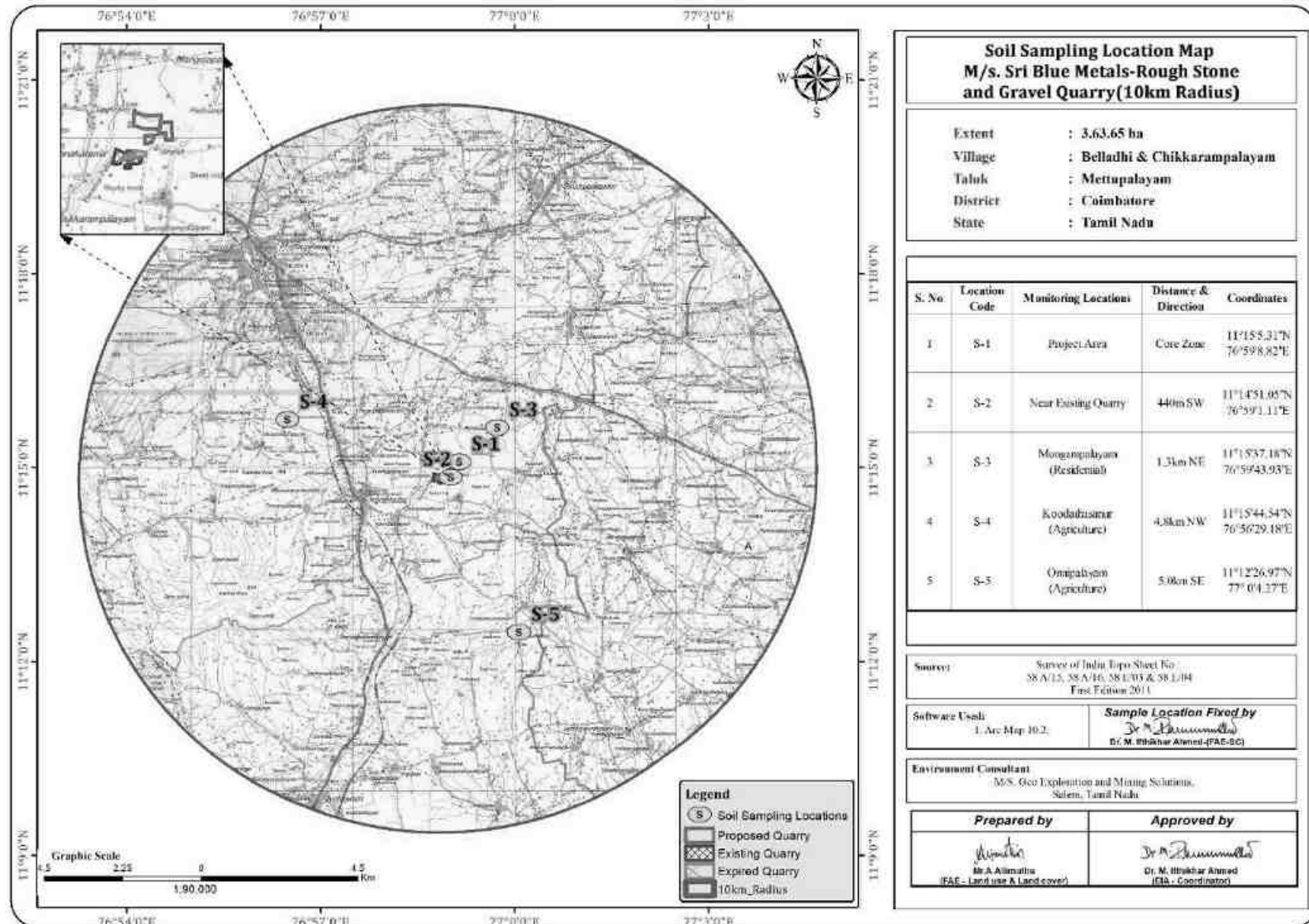
FIGURE 3.3: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS

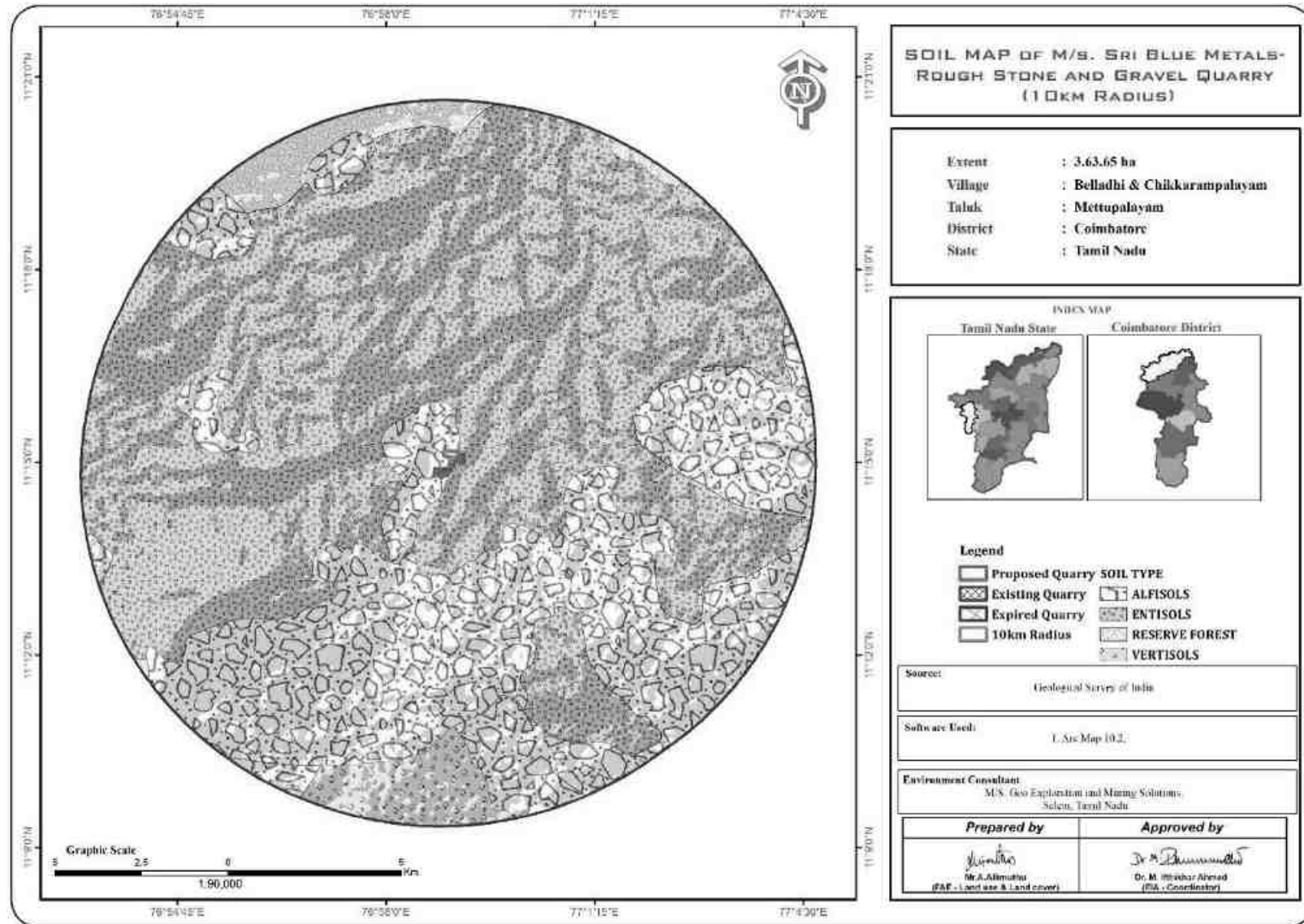
FIGURE 3.4: SOIL MAP

TABLE 3.7: SOIL QUALITY OF THE STUDY AREA

Parameter		S-1 (Project Area)	S-2 (Near Existing Quarry)	S-3 (Mongapalayam)	S-4 (Koodathanur)	S-5 (Onnipalayam)
1	Colour	Brown	Dark Brown	Brown	Brown	Brown
2	pH at 27°C	7.92	7.84	7.36	8.14	7.82
3	Electrical Conductivity at 25°C	560	420	490	620	690
4	Water Activity	Medium	Medium	Medium	Medium	Medium
5	Texture	Sandy Clay	Sandy Loam	Clay	Clay	Sandy Loam
6	Sand	40.8	41.4	34.2	34.8	54.2
7	Slit	14.6	16.4	6.8	7.6	7.8
8	Clay	40.4	38.6	50.6	52.4	16.4
9	Water Holding Capacity	40.1	32.4	46.4	46.4	38.6
10	Bulk Density	1.02	1.03	1.37	1.26	1.02
11	Porosity	21.4	20.4	24.6	22.4	22.8
12	Exchangeable Calcium (as Ca)	142.4	122.6	110.6	140.4	126.6
13	Exchangeable Magnesium (as Mg)	24.4	20.8	28.6	30.2	30.6
14	Exchangeable Manganese (as Mn)	26.2	24.4	26.4	26.4	34.4
15	Exchangeable Zinc as Zn	0.30	0.31	0.52	0.43	0.31
16	Available Boron (as B)	0.51	0.73	0.64	0.80	0.94
17	Soluble Chloride (as Cl)	140	136	154	143	163.2
18	Soluble Sulphate (as SO ₄)	124.1	130	111	117	102
19	Available Potassium (as K)	40.1	28.8	30.0	41.3	37.6
20	Sodium Absorption Ratio	1.02	1.67	1.98	1.45	1.53
21	Available Phosphorous (as P)	42.5	30.1	37.7	41.4	37.5
22	Available Nitrogen (as N)	188	242	346	358	242
23	Cadmium (as Cd)	BDL (DL:0.003)				
24	Chromium (as Cr)	BDL (DL:0.05)				
25	Copper (as Cu)	BDL (DL:0.05)				
26	Lead (as Pb)	0.44	0.30	0.64	0.48	0.47
27	Total Iron	1.42	1.46	2.60	1.96	1.66
28	Organic Matter	1.18	1.76	1.98	1.74	1.05
29	Organic Carbon	0.70	1.04	1.10	1.62	0.61
30	CEC	38.6	32.4	34.4	41.4	33.0

Source: Sampling Results by Chennai Mettex 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, Sandy Clay to Sandy Loam Soil and Bulk Density of Soils in the study area varied between 1.02 – 1.37 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 32.4 – 46.4 %. And 20.4 - 24.6 %.

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline with pH range 7.36 to 8.14
- The available Nitrogen content range between 188 to 358 mg/kg
- The available Phosphorus content range between 30.1 to 41.4 mg/kg
- The available Potassium range between 28.8 to 41.3 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:

Bhavani River is the major surface 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 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 well 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 7.2 to 13 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 3.5.

TABLE 3.8: WATER SAMPLING LOCATIONS

S.NO	CODE	LOCATIONS	DISTANCE & DIRECTION	COORDINATES
SURFACE WATER				
1	SW-1	Belladhi Lake	1.2km West	11°15'10.85"N 76°58'29.96"E
2	SW-2	Bhavani River	8.2km NW	11°19'23.88"N 76°57'49.13"E
GROUND WATER				
3	WW-1	Near Project Area	350m SE	11°14'47.52"N 76°59'10.29"E
4	WW-2	Onnipalayam	5.5km SE	11°12'19.40"N 77° 0'10.92"E
5	BW-1	Near Project Area	180m SE	11°14'52.30"N 76°59'10.30"E
6	BW-2	Vadavalli	2.5km East	11°15'4.88"N 77° 0'33.23"E

Source: On-site monitoring/sampling by Chennai Mettlex Laboratories in association with GEMS

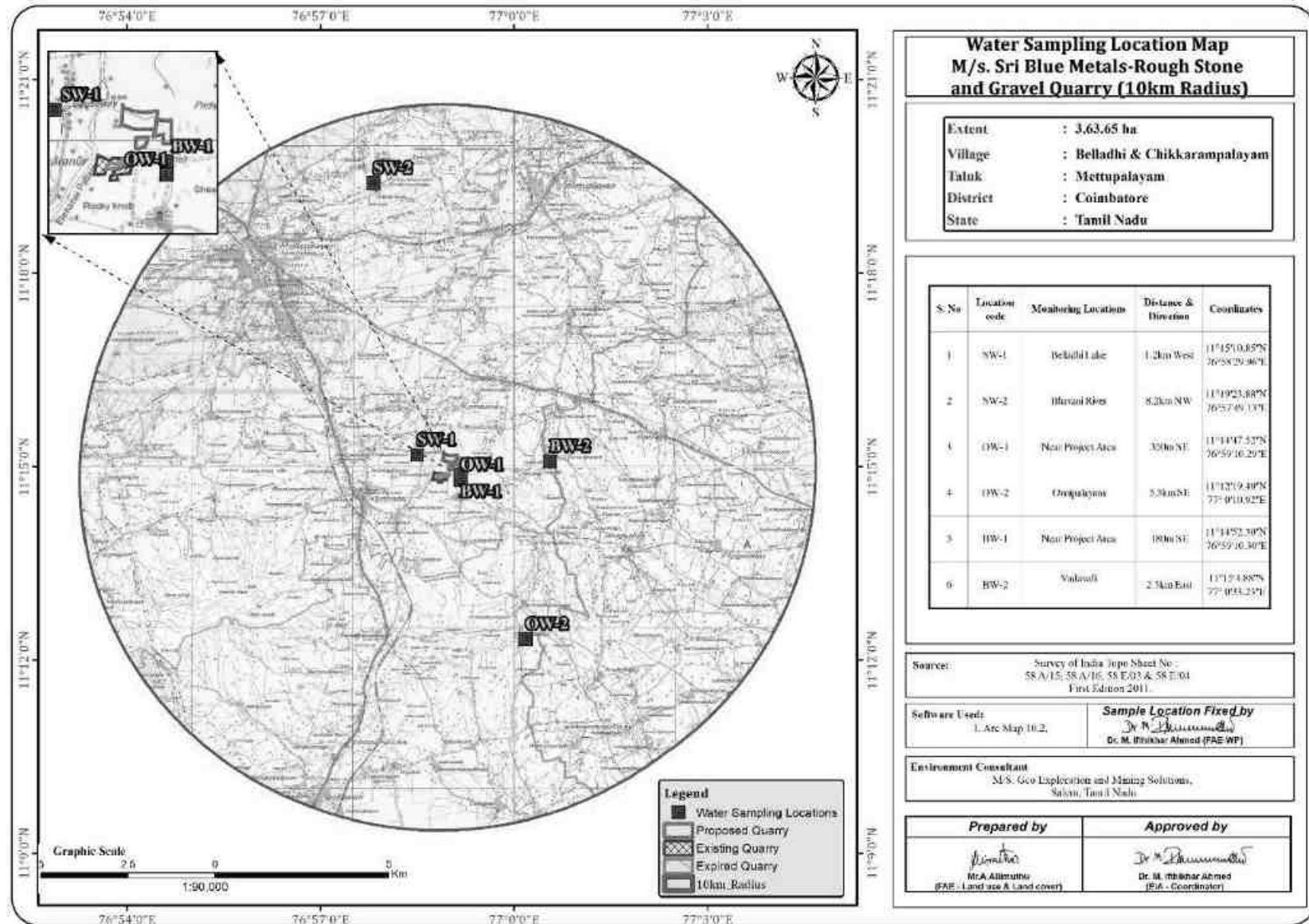
FIGURE 3.5: WATER SAMPLING LOCATIONS AROUND 10 KM RADIUS

TABLE 3.9: GROUND WATER SAMPLING RESULTS

S.NO	Parameter	BW-1 (Near Project Area)	BW-2 (Vadavalli)	WW-1 (Near Project Area)	WW-2 (Onnipalayam)
1	Color	< 5	< 5	< 5	< 5
2	Odour	Agreeable	Agreeable	Agreeable	Agreeable
3	pH@ 25°C	7.32	7.22	7.36	7.41
4	Electrical Conductivity @ 25°C	750	690	580	610
5	Turbidity	< 1	< 1	< 1	< 1
6	Total Dissolved Solids	420	386	324	342
7	Total Hardness as CaCO ₃	180	176	178	174
8	Calcium as Ca	32	36	28	44
9	Magnesium as Mg	24.3	19.4	26.7	14.5
10	Total Alkalinity	156	142	136	134
11	Chloride as Cl ⁻	88.6	84.4	76.4	78.8
12	Sulphate as SO ₄ ⁻	26.4	20.6	22.4	22.8
13	Iron as Fe	0.16	0.14	BDL(DL:0.1)	0.32
14	Free Residual Chlorine	BDL (DL: 2.0)	BDL(DL: 0.1)	BDL(DL: 0.1)	BDL(DL: 0.1)
15	Fluoride as F	0.13	0.16	0.18	0.19
16	Nitrates as NO ₃	8.4	8.6	9.2	8.8
17	Copper as Cu	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
18	Manganese as Mn	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)
19	Mercury as Hg	(BDL (DL: 0.0005)	(BDL (DL: 0.0005)	(BDL (DL: 0.0005)	(BDL (DL: 0.0005)
20	Cadmium as Cd	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)
21	Selenium as Se	BDL (DL: 0.005)	BDL (DL: 0.005)	BDL (DL: 0.005)	BDL (DL: 0.005)
22	Aluminium as Al	BDL (DL: 0.005)	BDL (DL: 0.005)	BDL (DL: 0.005)	BDL (DL: 0.005)
23	Lead as Pb	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)
24	Zinc as Zn	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)
25	Total Chromium	BDL (DL: 0.02)	BDL (DL: 0.02)	BDL (DL: 0.02)	BDL (DL: 0.02)
26	Boron as B	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)
27	Mineral Oil	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
28	Phenolic Compounds as C ₆ H ₅ OH	BDL (DL:0.0005)	BDL (DL:0.0005)	BDL (DL:0.0005)	BDL (DL:0.0005)
29	Anionic Detergents as	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
30	Cynaide as CN	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
31	Total Coliform	230	180	170	110
32	E-Coli	< 1.8	< 1.8	< 1.8	< 1.8
33	Barium as Ba	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)
34	Ammonia (as Total	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
35	Sulphide as H ₂ S	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
36	Molybdenum as Mo	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)
37	Total Arsenic as As	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)
38	Total Suspended Solids	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)

* 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	Colour	Hazen	10	5	300
2	Odour	-	Agreeable	Agreeable	Not specified
3	pH@ 25°C	-	7.22	7.36	6.5 – 8.5
4	Electrical Conductivity @ 25°C	µs/cm	550	740	
5	Turbidity	NTU	4.8	3.6	Not specified
6	Total Dissolved Solids	mg /l	308	414	1500
7	Total Hardness as CaCO ₃	mg/l	200	160	Not specified
8	Calcium as Ca	mg/l	56	40	Not specified
9	Magnesium as Mg	mg/l	14.5	14.5	Not specified
10	Total Alkalinity as CaCO ₃	mg/l	160	158	Not specified
11	Chloride as Cl ⁻	mg/l	62	94	600
12	Sulphate as SO ₄ ⁻	mg/l	26	28.4	400
13	Iron as Fe	mg/l	0.17	0.14	50
14	Free Residual Chlorine	mg/l	BDL(DL: 0.1)	BDL(DL: 0.1)	400
15	Fluoride as F	mg/l	0.12	0.11	1.5
16	Nitrates as NO ₃	mg/l	11.4	4.2	50
17	Copper as Cu	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	1.5
18	Manganese as Mn	mg/l	BDL (DL:0.02)	BDL (DL:0.02)	Not specified
19	Mercury as Hg	mg/l	(BDL (DL: 0.0005)	(BDL (DL: 0.0005)	Not specified
20	Cadmium as Cd	mg/l	BDL (DL:0.001)	BDL (DL:0.001)	0.01
21	Selenium as Se	mg/l	BDL (DL: 0.005)	BDL (DL: 0.005)	Not specified
22	Aluminium as Al	mg/l	BDL (DL: 0.005)	BDL (DL: 0.005)	Not specified
23	Lead as Pb	mg/l	BDL (DL:0.005)	BDL (DL:0.005)	0.1
24	Zinc as Zn	mg/l	BDL (DL:0.05)	BDL (DL:0.05)	15
25	Total Chromium	mg/l	BDL (DL: 0.02)	BDL (DL: 0.02)	0.05
26	Boron as B	mg/l	BDL (DL:0.05)	BDL (DL:0.05)	Not specified
27	Mineral Oil	mg/l	BDL (DL:01)	BDL (DL:0.01)	Not specified
28	Phenolic Compounds as C ₆ H ₅ OH	mg/l	(BDL (DL: 0.0005)	(BDL (DL: 0.0005)	0.005
29	Anionic Detergents as MBAS	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	Not specified
30	Cyanide as CN	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	0.05
31	Biological Oxygen Demand, 3 days @ 27°C		6	6.4	3
32	Chemical Oxygen Demand		30	38	Not specified
33	Dissolved Oxygen		7.4	6.8	4
34	Total Coliform	MPN/ 100ml	1600	1600	5000
35	E-Coli		170	210	Not specified
36	Barium as Ba	mg/l	BDL (DL:0.05)	BDL (DL:0.05)	300
37	Ammonia (as Total Ammonia-N)	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	Not specified
38	Sulphide as H ₂ S	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	Not specified
39	Molybdenum as Mo	mg/l	BDL (DL:0.02)	BDL (DL:0.02)	Not specified
40	Total Arsenic as As	mg/l	BDL (DL:0.005)	BDL (DL:0.005)	0.2
41	Total Suspended Solids	mg/l	4.8	5.4	-

3.2.4 Interpretation & Conclusion

Surface Water

Ph:

The pH varied from 7.22 to 7.36 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 varied from 308 to 414 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 62 – 94 mg/l. Nitrates varied from 4.2 to 11.4 mg/l, while sulphates varied from 26 to 28.4 mg/l.

Ground Water

The pH of the water samples collected ranged from 7.22 to 7.41 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 324 – 420 mg/l in all samples. The Total hardness varied between 174 – 180 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 between 70-75m. The maximum depth proposed out of proposed projects is 67m BGL. 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 the 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: POST MONSOON WATER LEVEL OF OPEN WELLS 1 KM RADIUS

Station Code	Water Level in Meters bgl				Latitude	Longitude
	Mar-25	Apr-25	May-25	Average		
OW1	14.2	14.8	15.4	14.8	11° 15' 07.5038" N	76° 58' 49.2212" E
OW2	14.8	15.4	16	15.4	11° 14' 47.5466" N	76° 59' 10.2801" E
OW3	14.6	15.2	15.8	15.2	11° 14' 50.8496" N	76° 59' 37.0029" E
OW5	15.5	16.1	16.7	16.1	11° 15' 02.5925" N	76° 58' 39.1007" E
OW4	15.8	16.4	17	16.4	11° 15' 18.2685" N	76° 58' 20.7478" E
OW6	15.9	16.5	17.1	16.5	11° 15' 44.7545" N	76° 59' 09.8153" E
OW7	16.2	16.8	17.4	16.8	11° 14' 18.2177" N	76° 58' 27.8546" E

Source: Onsite monitoring data

TABLE 3.12: POST MONSOON WATER LEVEL OF BOREWELLS 1 KM RADIUS

Station Code	Water Level in Meters bgl				Latitude	Longitude
	Mar-25	Apr-25	May-25	Average		
BW1	71	71.6	72.2	71.6	11° 15' 06.1402" N	76° 58' 48.7504" E
BW2	71.5	72.1	72.7	72.1	11° 14' 52.0686" N	76° 59' 10.4430" E
BW3	70.8	71.4	72	71.4	11° 15' 15.1823" N	76° 59' 38.0274" E
BW4	71.2	71.8	72.4	71.8	11° 14' 34.2719" N	76° 59' 05.1789" E
BW5	70.9	71.5	72.1	71.5	11° 14' 43.3870" N	76° 59' 43.5112" E
BW6	71.8	72.4	73	72.4	11° 14' 42.6587" N	76° 58' 27.3288" E
BW7	70.2	70.8	71.4	70.8	11° 14' 16.7594" N	76° 58' 26.9547" E
BW8	71.4	72	72.6	72	11° 14' 49.3779" N	76° 58' 10.2006" E
BW9	71	71.6	72.2	71.6	11° 15' 39.8698" N	76° 58' 36.2236" E

Source: Onsite monitoring data

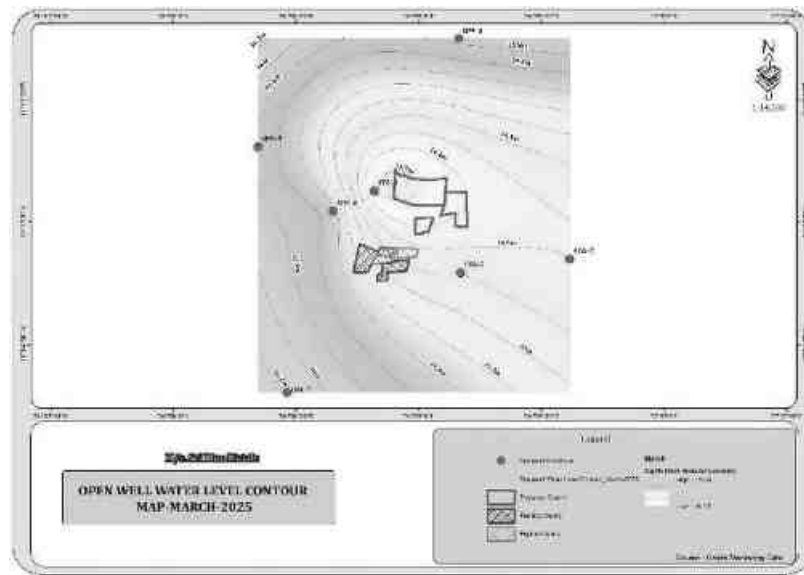
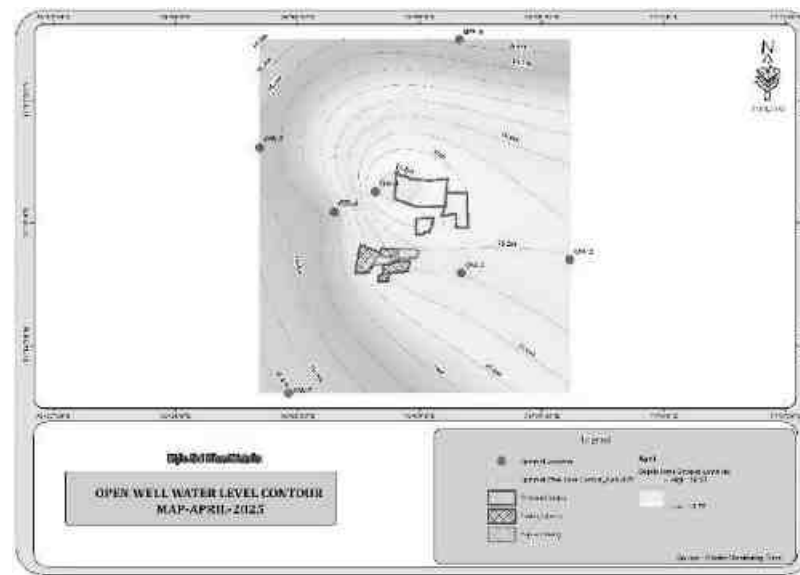
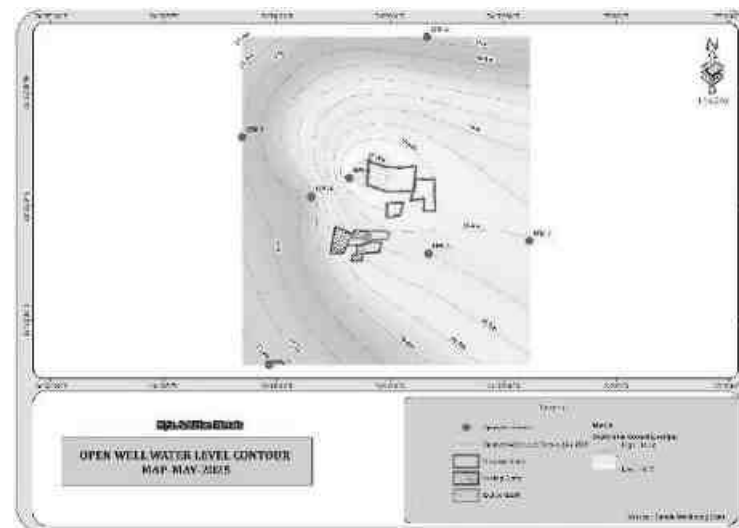
FIGURE 3.6: OPEN WELL CONTOUR MAP – March 2025**FIGURE 3.7: OPEN WELL CONTOUR MAP – April 2025****FIGURE 3.8: OPEN WELL CONTOUR MAP – May 2025**

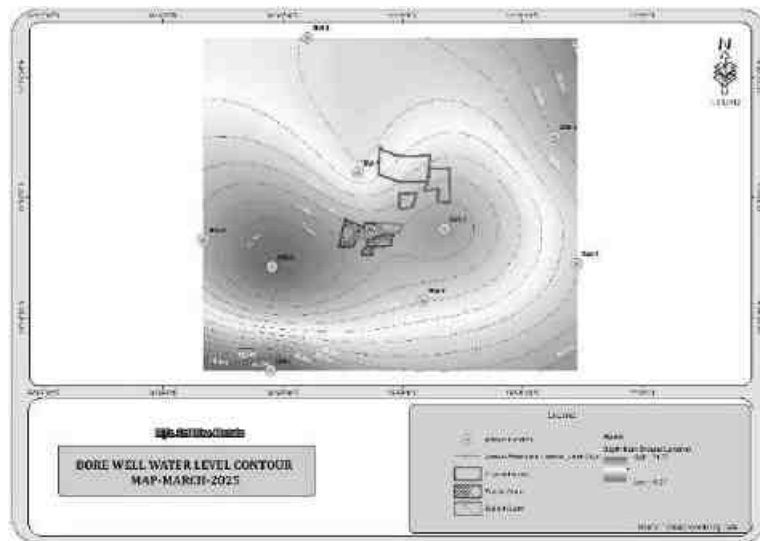
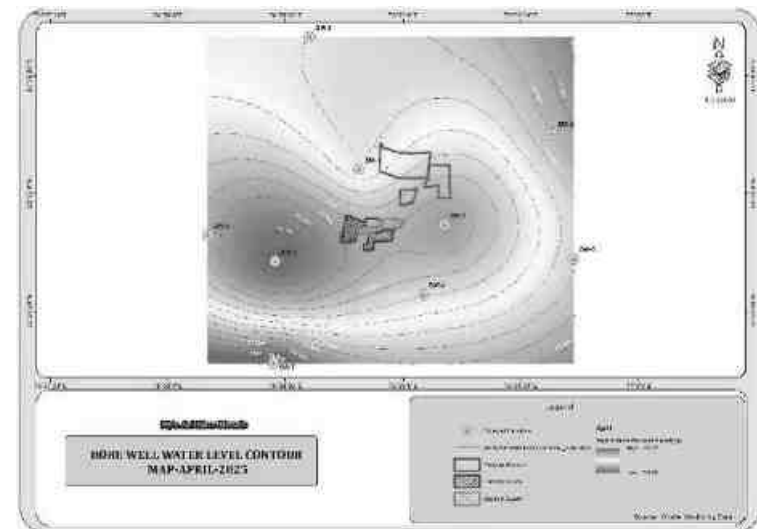
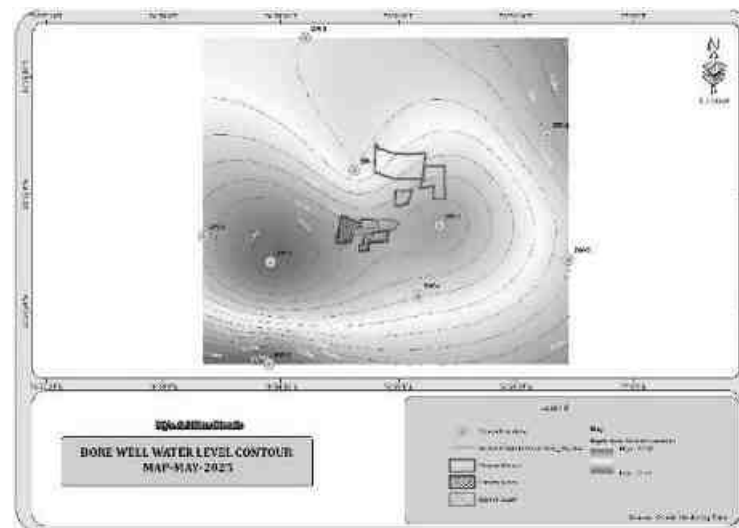
FIGURE 3.9: BOREWELL CONTOUR MAP – March 2025**FIGURE 3.10: BOREWELL CONTOUR MAP – April 2025****FIGURE 3.11: BOREWELL CONTOUR MAP – May 2025**

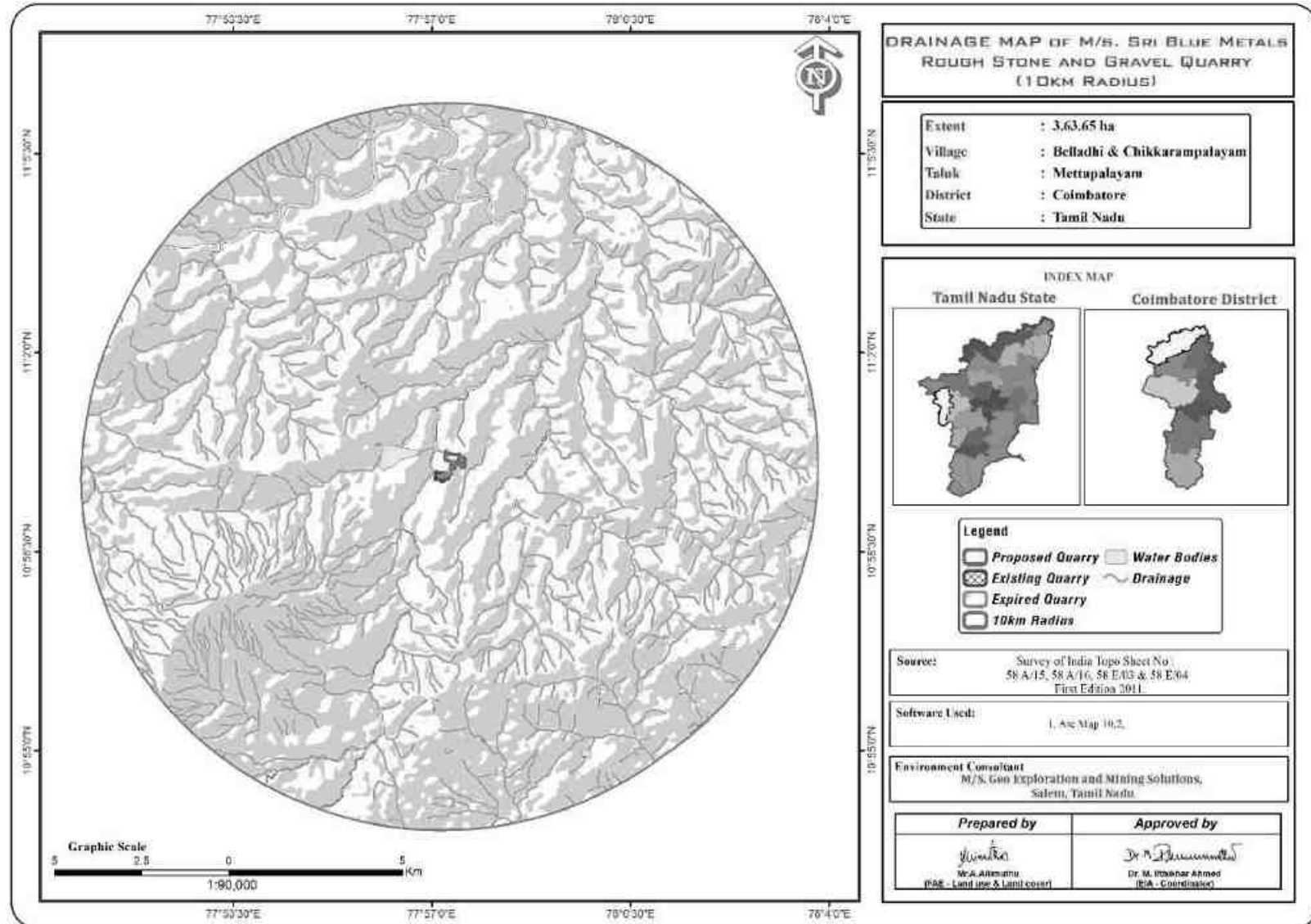
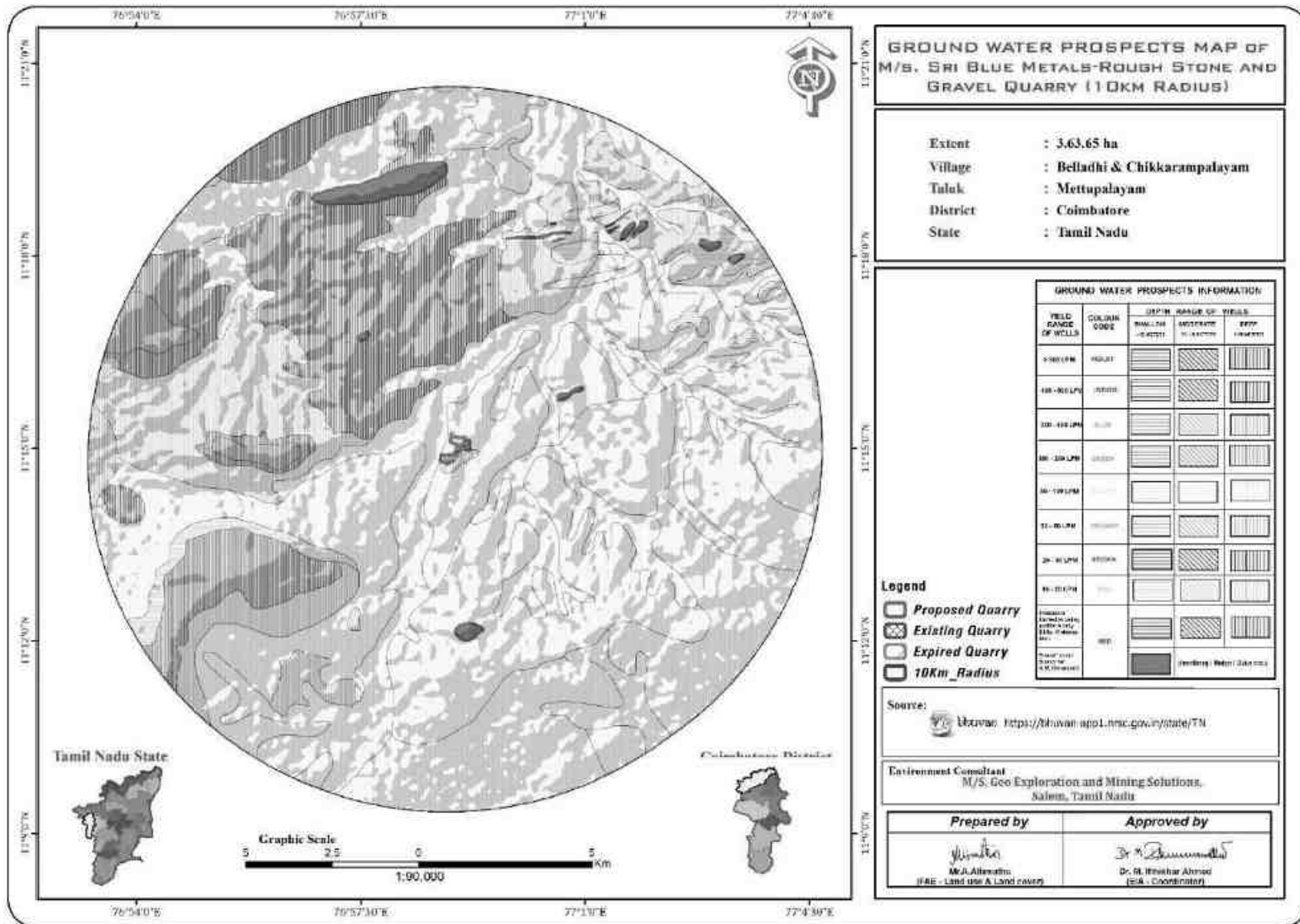
FIGURE 3.12: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE

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 inhomogeneities 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 inhomogeneities 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,

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

ρ_r = Resistivity of Rocks

ρ_w = Resistivity of water in pores of rock

F = Formation Factor

ϕ = Fractional pore volume

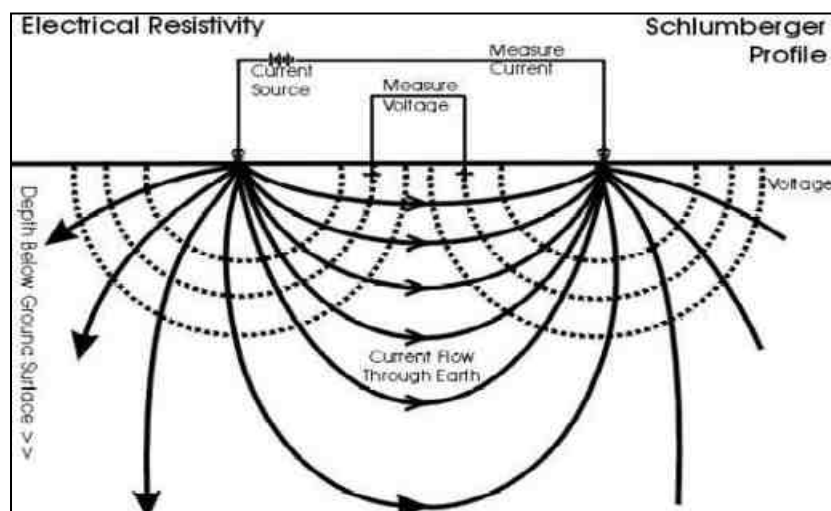
A = Constants with values ranging from 0.5 to 2.5

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 ratio 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 between 70-75m. The maximum depth proposed out of proposed project is 67m BGL. 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 proposed 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 –

Coimbatore is 421m above sea level. Coimbatore's climate is classified as tropical. The summers here have a good deal of rainfall, while the winters have very little rain. This location is classified as Aw by Köppen and Geiger. In Coimbatore –

- The average annual temperature is 25.4°C | 77.8°F.
- The annual rainfall here is around 952mm | 37.5 inch.
- The driest month is January with 13mm | 0.5 inch of rainfall. The greatest amount of precipitation occurs in October, with an average of 181mm | 7.1 inch.
- The warmest month of the year is April, with an average temperature of 28.9°C | 84.1°F. The lowest average temperatures in the year occur in December, when it is around 23.2°C | 73.7°F.
- The difference in precipitation between the driest month and the wettest month is 168 mm | 7 inch. The variation in annual temperatures throughout the year is 5.8°C | 42.4°F.

Source: <https://en.climate-data.org/asia/india/tamil-nadu/coimbatore-2788/>

Rainfall –

TABLE 3.13: RAINFALL DATA

Actual Rainfall in mm						Normal Rainfall in mm
2013	2014	2015	2016	2017	2018	
901.0	1221.7	992.9	505.5	873.4	1302.0	689.3

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

TABLE 3.14: METEOROLOGICAL DATA RECORDED AT SITE

S.No	Parameters		Mar - 2025	Apr - 2025	May - 2025
1	Temperature (°C)	Max	28.5	28.1	25.9
		Min	25.3	24.3	23.3
		Avg.	26.9	26.2	24.6
2	Relative Humidity (%)	Avg.	71.3	74.5	74.8
3	Wind Speed (m/s)	Max	8.750	3.681	3.125
		Min	1.459	0.833	0.000
		Avg.	5.104	2.257	1.562
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind direction		SSW,SW	NNE,NE	NE,NNE

Source: On-site monitoring/sampling by Chennai Mettlex Laboratories in association with GEMS

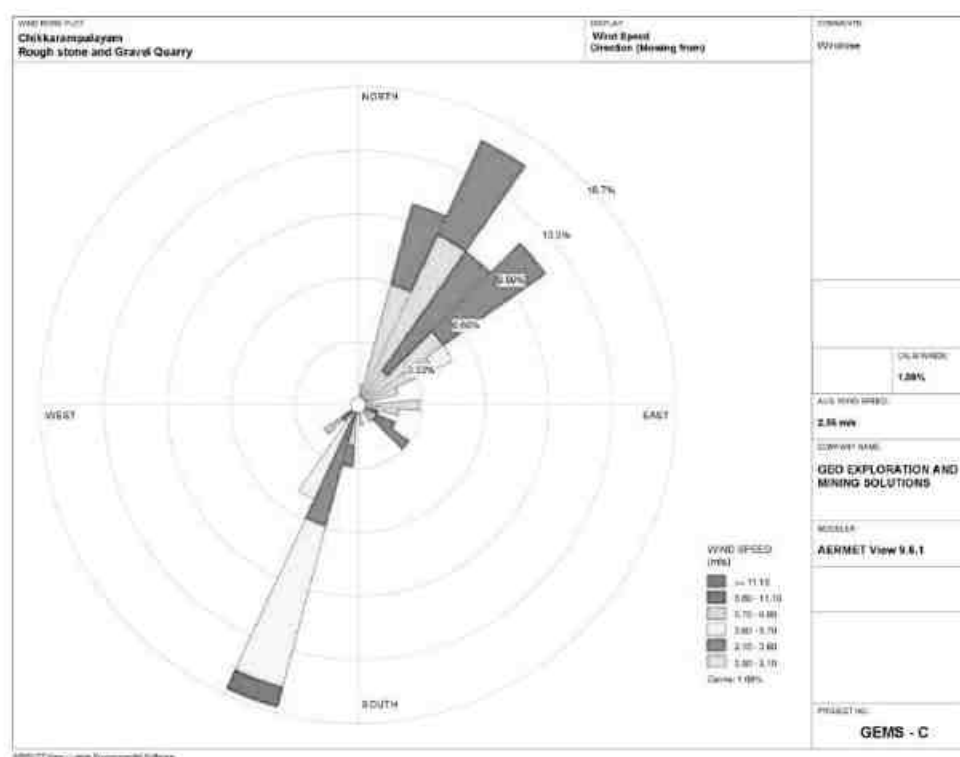
Correlation between Secondary and Primary Data

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

- The average maximum and minimum temperatures of IMD, Coimbatore_Agro showed a higher in respect of on-site data i.e. in Belladhi village.
- The relative humidity levels were lesser at site as compared to IMD, Coimbatore_Agro.
- The wind speed and direction at site shows similar trend that of IMD, Coimbatore_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



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

1. Predominant winds were from NE- SW
2. Wind velocity readings were recorded between 0.50 to 11.10 m/s
3. Calm conditions prevail of about 1.09 % of the monitoring period
4. Temperature readings ranging from 23.3 to 28.5 °C
5. Relative humidity ranging from 71.3 to 74.8 %
6. 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 ANALYSIS

Parameter	Method	Instrument
PM2.5	Gravimetric Method Beta attenuation Method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM10	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 modifiedmethod)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology followed by EHS360 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 (µg/m ³)	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	Nitrogen Dioxide (µg/m ³)	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	Particulate matter (size less than 10µm) PM10 (µg/m ³)	Annual Avg. 24 hours	60.0 100.0	60.0 100.0
4	Particulate matter (size less than 2.5 µm PM2.5 (µg/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 104 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 Nine (9) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period December 2022 – February 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

Nine (9) monitoring stations were set up in the study area as depicted in Figure 3.15 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	Project Area	Core Zone	11°15'3.46"N 76°59'9.58"E
2	AAQ2	Near Existing Quarry	440m SW	11°14'48.89"N 76°58'58.58"E
3	AAQ3	Mongampalayam (Residential)	1.3km NE	11°15'36.72"N 76°59'44.68"E
4	AAQ4	Vadavalli (School)	2.4km East	11°15'0.43"N 77° 0'31.49"E
5	AAQ5	Koodathasanur (Residential)	4.8km NW	11°15'45.74"N 76°56'29.65"E
6	AAQ6	Ramapalayam (Residential)	4.2km North	11°17'24.77"N 76°59'26.30"E
7	AAQ7	Onnipalayam (Residential)	5.0km SE	11°12'26.26"N 77° 0'4.58"E

Source: On-site monitoring/sampling by Chennai Mettex Laboratories in association with GEMS

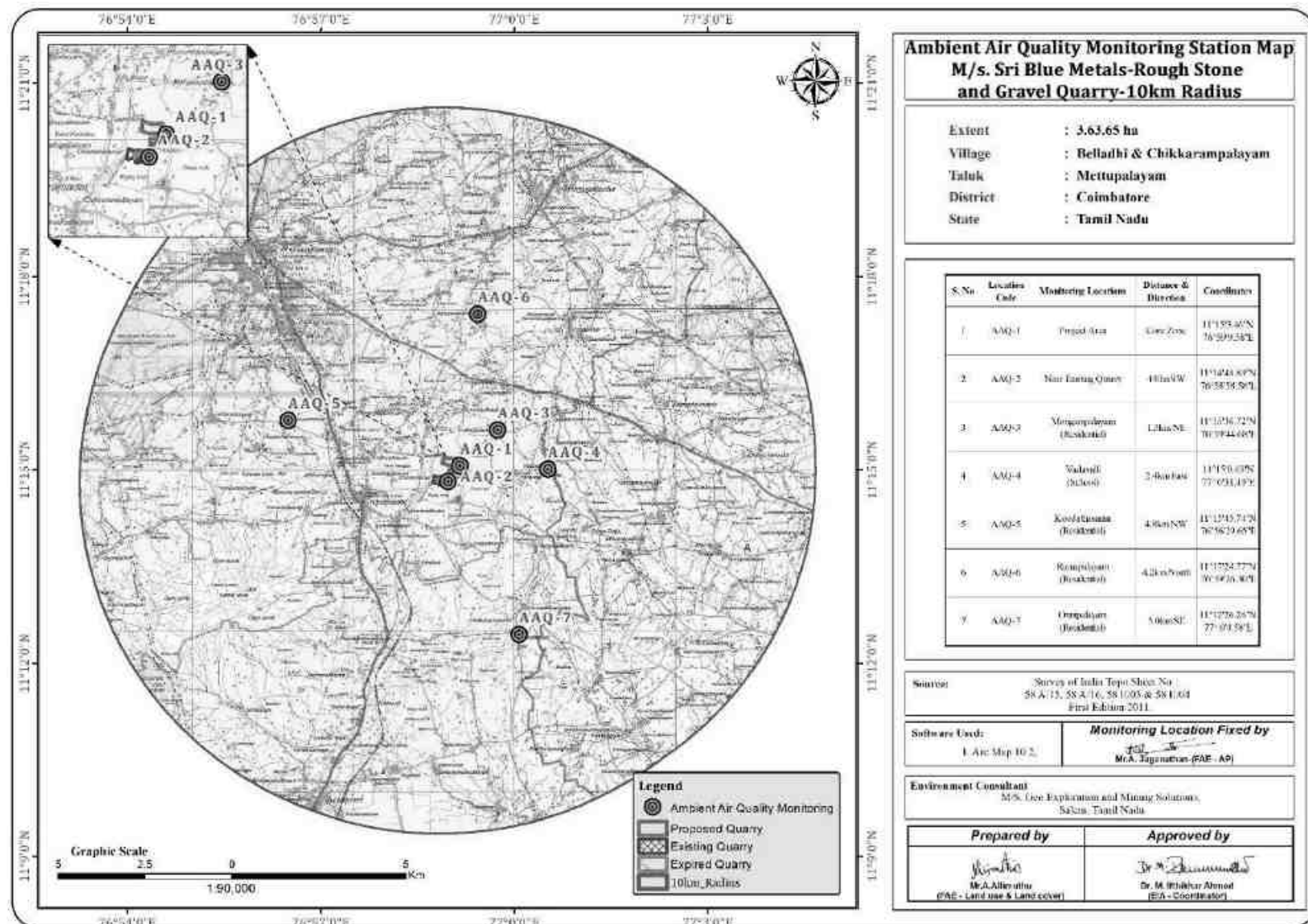
FIGURE 3.15: AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS

TABLE 3.27: SUMMARY OF AAQ – 1 to AAQ – 9

PM2.5	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8	AAQ9
Arithmetic Mean	19.4	20.0	20.4	18.9	21.2	19.6	21.9	17.2	19.4
Minimum	18.3	18.2	18.4	18.0	20.3	18.2	20.1	14.8	18.3
Maximum	20.2	21.9	22.3	19.9	22.8	20.9	25.3	21.0	20.2
NAAQ Norms	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60

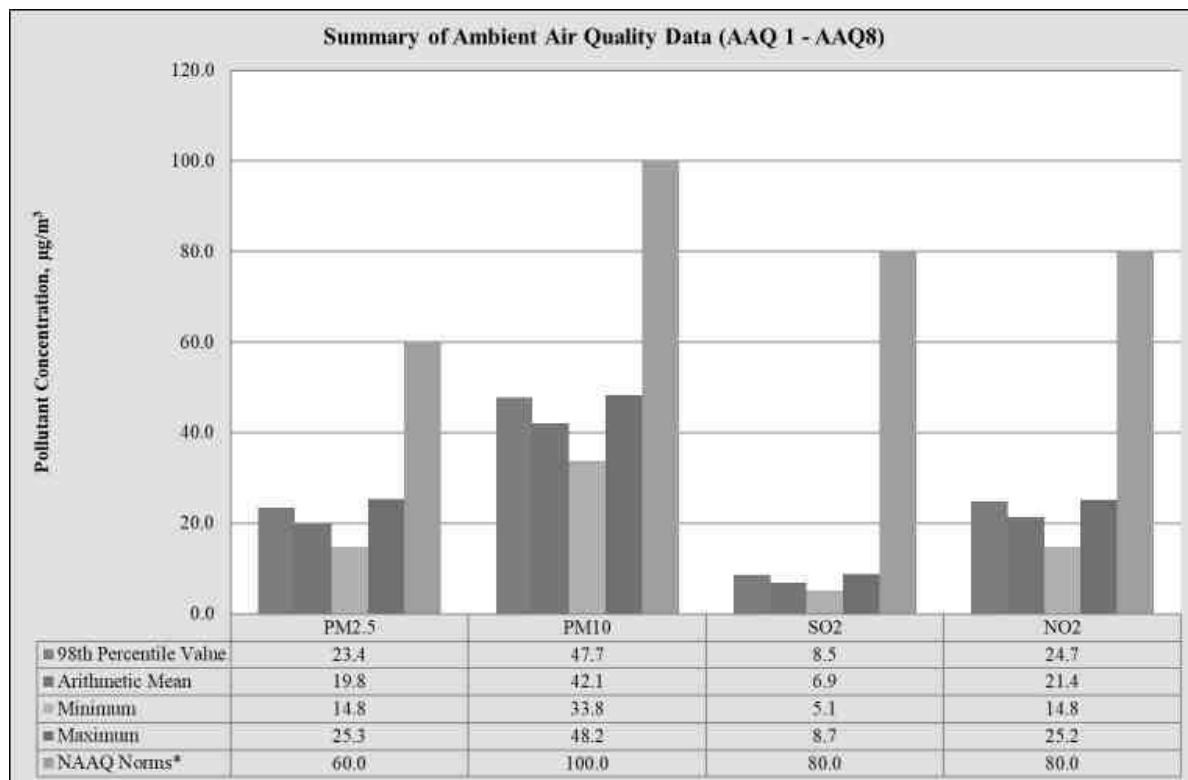
PM10	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8	AAQ9
Arithmetic Mean	43.8	40.8	41.8	40.8	42.5	37.2	39.5	46.6	43.8
Minimum	42.2	38.9	40.1	39.2	40.6	1.6	11.6	42.8	42.2
Maximum	45.6	42.6	43.5	41.7	44.8	40.5	44.7	48.2	45.6
NAAQ Norms	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100

SO₂	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8	AAQ9
Arithmetic Mean	6.6	7.0	6.7	5.4	7.2	6.9	7.2	7.2	6.6
Minimum	6.0	0.3	5.3	5.1	0.3	5.5	6.3	5.4	6.0
Maximum	7.6	7.9	7.9	5.9	8.7	7.9	7.9	8.5	7.6
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	100

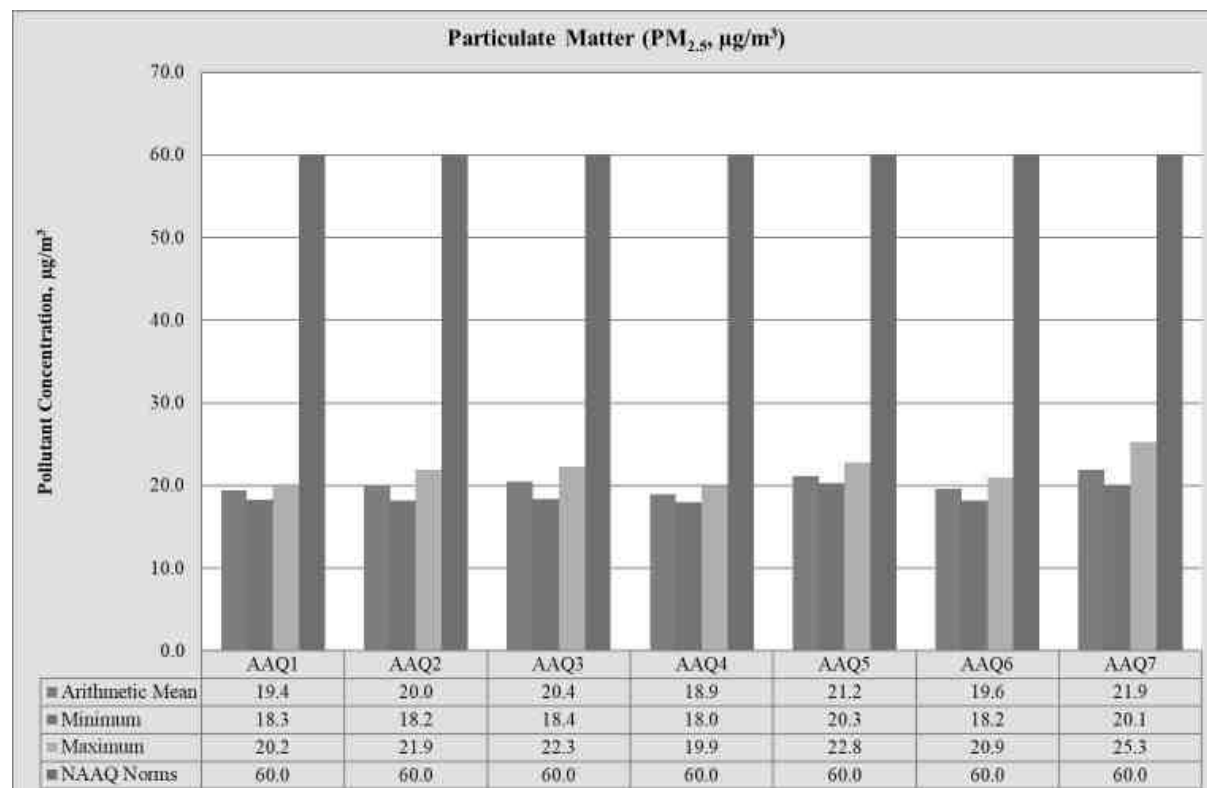
NO₂	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8	AAQ9
Arithmetic Mean	19.2	21.5	23.3	22.2	23.8	22.8	21.0	17.6	19.2
Minimum	18.2	20.1	22.1	20.1	22.2	21.2	20.0	14.8	18.2
Maximum	20.3	22.8	24.6	24.1	25.2	25.2	21.9	21.8	20.3
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	100

TABLE 3.28: ABSTRACT OF AMBIENT AIR QUALITY DATA

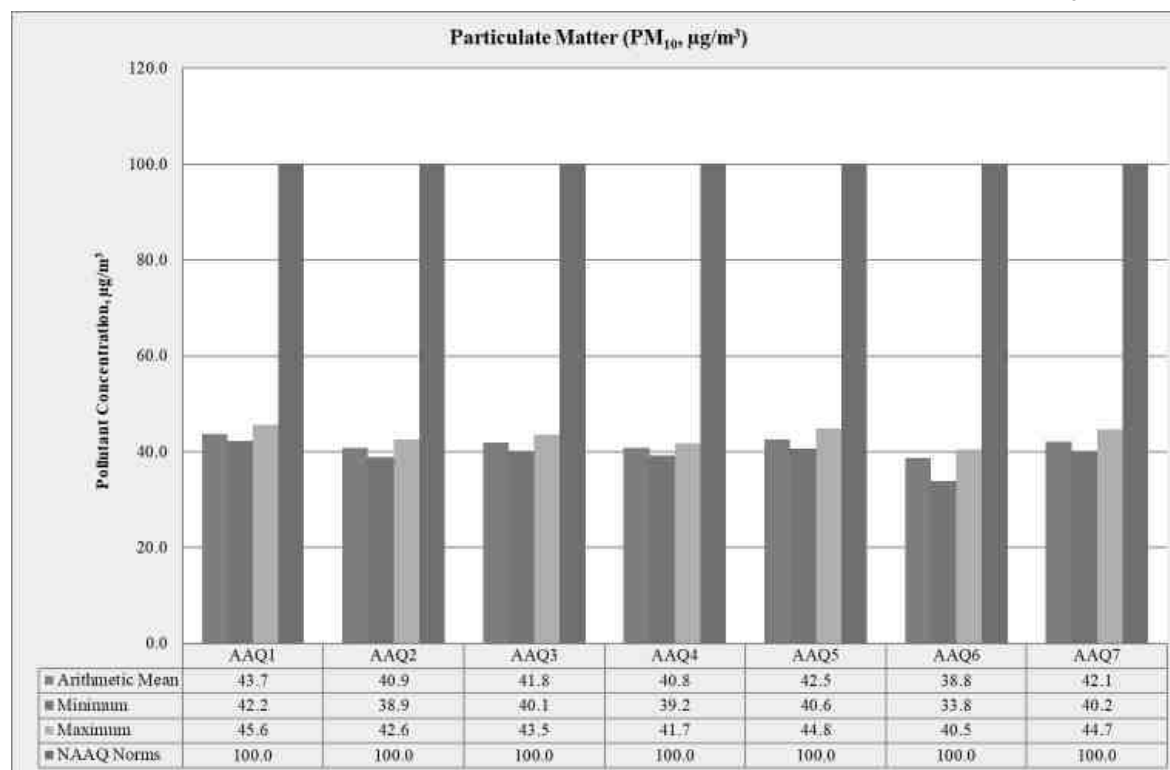
1	Parameter	PM2.5	PM10	SO ₂	NO ₂
2	No. of Observations	172	186	186	181
3	10 th Percentile Value	18.1	39.4	5.6	18.4
4	20 th Percentile Value	18.6	40.2	6.1	19.4
5	30 th Percentile Value	19.2	40.8	6.5	20.5
6	40 th Percentile Value	19.5	41.3	6.8	21.3
7	50 th Percentile Value	19.8	41.8	6.9	21.7
8	60 th Percentile Value	20.3	42.4	7.2	22.1
9	70 th Percentile Value	20.6	42.9	7.5	22.8
10	80 th Percentile Value	21.3	43.6	7.6	23.5
11	90 th Percentile Value	21.7	46.0	7.9	23.8
12	95 th Percentile Value	22.1	47.1	8.3	24.5
13	98 th Percentile Value	23.4	47.7	8.5	24.7
14	Arithmetic Mean	19.8	42.1	6.9	21.4
15	Geometric Mean	19.7	42.1	6.8	21.3
16	Standard Deviation	1.7	2.4	0.9	2.2
17	Minimum	14.8	33.8	5.1	14.8
18	Maximum	25.3	48.2	8.7	25.2
19	NAAQ Norms*	100.0	60.0	80.0	80.0
	% Values exceeding Norms*	0.0	0.0	0.0	0.0

FIGURE 3.16: BAR DIAGRAM OF SUMMARY OF AAQ 1 – AAQ 7

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

3.3.6 Interpretations & Conclusion

As per monitoring data, PM₁₀ ranges from 33.8 µg/m³ to 48.2 µg/m³, PM_{2.5} data ranges from 14.8 µg/m³ to 25.3 µg/m³, SO₂ ranges from 5.1 µg/m³ to 8.7 µg/m³ and NO₂ data ranges from 14.8 µg/m³ to 25.2 µg/m³. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

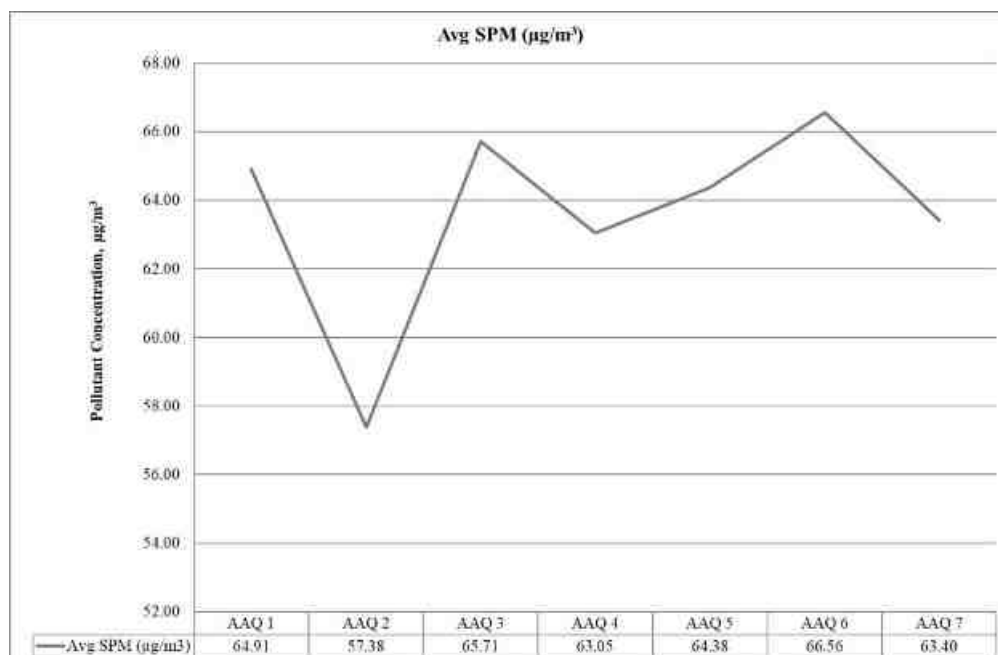
3.3.7 FUGITIVE DUST EMISSION –

Fugitive dust was recorded at 7AAQ monitoring stations for 30 days average during the study period.

TABLE 3.29: AVERAGE FUGITIVE DUST SAMPLE VALUES

AAQ Locations	Avg SPM (µg/m³)
AAQ 1	64.91
AAQ 2	57.38
AAQ 3	65.71
AAQ 4	63.05
AAQ 5	64.38
AAQ 6	66.56
AAQ7	63.40

Source: Onsite monitoring/ sampling by Chennai Mettux Laboratories

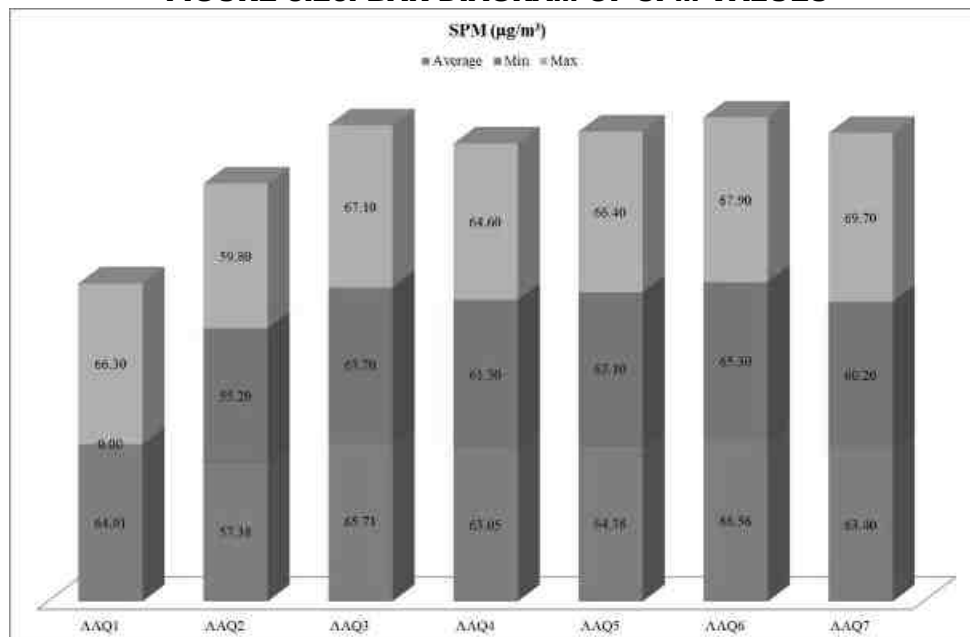
FIGURE 3.19: LINE DIAGRAM OF AVERAGE SPM VALUES

Source: Table 3.28

TABLE 3.30: FUGITIVE DUST SAMPLE VALUES IN µg/m³

SPM (µg/m³)	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Average	64.91	57.38	65.71	63.05	64.38	66.56	63.40
Min	0.00	55.20	63.70	61.30	63.10	65.30	60.20
Max	66.30	59.80	67.10	64.60	66.40	67.90	69.70

Source: Calculations from Lab Analysis Reports

FIGURE 3.20: BAR DIAGRAM OF SPM VALUES

Source: Table 3.30

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 Seven (7) 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 3.31: DETAILS OF SURFACE NOISE MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	N1	Project Area	Core Zone	11°15'3.23"N 76°59'11.16"E
2	N2	Near Existing Quarry	440m SW	11°14'47.49"N 76°58'58.35"E
3	N3	Mongampalayam (Residential)	1.3km NE	11°15'36.57"N 76°59'44.10"E
4	N4	Vadavalli (School)	2.4km East	11°15'0.48"N 77° 0'32.26"E
5	N5	Koodathasanur (Residential)	4.8km NW	11°15'46.45"N 76°56'28.68"E
6	N6	Ramapalayam (Residential)	4.2km North	11°17'25.38"N 76°59'25.72"E
7	N7	Onnipalayam (Residential)	5.0km SE	11°12'26.06"N 77° 0'5.33"E

Source: On-site monitoring/sampling by Chennai Mettux Laboratories in association with GEMS

3.4.2 Method of Monitoring

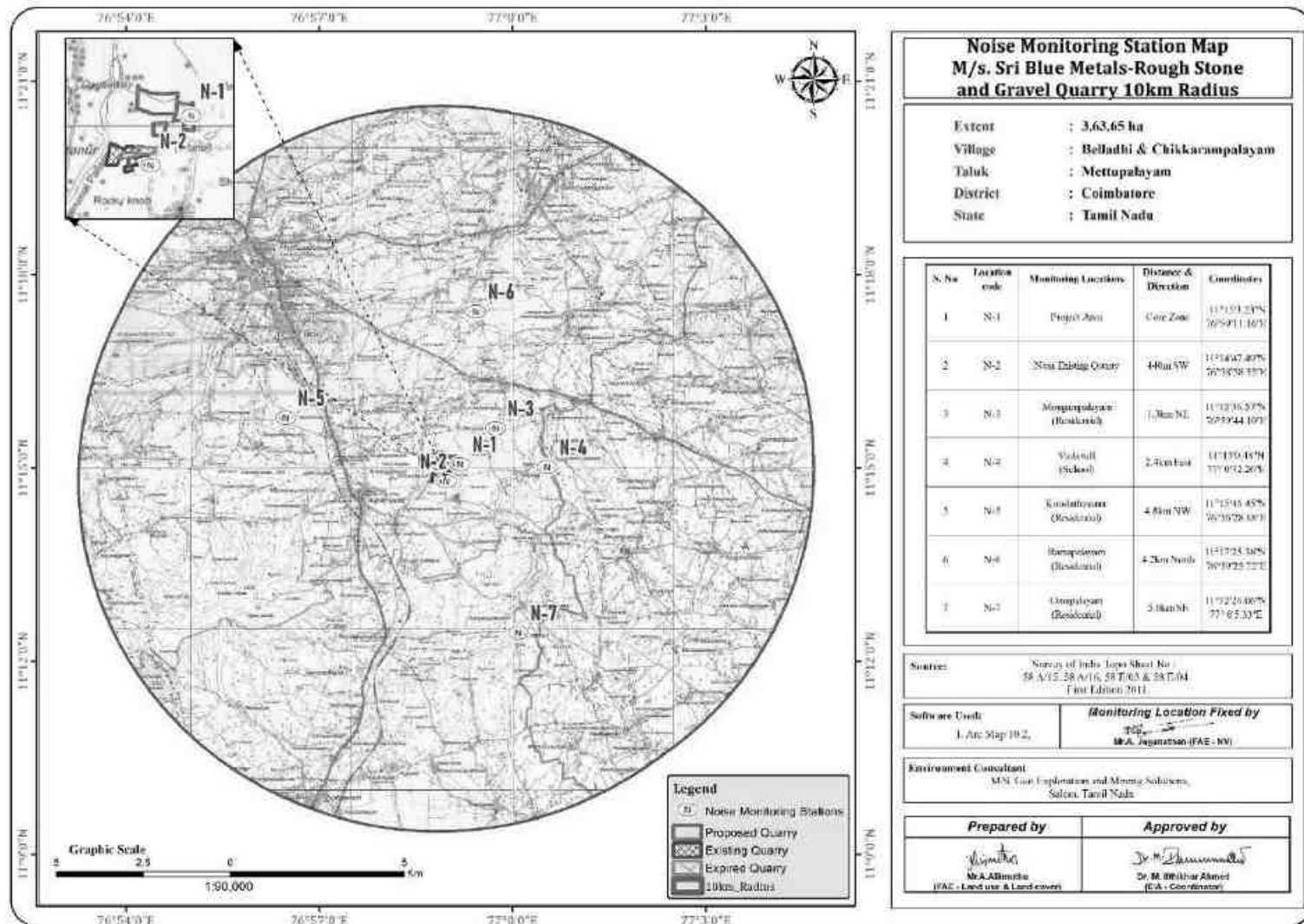
Digital Sound Level Meter was used for the study. All reading was taken on the 'A-Weighting' frequency network, at a height of 1.5 meters from ground level. The sound level meter does not give a steady and consistent reading and it is quite difficult to assess the actual sound level over the entire monitoring period. To mitigate this shortcoming, the Continuous Equivalent Sound level, indicated by Leq , 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,

$$Leq = 10 \log L / T \sum (10L_n/10)$$

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

T = Time interval of observation

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.

FIGURE 3.23: 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 3.32.

Day time: 6:00 hours to 22.00 hours.

Night time: 22:00 hours to 6.00 hours.

TABLE 3.32: AMBIENT NOISE QUALITY RESULT

S. No	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
1	Project Area	41.9	37.1	Industrial Day Time- 75 dB (A) Night Time- 70 dB (A)
2	Project Area	39.7	37.8	
3	Near Existing Quarry	39.6	35.3	
4	Therampalayam	37.7	35.7	
5	Bellaipalayam	38.6	35.3	Residential Day Time- 55 dB (A) Night Time- 45 dB (A)
6	Karamadai	39.2	37.8	
7	Onnipalayam	39.4	35.4	

Source: On-site monitoring/sampling by EHS360 Laboratories in association with GEMS

FIGURE 3.24: DAY TIME NOISE LEVELS IN CORE AND BUFFER ZONE

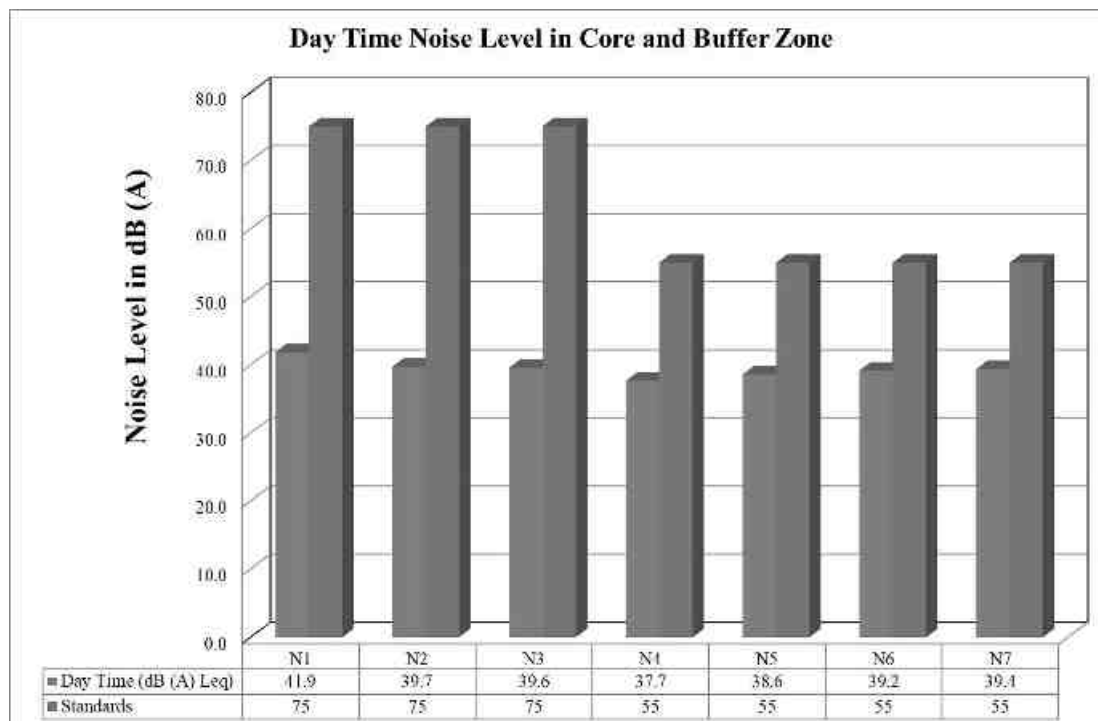
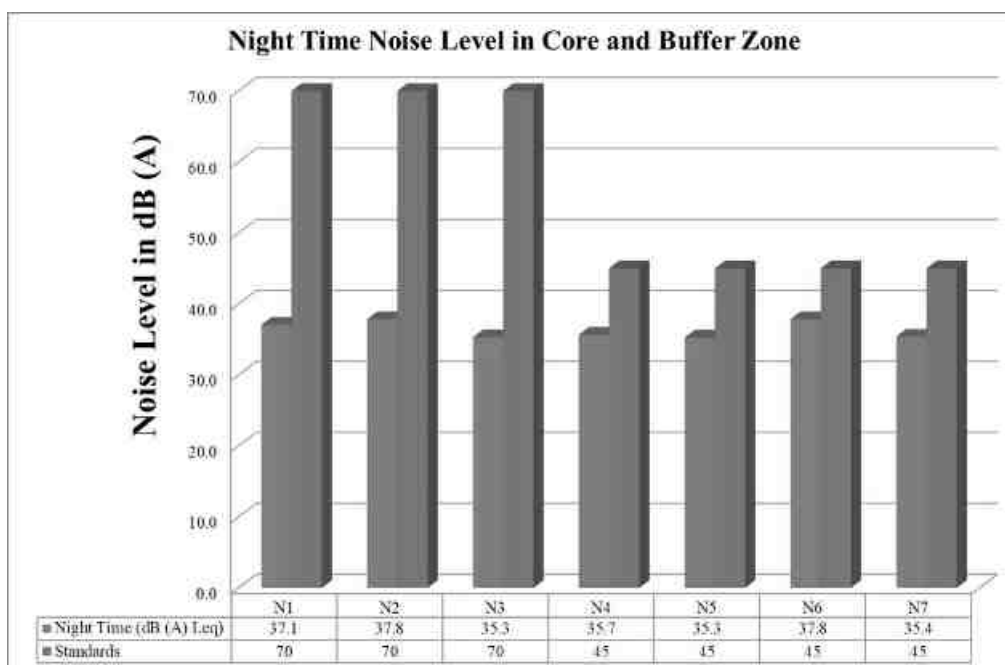


FIGURE 3.25: NIGHT TIME NOISE LEVELS IN CORE AND BUFFER ZONE

3.4.4 Interpretation & Conclusion:

Ambient noise levels were measured at 7 (Seven) locations around the proposed project area. Noise levels recorded in core zone during day time were from 41.9 dB (A) Leq and during night time were 37.1 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 37.7 to 39.7 dB (A) Leq and during night time were from 35.3 to 37.8 dB (A) Leq.

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

3.5 ECOLOGICAL ENVIRONMENT

Ecology is a branch of science which dealing the relations and interactions between organisms and their environment. An ecological survey of the study area was conducted, particularly with reference to listing of species and assessment of the existing baseline ecological conditions in the study area. The main objective of biological study is to collect the baseline data regarding flora and fauna in the study area. Data has been collected through extensive survey of the area with reference to flora and fauna. Information is also collected from different sources i.e. government departments such as District Forest Office, Government of Tamil Nadu. The checklist of flora and fauna was prepared based on the onsite observations as well as forest department records.

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:

1. To study the likely impact of the proposed mining project on the local biodiversity and to suggest mitigation measure, if required, for vulnerable biota.
2. To assess the nature and distribution of vegetation (Terrestrial and Aquatic) in and around the mining activity.
3. Detail of flora and fauna, Endemic, Rare, Endangered and Threatened (RET Species) separately for core and buffer area based on such primary field survey and clearly indicating the Schedule of fauna present. In case of any schedule- 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.
4. Devise management & conservation measures for biodiversity.

3.5.3 Methodology of Sampling

The present study was carried out in given steps

1. Field survey was conducted by visual encounter survey for flora present within the 10 km radius study area of all the proposed mine site.
2. After surveying the core and buffer areas, a detailed floral inventory has been compiled. List of all plants of the study area was prepared and their habitats were recorded.
3. Verification of Rare, Endangered and Threatened Flora species from IUCN Red Data Book.
4. Plants and Animals communities were noted.

Site selection criteria: The core study area is located at Village: Belladhi & Chickkarampalayam, Taluk: Mettupalayam, District: Coimbatore, Tamil Nadu. The buffer study area comprises of 10 km radius from all the proposed Rough Stone quarry area.

Selection of sampling locations was made with reference to topography, land use, vegetation pattern, etc. The observations were taken on natural vegetation, roadside plantation and non-forest area (agricultural field, in plain areas, village wasteland, etc.) for quantitative representation of different species.

A methodology of Sampling Flora and fauna studies were carried out to assess the list of terrestrial plant and animal species that occur in the core area and the buffer area up to 10 km radius from the project site. No damage is created to flora and fauna during the sampling.

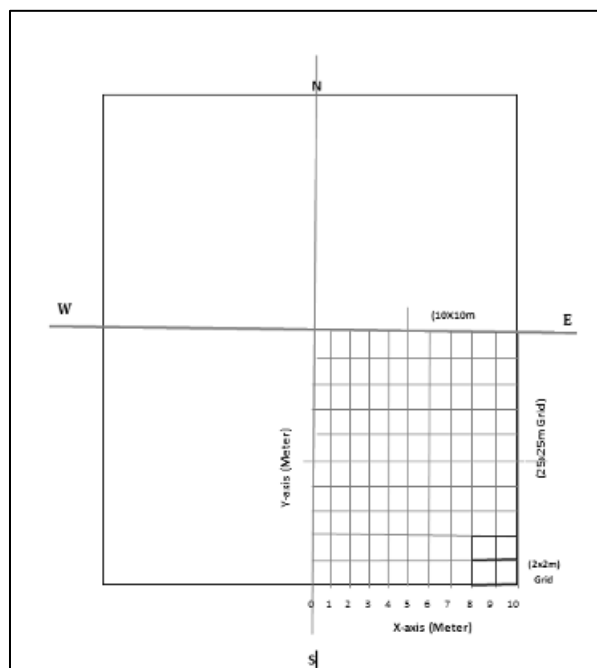
In order to provide representative ecological status for the study area, the 10-km buffer zone has been divided into four quartiles for biodiversity sampling, i.e., NE (Quartile-1), NW (Quartile-2) SW (Quartile-3) and SE (Quartile-4) is given in Fig. 3.26. Each of the quartiles have been examined for representative flora on randomly sampled quadrats for trees (25x25-m), shrubs (10x10-m) and herbs (2x2-m) depending upon prevailing geographical conditions and bio-diversity aspects of study area.

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 25 × 25-m were laid down randomly within core and 5-km buffer area; each quadrat was laid to assess the trees (>5 cm GBH) and one, 10 × 10-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 area, trees in agricultural bunds, tank bunds, farm forestry plantations, wildlife areas, natural forest area, avenue plantations, house backyards, etc. In each quadrat individuals belonging to tree (25 × 25-m) and shrub (10 × 10-m) were recorded separately and have been identified on the field. Quadrates sampling methods is given in Fig no.3.26.

FIGURE 3.26: A SCHEMATIC DIAGRAM FOR FLORAL RANDOM SAMPLING

FLORA IN CORE ZONE

Taxonomically a total of 27 species belonging to 20 families have been recorded from the core mining lease area. It exhibits plain topography. Based on habitat classification of the enumerated plants the majority of species were Trees 9 (33%) followed by Herb 8 (30%), Shrub 6 (22%) and Climbers 4 (15%). Details of flora with the scientific name were mentioned in Table No. 3.33. The result of core zone of flora studies shows that Fabaceae and Lamiaceae, Amaranthaceae are the main dominating species in the study area it mentioned in Table No.3.33 and the details of diversity of flora family's pattern are given in Fig No.3.27. No species found as threatened category (Table No. 3.33).

FLORA IN BUFFER ZONE

Similar type of environment also in buffer area but with more flora diversity compare than core zone area because nearby agriculture land was found to dominate mostly in all the directions. Majority of the flat landscape around project unit is occupied by agriculture fields. It contains a total of 76 species belonging to 38 families have been recorded from the buffer zone. The floral (76) varieties among them Thirty-five Trees 35 (46%) Twelve Shrubs 12 (16%) and Seventy Herbs 17 (22%) and Climbers Twelve 12 (16%) were identified. The result of buffer zone of flora studies shows that Fabaceae and Cucurbitaceae, Solanaceae are the main dominating species in the study area it mentioned in Table No.3.34.

There is no Rare, Endangered and Threatened Flora species in mining area and their surrounding area. Details of flora with the scientific name were mentioned in Table No.3.34. The diversity of flora families is given in Fig No.3.28.

TABLE 3.33: FLORA IN CORE ZONE

<i>Sl.No</i>	<i>English Name</i>	<i>Vernacular Name</i>	<i>Scientific Name</i>	<i>Family Name</i>
TREES				
1	Acacia Nilotica	Karuvelam maram	<i>Vachellia nilotica</i>	Fabaceae
2	Noni	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae
3	Mango	Manga	<i>Mangifera indica</i>	Anacardiaceae
4	Tamarind	Puliyamaram	<i>Tamarindus indica</i>	Legumes
5	Neem	Vembu	<i>Azadirachta indica</i>	Meliaceae
6	Asian Palmyra plam	Panai maram	<i>Borassus flabellifer</i>	Arecaceae
7	Millettia pinnata	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae
8	Mesquite	Velikathan maram	<i>Prosopis juliflora</i>	Fabaceae
9	Coconut	Thennai maram	<i>Cocos nucifera</i>	Arecaceae
SHRUBS				
10	Touch-me-not	Thottalchinungi	<i>Mimosa pudica</i>	Mimosaceae
11	Indian mallow	Thuththi	<i>Abutilon indicum</i>	Malvaceae
12	Wild sage	Unichedi	<i>Lantana camara</i>	Verbenaceae
13	Sarphonka	Katu-kolungi	<i>Tephrosia purpurea</i>	Fabaceae
14	Avaram	Avarai	<i>Senna auriculata</i>	Fabaceae
15	Milk Weed	Erukku	<i>Calotropis gigantea</i>	Apocynaceae
HERBS				
16	Common leucas	Thumbai	<i>Leucas aspera</i>	Lamiaceae
17	Devil's thorn	Nerunji	<i>Tribulus terrestris</i>	Zygophyllales
18	Yellow-fruit Nightshade	Kantang kathrikai	<i>Solanum virginianum</i>	Solanaceae

19	Mountain knotgrass	Poolai poondur	<i>Aerva lanata</i>	Amaranthaceae
20	Common nut sedge	Korai	<i>Cyperus rotundus</i>	Cyperaceae
21	Indian doab	Arugampul	<i>Cynodon dactylon</i>	Poaceae
22	Prickly chaff flower	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae
23	Basil	Karunthulasi	<i>Ocimum basilicum</i>	Lamiaceae
CLIMBER				
24	Slender dwarf morning-glory	Vishnukrandi	<i>Evolvulus alsinoides</i>	Convolvulaceae
25	wild water lemon	Sirupunaikkali	<i>Passiflora foetida</i>	Passifloraceae
26	stemmed vine	Perandai	<i>Cissus quadrangularis</i>	Vitaceae
27	Wild bitter	Pavarkai	<i>Momordica charantia</i>	Cucurbitaceae

TABLE 3.34: FLORA IN BUFFER ZONE

<i>Sl.No</i>	<i>English Name</i>	<i>Vernacular Name</i>	<i>Scientific Name</i>	<i>Family Name</i>	<i>Resource use type</i>
TREES					
1	Neem or Indian lilac	Vembu	<i>Azadirachta indica</i>	Meliaceae	M
2	Millettia pinnata	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	E
3	Bitter Albizia	Arappu	<i>Albizia amara</i>	Fabaceae	M
4	Coconut	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	EM
5	Rosewood trees	Eeti	<i>Dalbergia latifolia</i>	Fabaceae	E
6	Mango	Manga	<i>Mangifera indica</i>	Anacardiaceae	E
7	Sesban	Chitthakathi	<i>Sesbania sesban</i>	Fabaceae	M
8	Tamarind	Puliyamaram	<i>Tamarindus indica</i>	Legumes	EM
9	Creamy Peacock Flower	Vadanarayani	<i>Delonix elata</i>	Fabaceae	M
10	Beauty leaf	Punnai	<i>Calophyllum inophyllum</i>	Calophyllaceae	M
11	Indian fig tree	Athi	<i>Ficus recemosa</i>	Moraceae	EM
12	Gum arabic tree	Karuvelam	<i>Acacia nilotica</i>	Mimosaceae	NE
13	Indian fir tree	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	E
14	Asian Palmyra plam	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	E
15	Castor oil plant	Amanakku	<i>Ricinus communis</i>	Euphorbiaceae	M
16	Manilkara zapota	Sapota	<i>Manilkara zapota</i>	Sapotaceae	E
17	Black plum	Navalmaram	<i>Syzygium cumini</i>	Myrtaceae	EM
18	Lemon	Ezhumuchaipalam	<i>Citrus lemon</i>	Rutaceae	EM

19	Banyan tree	Alamaram	<i>Ficus benghalensis</i>	Moraceae	E
20	Banana tree	Vazhaimaram	<i>Musa</i>	Musaceae	EM
21	Teak	Thekku	<i>Tectona grandis</i>	Verbenaceae	E
22	Indian gooseberry	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae	EM
23	Eucalyptus	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae	EM
24	Jack fruit	Palamaram	<i>Artocarpus heterophyllus</i>	Moraceae	E
25	Henna	Marudaani	<i>Lawsonia inermis</i>	Lythraceae	EM
26	Five leaf chastera	Nochi	<i>Vitex negundo</i>	Lamiaceae	M
27	Papaya	Pappali maram	<i>Carica papaya L</i>	Caricaceae	EM
28	Acacia Nilotica	Karuvelam maram	<i>Vachellia nilotica</i>	Fabaceae	M
29	Chinese chaste tree	Nochi	<i>Vitex negundo</i>	Verbenaceae	E
30	Peepal	Arasanmaram	<i>Ficus religiosa</i>	Moraceae	M
31	Noni	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	M
32	Guava	Koyya	<i>Psidium guajava</i>	Myrtaceae	EM
33	Custard apple	Seethapazham	<i>Annona reticulata</i>	Annonaceae	E
34	Curry tree	Velipparuthi	<i>Murraya koenigii</i>	Asclepiadaceae	EM
35	Bamboo	Moonghil	<i>Bambusa bambo</i>	Poaceae	E
SHRUBS					
36	Avaram	Avarai	<i>Senna auriculata</i>	Fabaceae	M
37	Indian Oleander	Arali	<i>Nerium indicum</i>	Apocynaceae	M
38	Thorn apple	Oomathai	<i>Datura stramonium</i>	Solanaceae	E
39	Flame of the Woods	Idlipoo	<i>xoracoc cineia</i>	Rubiaceae	M
40	Puriging nut	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae	EM
41	Night shade plan	Sundaika	<i>Solanum torvum</i>	Solanaceae	EM
42	Indian mallow	Thuthi	<i>Abutilon indicum</i>	Meliaceae	M
43	Shoe flower	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae	EM
44	Rosary pea	Kundumani	<i>Abrus precatorius</i>	Fabaceae	M
45	Milk Weed	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	M
46	Ceylon Date Palm	Icham	<i>Phoenix pusilla</i>	Arecaceae	EM
47	Touch-me-not	Thottalchinungi	<i>Mimosa pudica</i>	Mimosaceae	M
HERBS					
48	Prickly chaff flower	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	M
49	Tridax daisy	Veetukaayapoundu	<i>Tridax procumbens</i>	Asteraceae	M
50	Hibiscus hispidissimus	Kaattu piral	<i>Hibiscus hispidissimus</i>	Malvaceae	M
51	Indian Copperleaf	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae	M
52	False daisy	Karisilanganni	<i>Eclipta prostata</i>	Asteraceae	EM
53	Common nut sedge	Korai	<i>Cyperus rotundus</i>	Cyperaceae	NE
54	Node Flower	Kumattikkirai	<i>Allmania nodiflora</i>	Amaranthaceae	M

55	Poor land flatsedg	Kunnakora	<i>Cyperus compressus</i>	Cyperaceae	NE
56	Gale of the wind	Keelaneeli	<i>Phyllanthus niruri</i>	Phyllanthaceae	EM
57	Benghal dayflower	Kanamvazha	<i>Commelina benghalensis</i>	Commelinaceae	M
58	Common leucas	Thumbai	<i>Leucas aspera</i>	Lamiaceae	M
59	Carrot grass	Partiniyam	<i>Parthenium hysterophorus</i>	Asteraceae	NE
60	Creeping wood sorrel	Pulliyari	<i>Oxalis corniculata</i>	Oxalidaceae	M
61	Red Hogweed	Mukurattai	<i>Boerhavia diffusa</i>	Nyctaginaceae	M
62	Holy basil	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae	M
63	Indian doab	Arugampul	<i>Cynodon dactylon</i>	Poaceae	E
64	European black nightshade	Manathakkali	<i>Solanum nigrum</i>	Solanaceae	EM
CLIMBER					
65	Ivy gourd	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae	M
66	Stemmed vine	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	M
67	Balloon vine	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	M
68	Betel	Vettilai	<i>Piper betle</i>	Piperaceae	EM
69	Butterfly pea	Karkakartum	<i>Clitoria ternatea</i>	Fabaceae	M
70	Wild bitter	Pavarkai	<i>Momordica charantia</i>	Cucurbitaceae	EM
71	Purple fruited pea eggplant	Thuthuvilai	<i>Solanum trilobatum</i>	Solanaceae	EM
72	Indian sarsparilla	Nannari	<i>Hemidesmus indicus</i>	Asclepiadaceae	M
73	Pointed gourd	Kovakkai	<i>Trichosanthes dioica</i>	Cucurbitaceae	EM
74	Butterfly-pea	Sangupoo	<i>Clitoria ternatea</i>	Fabaceae	M
75	Wild jasmine	Malli	<i>Jasminum augustifolium</i>	Oleaceae	EM
76	Bottle Guard	Sorakkai	<i>Lagenaria siceraria</i>	Cucurbitaceae	EM

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

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 3.35.

TABLE 3.35: AQUATIC VEGETATION

Sl.No	Scientific name	Common Name	Tamil Name	IUCN List
1	<i>Eichornia crassipe</i>	Water hyacinth	Agayatamarai	NA
2	<i>Aponogeton natans</i>	Floating laceplant	Kottikizhnagu	NA
3	<i>Nymphaea nouchali</i>	Blue waterlily	Nellambal	LC

*LC- Least Concern, NA-Not yet assessed

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

The study of fauna takes substantial amount of time to understand the specific faunal characteristics of the area. The assessment of fauna has been done on the bases of primary data collected from the lease sites. The presence was also confirmed from the local inhabitants depending on the animal sightings and the frequency of their visits in the project area. In addition, officials, local peoples were another source of information for studying the fauna of the area. Field activities are physical/active search, covering rocks, burrows, hollow inspection and location of nesting sites and habitat assessment etc. Taxonomical identification was done by the field guide book and wildlife envis data base (wiienvis.nic.in/Database/Schedule Species Database) and Zoological Survey of India (ZSI). Detailed faunas are mentioned in the Table No. 3.36 and 3.37.

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 these methods, 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

A total of 23 varieties of species observed in the Core zone of Belladhi Village, Rough stone and gravel quarry (Table No.3.36) among them numbers of Insects 7 (30%), Reptiles 5 (22%), Mammals 3 (13%) and Avian 8 (35%). A total of 23 species belonging to 18 families have been recorded from the core mining lease area. None of these species are threatened or endemic in the study area and surroundings. There is no Schedule I species and 7 species are under schedule IV according to Indian wild life Act 1972. A total eight species of bird were sighted in the mining lease area.

Dominant species are mostly birds and insects and three amphibians were observed during the extensive field visit (*Hoplobatrachus tigerinus*), (*Rana hexadactyla*), (*Bufo melonosticatus*). There are no critically endangered, endangered, vulnerable and endemic species were observed. Details of fauna in core zone with the scientific name were mentioned in Table No. 3.36.

TABLE 3.36: FAUNA IN CORE ZONE

<i>Sl. No</i>	<i>English Name</i>	<i>Family Name</i>	<i>Scientific Name</i>	<i>WPA Schedule</i>	<i>IUCN List</i>
INSECTS					
1	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
2	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
3	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	NL	NL
4	Mottled emigrant	Peridae	<i>Catopsilia pyranthe</i>	NL	LC
5	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
6	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
7	Stick insect	Lonchodidae	<i>carausius morosus</i>	NL	LC
REPTILES					
8	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
9	Brahminy skink	Scincidae	<i>Eutropis carinata</i>	NL	LC
10	Common skink	Scincidae	<i>Mabuya carinatus</i>	NL	LC
11	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
12	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
MAMMALS					
13	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	NL
14	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule II	LC
15	Common rat	Muridae	<i>Rattus rattus</i>	Schedule IV	LC
AVES					
16	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
17	Two-tailed Sparrow	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
18	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
19	common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
20	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
21	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
22	Koel	Cuculidae	<i>Eudynamys</i>	Schedule IV	LC
23	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC

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

FAUNA IN BUFFER ZONE

Taxonomically a total of 44 species belonging to 32 families have been recorded from the buffer zone area. Based on habitat classification the majority of species were Birds 17 (38%), followed by Insects 14 (32%), Reptiles 7 (16%), Mammals 3 (7%) and amphibians 3 (7.5%). There are three Schedule II species and twenty four species are under schedule IV according to Indian wild life Act 1972. A total 17 species of bird were sighted in the study area. There are no critically endangered, endangered, vulnerable and endemic species were observed.

The result of core & Buffer zone of fauna studies shows that Nymphalidae and *Scincidae*, *Agamidae* are the main dominating species in the study area; it is mentioned in Table No.3.37. There is no schedule I Species in study area. A detail of fauna diversity of family's pattern is given in Fig No.3.30. There are no critically endangered, endangered, vulnerable and endemic species were observed. Details of faunal diversity in buffer zone are given in Table No.3.37.

TABLE 3.37: FAUNA IN BUFFER ZONE

SI.No	Common name/English Name	Family Name	Scientific Name	Schedule list wildlife Protection act 1972	IUCN Red List data
INSECTS					
1	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
2	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
3	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
4	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
5	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
6	Common Indian crow	Nymphalidae	<i>Euploea core</i>	Schedule IV	LC
7	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
8	Ant	Formicidae	<i>Camponotus Vicinus</i>	NL	NL
9	Dragonfly	Gomphidae	<i>Ceratogomphus pictus</i>	Schedule IV	
10	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
11	Indian honey bee	Apidae	<i>Apis cerana</i>	Schedule IV	LC
12	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
13	Lesser grass blue	Lycanidae	<i>Zizina Otis indica</i>	Schedule IV	LC
14	Jewel beetle	Buprestidae	<i>Eurythyrea austriaca</i>	Schedule IV	NA
REPTILES					
15	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
16	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
17	Olive keelback water snake	Natricidae	<i>Atridium schistosum</i>	Sch II (Part II)	
18	Brahminy skink	Scincidae	<i>Eutropis carinata</i>	NL	LC
19	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
20	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
21	Common skink	Scincidae	<i>Mabuya carinatus</i>	NL	LC
MAMMALS					
22	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
23	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
24	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule (Part II)	LC
AVES					
25	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
26	Common Quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
27	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC

28	Shikra	Accipitridae	<i>Accipiter badius</i>	NL	LC
29	Koel	Cuculidae	<i>Eudynamys</i>	Schedule IV	LC
30	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
31	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotuscafer</i>	Schedule IV	LC
32	Indian golden oriole	Oriolidae	<i>Oriolus kundoo</i>	Schedule IV	LC
33	Rose-ringed parakeet	Psittaculidae	<i>Psittacula krameri</i>	NL	LC
34	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
35	Common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
36	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
37	Two-tailed Sparrow	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
38	Grey Francolin	Phasianidae	<i>Francolinus pondicerianus</i>	Schedule IV	LC
39	White-breasted waterhen	Rallidae	<i>Amaurornis phoenicurus</i>	NL	LC
40	Common Coot	Rallidae	<i>Fulica atra</i>	Schedule IV	LC
41	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
AMPHIBIANS					
42	Indian Burrowing frog	Dicroglossidae	<i>Sphaerotheca breviceps</i>	Schedule IV	LC
43	Green Pond Frog	Ranidae	<i>Rana hexadactyla</i>	Schedule IV	LC
44	Tiger Frog	Chordata	<i>Hoplobatrachus tigerinus (Rana tigerina)</i>	Schedule IV	LC

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

FIGURE 3.27: FLORAL DIVERSITY IN CORE ZONE

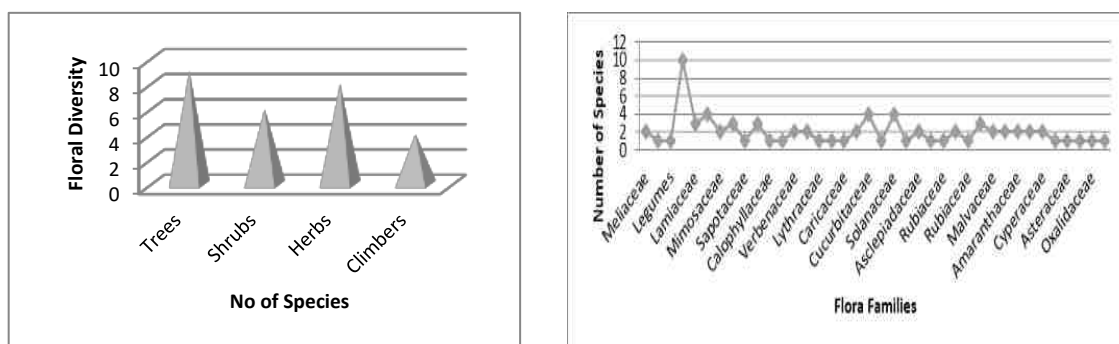
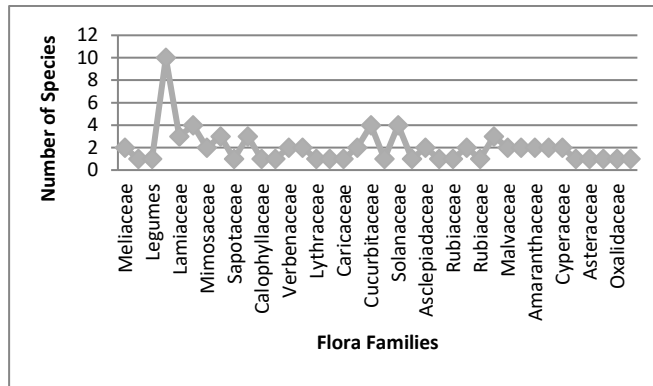
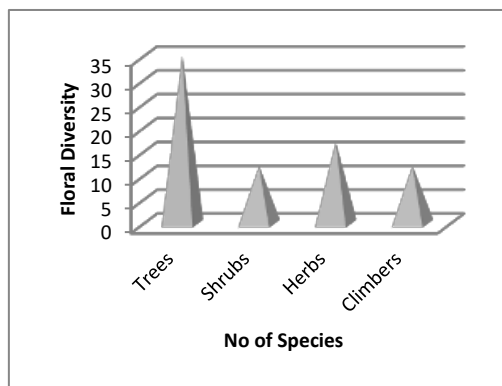
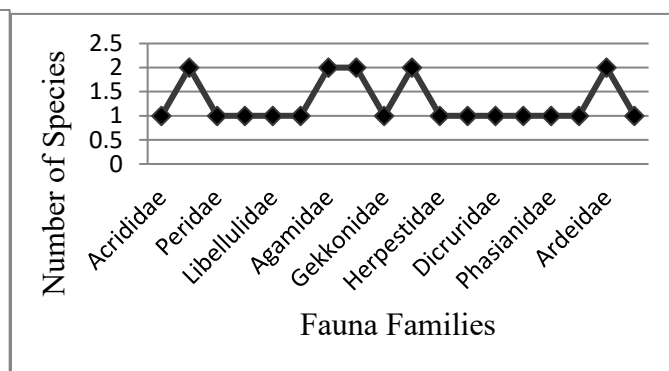
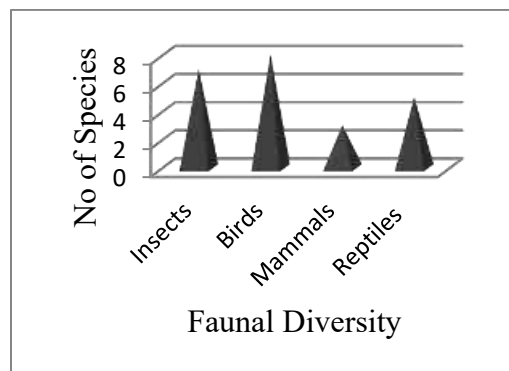
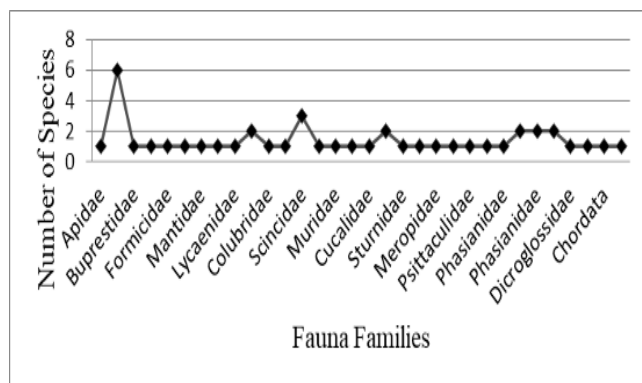
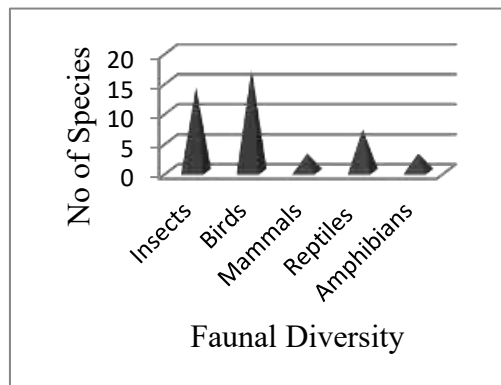


FIGURE 3.28: FLORAL DIVERSITY IN BUFFER ZONE**FIGURE 3.29: FAUNA DIVERSITY IN CORE ZONE****FIGURE 3.30: FAUNA DIVERSITY IN BUFFER ZONE**

3.5.4 Interpretation & Conclusion:

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. Hence this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

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

Coimbatore is the third largest city of Tamil Nadu, Coimbatore, is one of the most industrialized cities in Tamil Nadu, known as the textile capital of South India or the Manchester of the South, the city is situated on the banks of the river Noyyal, Coimbatore existed even prior to the 2nd or 3rd century AD by Karikalan, the first of the early Cholas. Among its other great rulers were Rashtrakutas, Chalukyas, Pandyas, Hoysalas and the Vijayanagara kings.

There are more than 25,000 small, medium, large scale industries and textile mill. Coimbatore is also famous for the manufacture of motor pump sets and varied engineering goods. The development of Hydro electricity from the Pykara Falls in the 1930 led to a cotton boom in Coimbatore.

Coimbatore serves as an entry and exit point to neighbouring Kerala and the ever-popular hill station of Udhagamandalam (Ooty). It is the disembarking point for those who want to take the Mountain train that runs from Mettupalayam, just 35 kms from Coimbatore. There are also regular bus services from Coimbatore to Ooty.

3.6.4 Study area:

BELLADHI VILLAGE

Belladhi village is situated in Teshil Mettupalayam, District Coimbatore and in State of Tamil Nadu India. Village has population of 7637 as per census data of 2011, in which male population is 3863 and female population is 3774. Total geographical area of Belladhi village is 1421.13 Hectares. Population density of Belladhi is 5 persons per Hectares. Total number of house hold in village is 2155.

TABLE 3.38: BELLADHI VILLAGE POPULATION FACTS

Number of Households	2155
Population	7637
Male Population	3863
Female Population	3774
Children Population	669
Sex-ratio	1097 females per 1000 males
Literacy	75.96%
Male Literacy	84.28%
Female Literacy	67.35%
Scheduled Tribes (ST)	3
Scheduled Caste (SC)	2,104

Source: <https://etrace.in/census/village/belladhi-mettupalayam-district-coimbatore-tamil-nadu-644355/>

Gram Panchayat name of the Belladhi village is Belladhi. CD Block name is Karamadai and Teshil/Taluk or sub-district is Mettupalayam. Data Reference year is 2009 of Census 2011. Sub District HQ Name is METTUPALAYAM and Sub District HQ Distance is 9 Km from the village. District Head Quarter name is COIMBATORE and it's distance from the village is 33KM. Nearest Town of the Belladhi village is KARAMADAI and nearest town distance is 3 km. Pincode of Belladhi village is 641104. As per census 2011 village code of village Belladhi is 644355.

TABLE 3.39: DEMOGRAPHICS POPULATION OF VILLAGE BELLADHI

Total Population	Male Population	Female Population
7637	3863	3774

Source: <https://etrace.in/census/village/belladhi-mettupalayam-district-coimbatore-tamil-nadu-644355/>

Sex Ratio of Belladhi Village -Census 2011

As per the Census Data 2011 there are 977 Femals per 1000 males out of 7637 total population of village. There are 1097 girls per 1000 boys under 6 years of age in the village

Literacy of Belladhi Village

Out of total poplation total 5293 people in Belladhi Village are literate, among them 2987 are male and 2306 are female in the village. Total literacy rate of of Belladhi is 75.96%, for male literacy is 84.28% and for female literacy rate is 67.35%.

Worker's profile of Belladhi Village

Total working population of Belladhi is 3526 which are either main or marginal workers. Total workers in the village are 3526 out of which 2508 are male and 1018 are female. Total main workers are 3331 out of which female main workers are 2405 and male main workers are 926. Total marginal workers of village are 195.

CHIKKIRAMPALAYAM VILLAGE

Chikkarampalayam village is situated in Teshil Mettupalayam, District Coimbatore and in State of Tamil Nadu India. Village has population of 10242 as per census data of 2011, in which male population is 5059 and female population is 5183. Total geographical area of Chikkarampalayam village is 1456.29 Hectares. Population density of Chikkarampalayam is 7 persons per Hectares. Total number of house hold in village is 2957.

As per the Census Data 2011 there are 1025 Femals per 1000 males out of 10242 total population of village. There are 1005 females per 1000 males under 6 years of age in the village.

In Chikkarampalayam village population of children with age 0-6 is 874 which makes up 8.53 % of total population of village. Average Sex Ratio of Chikkarampalayam village is 1025 which is higher than Tamil Nadu state

average of 996. Child Sex Ratio for the Chikkarampalayam as per census is 1005, higher than Tamil Nadu average of 943.

TABLE 3.40: CHIKKIRAMPALAYAM VILLAGE POPULATION FACTS

Number of Households	2,957
Population	10,242
Male Population	5,059
Female Population	5,183
Children Population	874
Sex-ratio	1025 females per 1000 males
Literacy	78.81%
Male Literacy	84.99%
Female Literacy	72.79%
Scheduled Tribes (ST) %	9
Scheduled Caste (SC) %	2,045

Source: <https://www.census2011.co.in/data/village/644356-chikkarampalayam-tamil-nadu.html>

Gram Panchayat name of the Chikkarampalayam village is Chikkarampalayam. CD Block name is Karamadai and Teshil/Taluk or sub-district is Mettupalayam. Data Reference year is 2009 of Census 2011. Sub District HQ Name is METTUPALAYAM and Sub District HQ Distance is 10 Km from the village. District Head Quarter name is COIMBATORE and it's distance from the village is 35Km. Nearest Town of the Chikkarampalayam village is KARAMADAI and nearest town distance is 1 km. Pincode of Chikkarampalayam village is 641104. As per census 2011 village code of village Chikkarampalayam is 644356.

TABLE 3.41: DEMOGRAPHICS POPULATION OF VILLAGE CHIKKIRAMPALAYAM

Total Population	Male Population	Female Population
10242	5059	5183

Source: <https://etrace.in/census/village/chikkarampalayam-mettupalayam-district-coimbatore-tamil-nadu-644356>

Sex Ratio of Chikkirampalayam Village -Census 2011

As per the Census Data 2011 there are 1025 Females per 1000 males out of 10,242 total population of village. There are 1005 girls per 1000 boys under 6 years of age in the village.

Literacy of Chikkirampalayam Village

Out of total population total 7383 people in Chikkarampalayam Village are literate, among them 3929 are male and 3454 are female in the village. Total literacy rate of Chikkarampalayam is 78.81%, for male literacy is 84.99% and for female literacy rate is 72.79%.

Worker's profile of Chikkirampalayam Village

Total working population of Chikkarampalayam is 4694 which are either main or marginal workers. Total workers in the village are 4694 out of which 3220 are male and 1474 are female. Total main workers are 4269 out of which female main workers are 3004 and male main workers are 1265. Total marginal workers of village are 425

TABLE 3.42: POPULATION DATA OF STUDY AREA

Sl.No.	Village Name	No of House Holds	Total Population	Male	Female	Total Literate Population	Male Literate	Female Literate	Total Illiterate Population	Male Illiterate	Female Illiterate
1	Belladhi	2155	7637	3863	3774	5293	2987	2306	2344	876	1468
2	Bellapalayam	2703	9131	4606	4525	6392	3517	2875	2739	1089	1650
3	Bilichi	3076	10412	5188	5224	7231	3884	3347	3181	1304	1877
4	Chickadasampalayam	5276	19049	9546	9503	13818	7370	6448	5231	2176	3055
5	Chikkarampalayam	2957	10242	5059	5183	7383	3929	3454	2859	1130	1729
6	Jadayampalayam	2935	10049	5030	5019	7240	3910	3330	2809	1120	1689
7	Pogalur	1321	4671	2332	2339	2874	1599	1275	1797	733	1064
8	Vadavalli	1105	3859	1902	1957	2496	1359	1137	1363	543	820

Source: www.censusindia.gov.in - Tamilnadu 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 Workers Male	Main Workers Female	Main Cultivation Workers	Main Agriculture Workers	Main Other Workers	Non-Worker Population
1	Belladhi	3526	2508	1018	3331	2405	926	476	1039	1773	4111
2	Bellapalayam	4626	3035	1591	4047	2738	1309	418	568	1986	4505
3	Bilichi	5390	3472	1918	4717	3129	1588	652	1048	2951	5022
4	Chickadasampalayam	8539	5860	2679	7450	5371	2079	620	1367	5289	10510
5	Chikkarampalayam	4694	3220	1474	4269	3004	1265	344	662	3151	5548
6	Jadayampalayam	4904	3250	1654	4627	3098	1529	689	1078	2119	5145
7	Pogalur	2524	1552	972	2315	1483	832	410	655	1216	2147
8	Vadavalli	2519	1395	1124	2420	1357	1063	1029	641	660	1340

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

TABLE 3.44: COMMUNICATION & TRANSPORT FACILITIES IN THE STUDY AREA

Sl.No	Village Name	PO	SPO	PTO	T	PCO	MP	IC / CSC	PCF	BS	PBS	RS	NH	SH	MDR	BTR	GR	NWR	FP
1	Belladhi	2	1	2	1	1	1	2	2	1	1	2	2	1	1	1	1	2	1
2	Bellapalayam	2	1	2	1	1	1	2	2	1	1	2	2	1	1	1	1	2	1
3	Bilichi	2	1	2	1	1	1	2	2	1	1	2	1	1	1	1	1	2	1
4	Chickadasampalayam	2	1	2	1	1	1	2	2	2	1	2	2	1	1	1	1	2	1
5	Chikkarampalayam	2	1	2	1	1	1	2	2	2	1	2	2	1	1	1	1	2	1
6	Jadayampalayam	2	1	2	1	1	1	2	2	1	1	2	2	1	1	1	1	2	1
7	Pogalur	2	1	2	1	1	1	2	2	1	1	2	2	2	2	1	1	2	1
8	Vadavalli	2	1	2	1	1	1	2	2	1	2	2	2	2	2	1	1	2	1

bbreviations: PO - Post Office; MP - Mobile Phone Coverage; RS - Railway Station; GR - Gravel Roads; SPO - Sub Post Office; IC / CSC - Internet Cafe/Common Service Centre; NH - National Highways; NWR - Navigate waterways River; PTO - Post & Telegraph office; PCF - Private Courier Facility; SH - State Highways; FP - Foot path; T- Telephone (Landline); BS - Public Bus Service; MDR - Major District Road; PCO - Public call office / Mobile; PBS - Private Bus Service; BTR - Black Topped (Pucca Roads). Note: 1 - Available within the village 2 - Not available

TABLE 3.45: WATER & DRAINAGE FACILITIES IN THE STUDY AREA

Sl.No	Village Name	TP	CW	UCW	HP	TW/BH	S	R/C	T/P/L	CD	OD	CT
1	Belladhi	1	1	1	2	1	1	2	2	1	1	1
2	Bellapalayam	1	1	1	1	1	2	2	2	1	1	2
3	Bilichi	1	1	1	1	1	2	2	2	1	1	2
4	Chickadasampalayam	1	1	1	1	1	2	1	2	1	1	1
5	Chikkarampalayam	1	1	1	2	1	2	2	2	1	1	2
6	Jadayampalayam	1	1	1	2	1	2	1	2	1	1	1
7	Pogalur	1	1	1	1	1	2	1	2	1	1	2
8	Vadavalli	1	1	1	2	1	1	2	2	2	1	2

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

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

TABLE 3.46: OTHER FACILITIES IN THE STUDY AREA

Sl.No	Village Name	ATM	CB	COB	ACS	SHG	PDS	RM	AMS	NC	NC-AC	CC	SF	PL	NPS	APS	BDRO	PS
1	Belladhi	2	1	1	2	1	1	1	2	1	1	1	1	1		1	1	1
2	Bellapalayam	2	2	1	1	1	1	2	1	1	1	1	2	2		1	1	1
3	Bilichi	2	2	1	1	1	1	2	2	1	1	2	1	1		1	1	1
4	Chickadasampalayam	2	2	1	1	1	1	2	1	1	1	1	1	2		1	1	1
5	Chikkarampalayam	2	2	2	1	1	1	2	2	1	1	1	2	1		1	1	1
6	Jadayampalayam	1	2	1	1	1	1	1	2	1	1	1	1	1		1	1	1
7	Pogalur	2	2	2	1	1	1	2	2	1	1	2	2	1		1	1	1
8	Vadavalli	2	2	1	2	1	1	2	2	1	1	1	2	1		1	1	1

Abbreviations: ATM - Automatic Teller Machine; PDS - Public Distribution System (Shop); CB - Commerical Bank; RM - Regular Market; COB - Co-operative Bank; AMS - Agricultural Market Society; ACS - Agricultural Credit Societies; NC - Nutritional Centres; SHG - Self Help Group; NC-AC - Nutritional Centres - Anganwadi Centre; DBRO - Birth & Death Registration Office; PS - Power Supply

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

TABLE 3.47: EDUCATIONAL FACILITIES IN THE STUDY AREA

Sl.No	Village Name	PPS		PS		MS		SS		SSS		DC		EC		MC		MI		PT		VTS		SSD	
		G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P	G	P
1	Belladhi	1	2	1	2	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2
2	Bellapalayam	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	Bilichi	1	2	1	2	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2
4	Chickadasampalayam	1	1	1	2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2
5	Chikkarampalayam	1	1	1	1	1	1	1	1	2	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2
6	Jadayampalayam	1	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
7	Pogalur	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8	Vadavalli	1	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

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

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

TABLE 3.48: MEDICAL FACILITIES IN THE STUDY AREA

SLNo	Village Name	CHC	PHC	PHSC	MCW	TBC	HA	HAM	D	VH	MHC	FWC	NGM-I/O
1	Belladhi	0	0	1	0	0	0	0	0	1	0	0	a
2	Bellapalayam	0	1	1	1	1	0	0	1	0	0	1	b
3	Bilichi	0	1	1	1	1	0	0	1	1	0	1	b
4	Chickadasampalayam	0	3	8	2	3	0	0	3	0	0	3	a
5	Chikkampalayam	0	1	1	1	1	0	0	1	1	0	1	b
6	Jadayampalayam	0	1	1	1	1	0	0	1	0	0	1	a
7	Pogalur	1	1	1	1	1	0	0	1	1	0	1	b
8	Vadavalli	0	0	1	0	0	0	0	0	0	0	0	b

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

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

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

3.6.6 Recommendation and Suggestion

- ## Geo Exploration and Mining Solutions

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.

CHAPTER – 4: ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 General

The environmental impact can be categorized as either primary or secondary, primary impacts which are attributed directly by the project; secondary impacts are those which are indirectly induced. The open cast mining operations involve development of benches, Approach Road, Haul Road, Excavation and handling of material. If adequate control measures are not taken to prevent/mitigate the adverse environmental impacts/lead to damage of the eco-system.

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 for sustainable resource extraction. Based on the baseline environmental status at the existing mine site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed. The various anticipated impacts will be on

- Land environment
- Water Environment
- Air Environment
- Noise Environment
- Socio economic environment
- Solid waste
- Soil environment

In general, the main findings regarding the potential impacts of climate change are Land Use Type, Energy Use, Water use & Dust emission and Biodiversity & rehabilitation.

Whereas, this mining activity is restricted to a small scale mining and the proposal falls in “B1” Category, the surrounding environment is already subjected to mining activities and based on the past weather data its inferred that there is no much of change in the climate data of the region and the district profile has no records or past history of climate change leading to Droughts and floods.

- The mine pit shall act as a rain water harvesting structure and formation of garland drains along the mine lease boundary to divert the surface runoff and collecting the runoff water for greenbelt development and dust suppression activities shall prove beneficial.
- The greenbelt development plan, all along the mine lease boundary, along with the budget allocation for the proposed mitigation measures shall prove beneficial to surrounding environment.
- Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding Climate Change

4.1 Land Environment

4.1.2 Anticipated Impact from Proposed Project

- 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
- Impact due to heritage site, Archaeological sites

4.1.2.1 Mitigation Measures for Proposed Project

- 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., 7.5 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
- There are no Archaeological sites, heritage site in the vicinity of the project area, the topography will be changed due to excavation of rough stone and Gravel.

4.1.3 Soil Environment

4.1.4 Impact on Soil Environment

The top layer of the project site in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low-lying areas. There is no disposal of Gravel. The excavated rough stone will be directly loaded into dumpers to the needy customers.

There will be no disposal of waste water from the quarry operation, No discharge of toxic effluent from the proposed project. The dust emission at working face and haul roads will be controlled by water sprinkling and plantation.

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 are no wastages anticipated in this rough stone and gravel quarrying operation. The entire quarried out materials will be utilized (100%). The overburden in the form of gravel formation the gravel will be also sold to needy customers for the filling and levelling of low-lying areas.

4.2 Water Environment

4.2.1 Anticipated Impact on Surface and ground water

The impact due to quarrying on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during quarrying process. The quarrying activity will not intersect ground water table as the maximum depth of the quarry is 45m and water table is found at 65m in summer season and 60m in rainy season.

The quarrying operation will be carried out well above the water table. There is no intersection of surface water bodies (Streams, Canal, Odai etc.,) in the project area. During rainy season rain water will be collected in the quarry pit and later used for greenbelt development and for the water sprinkling in the haul roads. There is no proposal for discharging of quarry pit water outside the project area.

TABLE 4.1: WATER REQUIREMENTS

<i>Purpose</i>	<i>Quantity calculation</i>	<i>Source</i>
Dust Suppression	1.0KLD	From Nearby Existing bore well
Green Belt	1.4KLD	From Nearby Existing bore well
Sanitation & Drinking	0.6KLD	Approved water vendors
Total	3.0 KLD	

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

Source: Approved Mining Plan Pre-Feasibility Report

Total water requirement in the proposed project is about 3.0 KLD, the water for dust suppression and greenbelt development will be sourced from the mine pit water collected during rainy seasons, the water for domestic purpose and drinking will be sourced from the approved water vendors.

4.2.2 Mitigation Measures:

- Garland drains, settling tank will be constructed along the 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;
- Using flocculating or coagulating agents to assist in the settling of suspended solids during monsoon seasons;
- 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.

Possibilities of water contamination and impact on an aquatic ecosystem health

- Anticipated impact from this proposed mining activity is surface runoff from cleared surfaces, or discharges from the quarry pit or floor, is likely to have elevated levels of sediment (both suspended and dissolved). The quality of the water discharged from the site can have impacts on downstream ecological communities and water users.
- Therefore, Run-off diversion is proposed – 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 with only clear water after the garland drains are enrooted through settlement traps.
- And, the depth of the mining is maximum 67m bgl and the ground water level in the surrounding areas is about 70-75 m bgl and there are no possibilities of encountering any ground water aquifers system and hence no ground water table intersection is anticipated.
- After the completion of quarry operation, the quarried out open pit mine may utilized for pici-culture or temporary reservoir pit for use of water for domestic purpose during dry seasons.
- Therefore, it's inferred that the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the possibilities of water contamination and impact on an aquatic ecosystem health.

4.3 Air Environment

The air borne particulate matter is the main air pollutant in this opencast mining. The mining operation will be carried out by jackhammer drilling (35mm dia) and Hydraulic Excavators will be utilized for excavation of Rough Stone waste.

4.3.1. Anticipated

Impact

- 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 from Proposed Project

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 three proposed Quarry. Air environment and net increase in emissions by Open pit source modelling in AERMOD Software.

4.3.1.2 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 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 4-2.

TABLE 4.2: ESTIMATED EMISSION RATE FOR PROPOSED PROJECT

	Activity	Source type	Value	Unit
Estimated Emission Rate for PM ₁₀	Drilling	g/s	0.096862374	g/s
	Blasting	g/s	0.002062481	g/s
	Mineral Loading	g/s	0.044942048	g/s
	Haul Road	g/s/m	0.00249974	g/s/m
	Overall Mine	g/s	0.068004079	g/s
Estimated Emission Rate for SO ₂	SO ₂	g/s	0.001204722	g/s
Estimated Emission Rate for NO _x	Nox	g/s	0.000095559	g/s

4.3.2 Frame work of Computation & Model details

The prediction included the impact of Excavation, Drilling, Blasting, 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.

Air Pollution Dispersion Modelling.

Baseline Air Quality –

Baseline air quality has been measured at 1 locations in the cluster and 7 locations within the buffer zone of the study area. The 24 - hourly average samples of particulate matters (PM₁₀ and PM_{2.5}), SO₂ and NO_x were measured following the National Ambient Air Quality Standards (NAAQS), 2009. Monitoring data of 8 sampling stations are given below –

Meteorological Data –

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 and monitored continually for study period without break. The station was installed at a height of 4 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. A weather data was collected from IMD, Coimbatore agro for the month of Dec 2022 – Feb 2023 to correlate with site data and found not much of change in the parameters.

FIGURE 4.1: AERMOD TERRAIN MAP

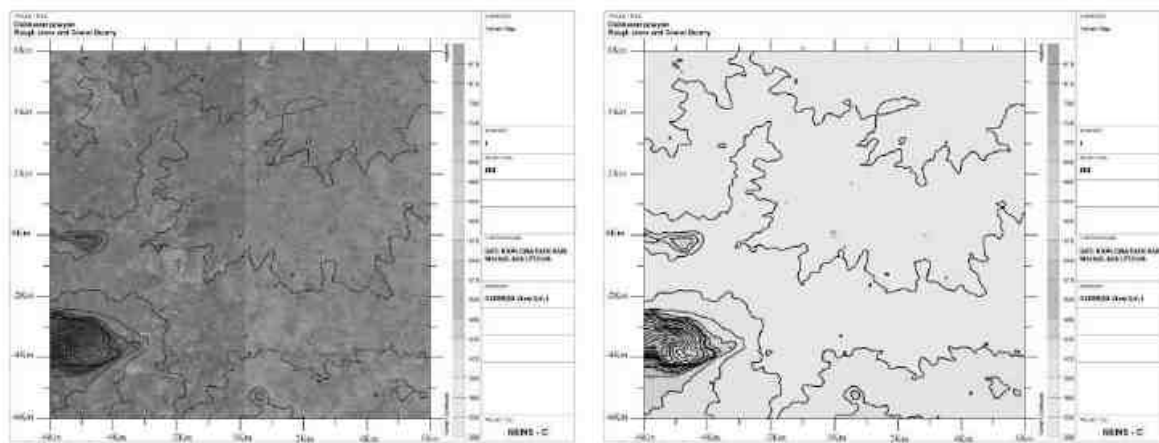


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM₁₀

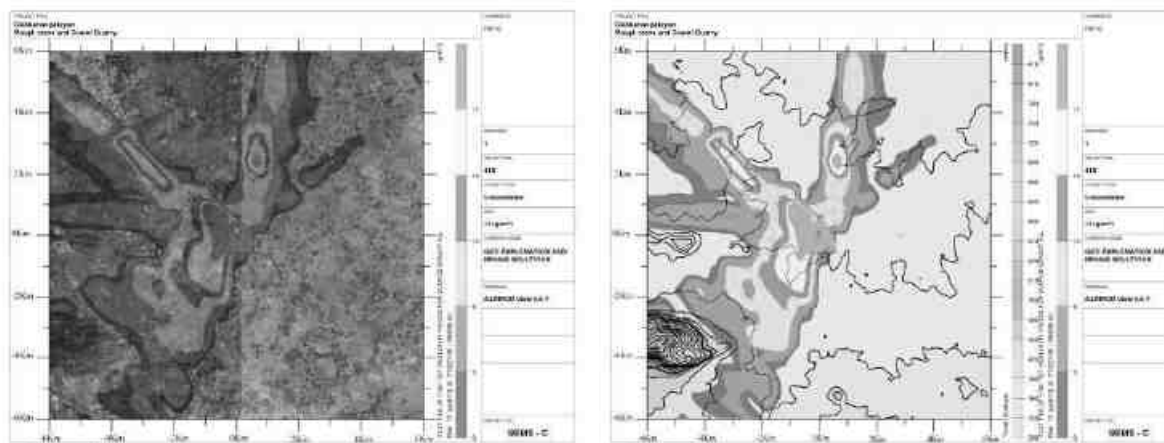


FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF SO₂

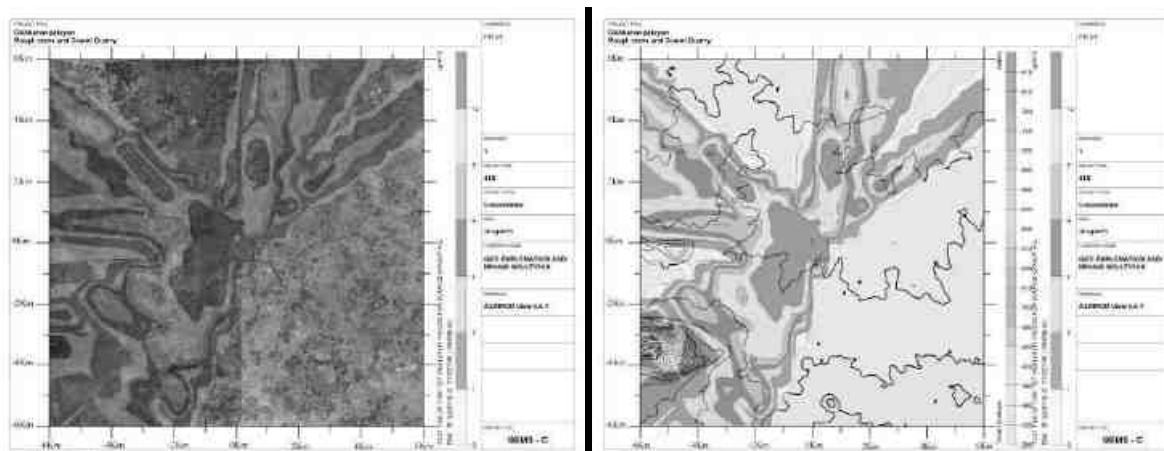
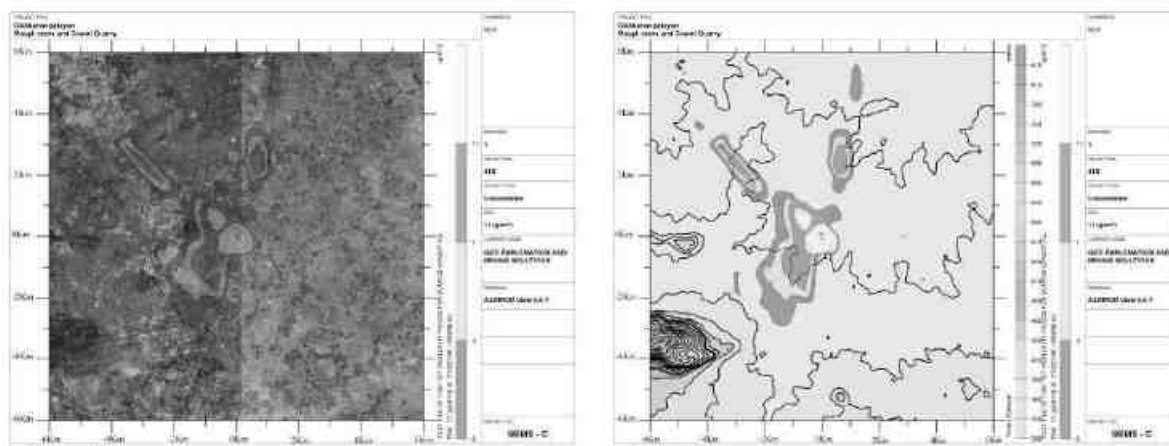
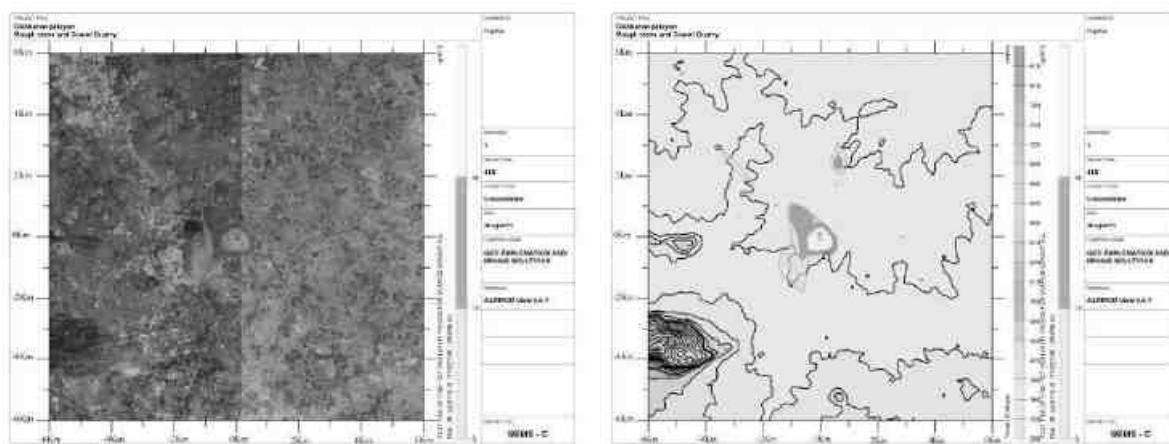


FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF NO_x**FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF FUGITIVE DUST**

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 4.3: 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	11°14'57.00"N 76°58'50.27"E	17	-20	43.7	17.72	61.42
AAQ2	11°15'33.80"N 76°57'59.66"E	-1530	1055	40.9	9.54	50.44
AAQ3	11°15'54.66"N 76°59'7.44"E	541	1693	41.8	7.65	49.45
AAQ4	11°14'22.79"N 76°57'45.77"E	-1954	-1143	40.8	12.01	52.81
AAQ5	11°12'25.30"N 77° 0'4.25"E	2278	-4781	42.5	0	42.5
AAQ6	11°16'19.13"N 77° 0'29.50"E	3049	2461	38.8	3.15	41.95
AAQ7	11°15'19.84"N 76°57'15.75"E	-2871	619	42.1	5.37	47.47

TABLE 4.4: 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	11°14'57.00"N 76°58'50.27"E	17	-20	19.4	10.95	30.35
AAQ2	11°15'33.80"N 76°57'59.66"E	-1530	1055	20.2	10.12	30.32
AAQ3	11°15'54.66"N 76°59'7.44"E	541	1693	20.4	8.69	29.09
AAQ4	11°14'22.79"N 76°57'45.77"E	-1954	-1143	18.9	10.38	29.28
AAQ5	11°12'25.30"N 77° 0'4.25"E	2278	-4781	21.2	0	21.2
AAQ6	11°16'19.13"N 77° 0'29.50"E	3049	2461	19.6	4.88	24.48
AAQ7	11°15'19.84"N 76°57'15.75"E	-2871	619	21.9	7.23	29.13

TABLE 4.5: 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	11°14'57.00"N 76°58'50.27"E	17	-20	6.6	3.59	10.19
AAQ2	11°15'33.80"N 76°57'59.66"E	-1530	1055	7.5	3.32	10.82
AAQ3	11°15'54.66"N 76°59'7.44"E	541	1693	6.7	2.47	9.17
AAQ4	11°14'22.79"N 76°57'45.77"E	-1954	-1143	5.4	3.50	8.9
AAQ5	11°12'25.30"N 77° 0'4.25"E	2278	-4781	7.5	0	7.5
AAQ6	11°16'19.13"N 77° 0'29.50"E	3049	2461	6.9	0	6.9
AAQ7	11°15'19.84"N 76°57'15.75"E	-2871	619	7.2	1.03	8.23

TABLE 4.6: 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	11°14'57.00"N 76°58'50.27"E	17	-20	19.2	11.85	31.05
AAQ2	11°15'33.80"N 76°57'59.66"E	-1530	1055	21.5	2.83	24.33
AAQ3	11°15'54.66"N 76°59'7.44"E	541	1693	23.3	1.18	24.48
AAQ4	11°14'22.79"N 76°57'45.77"E	-1954	-1143	22.2	5.99	28.19
AAQ5	11°12'25.30"N 77° 0'4.25"E	2278	-4781	23.8	0	23.8
AAQ6	11°16'19.13"N 77° 0'29.50"E	3049	2461	22.8	0	22.8
AAQ7	11°15'19.84"N 76°57'15.75"E	-2871	619	21.0	0	21

TABLE 4.7: 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	11°14'57.00"N 76°58'50.27"E	17	-20	64.91	36.15	101.06
AAQ2	11°15'33.80"N 76°57'59.66"E	-1530	1055	57.38	0	57.38
AAQ3	11°15'54.66"N 76°59'7.44"E	541	1693	65.71	0	65.71
AAQ4	11°14'22.79"N 76°57'45.77"E	-1954	-1143	63.05	0	63.05
AAQ5	11°12'25.30"N 77° 0'4.25"E	2278	-4781	64.38	0	64.38
AAQ6	11°16'19.13"N 77° 0'29.50"E	3049	2461	66.56	0	66.56
AAQ7	11°15'19.84"N 76°57'15.75"E	-2871	619	63.40	0	63.4

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 $\mu\text{g}/\text{m}^3$ for PM_{10} , SO_2 & NO_x respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

4.3.4. Mitigation Measure

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 areas

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

Climatic Changes:

- In general, the main findings regarding the potential impacts of climate change are Land Use Type, Energy Use, Water use & Dust emission and Biodiversity & rehabilitation.
- Whereas, this proposed mining activity is restricted to a small scale mining the proposals falls in a cluster situation where the surrounding environment is already subjected to mining activities and based on the past

weather data its inferred that there is no much of change in the climate data of the region and the district profile has no records or past history of climate change leading to Droughts and floods.

- The project area's proposed with land use type of patta land for mining with 5 m height bench with 5 m width bench and Pollution Under Control Certified Machineries is proposed for wining of mineral by opencast mechanized mining method and water consumption are proposed with water tankers from nearby areas and the mine pit itself shall act as a rain water harvesting structure and formation of garland drains along the mine lease boundary to divert the surface runoff and collecting the runoff water for greenbelt development and dust suppression activities shall prove beneficial.
- The greenbelt development plan, all along the mine lease boundary @ 1,820 Nos of trees, along with the budget allocation for the proposed mitigation measures shall prove beneficial to surrounding environment.
- Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding Climate Change leading Droughts and Floods etc.,

4.4 Noise Environment (Impact & Mitigation Measures)

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.

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

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.

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

4.4.1 Anticipated Impact

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 4.8: 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	94
2	Jack Hammer	Yes	88
3	Compressor	No	81
4	Excavator	No	85
5	Tipper	No	84
Total Noise Produced			95.8

*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 95.8 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 4.9: PREDICTED NOISE INCREMENTAL VALUES

Location ID	N1	N2	N3	N4	N5	N6	N7
Maximum Monitored Value (Day) dB(A)	49.5	53.4	46.1	42.5	44.9	47.1	46.5
Incremental Value dB(A)	60.1	47.2	37.8	632.5	26.5	27.6	26.1
Total Predicted Noise level dB(A)	60.5	54.3	46..7	42.9	45.0	47.1	46.5

4.4.2 Mitigation Measures

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

- Time intervals for each quarry during blasting.
- Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.
- Limiting time exposure of workers to excessive noise.
- Proper and regular maintenance of vehicles, machinery and other equipment's.
- The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipment's.
- Speed of trucks entering or leaving the quarry will be limited to moderate speed to prevent undue noise from empty vehicles.
- Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes (occasionally).
- Providing proper noise proof enclosure for the workers separated from the noise source and noise prone equipment.
- Provision of Quiet areas, where employees can get relief from workplace noise.
- The development of green belts around the periphery of the quarry site to attenuate noise.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

4.4.3 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 project area is located 310km NW. The ground vibrations due to the blasting in proposed mine 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

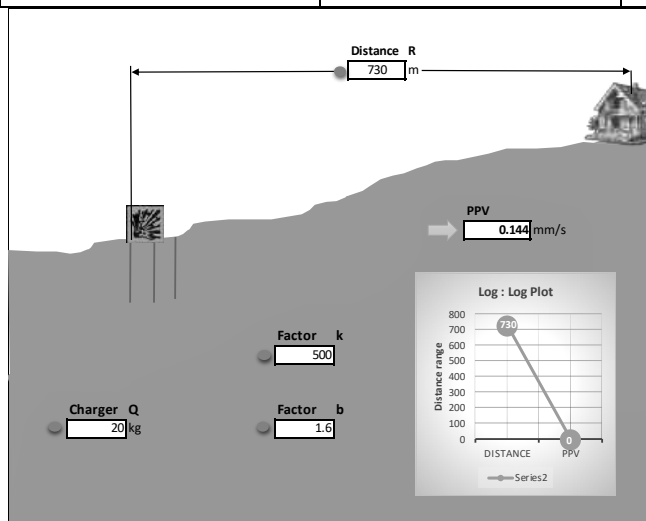
Q = maximum instantaneous charge (kg)

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

R = distance from charge (m)

TABLE 4.10: PREDICTED PPV VALUES DUE TO BLASTING

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
M/s. Sri Blue Metals	20	730m South	0.144



From the above graph, the Maximum charge per blast of 20Kg 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. It is proposed to carry out blasting not exceeding 2kg of Explosives per one blasting round. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

4.4.3.1 Mitigation Measures for Proposed Project

- The blasting operations in the cluster Quarry 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 a greater 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

Mining activities generally result in deforestation, land degradation, and water, air, and noise pollution which directly or indirectly affect the faunal and floral status of the mine area. However, the occurrence and magnitude of these impacts are entirely dependent upon the project location, mode of operation, and technology involved. Existing roads will be used; new roads will not be constructed to reduce the impact on flora. Wildlife is not commonly found in the lease area and its immediate environments because of the lack of vegetal cover and surface water.

4.5.1. Anticipated Impact on Flora

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

4.5.1.1. Mitigation Measures

The project site should have land to develop a greenbelt in and around the limits of the mine, along roads, and another vacant area. The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. Although the project will not lead to any tree cutting, it is proposed to improve the greenery of the locality through plantation services. To avoid dust emissions, the mined materials will be covered with tarpaulin during transportation.

- Plants that grow fast will be preferred.
- Preference for high canopy covers plants with local varieties.
- Perennial and evergreen plants will be preferred.
- The development of the Green Belt is an important aspect for any plant because:
 - a. It improves the ambient air quality by controlling Suspended Particulate Matter (SPM) in the air.
 - b. It helps in noise abatement for the surrounding area.
 - c. It helps in the settlement of new birds and insects within itself.
 - d. It maintains the ecological balance.
 - e. It increases the aesthetic value of the site.

TABLE NO 4.11 LIST OF PLANT SPECIES PROPOSED FOR GREENBELT DEVELOPMENT

S. No	Scientific name	Tamil Name
1	<i>Aegle marmelos</i>	Vilva Maram
2	<i>Albizia lebbeck</i>	Vaagai maram
3	<i>Cassia fistula</i>	Konrai tree
4	<i>Lannea coromandelica</i>	Othiyam
5	<i>Limonia acidissima</i>	Vila maram
6	<i>Syzygium cumini</i>	Naval maram
7	<i>Toona ciliata</i>	Santhana Vembu
8	<i>Ficus hispida</i>	Aththi maram
9	<i>Borassus flabellifer</i>	Panai-maram

Species suitable for abatement of noise and dust pollution		
1	<i>Azadirachta indica</i>	Vembhu maram
2	<i>Ficus religiosa</i>	Arasan maram
3	<i>Ficus hispida</i>	Aththi maram
4	<i>Bombax ceiba</i>	Mul Elavu
5	<i>Syzygium cumini</i>	Naval maram
6	<i>Tamarindus indica</i>	Puliyamaram
7	<i>Mangifera indica</i>	Manga maram
8	<i>Harwickia binata</i>	Anjan maram

(*Source: Guidance for Developing Green belts Manual, CPCB 2000)

4.5.2. Anticipated Impact on Fauna

- No rare, endemic & endangered species are reported in the buffer zone. However, during the course of mining, the management will practice the scientific method of mining with a proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife.
- Fencing around the mine lease area 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.

4.5.2.1. Mitigation Measures

- A suitable plan for the conservation of Schedule-I Species have been prepared and the necessary fund for implementation for the same will be made.
- All the preventive measures will be taken for the growth & development of fauna.
- Creating and developing awareness for nature and wildlife in the adjoining 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.
- Topsoil has a large number of seeds of native plant species in the mining area.
- Checks and controls the movement of vehicles in and out of the mine.
- Undertaking mitigative measures for a conducive environment for the flora and fauna in consultation with Forest Department.
- A dust suppression system will be installed within the mine and periphery of the mine.

TABLE 4.12: GREENBELT DEVELOPMENT PLAN

Year	No. of trees proposed to be planted	Survival %	Area to be planted	Name of the species
I	It is proposed to plant 1820 Nos of trees in the 1 st year	80 %	7.5m Safety barrier, Panchayat Road and nearby village roads	Neem, Pongamia, Pinnata, Ashoka etc.,

TABLE 4.13: BUDGET FOR GREEBELT DEVELOPMENT PLAN

ACTIVITY		YEAR					RATE	COST (Rs.)
		I						
Plantation under safety zone, approach road and nearby village roads	Nos.	1820					@200 Rs	3,64,000
	Cost	3,64,000					Per sapling	
Wire Fencing (In Mtrs) 910 Mtrs		2,73,000	-	-	-	-	@300 Rs Per Meter	2,73,000
Garland drain (In Mtrs) 820 Mtrs		2,46,000	-	-	-	-	@300 Rs Per Meter	2,46,000
TOTAL								8,83,000/-

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. Impact on Aquatic Biodiversity

Mining activities will not disturb the aquatic ecology as there is no effluent discharge proposed from the Rough Stone and Gravel quarry. There is no natural perennial surface water body within the mine lease area, like wetlands, rivers streams, lakes, and farmer sites. Belladhi Lake is located about 6.5km on the northwest side. There is no impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. Aquatic biodiversity is observed in the study area.

4.5.4. Impacts on Bird Fauna:

The project does not involve any tree felling or removal of vegetation. Therefore, there may not be loss of nesting and roosting habitat of avian fauna.

4.5.5. Impacts on wildlife

There is no National Park, Wildlife Sanctuary, Biosphere Reserve, Wildlife corridors and Tiger/Elephant Reserve found within 10 km radius of the project site.

4.5.6. Impact Assessment on Biological Environment

This chapter highlights the various impacts on ecology and biodiversity due to mining activity. The major adverse impacts due to pre-mining and mining phases are loss of habitat, biodiversity, rare flora and fauna, fisheries and other

aquatic life, migration of wildlife, and overall disruption of the ecology of the area. During the post-mining phase after land restoration, ecology may effectively improve. A detail of impact and assessments was mentioned in

Details of anticipated issues for the next operation period were summarized with possible impacts and mitigation measures to meet the problem (Table No.4.14.).

TABLE NO: 4.14. ANTICIPATED IMPACT OF ECOLOGY AND BIODIVERSITY IN BILICHI VILLAGE, ROUGH STONE AND GRAVEL QUARRY

S. 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)	The site possesses Common floral (not tree) species. Clearance of these species will not result in loss of flora.	Less severe	No immediate action is required. However, a Greenbelt /plantation will be developed on the project site and on the periphery of the project boundary, which will improve the floral and faunal diversity of the project area.
		Site specific loss of associated faunal diversity (Partial impact)	The site supports only common species, which use a 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 for 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 the generation of dust (Particulate matter) due to haul roads and emission of Sulphur Dioxide, Nitrogen Dioxide, Carbon monoxide, 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 is far from the core area.	Less severe	All vehicles will be certified for appropriate Emission levels. More plantations have been suggested Upgrade the vehicles with alternative fuels such as biodiesel, methanol, and biofuel around the mining area.

TABLE NO. 4.15. OVERALL ECOLOGICAL IMPACT ASSESSMENTS OF BILICHI VILLAGE, ROUGH STONE AND GRAVEL QUARRY, COIMBATORE DISTRICT, TAMIL NADU.

S.No	Attributes	Assessment
1	Impact of mining activity on agricultural land nearby the proposed project site.	Agricultural land is located away from the proposed project site. There are no impacts on the agricultural land & Horticulture. Kindly refer to the conclusion.
	Activities of the project affect the breeding/nesting sites of birds and animals	No breeding and nesting site was identified in the mining lease site. The fauna sighted mostly migrated from the buffer area.
2	Located near an area populated by rare or endangered species	No Endangered, Critically Endangered, or vulnerable species were sighted in the core mining lease area.
3	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/ coastline/estuary/sea	There is no National Park/ Wildlife Sanctuary/ Reserve Forest/ Mangroves and Eco-Sensitive zone/ Critically polluted area/ HACA/CRZ located within 10 km radius of the area.
4	The proposed project restricts access to waterholes for wildlife	‘No ‘
5	Proposed mining project impact surface water quality that also provides water to wildlife	‘No ‘scheduled or threatened wildlife animals are sighted regularly core in the core area.
6	Proposed mining project increase siltation that would affect nearby biodiversity areas.	Surface runoff management such as drains is constructed properly so there will be no siltation effect in the 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 the chances of water becoming polluted is low.

9	Mining projects affect the forest-based livelihood/ any specific forest product on which local livelihood depended.	'No'
10	The project likely to affect migration routes.	'No 'migration route was observed during the monitoring period.
11	The project is likely to affect the 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 is likely to affect wetlands, Fish breeding grounds, and marine ecology.	'No'. Wetland was not present in the near core Mining lease area. No breeding and nesting ground is present in the core mining area.

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

4.6 Socio Economic

4.6.1 Construction Phase

Anticipated Impacts:

- ♣ No. of people will get employment during the construction stage resulting in the ancillary development and growth. Nearby Local people will be given preference for employment on the basis of their skill and experience.
- ♣ Further due to proposed project, influx of working community will also generate an indirect employment through development of nearby market/ shops, trade centers, activities, transportation etc.
- ♣ Population influx during the construction phase can introduce various water and vector borne diseases which can lead to various unhygienic health problems in the area by disturbing the existing sanitation infrastructure.
- ♣ Rapid diverse population influx at the project site can create unusual behavioural activity such as worker-community conflicts, increase violence such as theft/stabbing, and increased consumption of drugs/alcohol within the area.
- ♣ Impacts on the health of nearby villagers can be envisaged due to the transportation activities leading to short term exposure of fugitive dust, resulting in various acute diseases such as increased eye irritation, nausea, headache etc.

Mitigation measures:

- ♣ Deploying of mobile toilets or the construction of temporary toilets will be done near to the construction site with the adequate water supply.
- ♣ Awareness programme will be conducted before the monsoon season regarding the spread of water borne/ vector diseases.
- ♣ Mosquito repellents will be provided in the nearby villages and at construction site to avoid the spread of diseases.
- ♣ To overcome behavioral impact, proper site in charge with timely supervision will be done. In advance, facilities with equipped medical and safety services will be provided to take a control over the incident/violence if any caused.
- ♣ To overcome behavioral impact, supervision will be done by site in charge. In advance, emergency cell will be formed with fully equipped communication system, medical and safety services to take control over the incident/violence caused.

4.6.2 Operation Phase:

Anticipated Impacts:

♣ Long term exposure to the pollutants such as PM, SO₂ and NO₂ Cement dust have a potential to create health impacts such as risk of cardiovascular and respiratory disease, eye irritation, bronchitis, lung damage, increased heart ailments, etc.

♣ Other impacts, associated with the applied for rough stone and Gravel quarry Project will create a positive impact as it will result in the overall development of the area in respect to the infrastructure development, educational growth, health facilities etc., as a part of the CSR activity.

Mitigation Measures:

♣ In order to mitigate the long-term health impacts, efficient Air Pollution Control Equipment (APCE) like Bag House / Bag Filter / ESP will be installed at all major stacks to keep the emissions within the permissible limits. To reduce the gaseous emission, Pyro-process itself acts as a long SO₂ scrubber and De - NO_x system will be installed for fuel burning along with calciner for low NO_x formation. To reduce fugitive emission from vehicles and machineries will be regularly monitored and maintained.

♣ For emergency, proposed to develop an occupational health center for its employees and nearby villagers.

4.6.3 Impact Evaluation:

Table 4.6.1 Impact Evaluation *Impact evaluation is given in table below.*

Impact Evaluation Element	Impact on socio economics due to the applied for rough stone and Gravel quarry over an extent of 3.63.65ha of Patta lands in S.F.Nos. 343,344/1, & 65/1A, Belladhi & Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu State.			
Potential Effect/ Concern	Proposed project will provide direct & indirect employment opportunities to the local residents, which will help to increase their earning and better living standard as well as further up-liftment of socio-economic status of the area.			
Characteristics of Impacts				
Nature	Positive		Negative	Neutral
	✓			
Type	Direct	Indirect	Cumulative	
			✓	
Extent	Project area	Local	Zonal	Regional
	✓			
Duration	Short time		Long term	
			✓	
Intensity	Low		Medium	High
			✓	
Frequency	Remote (R)	Occasional (O)	Periodic (P)	Continuous (C)
			✓	

Significance of Impact				
Significance	Insignificant	Minor	Moderate	Major
			✓	

4.6.4 Mitigation Measures for Proposed Project

- 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.
- No villages in the proposed mineral transportation route.
- Mineral loaded Vehicles will not allow during school hours (Morning 8 AM to 10 AM & Evening 4.30PM to 5.30PM).

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 any of the proposed quarry.

4.9 *Mine Closure*

Mine closure plan is the most important environmental requirement in mining projects. 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 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 mining plan. The mine closure is a part of approved mine plan and activities of closure shall be carried out as per the process described in mine closure plan.

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

5.0 Introduction:

Consideration of alternatives to a project proposal is a requirement of EIA process. This quarry is site specific. The site has been selected based on geological investigation and exploration and from the Existing quarry pits around the project site. Drilling, Blasting, Excavation, Loading & Transportation will be carried out in this quarrying operation.

- This area denotes the indicative of flow pattern of the rock mass in N30°E to S30°W with dipping SE60°.
- Transportation facility for materials & manpower.
- Overall impact on environment and mitigation feasibility.
- Socio – economic background.

Enough infrastructure exists and lesser resources are required to be deployed. Since, any major construction for infrastructure is not required and hence does not affect the environment considerably.

5.1 Factors Behind the Selection of Project Site

Rough Stone and Gravel Quarry Projects at Belladhi & Chickkarampalayam Villages is a site specific. The proposed mining lease 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 within the project areas.
- Availability of skilled, semi-skilled and unskilled workers in this region.
- All the basic amenities such as medical, fire-fighting, 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 – III, there is no major history of landslides, earthquake, subsidence etc., recorded in the past history

5.2 Analysis of Alternative Site

The mineral deposits are site specific in nature; hence, question of seeking alternate site does not arise for this project.

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 and Gravel in the area. The quarry areas fall in the clusters has following advantages –

- As the mineral deposition is homogeneous and batholith formation, therefore opencast method of working out deposit is preferred over underground method
- The material will be loaded after sprinkling with water 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 selected for this project. 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.

CHAPTER – 6: ENVIRONMENTAL MONITORING PROGRAMME

6.0 *General*

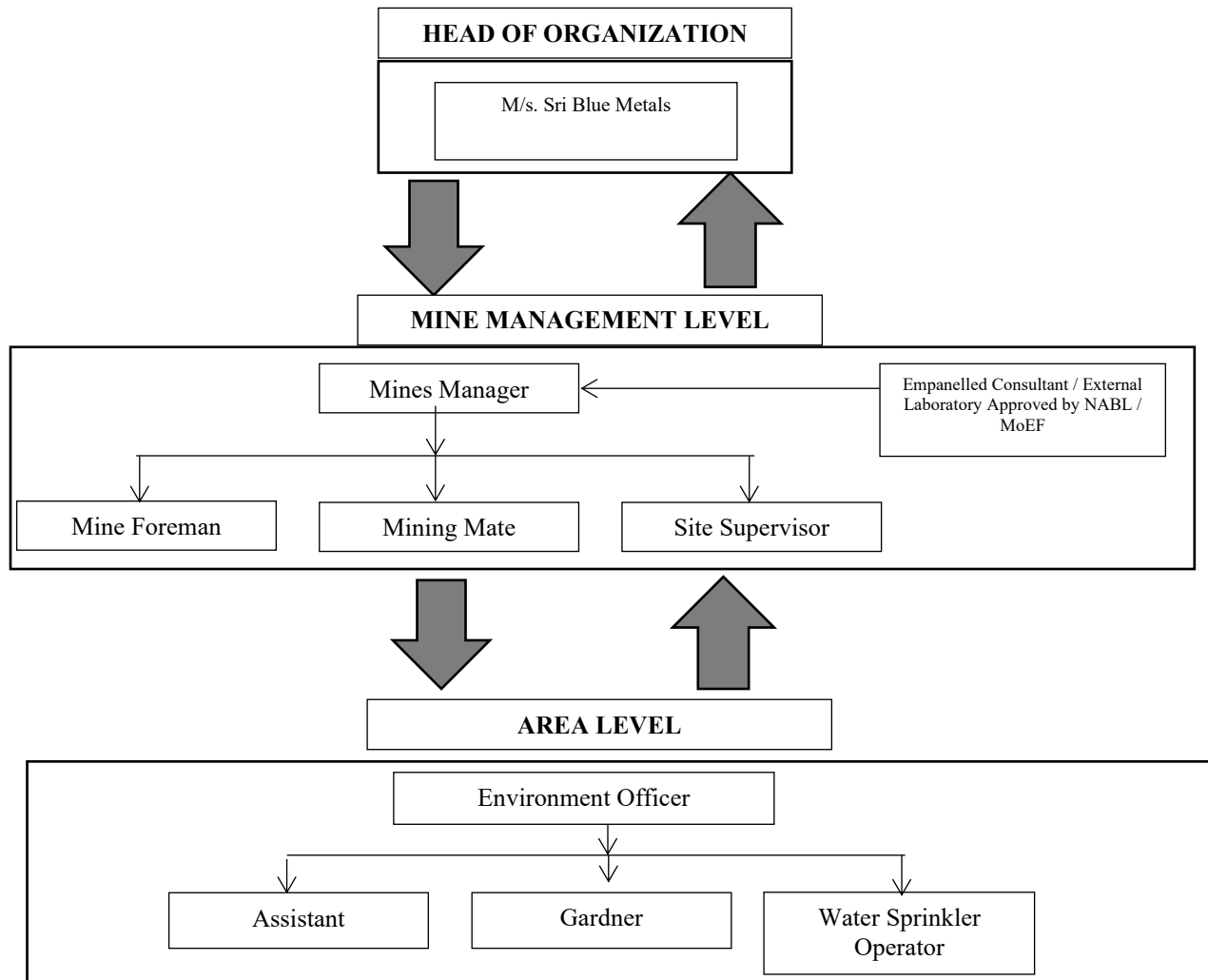
Environmental Monitoring will be taken up for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by MoEF & Consent to Operate issued by the State Pollution Control Board. Monitoring reports will be submitted to regulator as per statutory requirements. The entire monitoring work will be carried out by MoEF & CC / NABL recognized laboratories.

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.

6.1 *Methodology of Monitoring Mechanism*

Implementation of EMP and periodic monitoring will be carried out by the proponents and respective quarry owners in the cluster Quarry. A comprehensive monitoring mechanism has been devised for monitoring of impacts due to proposed project; Mine Management Level environmental protection measures like dust suppression, treatment and recycling of waste water, control of noise due to blasting and Ground vibration, maintenance of machinery and vehicles, housekeeping in the mine premises, plantation, implementation of other hand, implementation of area level protection measures like plantation and green Environmental Management Plan and environmental clearance conditions will be monitored by the proponent. On the belt development, environmental quality monitoring etc.,

An environment monitoring cell (EMC) will be constituted at the quarry consisting of following members to monitor the implementation of EMP and other environmental protection measures.

FIGURE 6.1 ENVIRONMENTAL MONITORING CELL

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 programs at site and data thus generated will be regularly furnished to the State regulatory agencies. 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 monthly, half-yearly and yearly. The half-yearly reports will be 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).

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 the project
2	Soil Quality Control Measures	Before commissioning of the project	Immediately after the commencement of the 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

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 Environmental Policy of the Proponent

The project proponents in the proposed Quarry are committed to ensure that:

- Protect the environment by control and prevention of pollution and promote green environment.
- To operate the quarry with an objective of no injuries and accidents at the work place and provide a safe work place for our employees, contractors and others who perform their duties.
- Adequate health care will be taken to all the employees and create process to reduce the adverse effect of the operations on Health of the employees.
- Provide safety appliance and continuous training in safety to employees to ensure safe production and achieve the target of zero accidents.
- Develop safe working methods and practices, remove unsafe work conditions and consider all the aspects at the early stages of process development to provide safe working atmosphere.
- Communicate Safety, Health and Environmental Policy to all employees for better understanding and practice.

6.5 Budgetary Provision for Environmental Monitoring Programme

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 total cost for Environmental Monitoring Programme for one proposed quarry for the mining plan period is Rs 3,80,000/-.

TABLE 6.3 ENVIRONMENT MONITORING BUDGET

Parameter	Sl.Nos	Capital Cost	Recurring Cost
Air Quality, Meteorology, Water Quality Hydrology, Soil Quality, Noise Quality Vibration Study, Greenbelt	M/s. Sri Blue Metals	Rs.3,80,000/-	Rs.76,000/-
TOTAL		Rs. 3,80,000/-	Rs.76,000/-

Source: Approved Mining Plans

6.6 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 proponent with Environmental Monitoring cell and necessary corrective measures will be carried out. 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
- SEIAA, Chennai, Tamil Nadu

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

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

CHAPTER – 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 cluster 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 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	▪ 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; ▪ 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 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& Blasting	Due to improper and unsafe practices Due to high pressure of compressed air, hoses may burst Drill Rod may break	- 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.
3	Blasting	Fly rock, ground vibration, Noise and dust. Improper charging, stemming & Blasting/fining of blast holes Vibration due to movement of vehicles	- The maximum charge per delay and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blast 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 is and will be distinctly demarcated (by means of red flags)
4	Transportation	Potential hazards and unsafe workings contributing to accident and injuries Overloading of material	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

		While reversal & overtaking of vehicle Operator of truck leaving his cabin when it is loaded.	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
5	Natural calamities	Unexpected happenings	▪ Escape Routes will be provided to prevent inundation of storm water ▪ Fire Extinguishers & Sand Buckets
6	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	▪ Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

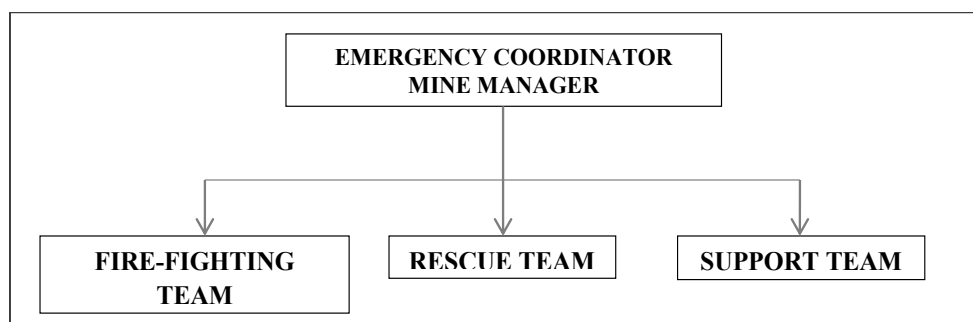
7.3 Disaster Management Plan

Natural disasters like Earthquake, Land slides has not been recorded in the past history as the terrain is categorized under seismic zone III. 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. 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

(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 carryout 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 is proposed at strategic locations within the quarry.

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
- Fire fighting and first-aid provisions in the mines office complex and mining area will be 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 the quarry in phase manner
- Cleaning of mine faces will be carried out regularly
- Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- A blasting SIREN will be used at the time of blasting for audio signal.
- Checking of blasting area for any un-blasted hole or material.
- Warning notice boards indicating the time of blasting and NOT TO TRESPASS will be displayed at prominent places

7.4 CUMULATIVE IMPACT STUDY

Totally 4 Quarry within the cluster, there are 1 Nos of Proposed quarry, 3 existing Quarry falls in the cluster. The list of Quarry is as below –

TABLE 7.3: LIST OF QUARRY IN THE CLUSTER

PROPOSED QUARRY				
CODE	Name of the Proponent and Address	S.F. Nos & Village	Extent in Ha	Status
P1	M/s. Sri Blue Metals.	65/1A(P) - Chikkarampalayam – 343 & 344/1 - Bellathi Village	3.63.65	File No. 11986 ToR Identification No.TO25B0108TN5806008N Dated.18.06.2025
P2	Tvl. Saravana Blue Metals	69 & Chikkarampalayam	7.51.50	Pending with SEIAA
P3	Tvl. Saravana Blue Metals	68/2C(P) & Chikkarampalayam	1.30.00	Pending with SEIAA
TOTAL			12.45.15	
EXISTING QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos	Extent in Ha	Lease Period
E-1	Tvl. Sri Blue Metals	77/1B & 421/2B (Part) & Chikkarampalayam	3.11.0	14.02.2023 to 13.02.2028
E-2	M. Muthammal	77/2E(P), 77/2F(P) & 79/1A (P)	1.82.0	27.03.2023 to 26.03.2028
TOTAL			3.11.0	
EXPIRED QUARRIES				
EX-1	Thiru. S. Gnanasekaran	77/2D(P) & Chikkarampalayam	1.01.2	01.10.2018 to 30.09.203
EX-2	Tmt.Kaveriammal	77/2B(P) & Chikkarampalayam	0.99.0	24.12.2018 to 24.12.2018
TOTAL CLUSTER EXTENT			17.38.15	

Note:-

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

TABLE 7.4: SALIENT FEATURES OF THE PROPOSAL PROJECT –P1

Name of the Quarry	M/s. Sri Blue Metals Rough Stone & Gravel Quarry	
Toposheet No	58-A/15 and 58-A/16	
Land Classification	It is a Patta Land, Jointly Registered in the name of the Tmt.G. Chandra and Tmt. P. Jayalakshmi, vide Patta Nos.1236, 3819 and 2949. The Applicant has obtained consent from the Pattadhars.	
Latitude between	11°14'59.04"N to 11°15'07.61"N	
Longitude between	76°59'05.01"E to 76°59'11.83"E	
Highest Elevation	352m AMSL	
Proposed Depth of Mining as per Tor	67m (2m Gravel + 65m Rough Stone)	
Geological Resources	Rough Stone in m ³	Gravel m ³
	23,63,725	72,730
Mineable Reserves	Rough Stone in m ³	Gravel m ³
	6,88,975	55,218
Yearwise production for first five years	Rough Stone in m ³	Gravel m ³
	3,65,250	55,218
Yearwise production for Second five years	Rough Stone in m ³	Gravel m ³
	3,23,725	-
Ultimate Pit Dimension	XY-AB = 147m (L) x 141m (W) x 67m (D) Bgl X1Y1 - CD = 93m (L) x 74m (W) x 32m (D) Bgl	
Water Level in the surrounds area	70 - 75 m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Topography	The lease applied area is plain terrain. The area has gentle sloping towards Northeastern side and altitude of the area is 352m (max) above from Mean Sea level. The area is covered by 2m thickness of Gravel and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pits. The Water level in the surrounding area is 70m in summer and at 75m in rainy seasons below general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 1205.8 mm.	
	Jack Hammer	8 Nos
	Compressor	2 Nos
	Excavator with bucket and rock breaker	2 Nos
	Truck	4 Nos
	Water Sprinkling Tanker	1 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	
Project Cost	Rs.2,98,38,000/-	
CER Cost	Rs 5,00,000/-	
Nearby Water Bodies	Water bodies	Distance & Direction
	Odai	670m NW
	Tank	700m NE

	Belladhi Lake	1.1km West
	Odai	1km West
	Odai	1.3km SE
	Bhavani River	6.8km NE
Greenbelt Development Plan	Proposed to plant 1820 trees in the 7.5m Safety Zone, Village Road and panchayat roads.	
Proposed Water Requirement	3.0 KLD	
Nearest Habitation	730m South	

TABLE 7.5: SALIENT FEATURES OF THE PROPOSAL PROJECT –E1

SALIENT FEATURES OF PROPOSAL “E1”		
Name of the Mine	M/s. Sri Blue Metals Rough stone and Gravel quarry	
Land Type	It is a Patta lands	
S.F. No.	77/1B and 421/2B(Part)	
Extent	3.11.0 Ha	
Previous quarry details	It is a Patta land. S.F.No.77/1B Registered in the name of Tmt. G. Chandra vide Patta No.1658 and S.F.No.421/2B Registered in the name of Thiru. S. Gnanasekaran vide Patta No.861. The applicant has obtained consent from the pattadars.	
Existing pit dimension	Pit I: 181m (L) X 139m (W) X 27m (D) Bgl Pit II: 116m (L) X 55m (W) X 25m (D) Bgl	
Proposed depth of mining	40m bgl	
Geological Reserves	Rough Stone	Gravel
	10,47,328 m ³	2,412 m ³
Mineable Reserves	Rough Stone	Gravel
	2,75,846 m ³	-
Proposed production for five-year mining plan period	Rough Stone	Gravel
	2,23,397 m ³	-
Mining Plan Period / Lease Period	5 years	
Ultimate Pit Dimension	Pit I: 181m (L) X 139m (W) X 52m (D) Pit II: 116m (L) X 55m (W) X 42m (D)	
Toposheet No	58-A/16	
Latitude	11°14'47.63"N to 11°14'54.52"N	
Longitude	76°58'44.12"E to 76°58'53.96"E	
Water Level	65 to 60m BGL	
Proposed Water Requirement	3.5 KLD	
Machinery	Jack Hammer	8
	Compressor	2
	Hydraulic Excavator	1
	Tippers	3
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	31 Nos	
Total Project Cost	Project Cost	Rs. 60,13,000/-
	EMP Cost	Rs.3,80,000/-
	Total	Rs.61,34,000
CER cost	Rs. 5,00,000	
Nearby Water Bodies	Canal – 90m - West	

TABLE 7.6: SALIENT FEATURES OF THE PROPOSAL PROJECT –E2

Name of the Quarry	Tmt. M. Muthammal Rough Stone & Gravel Quarry	
S.F.No	77/2E(P), 77/2F(P) & 79/1A(P)	
Extent	1.82.0 Ha	
Toposheet No	58-A/16	
Latitude between	11°14'45.62"N to 11°14'50.65N	
Longitude between	76°58'49.83"E to 76°58'57.68"E	
Highest Elevation	340m AMSL	
Proposed Depth of Mining	41m	
Geological Resources	Rough Stone in m ³	Gravel m ³
	3,96,853	480
Mineable Reserves	Rough Stone in m ³	Gravel m ³
	79,149	-
Ultimate Pit Dimension	Pit I: 60m (L) X 38m (W) X 41m (D) Pit II: 173m (L) X 64m (W) X 41m (D)	
Existing Pit Dimension (Maximum)	Pit I: 60m (L) X 38m (W) X 20m (D) Pit II: 98m (L) X 46m (W) X 24m (D) Pit II: 82m (L) X 64m (W) X 15m (D)	
Water Level in the surrounds area	65 - 60m bgl	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Machinery proposed	Jack Hammer	2Nos
	Compressor	1 No
	Excavator with bucket and rock breaker	1 No
	Tipper	1 No
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	15Nos	
Project Cost	Rs.27,57,000/-	
EMP Cost	Rs. 3,80,000/-	
CER Cost	Rs 31,37,000/-	
Nearby Water Bodies	Water bodies	Distance & Direction
	Odai	300m West
Proposed Water Requirement	3.0 KLD	
Nearest Habitation	600m- SE	

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

Impact on Air Environment –

Calculating the Cumulative Load of Mining within the cluster is as shown in table 7.5 & 7.6.

TABLE 7.8 CUMULATIVE PRODUCTION LOAD OF ROUGH STONE IN CLUSTER

Proposed Quarry Project				
Quarry	Production for Ten/five-year plan period considering safety parameters	Per Year Production in m³	Per Day Production in m³	Number of Lorry Load Per Day @ 12m³ per load
P1	6,88,975	68,897	230	20Trips /Day
List of Existing Quarry				
Quarry	Production for five-year plan period	Per Year Production in m³	Per Day Production in m³	Number of Lorry Load Per Day @ 12m³ per load
E-1	2,23,397	44,679	149	13 Trips /Day
E-2	79,149	15,829	53	5Trips /Day
G. Total	9,91,521	1,29,405	432	38 Trips/ Day

TABLE 7.9: CUMULATIVE PRODUCTION OF GRAVEL IN CLUSTER

Proposed Quarry Project				
Quarry	Production for three-year plan period considering safety parameters	Per Year Production in m³	Per Day Production in m³	Number of Lorry Load Per Day @ 12m³ per load
P1	55,218	18,406	62	5 Trips /Day
List of Existing Quarry				
Quarry	Production for three-year plan period	Per Year Production in m³	Per Day Production in m³	Number of Lorry Load Per Day @ 12m³ per load
Nil				
G. Total	55,218	18,406	62	5 Trips/ Day

Based on the above production quantities the emissions due to various activities in all the 1 proposal quarry includes various activities like ground preparation, excavation, handling and transport of mineral. 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 7.7.

TABLE 7.11: INCREMENTAL & RESULTANT GLC WITHIN CLUSTER

PM₁₀ in µg/m³	
Location	AAQ1 – CORE
Background (average)	43.7
Anticipated Incremental due to the proposals	17.72
Resultant	61.42
NAAQ Norms	100 µg/m ³
PM_{2.5} in µg/m³	
Background (average)	19.4
Highest Incremental	10.95
Resultant	30.35
NAAQ Norms	80 µg/m ³
SO₂ in µg/m³	
Location	AAQ1 – CORE
Background (average)	6.6
Anticipated Incremental due to the proposals	3.59
Resultant	10.19
NAAQ Norms	80 µg/m ³
NO_x in µg/m³	

Location	AAQ1 – CORE
Background (average)	19.2
Anticipated Incremental due to the proposals	11.85
Resultant	31.05
NAAQ Norms	80 µg/m ³

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 Quarry 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 7.12: PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER

Location ID	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near South from the cluster 730m	43.4	48.7	49.6	55
Habitation Near South East from the cluster 680m	42.9	47.6	48.9	
Habitation Near South East from the cluster 520m	39.3	50.6	50.9	

Source: Lab Monitoring Data

The incremental noise level is found within the range of 48.7 – 50.6 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 all the 3 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 all the 3 mines is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease areas. 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. Nearest Habitations from Cluster is tabulated in Table 7.9

The ground vibrations due to the blasting in all the mines are calculated using 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 7.13: GROUND VIBRATIONS AT MINES

PROPOSAL QUARRY			
Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	20	730	0.144
EXISTING QUARRY			
Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
E1	20	380	0.409
E2	20	600	0.197

Source: PPV Calculation

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 mines shall provide employment and revenue will be created to government

TABLE 7.14: SOCIO ECONOMIC BENEFITS FROM CLUSTER MINES

PROPOSAL QUARRY			
Code	Employment	Project Cost	CER
P1	39	Rs.2,98,38,000 /-	Rs 3,00,000/-
EXISTING QUARRY			
Code	Employment	Project Cost	CER
E1	35	Rs. 56,33,000/-	Rs 5,00,000/-
E2	15	Rs 31,37,000/-	Rs 5,00,000/-
Grand Total	89	Rs. 3,86,08,000/-	Rs. 13,00,000/-

A total of 39 people will get employment due to this cluster, in this already 50 people employed in the existing Quarry. For the Existing Quarry Corporate Environment Responsibility (CER) allocated as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.

For the proposed projects it is recommended to spent Rs 3,00,000/- towards CER Activities in the nearby Government School for Renovation or reconstruction of Existing Toilet, Providing Note books to the school library and Plantation in the school ground any other recommendations by the School Head masters.

- In this cluster from the 1 Proposal, it is proposed to spent Rs 3,00,000/- for CER activities

Considering 500 Nos of trees per hectare it is proposed to plant about 1820nos. of saplings in the proposed project for the Mining plan period in safety barrier, Un utilized area and village roads with survival rate 80% (Anticipated). 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 7.15: GREENBELT DEVELOPMENT BENEFITS FROM PROPOSAL MINE

Proposed project				
CODE	No of Trees proposed to be planted	Survival %	Area to be covered	Name of the Species
M/s. Sri Blue Metals	1820	80	7.5m Safety barrier, Panchayat road and Village roads	Neem, Pongamia, Pinnata, ashoka etc.,

It is anticipated that there shall growth of native species of Neem, Pongamia, Pinnata, etc., in the Proposal at a rate due to these proposals 1820 Trees Planted over a period of 10 Years with Survival Rate of 80%. Besides every individual lease holder will plant Saplings in the School ground as part of CER activities.

7.5 PLASTIC WASTE MANAGEMENT PLAN

All 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

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

7.6 CLUSTER MANAGEMENT COMMITTEE

The cluster management committee is proposed to form including of 1 Proposed quarry and 2 existing quarries total extent of the cluster is 17.38.15 Ha

In the cluster management committee, the following Environmental Management plan will be followed the activities such as

- Transportation of Minerals and blasting activities with the coordination between the individual quarry owners.
- Sprinkling of water regularly thrice a day in the mutual understanding with the quarry owners
- Carrying out blasting operation as specified times by the Mines Managers and as per the EIA report
- Usage of Haul roads in a time specified by the Cluster Management Committee
- Following Safe operating procedure prescribed by the Mines Manager during natural calamities
- Planting Trees in the Government Land, School and within the project site
- Celebrating Safety month, Environmental Month along with the Mines Managers in every six months once
- Regularly follow the health of the workers and take medical examination as per the DGMS norms under the guidance of Mines Manager
- Meet at Association Hall monthly once to review the Environmental Management and Safety activities prescribed by the Cluster Management Committee
- We have read and understood all the above steps and we ensure to follow these specific steps Quarry owners in the Cluster management committee

Quarries in the Cluster Management Committee

PROPOSED QUARRY				
CODE	Name of the Proponent and Address	S.F. Nos & Village	Extent in Ha	Status
P1	M/s. Sri Blue Metals.	65/1A(P) - Chikkarampalayam – 343 & 344/1 - Bellathi Village	3.63.65	File No. 11986 ToR Identification No.TO25B0108TN5806008N Dated.18.06.2025
P2	Tvl. Saravana Blue Metals	69 & Chikkarampalayam	7.51.50	Pending with SEIAA
P3	Tvl. Saravana Blue Metals	68/2C(P) & Chikkarampalayam	1.30.00	Pending with SEIAA
TOTAL			12.45.15	
EXISTING QUARRIES				
CODE	Name of the Proponent and Address	S.F. Nos	Extent in Ha	Lease Period
E-1	Tvl. Sri Blue Metals	77/1B & 421/2B (Part) & Chikkarampalayam	3.11.0	14.02.2023 to 13.02.2028
E-2	M. Muthammal	77/2E(P), 77/2F(P) & 79/1A (P)	1.82.0	27.03.2023 to 26.03.2028
TOTAL			3.11.0	
EXPIRED QUARRIES				
EX-1	Thiru. S. Gnanasekaran	77/2D(P) & Chikkarampalayam	1.01.2	01.10.2018 to 30.09.203
EX-2	Tmt.Kaveriammal	77/2B(P) & Chikkarampalayam	0.99.0	24.12.2018 to 24.12.2018
TOTAL CLUSTER EXTENT			17.38.15	

STANDARD OPERATING PROCEDURE FOR BELLADHI & CHICKKAMPALAYAM CLUSTER MANAGEMENT COMMITTEE

1. Maintenance of Haul Roads and Village Roads:

- 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

2. Maintenance of Drilling Activities

- 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.
- 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

3. Maintenance of Blasting Activities

- 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 (1.00 PM to 2.00 PM), 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
- The blasting operations in the cluster quarries 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 a greater 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. Maintenance of Greenbelt Activities

- 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 areas
- Suitable plan for conservation of Schedule-I Species have prepared and necessary fund for implement for the same will be made.
- 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

5. Maintenance of 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
- 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

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

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.

6. Cluster Management Committee Policy

- 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 programme 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
 - 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.

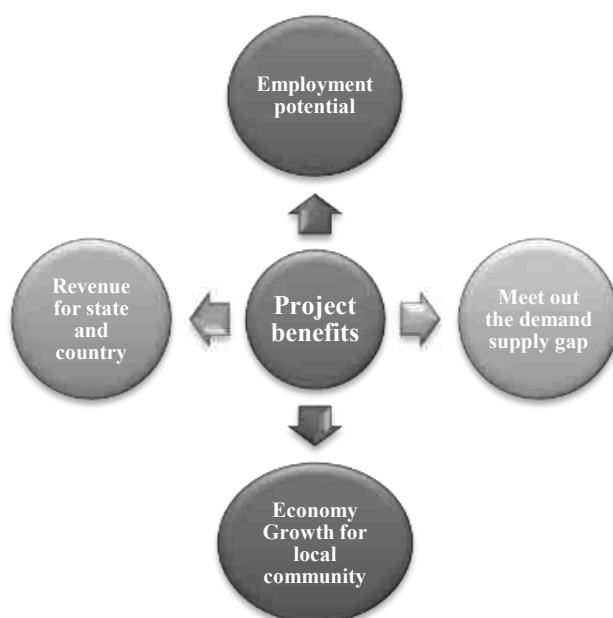
CHAPTER – 8: PROJECT BENEFITS

8.1 General

The Proposed Project for Quarrying Rough Stone and Gravel at Belladhi & Chickkarampalayam Village aims to produce 6,88,975m³ Rough Stone over a period of 10 Years, 55,218 m³ of Gravel over a period of 3 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



8.2 Employment Potential

This proposed project falls in the cluster will provide employment opportunities to about employment to about 39 persons directly. 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.

8.3 Socio-Economic Welfare Measures Proposed

The impact of mining activity in the area will be more positive than negative 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.

8.4 Improvement in Physical Infrastructure

The proposed project site is located in Bilichi village, Coimbatore North taluk, Coimbatore 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 the cluster quarry projects.

- 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.

8.5 Improvement in Social Infrastructure

The quarry project in the region will have positive impact on the social economic condition of the area by way of providing employment to the local peoples; thereby increasing the per capita income, housing, education, medical and transportation facilities, economic status, health and agriculture.

- Social welfare program like medical camps, educational facilities to the poverty level students, providing water supply from the Quarry during drought seasons will be taken from the project proponent's
- Supplementing Govt. efforts in health monitoring camps, social welfare and various Awareness programs among the rural population.

8.6 Other Tangible Benefits

The proposed quarry project 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 quarry site 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 SOCIAL RESPONSIBILITY

Project Proponent will take responsibility to develop awareness among all levels of their staff about CSR activities and the integration of social processes with business processes. Those involved with the undertaking of CSR activities will be provided with adequate training and re-orientation.

Under this programme, the project proponents will take-up following programmes for social and economic development of villages within 10 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these schemes, proponent will interact with LSG. The schemes will be selected from the following broad areas –

- Health Services
- Social Development
- Infrastructure Development
- Education & Sports
- Self-Employment

CORPORATE ENVIRONMENT RESPONSIBILITY

For the existing Quarry 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, all the mines being a green field project & Capital Investment is ≤ 100 crores, they shall contribute 2% of Capital Investment towards CER.

For the proposed projects it is recommended to spend Rs 3, 00,000/- towards CER Activities in the nearby Government School for Renovation or reconstruction of Existing Toilet, Providing Note books to the school library and Plantation in the school ground any other recommendations by the School Head masters.

TABLE 8.1 CER – ACTION PLAN

Code	CER
P1	Rs 3,00,000/-
Total	Rs 3,00,000/-

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

CHAPTER – 9: ENVIRONMENTAL COST BENEFIT ANALYSIS

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

CHAPTER - 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. Sri Blue Metals** will –

- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities
- 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 a program to train employees in general environmental issues and individual workplace environmental responsibilities.
- 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 –

Land degradation is one of the major adverse impacts of opencast mining in the form of excavated voids and contamination of soil affects the viability of the soil resource.

Soil contamination then has a number of flow-on effects like, Inhabitation of plant growth, and death of existing plants in contaminated areas and contamination of soil also has potential to impact on a surface water quality and groundwater resources.

TABLE 10.1: PROPOSED CONTROLS FOR LAND ENVIRONMENT

CONTROL	RESPONSIBILITY
Designing vehicle wash-down system so that all washed water is captured and passed through grease and oil separators.	Mines Manager
Re fueling will be carried out in a safe location, away from vehicle movement pathways	Mine Foreman & Mining Mate
Greenbelt development and its maintenance	Environment Officer
Garland drains with catch pits to be provided all around the project area to prevent run off affecting the surrounding lands.	Environment Officer
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
Thick plantation using native flora species will be carried out on the top benches.	Mines Manager
There will be formation of a small surface water body in the mined out area, which can be used for watering the greenbelt at the conceptual stages.	Environment Officer

Source: Proposed by FAE's & EIA Coordinator

10.3 Soil Management

Top Soil Management –

- There is no top soil within the project area thin layer of soil will be utilized for Greenbelt purpose.

Overburden / Waste and Side Burden Management –

- The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government.

TABLE 10.2: PROPOSED CONTROLS FOR SOIL MANAGEMENT

CONTROL	RESPONSIBILITY
Garland drains are to be paved around the quarry pit area to arrest possible wash off in the rainy seasons	Mines Manager
Surface run-off from the surface water 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	Environment Officer
keeping records of mitigation of erosion events, to improve on management techniques	Environment Officer
A monitoring map with information including their GPS coordinates, erosion type, intensity, and the extent of the affected area, as well as existing control measures and assessment of their performance	Environment Officer

Empty sediment from sediment traps Maintain, repair or upgrade garland drain system	Environment Officer
Test soils for pH, EC, chloride, exchangeable cations, particle size and water holding capacity	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.4 Water Management

In the proposed quarrying 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 67m BGL, the water table in the area is 70m – 75m below ground level, hence the proposed projects 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 existing and proposed mining activities would result in the increase of particulate matter concentrations due to fugitive dust. Water sprinkling twice per day 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.

Carbon dioxide (CO₂): Carbon dioxide enters the atmosphere through burning fossil fuels (Coal, natural gas, and oil), solid waste, trees and other biological materials. Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Therefore, the proposal for 1820 Nos. of trees to be planted.

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 Management

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and other allied 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 and 50m safety barrier) 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 in-built 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 shall be 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 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

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 1820 nos. of saplings is proposed to be planted for the Mining plan period in safety barrier and nearby village 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 10 YEAR PLAN PERIOD

PROPOSAL FOR P1 – Tvl. Sri Rajalakshmi Samappa				
Year	No. of trees proposed to be planted	Survial %	Area to be planted	Name of the species
I	It is proposed to plant 1820 Nos of trees in the 1 st year	80 %	7.5m Safety barrier, Panchayat road and nearby village roads	Neem, Pongamia, Pinnata, ashoka etc.,

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 (three 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
1.	Azadirachta indica	Neem, Vembu
2.	Borassus Flabellifer	Palmyra Palm
3.	Pongamia pinnata	Pungam

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 Quarry 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 detail 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 – P1

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 will 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

10.9.4 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

Activities	Mitigation Measure	Provision for Implementation	Capital	Recurring
Air Environment	Haul road maintenance & Water sprinkling	Lump sum fund allocation for daily maintenance of haul roads and thrice a day water sprinkling by fixed sprinklers or water tankers	0	50000
	Muffle blasting – To control fly rocks during blasting	Lump sum fund allocation Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure	Lump sum fund allocation for ensuring wet drilling by covering drill holes with wet gunny bags and spraying water while drilling	0	10000
	No overloading of trucks/tippers/tractors	Lump sum fund allocation Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin	Lump sum fund allocation Manual Monitoring through Security guard	0	5000
	Enforcing speed limits of 20 km/hr within ML area	Lump sum fund allocation Manual Monitoring through Security guard	0	5000
	Regular monitoring of exhaust fumes as per RTO norms	Lump sum fund allocation Manual Monitoring through Security guard	0	5000
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	5000
	Haul road maintenance & Water sprinkling	Lump sum fund allocation for daily maintenance of haul roads and thrice a day water sprinkling by fixed sprinklers or water tankers	0	50000
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 / Competent 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	0
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 management	Provision for garland drain @ Rs. 10,000/- per Hectare	5000	1000
	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Provision made in Operating Cost	0	0

	3. Greenbelt development under safety zone during the mining plan period	Provision made in Operating Cost	0	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	100000
	Workers will be provided with Personal Protective Equipment's	Lumpsum fund allocation	50000	15000
	Health checkup for workers will be provisioned	IME & PME Health checkup for all the employees will be covered batch wise.	0	50000
	First aid facility will be provided	Lumpsum fund allocation	0	5000
	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	Lumpsum fund allocation	50000	10000

	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Appointment of Competent person for ensuring the safety operation	Provision made in operational cost	0	0
CER	As per MoEF &CC OM 22-65/2017-IA.III Dated 25.02.2021	Lumpsum fund allocation	300000	0
TOTAL			5,60,000	3,02,000

In order to implement the environmental protection measures, an amount of Rs. 5.60 lakhs as capital cost and recurring cost as Rs. 3.02 lakhs as recurring cost is proposed considering present market price considering present market scenario for the proposed project

<u>Year Wise Break Up</u>			
1 st Year	₹ 8,62,000/-	6 th Year	₹ 3,85,437/-
2 nd Year	₹ 3,17,100/-	7 th Year	₹ 4,04,709/-
3 rd Year	₹ 3,32,955/-	8 th Year	₹ 4,24,944/-
4 th Year	₹ 3,49,603/-	9 th Year	₹ 4,46,192/-
5 th Year	₹ 3,67,083/-	10 th Year	₹ 4,68,501/-
Total		Rs. 44 lakhs	

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.

CHAPTER – 11: SUMMARY AND CONCLUSIONS

M/s. Sri Blue Metals Rough Stone & Gravel Quarry (Cluster Extent – 17.38.15 ha); 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 the Final EIA /EMP Report will be prepared based on the outcome of Public Consultation and the outcome will be incorporated in the EMP Report.

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 Quarry 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 Dec 2022 to Feb 2023 (Baseline Data Used is as per MoEF & CC Office Memorandum No. J-11013/41/2006-IA-II (I) (Part) Dated 29th August 2017 & MoEF & CC Office Memorandum F.No.IA3-22/10/2022-IA.III [E 177258] Dated: 08.06.2022) 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 Draft 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 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 one proposed project people.

As discussed, it is safe to say that the one proposed quarry in cluster 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 M/s. Sri Blue Metals Rough Stone & Gravel Quarry (Extent – 3.63.65 ha).

CHAPTER 12.0: DISCLOSURE OF CONSULTANTS

The Project Proponent's Thiru. S. Gnanasekaran – Proprietor of M/s. Sri Blue Metals 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 38	A B	WP GEO SC	A A A
2	Dr. P. Thangaraju	In-house	1	A	HG GEO	A A
3	Mr. N. Senthilkumar	Empanelled	31 38	A B	AQ WP RH	A B A
4	Mr. J. R. Vikram Krishna	Empanelled	1 38	A B	SHW RH NV	A A A
5	Mr. A. Jagannathan	In-house	-	-	AP NV SHW	A A B
6	Mrs. Jisha parameswaran	In-house	-	-	SW	B
7	Mr. Govindasamy	In-house	-	-	WP	B
8	Mr. Panneer Selvam	In-house	-	-	EB	B
9	Mr. A. Allimuthu	In-house	-	-	LU	B
10	Dr. T. Sasikala	Empanelled	-	-	SE	B
Abbreviations						
EC	EIA Coordinator					
AEC	Associate EIA Coordinator					
FAE	Functional Area Expert					
FAA	Functional Area Associates					
TM	Team Member					
GEO	Geology					
WP	Water pollution monitoring, prevention and control					
AP	Air pollution monitoring, prevention and control					
LU	Land Use					
AQ	Meteorology, air quality modelling, and prediction					
EB	Ecology and bio-diversity					
NV	Noise and vibration					
SE	Socio economics					
HG	Hydrology, ground water and water conservation					
SC	Soil conservation					
RH	Risk assessment and hazard management					
SHW	Solid and hazardous wastes					
MSW	Municipal Solid Wastes					
ISW	Industrial Solid Wastes					
HW	Hazardous Wastes					

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

Declaration by experts contributing to the EIA/EMP for M/s. Sri Blue Metals Rough Stone & Gravel Quarry over an Extent of **3.63.65ha** in Belladhi & Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu State. 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**

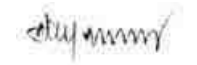
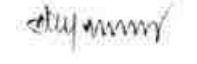
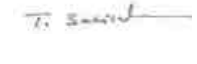
Designation: **EIA Coordinator**

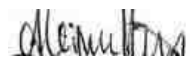
Date & Signature:



Period of Involvement: **March 2025 to till date**

FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

Sl. No.	Functional Area	Involvement	Name of the Expert/s	Signature
1	AP	- 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	- 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	
3	HG	- Interpretation of ground water table and predict impact and propose mitigation measures. - Analysis and description of aquifer Characteristics	Dr. P. Thangaraju	
4	GEO	- Field Survey for assessing the regional and local geology of the area. - Preparation of mineral and geological maps. - Geology and Geo morphological analysis/description and Stratigraphy/Lithology.	Dr. P. Thangaraju	
5	SE	- Revision in secondary data as per Census of India, 2011. - Impact Assessment & Preventive Management Plan - Corporate Environment Responsibility.	Dr. T. Sasikala	
6	EB	- 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.	Mr. Panneer Selvam	
7	RH	- Identification of hazards and hazardous substances - Risks and consequences analysis - Vulnerability assessment - Preparation of Emergency Preparedness Plan	Mr. J. R. Vikram Krishna	

		Management plan for safety.		
8	LU	- 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	- Identify impacts due to noise and vibrations - Suggesting appropriate mitigation measures for EMP.	Mr. A. Jagannathan	
10	AQ	- Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. - Recommending mitigations measures for EMP	Mr. N. Senthilkumar	
11	SC	Assessing the impact on soil environment and proposed mitigation measures for soil conservation	Dr. M. Ifthikhar Ahmed	
12	SHW	- 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. J. R. Vikram Krishna	

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 this EIA/EMP for M/s. Sri Blue Metals Rough Stone & Gravel Quarry Project over an Extent of 3.63.65 ha in Belladhi & Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu State. 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/25-28/RA 0424 Dated: 25.08.2025

Validity:

Valid till 06.08.2028.

ANNEXURE

M/s. SRI BLUE METALS ROUGH STONE & GRAVEL QUARRY

CLUSTER EXTENT = 17.38.15 ha

Belladhi & Chickkarampalayam Village,
Karamadai Taluk,
Coimbatore District,
Tamil Nadu State.

Project Proponent	Proposed Project	Extent
M/s. Sri Blue Metals, Prop. S. Gnanasekaran, No.2/241, Kannarpalayam, Karamadai, Mettupalayam Taluk, Coimbatore District Tamil Nadu – 641 104	S.F. Nos:343,344/4, Belladhi Village, 65/1A(P)-Chickkarampalayam Village Karamadai Taluk, Coimbatore District.	3.63.65 ha

ToR obtained vide

File No. 77986 ToR Identification No.TO25B0108TN5806008N Dated.18.06.2025

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 Category 'B' & 38 Category 'B' Certificate No : NABET/EIA/2225/RA 0276 Dated: 06.08.2025 Phone: 0427-2431989, Email: ifthiahmed@gmail.com, geothangam@gmail.com Web: www.gemssalem.com  	Laboratory ENVIRONMENTAL LAB 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  

LIST OF ANNEXURES

CODE	DESCRIPTION	PAGE NO.
P1	COPY OF TERMS OF REFERENCE	1A-22A
	COPY OF APPROVED LETTER	23A-24A
	COPY OF APPROVED 500m CLUSTER CERTIFICATE	25A-26A
	COPY OF APPROVED MINING PLAN AND PLATES	27A-99A
E1	COPY OF EC	100A-131A
E2	COPY OF EC	132A-162A
	COPY OF BASELINE MONITORING DATA	163A – 189A
	COPY OF NABET CERTIFICATE	190A



File No: 11986
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA),
TAMIL NADU)



Dated 18/06/2025



To,

Thiru.SAMAPPAGOWDER GNANASEKARAN
2/24, Kannarpalayam, Karamadai POst, Coimbatore District., Mettupalayam, TAMIL NADU, 641104
ssribluemetals@gmail.com

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

Sir/Madam,

Sub:SEIAA, Tamil Nadu – Terms of Reference along with Public Hearing (ToR) for the Proposed Rough Stone and Gravel Quarry lease over an extent 3.63.65 Ha at S.F. Nos 343 & 344/1 of Belladhi Village; S.F. No. 65/1A (Part) of Chickkarampalayam Village, Karamadai Taluk, Coimbatore District, Tamil Nadu by M/S. Sri Blue Metals – S. Gnanasekaran Proprietor – “B1” and Schedule S.No1 (a) – ToR issued along with Public Hearing- preparation of EIA report – Regarding.

Ref:

1. Online proposal No. SIA/TN/MIN/530707/2025, Dated: 22.03.2025.
2. Your application submitted for Terms of Reference dated: 24.03.2025.
3. Minutes of the 569th Meeting of SEAC held on 22.05.2025.
4. Minutes of the 837th Meeting of Authority held on 12.06.2025.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO25B0108TN5806008N
(ii) File No.	11986
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	M/s. Sri Blue Metals, Rough Stone and Gravel Quarry Project
(viii) Name of Company/Organization	SAMAPPAGOWDER GNANASEKARAN
(ix) Location of Project (District, State)	COIMBATORE, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.
4. The above-mentioned proposal has been considered by SEIAA in the meeting held on 12/06/2025. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
5. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations on all technical aspects recommended the proposal for grant of Terms of Reference with public hearing under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).
6. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to issue the following Terms of Reference with public hearing for instant proposal of M/S. Sri Blue Metals – S. Gnanasekaran Proprietor under the provisions of EIA Notification, 2006 and as amended thereof.
7. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
8. The Terms of Reference with public hearing to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
9. This issues with the approval of the Competent Authority.
10. The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

Copy To

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary to Government, Environment and Forests Department, Tamil Nadu.
3. The Additional Chief Secretary to Government, Natural Resources Department, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st& 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai – 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chair Person, TNPC Board, 76, Mount Salai, Guindy, Chennai-32
7. The District Collector, Coimbatore District,
8. The Commissioner of Geology and Mines, Guindy, Chennai-32
9. Assistant Director, Department of Geology & Mining, Coimbatore District,
10. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
11. File Copy.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seac Conditions - Site Specific

S. No	Terms of Reference
1.1	1. A Cluster Management Committee (CMC) shall be constituted including all the mines in

S. No	Terms of Reference
	the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The Organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities. 2. The Boundary pillars to be erected as per the mine rules and the evidence should be submitted along with the EIA report. 3. The details of enumeration of structures including schools, colleges, primary health centres should be submitted along with the EIA report. 4. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km 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. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations. 5. The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 6. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report. 7. 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. 8. The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures. 9. The PP shall install the CCTV camera for the continuous surveillance of mining activity & furnish the photographic/videographic evidence along with the EIA report.

2. Seac Standard Conditions

S. No	Terms of Reference
2.1	1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. 2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site. 3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with

S. No	Terms of Reference
	details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc. 4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry. 5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report. 6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site. 7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC. 8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level. 9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent. 10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site. 11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences. 12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines, 13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines? 14. Quantity of minerals mined out. · Highest production achieved in any one year · Detail of approved depth of mining. · Actual depth of the mining achieved earlier. · Name of the person already mined in that leases area. · If EC and CTO already obtained, the copy of the same shall be submitted. · Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. 15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone). 16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc., 17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 18. The Project Proponent shall provide the details of mineral reserves and mineable reserves,

S. No	Terms of Reference
	planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same. 19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment. 20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. 21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study. 22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind. 23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted. 24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given. 25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided. 26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered. 27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided. 28. Impact on local transport infrastructure due to the Project should be indicated. 29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity. 30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific. 31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible. 32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native

S. No	Terms of Reference
	origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner. 33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner 34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period. 35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period. 36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed. 37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations. 38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation. 39. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given. 40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc. 41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB. 42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine. 43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

3. Seiaa Specific Conditions:

S. No	Terms of Reference
3.1	The Authority noted that the subject was placed in the 569th SEAC-II meeting held on 16.05.2025. After detailed discussions, the Authority accepts the recommendation of SEAC-II and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 6,88,975m³ of Rough Stone and 55,218m³ of Gravel up to the depth of 67m BGL and the annual peak production is 80,625m³ of Rough Stone and 32,658m³ of gravel as per the approved mining plan, under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC-II & normal conditions & the conditions mentioned below.

4. Seiaa Standard Conditions:

S. No	Terms of Reference
4.1	<u>Cluster Management Committee</u> 1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry. 2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc., 3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines. 4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network. 5. The committee shall deliberate on risk & emergency management plan, fire safety & evacuation plan and sustainable development goals pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan. 6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the Environmental policy devised shall be given in detail in the EIA Report. 7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner. 8. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity. <u>Agriculture & Agro-Biodiversity</u> 9. Impact on surrounding agricultural fields around the proposed mining Area. 10. Impact on soil flora & vegetation around the project site. 11. Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP. 12. The Environmental Impact Assessment should study the agro-biodiversity, agro- forestry, horti-cultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem. 13. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services. 14. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock. <u>Forests</u> 15. The project proponent shall detailed study on impact of mining on Reserve forests and free ranging wildlife. 16. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna. 17. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection. 18. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site. <u>Water Environment</u> 19. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period. 20. Erosion Control measures.

S. No	Terms of Reference
	21. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas. 22. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. 23. The project proponent shall study and furnish the details on potential fragmentation impact on natural Environment, by the activities. 24. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts. 25. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components. 26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites. 27. The EIA shall include the impact of mining activity on the following: - Hydrothermal/Geothermal effect due to destruction in the Environment. - Bio-geochemical processes and its foot prints including Environmental stress. - Sediment geochemistry in the surface streams. <u>Energy</u> 28. The measures taken to control Noise, Air, Water, Dust Control and steps adopted to efficiently utilise the Energy shall be furnished. <u>Climate Change</u> 29. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities. 30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features. 31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood. <u>Mine Closure Plan</u> 32. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued. <u>EMP</u> 33. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued and the scope for achieving SDGs. 34. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan. <u>Risk Assessment</u> 35. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining. <u>Disaster Management Plan</u> 36. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued. <u>Others</u> 37. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc. 38. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and

S. No	Terms of Reference
	all the activities proposed shall be part of the Environment Management Plan. 39. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the Environment. The ecological risks and impacts of plastic & microplastics on aquatic Environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994
1.2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given
1.3	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee
1.4	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the areashould be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone)
1.5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics
1.6	Details about the land proposed for mining activities should be givenwith information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority
1.7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large,may also be detailed in the EIA Report
1.8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided

S. No	Terms of Reference
1.9	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
1.10	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
1.11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given
1.12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees
1.13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished
1.14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated
1.15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given
1.16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted
1.17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished
1.18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled- I fauna found in the study area, the necessary plan alongwith budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost

S. No	Terms of Reference
1.19	Proximity to Areas declared as Critically Polluted or the Project areas likely to come under the Aravali Range, (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered
1.20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)
1.21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report
1.22	One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given
1.23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map
1.24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated
1.25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided
1.26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided
1.27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided
1.28	Based on actual monitored data, it may clearly be shown whether working will intersect

S. No	Terms of Reference
	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 State Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished
1.29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out
1.30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same
1.31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution
1.32	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines
1.33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report
1.34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report
1.35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed
1.36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations
1.37	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation
1.38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if

S. No	Terms of Reference
	any, occupational health impacts besides other impacts specific to the proposed Project
1.39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project
1.40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given
1.41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out
1.42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report
1.43	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc
1.44	Besides the above, the below mentioned general points are also to be followed:- a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed. g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation. h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable. i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area

A. STANDARD TERMS OF REFERENCE

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

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

- due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
 - 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
 - 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
 - 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need-based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
 - 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented

date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM₁₀, particularly for free silica, should be given.

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

both in AMSL and Bgl. A schematic diagram may also be provided for the same.

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

and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.

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

content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.

- i) As per the circular no. J-11011/618/2010-IA. II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.

12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
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 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 OM No.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

Signature Not Verified

Digitally Signed by : A R Rahul Nadh IAS
Member Secretary, SEIAA

Date: 19/06/2025 ☐

From

Thiru.K.Vijayaragavan, M.Sc.,
Assistant Director,
Geology and Mining,
Coimbatore

To

M/s.Sri Blue Metals,
2/241, Kannarpalayam,
Karamadai Post,
Mettupalayam,
Coimbatore District.



Rc.No.1262/Mines/2024 Dated: .02.2025.

Sir,

Sub: Mines and Quarries - Minor Minerals - Coimbatore District - Mettupalayam Taluk - Survey Nos.343 (2.38.50 Hec) and 344/1 (0.30.55 Hec) of Bellathi Village - Survey No.65/1A (part) (0.94.60 hec) of Chickkarampalayam Village - over an extent of 3.63.65 hectares of patta land - Rough stone & Gravel quarry lease - Precise area communicated - Draft mining plan submitted by M/s.Sri Blue Metals - Approval of mining plan - Regarding.

Ref: 1. Application of M/s.Sri Blue Metals dated: 25.11.2024 and 20.01.2025.
2. Precise area communication in Rc.No.1262/Mines/2024 dated: 28.01.2025.
3. M/s.Sri Blue Metals letter dt.18.02.2025.

In the reference 1st cited, M/s.Sri Blue Metals have applied for the grant of rough stone & Gravel quarry lease over an extent of 3.63.65 hectares of patta land in Survey Nos.343 (2.38.50 Hec) and 344/1 (0.30.55 Hec) of Bellathi Village, Survey No.65/1A (part) (0.94.60 hec) of Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

2) Based on the recommendations of the Tahsildar, Mettupalayam, Revenue Divisional Officer, Coimbatore North, Block Development Officer (V.P), Karamadai and the Assistant Geologist of Geology and Mining, Coimbatore, the precise area has been communicated to the applicant vide reference 2nd cited.

3) In exercise of powers delegated under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan submitted by M/s.Sri Blue Metals for grant of rough stone & gravel quarry lease over an extent of 3.63.65 hectares of patta land in Survey Nos.343 (2.38.50 Hec) and 344/1 (0.30.55 Hec) of Bellathi Village, Survey No.65/1A (part) (0.94.60 hec) of Chickkarampalayam Village,

Mettupalayam Taluk, Coimbatore District for a period of ten years and the proposed mineable reserves after leaving safety distance for first five years is arrived as **3,65,250 M³** of rough stone and **55,218 M³** of gravel upto a depth of 67m. This approval is 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 the Mines and Minerals (Development and Regulation) Act, 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884(Central Act IV of 1884) and the rules made there under the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii). That the mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv). No hindrance should be caused to the Public and nearby patta lands.
- (v). A safety distance of 7.5 meters should be provided for adjacent patta land from the lease applied area.
- (vi). A safety distance of 50 meters should be provided to the EB line passing on the South eastern side and EB transformer situated on the western side of the applied area.
- (vii). The scheme of mining shall be submitted to the Assistant Director of Geology and Mining atleast 180 days before the expiry of the five years period for which it was approved on the last occation.


Assistant Director,
Geology and Mining,
Coimbatore

Encl: 2 copies of Approved Mining Plan.

Copy submitted to :

1. The Chairman, State Level Environment Impact Assessment Authority, Chennai
2. The Commissioner of Geology and Mining, Industrial Estate, Guindy, Chennai- 32

sub
25/2/25

From

Thiru.K.Vijayaragavan, M.Sc.,
Assistant Director,
Geology and Mining,
Coimbatore

To

M/s.Sri Blue Metals,
2/241, Kannarpalayam,
Karamadai Post,
Mettupalayam,
Coimbatore District.



Rc.No.1262/Mines/2024 Dated: .02.2025.

Sir,

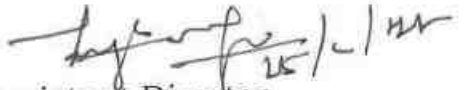
Sub: Mines and Quarries - Minor Minerals - Coimbatore District - Mettupalayam Taluk - Survey Nos.343 (2.38.50 Hec) and 344/1 (0.30.55 Hec) of Bellathi Village - Survey No.65/1A (part) (0.94.60 hec) of Chickkarampalayam Village - over an extent of 3.63.65 hectares of patta land - Rough stone & Gravel quarry lease - Precise area communicated to M/s.Sri Blue Metals - 500 mts Radius letter requested- regarding.

Ref: 1. Application of M/s.Sri Blue Metals dated: 25.11.2024.
2. Precise area communication in Rc.No.1262/Mines/2024 dated: 28.01.2025.
3. M/s.Sri Blue Metals letter dt.18.02.2025

With reference to your letter in the reference 3rd cited, the details of existing and lease expired quarries located within 500m radius from the proposed Rough stone & gravel quarry lease over an extent of 3.63.65 hectares of patta land in Survey Nos.343 (2.38.50 Hec) and 344/1 (0.30.55 Hec) of Bellathi Village, Survey No.65/1A (part) (0.94.60 hec) of Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District are as follows:

Sl. No	Name of the quarry Owner	Name of the Village & Survey Number	Extent (in Hects)	Remarks
a. Existing Quarries				
1.	Tvl.Sri Blue Metals	Chikkarampalayam 77/1B & 421/2B (Part)	3.11.0	14.02.2023 to 13.02.2028

2.	M.Muthammal	Chikkarampalayam 77/2E (Part), 77/2F (Part) & 79/1A (Part)	1.82.0	27.03.2023 to 26.03.2028
b. Expired Quarries				
1.	Thiru.S.Gnanasekaran	Chikkarampalayam S.F.No.77/2D(P)	1.01.2	01.10.2018 to 30.09.2023
2.	Tmt.Kaveriammal	Chikkarampalayam S.F.No.77/2B(P)	0.99.0	24.12.2018 to 23.12.2023
c. Abandoned Quarries				
-NIL-				
d. Present proposed Quarries				
1.	M/s.Sri Blue Metals	Chikkarampalayam & 65/1A (part) Bellathi & 343, 344/1	3.63.65	applied area (Rough Stone and gravel)
2.	Tvl.Saravana Blue metals	Chikkarampalayam 69	7.51.50	Pending with SEIAA
3.	Tvl.Saravana Blue metals	Chikkarampalayam 68/2C (P)	1.30.00	Pending with SEIAA


 Assistant Director,
 Geology and Mining,
 Coimbatore
 25/2/25

**MINING PLAN ALONG WITH PROGRESSIVE QUARRY
CLOSURE PLAN FOR BELLADHI & CHICKKARAMPALAYAM
ROUGH STONE AND GRAVEL QUARRY**

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

Patta Land / Lease period = Ten years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 3.63.65 Ha
S.F.NOS. : 343, 344/1
VILLAGE : BELLADHI
S.F.NO. : 65/1A (Part)
VILLAGE : CHICKKARAMPALAYAM
TALUK : KARAMADAI
DISTRICT : COIMBATORE
STATE : TAMIL NADU

FOR

APPLICANT

M/s. Sri Blue Metals,
Proprietor of Thiru. S. Gnanasekaran,
No.2/241, Kannarpalayam,
Karamadai Post, Mettupalayam Taluk,
Coimbatore District,
Tamil Nadu – 641 104.

PREPARED BY
P. Viswanathan, M.Sc.,
Qualified Person

(As per Rule 15(I)(a) and (I)(b) of MCR, 2016)

No. 4/366-D, Selva Nagar,
Kamaraj Nagar Colony, Near Omega Church,
Salem District – 636 014.

Mobile No.: +91 97916 09929

E-mail ID: viswa2727@gmail.com.

ABBREVIATIONS

- EIA - Environment Impact Assessment.
- EMP - Environment Management Plan.
- SEIAA - State Level Environment Impact Assessment Authority.
- SEAC - State Expert Appraisal Committee
- MoEF&CC - Ministry of Environment, Forest and Climate changes.
- CPCB - Central Pollution control board.
- TNPCB - Tamil Nadu Pollution control board.
- DMS - Director of Mines Safety.
- DGMS - Director of General Mines Safety.
- CRZ - Coastal Regulatory Zone.
- HACA - Hill Area Conservation Authority.
- S.F.No. - Survey Field Number.
- MMR - Metalliferous Mines Regulations.
- MCR - Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules.
- TNMMCR - Tamil Nadu Minor Mineral Concession Rules.
- NONEL - Non-Electric.
- PPV - Peak Particle Velocity.
- DGPS - Differential Global Positioning System.
- QP - Qualified Person.
- MSL - Mean Sea Level
- BGL - Below Ground Level



M/s. Sri Blue Metals,
Proprietor of Thiru. S. Gnanasekaran,
No.2/241, Kannarpalayam,
Karamadai Post, Mettupalayam Taluk,
Coimbatore District,
Tamil Nadu – 641 104.



CONSENT LETTER FROM THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Belladhi and Chickkarampalayam Rough Stone and Gravel Quarry over an extent 3.63.65 Hectares of Patta lands in S.F.Nos. 343, 344/1 of Belladhi village and S.F.No. 65/1A (Part) of Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu State has been prepared by

P. Viswanathan, M.Sc.,
Qualified Person

I have entrusted the works to prepare this Mining Plan based upon the production requirements to meet as per the Mines Acts, Rules, Regulations and Amendments as on date. I request to the Assistant Director, Department of Geology and Mining, Coimbatore District, Tamil Nadu State to make further correspondence regarding the corrections of the Mining Plan with the said Qualified Person at his following address.

P. Viswanathan, M.Sc.,
No. 4/366-D, Selva Nagar,
Kamaraj Nagar Colony, Near Omega Church,
Salem District – 636 014.
Mobile No.: +91 97916 09929.

I hereby undertake that all the responsibilities of contents in the Mining Plan and if any corrections 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. If there is any substantial change during operation I will carried out a Modified Mining plan and seek its approval from concerned Authorities.

Signature of the Applicant
For M/s. Sri Blue Metals


S. Gnanasekaran
(Proprietor)

Place: Coimbatore
Date: 29.01.2025

M/s. Sri Blue Metals,
Proprietor of Thiru. S. Gnanasekaran,
No.2/241, Kannarpalayam,
Karamadai Post, Mettupalayam Taluk,
Coimbatore District,
Tamil Nadu – 641 104.



DECLARATION OF THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Belladhi and Chickkarampalayam Rough Stone and Gravel Quarry over an extent 3.63.65 Hectares of Patta lands in S.F.Nos. 343, 344/1 of Belladhi village and S.F.No. 65/1A (Part) of Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore 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 from time to time as per Tamil Nadu Minor Mineral Concession Rules, 1959.

Signature of the Applicant
For M/s. Sri Blue Metals


S. Gnanasekaran
(Proprietor)

Place: Coimbatore

Date: 03.02.2025

CERTIFICATE



Certified that I am, **P. Viswanathan, M.Sc.**, residing at No. 4/366-D, Selva Nagar, Kamaraj Nagar Colony, Near Omega Church, Salem District – 636 014, holding a Master Degree in M.Sc., (Applied Geology) from Periyar University, Salem and I worked in the field of Mining 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 degree in mining engineering or 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 prepared this Mining Plan and Progressive Quarry Closure Plan in Respect of Belladhi and Chickkarampalayam Rough Stone and Gravel Quarry over an extent 3.63.65 Hectares of Patta lands in S.F.Nos. 343, 344/1 of Belladhi village and S.F.No. 65/1A (Part) of Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District for **M/s. Sri Blue Metals**, Proprietor of Thiru. S. Gnanasekaran, residing at No.2/241, Kannarpalayam, Karamadai Post, Mettupalayam Taluk, Coimbatore District, Tamil Nadu – 641 104. 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: 03.02.2025

P. Viswanathan, M.Sc.,

No. 4/366-D, Selva Nagar,

Kamaraj Nagar Colony, Near Omega Church,

Salem District – 636 014.



CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of Prepared under Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959. The preparation of Mining Plan and Progressive Quarry Closure Plan for Belladhi and Chickkarampalayam Rough Stone and Gravel Quarry over an extent 3.63.65 Hectares of Patta lands in S.F.Nos. 343, 344/1 of Belladhi village and S.F.No. 65/1A (Part) of Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu State has been prepared for

M/s. Sri Blue Metals,

Proprietor of Thiru. S. Gnanasekaran,

No.2/241, Kannarpalayam,

Karamadai Post, Mettupalayam Taluk,

Coimbatore District,

Tamil Nadu – 641 104.

Whenever specific permissions / exemptions / relaxations and approvals are required, the applicant will approach the concerned authorities of the Assistant Director, Department of Geology and Mining, Coimbatore District, Tamil Nadu State 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, M.Sc.,

Place: Salem

Date: 03.02.2025

P. Viswanathan, M.Sc.,

No. 4/366-D, Selva Nagar,

Kamaraj Nagar Colony, Near Omega Church,

Salem District – 636 014.



CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations or Orders made there under have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Belladhi and Chickkarampalayam Rough Stone and Gravel Quarry over an extent 3.63.65 Hectares of Patta lands in S.F.Nos. 343, 344/1 of Belladhi village and S.F.No. 65/1A (Part) of Chickkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu State has been prepared for

M/s. Sri Blue Metals,

Proprietor of Thiru. S. Gnanasekaran,

No.2/241, Kannarpalayam,

Karamadai Post, Mettupalayam Taluk,

Coimbatore District,

Tamil Nadu – 641 104.

Whenever specific permissions / exemptions / relaxations and approvals are required, the Applicant will approach the concerned authorities of Director of Mines Safety (DMS), No.5, II Street, Block-AA, Anna Nagar, Chennai-40, Tamil Nadu State 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: 03.02.2025

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MINING PLAN ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR BELLADHI & CHICKKARAMPALAYAM ROUGH STONE AND GRAVEL QUARRY.

(Prepared Under Rules 41 & 42 As Per the Amended Tamil Nadu Minor Mineral Concession Rules, 1959)

INTRODUCTION AND EXECUTIVE SUMMARY

The Applicant **M/s. Sri Blue Metals, Proprietor of Thiru. S. Gnanasekaran**, residing at No.2/241, Kannarpalayam, Karamadai Post, Mettupalayam Taluk, Coimbatore District, Tamil Nadu – 641 104, has entrust and given consent to preparation of Mining plan and Progressive Mine Closure Plan as per the provisions of Mines Act, Rules, Regulations and as amended till date.

The Applicant (**M/s. Sri Blue Metals, Proprietor of Thiru. S. Gnanasekaran**) has applied for Rough stone and Gravel quarry lease for over an extent 3.63.65 Hectares of Patta lands in S.F.No. 65/1A (Part) of Chickkarampalayam Village and S.F.Nos. 343, 344/1 of Belladhi Village, Mettupalayam Taluk, Coimbatore District for the period of ten years under rule 19 and 20(2) (a) of Tamil Nadu Minor Mineral Concession Rules, 1959.

The application was examined, Scrutinized, Inspected and processed by the Assistant Director, Department of Geology and Mining, Coimbatore District and passed a precise area communication letter vide **Rc.No.1262/Mines/2024, Dated: 28.01.2025** under rule 19 of Tamil Nadu Minor Mineral Concession Rules, 1959 for submission of draft Mining plan under Rules 41 and 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and obtain approval and obtain Environmental Clearance from the State Level Environment Impact Assessment Authority, Tamil Nadu for quarrying Rough stone and Gravel for the period of **Ten years** with following conditions (Refer Annexure No. I):

General Condition:

- 1) No hindrance shall be caused to the adjacent Patta lands and Public while quarrying Rough stone and Gravel.
- 2) A safety distance of 7.5 meters should be provided to the adjacent patta lands while quarrying operation.

Special Conditions:

- 1) The safety distance of 50 meters should be provided to the EB line passing on the Southeastern side and Transformer is situated on the western side of the lease applied area while quarrying operation.

This Mining Plan along with Progressive quarry closure Plan is prepared in full consultation with **M/s. Sri Blue Metals, Proprietor of Thiru. S. Gnanasekaran**, residing at No.2/241 Kannarpalayam, Karamadai Post, Mettupalayam Taluk, Coimbatore District, Tamil Nadu – 641 104 for his proposed Rough stone and Gravel quarry over an extent **3.63.65 Hectares** of patta lands in **S.F.No. 65/1A (Part) of Chickkarampalayam Village and S.F.Nos. 343, 344/1 of Belladhi Village, Mettupalayam Taluk, Coimbatore District**, Tamil Nadu State under amended Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959 with obtained full consent as per the application and Production schedule in preparation of Mining plan as per the provisions of Mines Act, Rules, Regulations as on date.

The Mining plan has been prepared after carrying the field survey, collection of Primary & secondary data, environmental setting, geological features and tentatively estimated the Resources & Reserves, depth of mining as identified in the field with best our knowledge and experience. This mining plan is prepared by considering the Rule 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the EIA Notification 2006 and its subsequent Amendments.

In order to ensure compliance of the order of the Honourable Supreme Court Dated: 27.02.2012 in I.A.No.12-13 of 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 is require prior environmental clearance. As per amendment in EIA Notification 2006 vide S.O. 1886(E), Dated:20.04.2022 “All mining lease area in respect of minor mineral mining leases and ≤ 250 ha mining lease area in respect of major mineral mining lease other than coal” would be treated as category B and will be considered by the state notified by Ministry of Environment, Forest and Climate Change as prescribed procedure under EIA notification 2006.

The field survey carried out by the Qualified Person and Team as on 31.01.2025.

Short Notes of Mining plan:

- Village Panchayat - Belladhi & Chickkarampalayam
- Panchayat Union - Karamadai
- Total extent of the lease applied area is 3.63.65Ha.
- Topography of the area - Plain topography.
- The Estimated Geological Resources are **23,63,725m³** of Rough stone and **72,730m³** of Gravel in the entire area.

- f. Tentative Mineable Reserves are **6,88,975m³** of Rough stone and **55,218m³** of Gravel in the entire area.
- g. The proposed quantity of reserves/ (level of production) to be mined are **6,88,975m³** of Rough stone and **55,218m³** of Gravel for **ten years** (**3,65,250m³** of Rough stone and **55,218m³** of Gravel for **first five years** and **3,23,725m³** of Rough stone for **second five years**) in the entire area.
- h. Proposed Depth of mining = 67m [2m Gravel + 65m Rough stone] below ground level.
- i. Lease Period = Ten Years
- j. Mining Plan period = Five Years
- k. It is a fresh lease applied area, at present the area is virgin. Hence no existing pit.
- l. Method of mining / level of mechanization.
Opencast mechanized method, the quarry operation involves shallow Jack hammer drilling and slurry blasting with NONEL initiation,
- m. Type of machineries proposed in the quarrying operation is given below.
Excavators attached with 0.90m³ Bucket and rock breaker.
Shallow Jack hammer, Compressor (Diesel drive) (4 Jack hammer capacity)
Tippers.
- n. No trees will be uprooted due to this quarry operation.
- o. The approach road from the main road to quarry road will be constructed and maintained in a good condition for the haulage of materials and machineries.
- p. There is No Export of this Rough stone and Gravel.
- q. Topo sketch covering 10km and 1km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archaeological importance and places of worships is marked and enclosed as Plate Nos. IA & IC.
- r. The lease applied area is about 3.63.65Ha bounded by twelve corners; the corners are designated as 1 – 12 clock-wise from the Southwestern side and Co-ordinates for all the corners are clearly marked in the Quarry Lease Plan and Surface Plan enclosed as Plate No. II.

- s. 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, IV and V.
- t. General conditions will not applicable for the proposed area. The area applied for lease is 10Km away from the,
- i) *Critically polluted areas as identified by CPCB,*
 - ii) *Protected area under wild life protection ACT, 1972,*
 - iii) *Notified Eco sensitive areas*
 - iv) *Interstate Boundary*
- u. There is no waste anticipated during this quarry operation. Hence, waste dump is not proposed in the lease applied area.
- v. Around 39 employees are proposed to deploying the quarrying operation.
- w. Total Cost of the project is about **Rs.3,04,35,000/-**.

**1.0 GENERAL INFORMATION****1.1 Name of the Applicant with Address:**

Name : M/s. Sri Blue Metals,
Prop. S. Gnanasekaran,
Address : No.2/241, Kannarpalayam,
Karamadai, Mettupalayam Taluk,
Coimbatore District.
State with PIN Code : Tamil Nadu – 641 104.
Mobile No : +91 99763 64777, 86673 84540 & 90959 15146
Aadhaar No : 4171 8521 8213
E-mail : sribm272615@gmail.com

1.2 Status of the Applicant (Individual / Company / Firm):

The applicant is an Individual.

1.3 Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough stone and Gravel.

1.4 Period of permission / lease to be granted:

Ten years as mentioned in Precise area Communication letter.

1.5 Name and address of the Qualified Person who preparing the Mining Plan:

Name : P. Viswanathan, M.Sc.,
Qualified Person (As per Rule 15(I)(a) and (I)(b) of MCR, 2016)
Address : No. 4/366-D, Selva Nagar,
Kamaraj Nagar Colony, Near Omega Church,
Salem District,
State with PIN Code : Tamil Nadu – 636 014.
Mobile : +91 97916 09929
Email : viswa2727@gmail.com

1.6 Name and Address of the Prospecting Agency:

State Geology and Mining Department, Government 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 regional exploration studies and geological mapping in Tamil Nadu. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area and the Rough stone is clearly inferred from the nearby existing quarry pits. No detailed Exploration has carried out.

1.7 Reference no. Date of grant/ Precise Area Communication received form the State Government:

The precise area communication letter was received from the Assistant Director, Department of Geology and Mining, Coimbatore District vide **Rc.No.1262/Mines/2024, Dated: 28.01.2025** (Refer Annexure No. I) and was given to us for the preparation of mining plan to meet out the applicant's production schedule.

2.0 LOCATION AND ACCESSIBILITY:**2.1. Details of the area with location map:**

The lease applied area is located about 26km Northeastern side of Coimbatore town, 7.6km Southeastern side of Mettupalayam town and 3km Northeastern side of Karamadai.

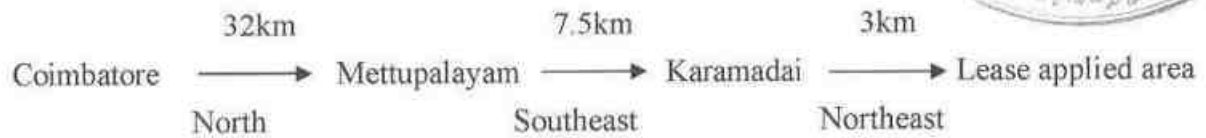
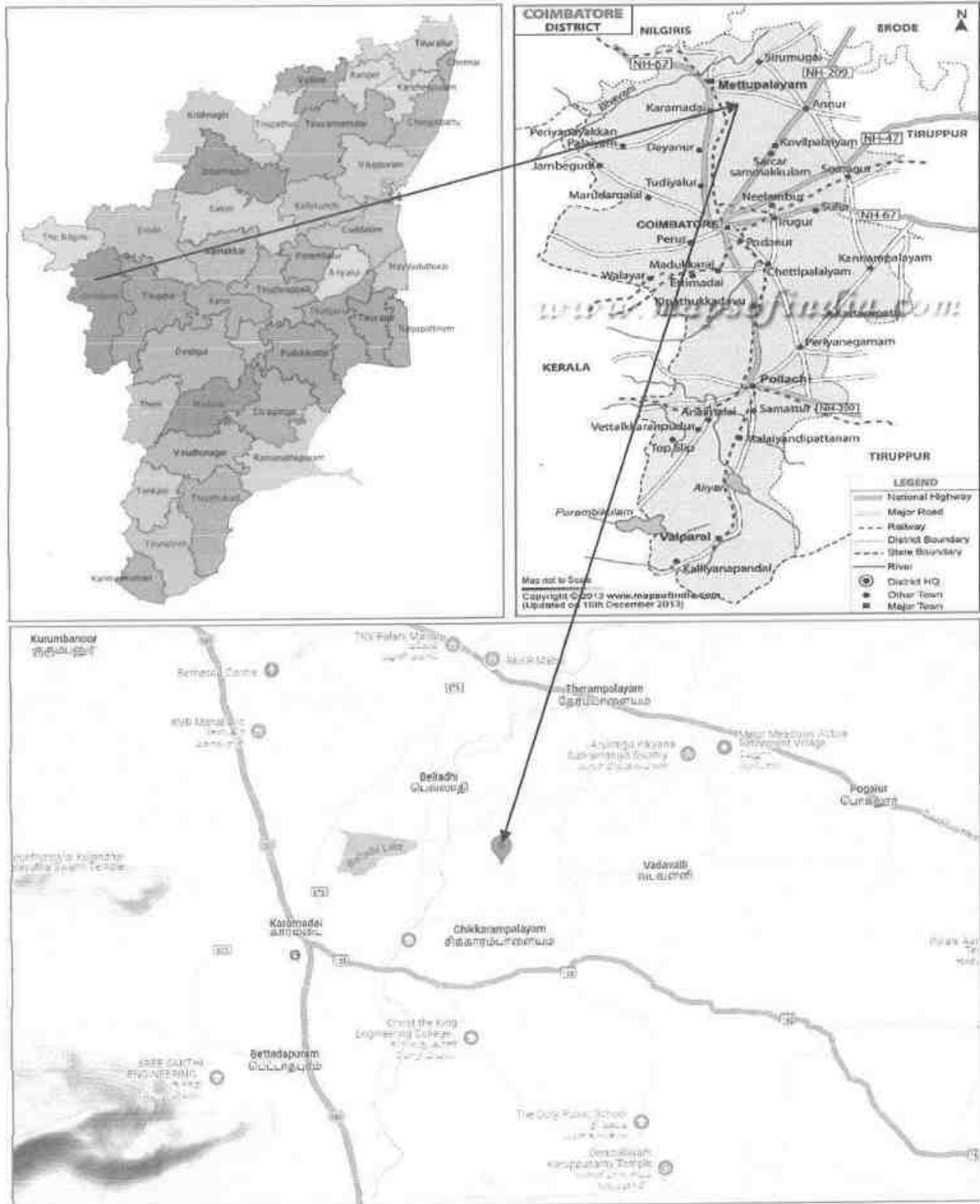
**Location Map of the Lease Applied area**

Table – 1

District	Taluk	Village	S.F. No.	Area (Ha.)	Patta no.
Coimbatore	Mettupalayam	Belladhi	343	2.38.50	1236
			344/1	0.30.55	3819
		Chickkarampalayam	65/1A(P)	0.94.60	2949
			Total	3.63.65	-

Source: As per the FMB and 'A' register record furnished by the applicant.

2.2. Classification of the area (Ryotwari/ Poramboke / others):

It is a patta lands (classified as punsei) which is not fit for vegetation/ Cultivation.

2.3. Ownership / Occupancy of the applied area (surface right):

It is patta lands, Jointly Registered in the name of Tmt. G. Chandra and Tmt. P. Jayalakshmi, vide Patta Nos. 1236, 3819 and 2949 (Refer Annexure Nos. IV to VI). The applicant has obtained consent from the Pattadhars (Refer Annexure No. VII).

2.4. Existence of public road / Railway line, if any nearby and approximate distance:

The approach road is situated on the Southern side, which is connects the village road located at 130m on the Southern side of the lease applied area.

Road access is available from the quarry to National Highway, no towns are enrooted hence the traffic density is not much more due to the transportation of Rough stone and Gravel.

The approach road from the quarry will be constructed and the same has been utilized for haulage and maintained during the entire lease period.

The Nearest Railway line is Coimbatore – Mettupalayam which is located at 2.9km on the Southwestern side of the area as per the GSI Toposheet and Google Map.

2.5. Toposheet No. with latitude and longitude:

The lease applied area falls in the Toposheet No: **58-A/15 and 58-A/16** Latitude between: **11°14'59.04"N to 11°15'07.61"N** and Longitude between: **76°59'05.01"E to 76°59'11.83"E** on WGS datum-1984 as per the GSI Toposheet (Refer Plate Nos. I to II).

PART – A

3.0 GEOLOGY AND MINERAL RESERVES:

3.1 Brief description of the Topography and general Geology of the area (with plans):

The lease applied area is situated in plain topography. The gradient of the area is gentle towards Northeastern side and altitude of the area varies from 352m above from Mean Sea Level. The area is covered by 2m thickness of Gravel and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pit.

The Water level in the surrounding area is 70m - 75m below from general ground profile which is observed from the nearby bore wells. Normal rainfall is about 1205.8mm.

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with accumulation of recent quaternary formation. On regional scale of the Charnockite body is N30°E – S30°W with dipping towards SE60°.

The general geological sequences of the rocks in this area are given below:

AGE	FORMATION
Recent	- Quaternary formation (Gravel)
-----Unconformity-----	
Archaean	- Charnockite
	Peninsular Gneissic complex

3.2 Details of exploration already carried out if any:

State Geology and Mining Department, 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 Coimbatore District. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area. The Rough stone is clearly inferred from the nearby existing quarry pit.

3.3 Estimation of Reserves:

a) Geological Resources 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, commercial aspects etc.,

Totally three sections have been drawn, one section drawn along the Length wise (X-Y) and another two cross sections are drawn Width wise (A-B and C-D) to cover the maximum area considered for lease upto 67m depth below from the ground level.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone and Gravel deposit has been prepared in the scale of 1:1000 (please refer the Geological plan and sections Plate No. III). As the sale of Rough stone and Gravel are in terms of cubic metres (Volume) only and not in terms of tonnage. No Exploration has been carried out.

Estimation of Geological Resources (Plate No. III):

The Geological Resources of Rough Stone and Gravel Quarry are estimated upto a maximum depth of 67m (2m Gravel + 65m Rough Stone) below from the ground level. The total Geological resources are estimated by area method. The total geological resources are given below:

TABLE – 2

GEOLOGICAL RESOURCES					
Area (Ha)	Area in Sq. m/Ha in (m)	Area (m²)	Depth in (m)	Geological Resources of Rough stone in (m³) 100%	Gravel (m³)
3.63.65	10000	36365	2	-	72730
3.63.65	10000	36365	65	2363725	-
Total				23,63,725	72730

The Geological Resources of Rough Stone : 23,63,725m³

The Geological Resources of Gravel : 72,730m³

Geological Resources has been estimated based on the physical investigation and filed survey data.

Tentative Mineable Reserves:

The Mineable reserves are estimated after leaving the safety distance and bench loss to a maximum depth of 67m.

TABLE – 3

MINEABLE RESERVES						
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Mineable Reserves of Rough stone in (m³) 100%	Gravel (m³)
XY-AB	I	147	141	2	-	41454
	II	144	135	5	97200	-
	III	139	125	5	86875	-
	IV	134	115	5	77050	-
	V	129	105	5	67725	-
	VI	124	95	5	58900	-
	VII	119	85	5	50575	-
	VIII	114	75	5	42750	-
	IX	104	65	5	33800	-
	X	94	55	5	25850	-
	XI	84	45	5	18900	-
	XII	74	35	5	12950	-
	XIII	64	25	5	8000	-
	XIV	54	15	5	4050	-
Total					584625	41454

XY-CD	I	93	74	2	-	13764
	II	90	68	5	30600	-
	III	85	58	5	24650	-
	IV	80	48	5	19200	-
	V	75	38	5	14250	-
	VI	70	28	5	9800	-
	VII	65	18	5	5850	-
	Total				104350	13764
Grand Total				688975	55218	

Tentative Mineable Reserves of Rough Stone : **6,88,975m³**

Tentative Mineable Reserves of Gravel : **55,218m³**

The mineable reserves have been computed as **6,88,975m³** of Rough stone at the rate of 100% recovery and **55,218m³** of Gravel for a period of Ten years upto a depth of 67m below from the ground level.

4.0 MINING:

4.1 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 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.

4.2 Mode of working (mechanized/ manual):

The Rough Stone is proposed to quarry at 5m bench height & width with conventional Opencast Mechanized Method.

The quarry operation involves Drilling, Blasting, Rock breaking, 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 by considerable volume from the parent rock mass by drilling with Hand Jack Hammer and blasting, the liberated Rough stone will be loaded into the Tipper by hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

Hydraulic excavators are attached with rock breakers for fragmentation of large boulders to avoid secondary blasting and easy handling of material. 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.

4.3 Proposed Bench Height and Width:

The bench height is proposed 5.0 meter vertical bench the width of the bench is not less than the Height as per 106 2(b) of Metalliferous Mines Regulations, 1961 from the DMS, the realignment of benches will be carried out.

4.4 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 gravel, the gravel will be directly loaded into Tipper for the filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government. The excavated Rough stone will be directly loaded into Tipper to the needy customers. The Composite year wise Development and production plan and sections indicating the pit lay out and green belt development are shown in Plate No. III and III-A given tables below.

Year wise Development and Production

TABLE - 4

YEARWISE DEVELOPMENT AND PRODUCTION FOR FIRST FIVE YEARS							
Section	Year	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserve of Rough stone in (m³) 100%	Gravel (m³)
XY-CD	I	I	93	74	2	-	13764
		II	20	68	5	6800	-
XY-AB		I	67	141	2	-	18894
		II	64	135	5	43200	-
		III	20	125	5	12500	-
		IV	10	115	5	5750	-
	Total				68250	32658	
	II	I	37	141	2	-	10434
		II	37	135	5	24975	-
		III	37	125	5	23125	-
		IV	37	115	5	21275	-
		Total				69375	10434
III	I	43	141	2	-	12126	
	II	43	135	5	29025	-	
	III	43	125	5	26875	-	
	IV	43	115	5	24725	-	
	Total				80625	12126	
IV	V	80	105	5	42000	-	
	VI	70	95	5	33250	-	
	Total				75250	-	

V	VII	60	85	5	25500	-
	VIII	50	75	5	18750	-
	IX	40	65	5	13000	-
	X	30	55	5	8250	-
	XI	20	45	5	4500	-
	XII	10	35	5	1750	-
	Total				71750	-
Grand Total					365250	55218

The Recoverable reserves have been estimated as **3,65,250m³** of Rough stone at 100% recovery for five years and **55,218m³** of Gravel for first three year upto a depth of 57m below ground level (Refer Plate No. III). The peak production capacity in the quarry is **80,625m³** of Rough stone, **32,658m³** of Gravel and the proposed production schedule is arrived as per applicant's requirement.

Table – 5

YEARWISE PRODUCTION FOR REMAINING FIVE YEARS						
Section	Year	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserve of Rough stone in (m ³) 100%
XY-AB	VI	III	39	125	5	24375
XY-CD		II	70	68	5	23800
		III	85	58	5	24650
		Total				72825
XY-AB	VII	IV	80	48	5	19200
		IV	44	115	5	25300
		V	49	105	5	25725
		Total				70225
XY-AB	VIII	VI	54	95	5	25650
		VII	59	85	5	25075
		V	75	38	5	14250
		Total				64975
XY-CD	IX	VI	70	28	5	9800
		VII	65	18	5	5850
XY-AB		VIII	64	75	5	24000
		IX	64	65	5	20800
	Total				60450	
	XY-AB	X	X	64	55	5
XI			64	45	5	14400
XII			64	35	5	11200
XIII			64	25	5	8000
XIV			54	15	5	4050
Total				55250		
Grand Total						323725

The Recoverable reserves have been computed as **3,23,725m³** of Rough stone at 100% recovery to a depth of 67m below from the ground level for **remaining five years of the lease period** (Refer Plate No. III-A). Total excavation will be proposed **6,88,975m³** of Rough stone and **55,218m³** of Gravel for the period of ten years.

The annual peak production capacity in the quarry is 80,625m³ of Rough stone and 32,658m³ of Gravel of the plan period and the proposed production schedule is arrived as per applicant's requirement and the EIA & EMP will be prepared an annual peak production.

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 of Mine Safety, Chennai region by submitting relevant documents, appropriate safety plans and its Mitigation measures.

One lorry load	=	6m ³ (approximate)
Total Number of Working days	=	300 days per year
Total Rough stone to be removed during the lease period	=	6,88,975m ³
Peak production capacity during the plan period	=	80,625m ³
Hence total Lorry loads per day	=	80,625m ³ /6m ³
	=	13,438 Lorry loads
	=	13,438/300 days
Rough Stone (Maximum)	=	44 – 45 Lorry loads per day.
Total Gravel to be removed during the lease period	=	55,218m ³
Peak production capacity during the plan period	=	32,658m ³
Hence total Lorry loads per day	=	32,658m ³ /6m ³
	=	5,443 Lorry loads
	=	5,443/300 days
Gravel (Maximum)	=	18 Lorry loads per day.

Working hours = 8.30 am to 5.30 pm (with 12.30-1.30 P.M. lunch break).

4.5 Machineries to be used:

For Mining:

The following machineries are utilized for the development and production work at this quarry.

TABLE – 6

I. DRILLING MACHINE:

S. No.	Type	Nos.	Dia Hole mm	Size Capacity	Motive power
1	Hand Jackhammer	8	32	1.2m to 2.0m	Air Compression
2	Compressor	2	-	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	4	30 tonnes	Diesel Drive
2	Water Sprinkling Tanker	1	6,000 litres	Diesel Drive

4.6 Brief note on conceptual mining plan for the entire lease period base on the geological, mining and environmental 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 this mining plan period is given below (Refer Plate No. V):

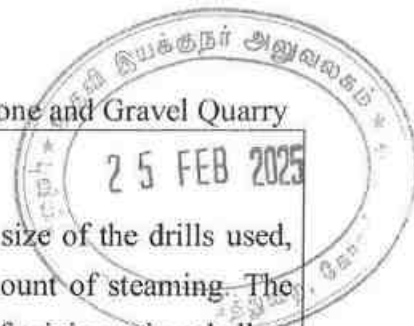
Table – 7

Section	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)
XY-AB	147	141	67
XY-CD	93	74	32

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 and V. As per the NGT orders the applicant is directed to plant 500 tree saplings per hectares along the quarry site either at the regular or the phased manner by planting native species.

There is no waste anticipated during the entire life of quarry. Hence, there is no proposal for backfilling. After completion of quarry operations, the quarry pit will be allowed to collect the seepage and rain water, the water storage will be kept as temporary reservoir to charging the nearby wells and will be utilized for greenbelt development. When the quarry reaches its ultimate pit limit or at the end of life of quarry, greenbelt development will be carried out over the quarried out top bench. The Conceptual Mining is based upon the entire ROM proposed for the life of the Mine.

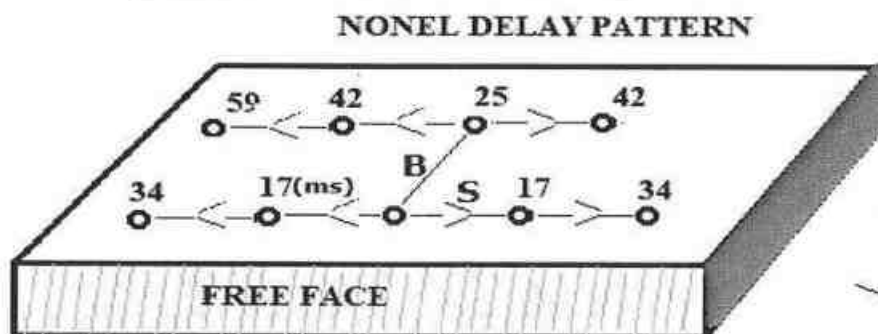
The quarry area will be fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle (Refer Plate No. IV and V).

**5.0 BLASTING:****5.1 Blasting pattern:**

Selection of drilling pattern for blasting varies with the type and size of the drills used, depth of hole, kind of rock, quantity, rapidity of the explosives and amount of steaming. The quarrying operation is proposed to be carried out with conventional method of mining using shallow Jack hammer drilling and mild blasting with NONEL initiation of shattering effect for loosening the Rough stone. NONEL initiation provides reasonably good solution to fly rock problem. The main objectives of NONEL Blasting are to reduce the ground vibration, noise, fly rocks generated due to blasting operations. The overall cost of blasting in NONEL is very less compared to electrical blasting and hence it optimizes the cost of blasting.

Drilling and blasting parameters are as follows:

Depth of Each hole	:	1.5m
Spacing between holes	:	1.0m
Burden for hole	:	0.75m
Diameter of hole	:	32-35mm
Pattern of hole	:	Staggered pattern
Inclination of holes	:	80° from horizontal
Use of delay detonators	:	NONEL
Hole to Hole	:	17 milli second delay (ms)
Row to Row	:	25 milli second delay (ms)

Staggered Pattern of Blasting Design

Spacing (S)	=	1.0m
Burden (B)	=	0.75m
Depth of the hole	=	1.5m
No. of holes proposed per day (Peak Production)	=	232 Holes

5.2 Type of explosives to be used:

Small Dia. 25mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or secondary blasting is proposed. NONEL blasting and muffle blasting may be adopted after permission from DGMS.

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5.3 Measures proposed to minimize ground vibration due to blasting:

The quarry is situated more than 300m away from the nearby villages. Controlled blasting measures by NONEL initiation is being adopt for minimizing ground vibration and fly rock.

Shallow depths jackhammer drilling with blasting is proposed to be carried out with minimum use of explosive mainly to give heaving effect in Rough stone for easy excavation and to control fly rock.

NONEL Delay detonators:

NONEL blasting permits for bottom initiation and lesser charge per delay.

The major advantages of NONEL 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 (As per Peak production capacity):

The Hydraulic excavators are attached with rock breakers for breaking the rock mass to reduce the blasting and explosive usage also to avoid secondary blasting. Anyhow, as per day's production schedule the maximum blasting program proposed as given below.

Peak production	= 80,625m ³ x 2.6 (Bulk Density) = 2,09,625 Tons
No of Holes	= 232 Holes
Yield	= 696 Tons
Powder factor	= 6 Tons/ Kg of explosives
Maximum explosive required	= 116 Kg-Slurry explosives
Charge/ hole	= 0.5 Kg
Blasting at day time only	= 12.30 – 1.00 P.M. (whenever required)

Anticipated theoretical calculation of PPV

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)

PREDICTED PPV VALUES DUE TO BLASTING

Table – 8

Maximum Charge per day (kg)	Number of Round Blast per day	Maximum Charge per Round (kg)	Number of holes blasted per round	Number of holes blasted per day	Maximum Charge blast at a time by NONEL (kg)	Nearest Infrastructure (m)	PPV (mm/s)
116	2	83	166	232	1 (2 Holes)	320	1.683

From the above table, the charge per blast of 116kg is well below the Peak Particle Velocity of 8 mm/s as per Director General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. Anyhow, the company ensures that carry out the **blasting twice a day based on the site condition** under the supervision of competent qualified statutory personnel 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.

5.4 Storage and safety measures to be taken while blasting:

The applicant will engage an authorized explosive agency as approved by Petroleum and Explosives safety Organization (PESO) to carry out the blasting and it will be supervised by competent and statutory foreman/Permit Mines Manager. The explosives agencies should be having the valid Blaster certificate. He will blast holes in the quarry site. After completion of Blasting the explosive Agency will take it out back the remaining quantity of Explosives. The blasting and quarrying operation is advised to handle by competent qualified statutory personnel approved by the DGMS and competent authorities and he will maintain the records of Explosives as per the Indian Explosives Act, Mines Act and EP Act.

6.0 MINE DRAINAGE:**6.1 Depth of water table (based on nearby wells and water bodies):**

The lease applied area consist dendritic drainage pattern. The water table in the area is about 70m - 75m which is observed from the existing private boreholes. The lease applied area is fully covered by Massive Charnockite. The quarry operation confined to well above the water table hence, the Ground Water problem will not arise. Anyhow, Garland drain will be constructed along the boundary to prevent surface run-off water entering into the quarry.

TABLE – 9

Type	Distance & Direction	Location
Bore Well	720m Southeastern side	11°14'52.73"N, 76°58'43.24"E

6.2 Arrangements and places where the mine water is finally proposed to be discharged:

The quarry operations are confined to well above the water table during the entire lease period. If water is encountered at quarry due to rain water and seepage, the same will be pumped out by 5HP water pump and discharge to the Greenbelt development areas. Besides, the water will also be used for dust suppression on haul roads during Haulage of machineries.

7.0 STACKING OF MINERAL WASTE AND DISPOSAL OF WASTE:

There is no waste anticipated during entire life of the quarry hence, disposal of waste does not arise.

8.0 USE OF THE MINERAL:

The excavated rough stone (100%) will be directly loaded into Tippers as raw form to the needy nearby crushing unit to making Road metals and construction materials. The quarried out gravel will be directly loaded into Tippers for filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fee to the Government.

9.0 OTHERS:**9.1 Other Permanent Structure (also shown in the map)****TABLE – 10**

S.No.	Description-Nearest	Particulars	Aerial Distance & Direction
1	National Highway	(NH-181) Coimbatore – Mettupalayam	2.9km – SW
2	State Highways	(SH-168) Karamadai – Kariampalayam	1.5km – SE
3	Railway station	Karamadai	3.1km – SW
4	Airport	Coimbatore	25km – SE
5	Town	Mettupalayam	7.5 km – NW
6	Government School	Government School - Kannarpalayam	2.3km – SW
7	Government Hospital	Primary Health Centre Karamadai	2.6km – SW
8	Habitation	740m – South	
9	Reserved Forest	No Reserve Forest within 60m Radius	
10	Defence Installation/ Historical Monuments/ Archaeological	Nil within 500m radius.	
11	Water Bodies	Odai – 680m – Northwestern side. No Water Bodies within 50m Radius.	
12	Interstate Boundary	Around 28.2km – SW (Kerala state border)	
13	Critically Polluted areas identified by the CPCB	Around 34km – South (SIDCO, Coimbatore)	
14	Protected areas Notified under wildlife (Protection) Act, 1972.	22km – NE – Sathiyamangalam Tiger Reserve	

15	Applicability of CRZ, Notification 2011 as amended.	Not Applicable																			
16	Applicability of Hill Area Conservation Authority (HACA) Clearance.	Not Applicable.																			
17	Housing area, EB line (HT & LT Line)	The EB line and Transformer is situated on Southeastern and Western side of the lease applied area. Hence, 50m safety distance has been provided. No other EB-HT line or Housing area located within 50m radius from the lease applied area.																			
18	Boundaries of the permitted area.	The boundaries of the permitted areas are as follows (Refer Plate No. II): North - S.F.Nos. 342 and 345 (Belladhi) East - S.F.Nos. 344/2 and 65/1B (Belladhi) South - S.F.No. 65/1A (P) and 67 (Chickkarampalayam) West - S.F.No. 68.																			
19	Adjacent Patta lands / Govt. Land	<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>Patta land</td><td>7.5m</td></tr> <tr> <td rowspan="2">South</td><td>Patta land</td><td>7.5m</td></tr> <tr> <td>Patta land</td><td>50m for EB line</td></tr> <tr> <td rowspan="2">West</td><td>Patta land</td><td>7.5m</td></tr> <tr> <td>Patta land</td><td>50m for Transformer</td></tr> </tbody> </table> (Refer Plate No. II):	Direction	Classification	Safety Distance	North	Patta land	7.5m	East	Patta land	7.5m	South	Patta land	7.5m	Patta land	50m for EB line	West	Patta land	7.5m	Patta land	50m for Transformer
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South	Patta land	7.5m																			
	Patta land	50m for EB line																			
West	Patta land	7.5m																			
	Patta land	50m for Transformer																			

TABLE – 11

STRUCTURE WITHIN 50m - 100m					
Number of Structures – 2 Nos.					
Number of Structure	Type of Structure	Usage Purpose	Commercial / industry/ residential/ farm house/ Govt. building	Occupants of Building/ Structure	Remarks
1	Crusher plant	Rough stone crusher	Industry	No resident	Private
1	Shed	Quarry Labour Rest shed	Industry	No resident	Private
STRUCTURE WITHIN 100m - 200m					
Number of Structures – 1 No					
1	Shed	Quarry Labour Rest shed	Industry	No resident	Private
STRUCTURE WITHIN 200m - 300m					
Number of Structures – 1 No.					
1	Shed	Storage for Agriculture goods	Farm house	No resident	Private

9.2 Employment potential (skilled, semi-skilled, un skilled):**TABLE – 12**

Designation	Present Employment position	Employees Requirement	Total
a) Supervisory category			
Mine Manager	-	1	1
Geologist	-	1	1
b) Skilled labour			
Mine Foreman	-	1	1
Blaster/Mate	-	1	1
Excavator – Operator	-	2	2
Tipper Driver	-	4	4
Water sprinkler Driver	-	1	1
Jack-Hammer Drillers	-	16	16
c) Unskilled			
Security	-	1	1
Labour & Helper	-	4	4
Co-operator and Cleaner	-	7	7
Total	-	39	39

The proposed output per man shift:

TABLE – 13

Peak Production	80,625m ³
No. of days likely to be worked	300 days
Average production per day	269m ³
OMS = Average Production per day / Average employment per day	269m ³ / 39 = 6.9m ³

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.

9.3 Welfare Measures:**a) Drinking Water:**

Packaged drinking water is available from the nearby water vendors in Karamadai which is located about 3km on the Southwestern side of the lease applied area.

b) Sanitary Facilities:

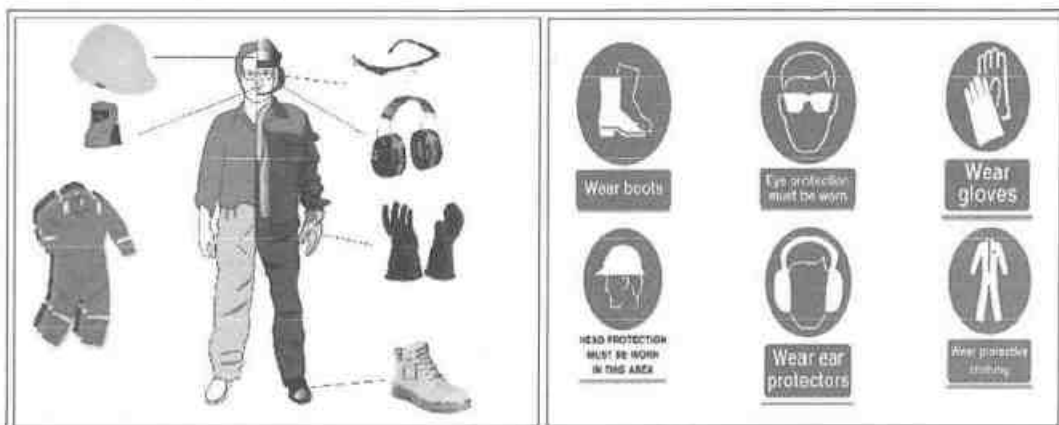
Hygienic modern Sanitary Facilities will be constructed as semi-permanent structure within the applied area and it will be maintained periodically.

c) First aid facility:

First aid kits are kept in Mines office room, in case of such eventuality is the victim will be given first aid immediately at the site by the competent and statutory foreman/permit manager/manager will be in charge of first aid and injured person will be taken to the hospital by the applicant's vehicle. Primary Health Centre is available in Karamadai located at 2.6km on the Southwestern side of the area.

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,
- Reflector Jackets
- Dust mask
- Mine Goggles,
- Ear plugs,
- Ear muffs
- Safety Shoes

All personnel protective equipment as per the DGMS standard 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.

10.0 MINERAL PROCESSING:

No mineral processing/beneficiation involved.

PART – B**11.0 ENVIRONMENT MANAGEMENT PLAN**

The EMP is prepared based on the Mines act, Rules & amendment from by state & central government. If the SEIAA/SEAC instructed the modification and alter the EMP the outcome of their recon would be final and the applicant is instructed to follow the EIA / EMP for its compliance as per the CPCB / TNPCB Norms.

Environment	Anticipated impact	Mitigation measure
Land Environment	i. Topography of the area will change due to mining activity. ii. Soil quality and agriculture land on surrounding land environment will impact due to; a) Dust propagation during quarry operation like drilling, blasting, loading, unloading and movement of men, Vehicle and machineries. b) Vehicular and machineries emissions and spillage of oil and grease.	i. Backfilling is the only source for mitigation measure for topographical changes, but no waste will be anticipated during entire life of the Rough stone and Gravel quarrying operation hence, backfilling is not proposed. ii. The Mining benches will not exceed beyond the approved height and width. iii. At the end of life of mine, the pit will be allowed to collect the seepage and rain water and the water storage will be kept as temporary reservoir for charging the nearby wells also the water utilized for greenbelt development purpose. i. Regular water sprinkling on dust prone area like haul road and other active area to arrest the dust generation. ii. The applicant is carried out the greenbelt along the safety zone, the same will be maintain also additional greenbelt will be developed with thick long leave plants to arrest the fugitive dust and vehicular emissions propagation. iii. Wet drilling/dust extractor unit by proper drilling pattern and controlled blasting with NONEL initiation will be carried out to minimize the dust generation. iv. Excavated benches shall be developed by planting with grasses, herbs and shrubs of local species to prevent soil erosion and landslide.



	c) Propagation of foreign material like polythene bag, Plastic water and cool drink containers and undecomposed waste materials dumping.	v. PUC (Pollution under control) certified vehicles will be used for transportation and all vehicles and their exhausts would be well maintained and regularly tested for pollutant concentrations. vi. Oiling and greasing will be managed in respective places at vehicle maintenance shed and oil tray will be use to collect the spillage during maintenance and the same will be disposed in manner. vii. Leftover foreign material like polythene bag, undecomposed materials or ill managed dumping will not be allowed.
Water Environment	Surface Mining can have direct impact on physico-chemical characteristics of the local drainage and groundwater resources. The detrimental effects, if any, to water resources resulting from surface mining are caused by following: i. Flow direction of Surface run off water will interrupting during rainy season due to modification of topography. ii. Surface water course will be contaminated due to dust propagation and vehicle emission.	i. Garland drain with check dam will be constructed all along the boundary barrier to prevent surface run off rain water entering into the pit. ii. The pit water due to rain and seepage will be utilized for water sprinkling on haul Roads and plantations. iii. Greenbelt will be developed in the safety zone with thick long leaves plants and water sprinkling on dust prone area to arrest the fugitive dust and vehicular emissions. iv. Further mining will be completely stopped during the monsoon for free flow of surface run off and allowing natural recharge of groundwater. v. No wastewater will be generated from the quarry activity. Proper drainage will be Maintained to eliminate inundation of working pit during rain from run-off water. vi. Septic tanks and soak pits will be provided for the disposal of domestic washroom effluents, the same will be disposed in proper manner.



Air Environment	In surface mining operations, the source of air pollution may cause deterioration of air quality due to; a) The fugitive dust emissions from drilling/blasting, scooping, loading-unloading operation of extracted mineral and its transportation. Drilling/blasting and loading of quarry material would be associated with the fugitive dust emission in the active area whereas fugitive emission during transportation would affect the areas/villages situated adjacent to the road side. Another source of air pollution would be emission from the drilling machinery and excavators/tippers vehicles to be used for loading.	i. Regular water sprinkling on haul road and dust prone area to arrest the dust generation. ii. Additional greenbelt will be developed in the safety zone and Haul road with thick long leaves plants to arrest the fugitive dust and vehicular emissions. iii. Wet drilling/dust extractor unit by proper drilling pattern and controlled blasting with NONEL initiation will be carried out to minimize the dust generation. iv. Quarry material will be handled under wet condition during scooping, loading and unloading to minimize the dust propagation, besides loaded materials are covered by Tarpaulin until to reaches its destination. v. Provision of dust filters/ Nose mask to workers working at dust prone areas. vi. Vehicular emission as a result of combustion of diesel generates particulate matter (PM_{10} & $PM_{2.5}$), Nitrogen oxides and Sulphur dioxide (NO_2 & SO_2). High quality diesel will be used in the motor vehicles to control these pollutants. vii. PUC (Pollution under control) certified vehicles will be used for transportation and all vehicles and their exhausts would be well maintained and regularly tested the pollutant concentrations. viii. CPCB Prescribed emission standards for the vehicles would be followed.
Noise Environment	In the present mining activity for building material, noise will be generated from drilling machinery, blasting and vehicular movement. Noise level in the working environment is compared with the standards prescribed by Central Pollution Control Board as adopted and enforced by the Govt. of India through Noise Pollution (Regulation and Control) Rules, 2000.	i. Selection of innovative low – noise equipment for the quarry operation. ii. The noise levels shall be maintained within the permissible levels by involving all the noise regulating measures in vehicles and drilling/blasting operations. iii. To ensure minimum vibrations and noise due to blasting, NONEL in continuous sequence is proposed. iv. Personnel Protective Equipment (PPE) like earmuffs and earplugs shall be provided to the employees whose in critical operation like drilling, blasting and excavation as occupational safety measures. v. Proper maintenance done with regular interval by the Oiling and greasing for the

		machineries and vehicles to control the Source of noise during operation and transportation. vi. Regular and proper maintenance of machinery and transportation vehicles shall be ensured. vii. Transporting vehicles are enforcing the speed limits of 20km/hour within quarry area and not exceed 40km per hour from quarry to destination to reduce Noise and vibration. viii. There would be restrictions on mining activity and vehicular movement during night hours.
Biological Environment	The area having main floras are Neem, Cocos nucifera, Palm, Casuarina, Pongamia pinnata, Senna auriculata, Bushes, veld grape, Cactus, and shrubs. No plants of botanical interest or animals of zoological interest recorded within 500m radius. The anticipated impacts on biological environment as follows: i. Cattles may die by entering the pit. ii. Diversity of living insects and faunas due to vibration. iii. Natural habitats of the existing faunas and its breeding will change due to the noise and vibration during operation. iv. The mining activities can also disrupt the ecological diversity. v. Deposition of dust on the plant and crop leaves is affecting the photosynthesis, Pollination, growth ratio and agriculture productivity.	i. 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. ii. The natural habitats of the existing flora and fauna will not be disturbed. iii. No mining will be carried out during the monsoon season to minimize impact on aquatic life for many species. iv. Fruit bearing trees will be planted to survive the existing faunas. v. No clearance of vegetation will be done during the entire mining operations. vi. Regular Water sprinkling on haul roads would be reduces the dust propagation, thus avoiding damage to the crops and plants. vii. No night hour mining will be carried out which may catch the attention of faunas.



Socio Economic Environment	Any activity during mining will have adverse impact on Environment, careful mitigation measures are proposed to balance the impact on the existing environment and the applicant is always instruct to carry out safe, sustainable, eco-friendly mining operations at all times. The following positive impact on the society due to this mining activity. i. It is proposed to provide employment to about 39 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. 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. ii. 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. iii. Improvement of Physical structure like 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. iv. The continuation of opportunity for the employments, the nearby villages, living peoples and their life style would be improved. v. The applicant is advised to invest the CER cost (@ 2% from the total Project Cost) to develop the local Panchayat.	i) Preference employment will be given to the local community. This quarrying activity will also indirectly provide employment to the local community by the way of petty shops, hotels, etc ii) The CER activity proposed by the company will enhance the requirement of the local community. iii) The improvement of physical structure like road transport facilities, medical, social benefits will get enhanced. iv) There will be a positive enhancement of lifestyle of the nearby village.



11.1 Environmental impact assessment statement describing impact of mining on the next ten years:

In the mining plan proposed for production of Rough stone and Gravel. 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 environmental impact studies will be conducted as per EIA notification issued by MoEF& CC. It is B Category mine. The compliance monitoring will be carried out for every six months as prescribed by the MOEF&CC and with state concerned authorities.

11.2 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%). The maintenance of machineries & fuelling will be carried out as per the TNPCB Norms and the waste will be disposed in the Norms.

11.3 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.):

In the mining plan only to a maximum depth of 67m (2m gravel + 65m Rough stone) below from the ground level has been envisaged as workable depth for safe & economic quarrying operation during entire life of quarry. There is no waste anticipated during entire life of the quarry hence, backfilling is not proposed. After completion of quarry operations, the quarry pit will be allowed to collect the seepage and rain water, the water storage will be kept as temporary reservoir to charging the nearby wells and will be utilized for greenbelt development. When the quarry reaches its ultimate pit limit or at the end of life of quarry, greenbelt development will be carried out over the quarried out top bench. 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.

11.4 Programme of Greenbelt development (indicate extend, number, name of species to be afforested):

The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development. Around 3,600m² area will be utilized for green belt development by planting 600 numbers along the safety zone during entire lease period also around 500 tree saplings in the approach road at first year of the plan period and 300 tree saplings from third year onwards in quarried out top benches with 2m height tree saplings with an anticipated survival rate of 80% with maintain at least 1220 plants during the entire life of the quarry.

As per the SEIAA Recommendation the plantation will be carried out based on the output Environmental Clearance and the recommended species will be carried out for green belt development. Appropriate species of trees will be planted in a phased manner as described below.

Table – 14

Year	No. of trees proposed to be planted	Area to be covered (m ²).	Survival (%)	Name of the species	No. of trees expected to be grown
I	60	360	80%	Neem, Pongamia Pinnata, Casuarina, Cordia dichotoma, Mookusali maram, Mantharai, etc.,	48
II	60	360	80%		48
III	60	360	80%		48
IV	60	360	80%		48
V	60	360	80%		48
VI	60	360	80%		48
VII	60	360	80%		48
VIII	60	360	80%		48
IX	60	360	80%		48
X	60	360	80%		48

11.5 Proposed financial estimate / budget for the project:

Budget Provision for the Mining Plan period:

TABLE – 15

A. Operational Cost / Project Cost / Investment:					Cost (Rs.)
i) Land cost	The Land value as per the Government Guideline land cost is about,				46,79,000
	S.F.Nos.	Extent (Ha.)	Cost / Ha (Rs.)	Cost of the area (Rs)	
	343	2.38.50	1248000	2976480	
	344/1	0.30.55	1248000	381264	
	65/1A	0.94.60	1396500	1321089	
	Total	3.63.65		46,78,833	
	i.e., Rs.46,79,000/-. (Source: https://tnreginet.gov.in/portal/).				
ii) Machinery cost	The following machineries are proposed to meet out the productions. Excavator attached with rock breaker Tipper, Tractor mounted compressor with jack Hammer and loose tools.				2,21,00,000
iii) Labourers shed	Labour shed will be constructed as semi-permanent structure. The cost is around				5,00,000
iv) Sanitary facility	Adequate latrine and urinal accommodation has provided at conveniently accessible places the cost would be around.				1,00,000
v) Drinking water facility for the labourers	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.				3,00,000
vi) Sanitary arrangement	The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around.				1,50,000
vii) Safety kit	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.				1,00,000

viii) CCTV Arrangements	Installation of CCTV cameras in the quarry area.	25 FEB 2025	2,80,000
Total Cost			2,80,09,000
B. EMP Cost:		Cost (Rs.)	
1.	Environmental Monitoring Program (Air Quality, Water Quality Sampling, Noise and Ground vibration test) Rs. 50,000/ year.		2,50,000
2.	Water will be sprinkled in the haul roads by own water sprinklers for dust suppression (1 No.). The cost would be around.		6,00,000
3.	Construction of Garland drain with check dam to prevent surface run-off rain water entering to the quarry pit, the construction cost is around (Total Peripheral length 820m x Rs. 300/meter).		2,46,000
4.	Fencing constructed around the quarry area to prevent the inadvertent entry of public and cattle cost would be around (Total Peripheral length 910m x Rs. 300/meter).		2,73,000
5.	First aid room & accessories		80,000
6.	Dust extractor unit for Jackhammer (4 Nos.)		1,00,000
7.	Greenbelt development for dust suppression & Noise control measures	Greenbelt development will be carried out along the safety barrier; the cost would be around (600 saplings x Rs. 200/sapling).	1,20,000
		Greenbelt development will be carried out along the quarried out top benches; the cost would be around (300 saplings x Rs. 200/sapling).	60,000
		Greenbelt development will be carried out on haul road; the cost would be around (500 saplings x Rs. 200/sapling).	1,00,000
Total EMP Cost			18,29,000/-
Description		Cost (Rs.)	
A. Operational Cost			2,80,09,000/-
B. EMP Cost			18,29,000/-
Total Project Cost (A+ B)			2,98,38,000/-
C. The applicant Indents to involve corporate environment responsibilities (CER) activity like Water Purifier, Plantation, Books to Library, sanitary facility, Smart class Board, class room painting and as per requirement to the nearby Government School at 2.0% from the total project cost. The Cost would be around Rs.5,97,000/. If the concerned authority is directed to modify the CER cost and mode of utilization of the cost, the same will be implement by the applicant.			5,97,000/-
Total Cost (A+B+C)			3,04,35,000/-
The total cost would be around three crore four lakhs and thirty five thousands only.			

12.0 PROGRESSIVE QUARRY CLOSURE PLAN**12.1 Introduction:**

As per guidelines for preparation of mining plan prescribed under Minor Mineral Conservation and Development Rules, 2010 also the entire area is proposed for a short period of ten years only hence, the progressive quarry closure plan may not be applicable to this quarry. Anyhow, during temporary discontinuance of quarry the following measures will be taken.

- Barbed wire fencing will be constructed around the quarry.
- Benches will be smoothening.
- Quarry will be closed & sentries will be posted round the clock.
- Green belt development will be maintained.
- Machineries will be removed from pit and engaged in another site.

12.2 Present and Post Land use pattern:

Table – 16

Description	Present area (Ha)	Area required during first five years (Ha)	Area at the end of the lease period (Ha)
Area Under Quarry	Nil	2.97.00	2.97.00
Site Services	Nil	0.01.00	0.01.00
Roads	Nil	0.02.00	0.02.00
Green Belt	Nil	0.18.00	0.36.00
Unutilized Area	3.63.65	0.45.65	0.27.65
Grand Total	3.63.65	3.63.65	3.63.65

12.3 Statutory obligations:

The applicant ensures to comply all the conditions stipulated in the precise area communication letter before grant of quarry lease and during the course of quarry operations as per the DGMS, Department of Geology and Mines, Labour Enforcement officer, controller of Explosives etc., circulars, Norms, Rules, Regulations and Act.

12.4 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 (As per Rule 15(I)(a) and (I)(b) of MCR, 2016)

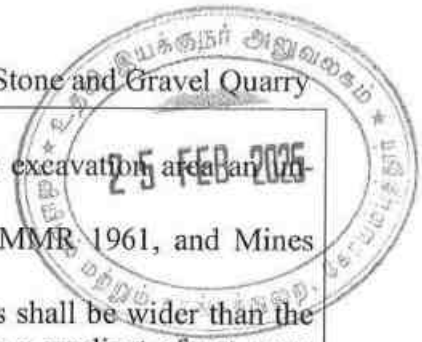
Address : No. 4/366-D, Selva Nagar,
Kamaraj Nagar Colony, Near Omega Church,
Salem District,

State with PIN Code : Tamil Nadu – 636 014.

Mobile : +91 97916 09929.

Email : viswa2727@gmail.com.

The applicant will himself implement the closure plan; no outside agency will be involved.

**(i) Safety & Security:**

Safety measures will be implemented to prevent access in the excavation area and authorized 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 5.0 m for ease of operations and provide sufficient room for the movement of machineries and vehicles.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipment 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 given to the public before blasting to prevent accident.
- Security guards will be posted.
- In the event of temporary closer, approaches will be fenced off and notice displayed.
- Installation of CCTV cameras in the quarry and entrance of the quarry.
- Monitoring of Quarrying operation by external agency as directed by authorities.

(ii) 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.

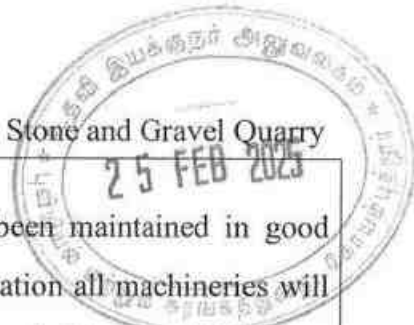
- The mechanized mining activities in the area may involve any high risk accident due to side falls/collapse, flying stones due to blasting etc.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency 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.

Environmental Monitoring Cell:

A dedicated team nominated by the mine manager or Agent will monitor and maintain the environmental compliances of the quarry as per the approved Environment Management Plan and report the Compliance to the Mine Manager half yearly.

Disaster Management Cell:

The Competent Qualified Statutory managers appointed by the applicant as per the Director of Mines Safety will be responsible for Disaster Management. It care any eventualities his mobile number will be displayed and he will take all the precautions and safety measures as per Mines and Minerals (Development and Regulations) Act, 1957.

**(iii) Disposal of mining machinery**

All the Machineries will be purchased fresh, the same has been maintained in good condition during entire life of quarry. After completion of quarry operation all machineries will be utilized at another quarry area or sold out to the second hand. Hence, disposal or decommissioning of mining machinery does not arise.

(iv) 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.

(v) 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.

(vi) 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 at present scenario:

TABLE – 17

ACTIVITY		YEARS										RATE	COST (Rs.)
		I	II	III	IV	V	VI	VII	VIII	IX	X		
Plantation under safety zone	Nos	60	60	60	60	60	60	60	60	60	60	Rs.200 Per sapling	1,20,000
	Cost	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000		
Plantation in quarried out top bench and Haul road	Nos	Haul Road			Quarried out top bench							Rs.200 Per sapling	1,60,000
		250	250	-	-	-	-	-	100	100	100		
	Cost	50000	50000	-	-	-	-	-	20000	20000	20000		
Barbed Wire Fencing (910 Mtrs)		2,73,000	-	-	-	-	-	-	-	-	-	Rs300 Per Meter	2,73,000
Garland Drain (820 Mtrs)		2,46,000	-	-	-	-	-	-	-	-	-	Rs300 Per Meter	2,46,000
Total													7,99,000

13.0 STATUTORY COMPLIANCE TO BE FOLLOWED DURING THE COURSE & CLOSURE OF QUARRY LEASE:

The Applicant after execution of lease deed should ensure to carry out that the quarry operation in accordance to the Approved Mining plan and as per TNMMCR, 1959, Mines Act 1952 & MMR 1961.

The conditions in the nutshell as follows:

1. The quarry operation should be fenced with the barbed wire and three tier Greenbelt has to be carried out all along the boundary barriers and should be maintained till the end of the life of the mine.
2. The quarry operation should be carried out as per the regulation 3,4,5 of MMR 1961 as prescribed in the form I, II, III, IVA, IVB, IVC, V, VI.
3. Statutory competent qualified person as per regulation 39, 40, 41, 42, 43, 44, 47, 48 of MMR 1961 should be appointed to carryout day today quarrying operation in scientific & systematic manner.
4. Blasting has to be carried out during the designated timing as per the approved mining plan with sufficient warning all around the mines by only the Qualified blaster as indicated in the regulations 153, 154, 156, 160, 166, 167, 169 of MMR 1961.
5. During the Quarrying operations the benches has to be maintained and haul roads should be maintained as per the regulations 60, 61, 62, 65, 66, 95, 96, 105, 106, 110, 115, 118 of MMR 1961. When the quarry attains 30mts depth from the general ground profile a slope stability study should be carried out with competent authorized agencies only.
6. All PPE should be provided to the employees and periodic Medical Examination has to be carried out as per the regulation 124, 127, 177, 178, 181, 183, 185, 188, 190, 191A of MMR 1961.
7. The Applicant should submit the quarterly, half yearly & Annual returns to the concerned Authorities as per regulation 3, 4, 5, 9 & 10 MMR 1961 on time and HYCR self-compliance reports should be submitted to the State Pollution control Board.
8. Periodical Hydrology & Hydrogeological Studies has to be carried out during the course of quarrying operation. if any significant seepages is inferred, the applicant should carry out a comprehensive Hydrogeological studies to ensure the impact of agricultural activities in and around the mine (Open well & Tube well). If the impact is noticed considerably the quarry had to be continued only after obtaining permission clearances and approval from the competent regulatory authorities.
9. The lessee should utilize green energy / Solar energy as far as possible for operation of machineries, equipment and illumination in the mine's office, quarry boundaries and avenue roads.
10. The lessee should ensure all the skilled and semi-skilled workers should be provided trainings in nearby Vocational Training centre as per the MVTR 1966 and should be registered in Shram Suvidha portal as directed by the Ministry of labour.
11. The lessee should carry out the quarrying operation keeping the view of mineral conservation, development and sustainable mining.
12. If the lessee intends to deviate from the approved mining plan, a modified mining plan has to be prepared submitted and approved from the concerned authority before making any significant changes in the mining operations.
13. The lessee should carry out the mining operation in Eco friendly environment with good hygienic conditions to the employees deployed and maintain good harmony with local communities in the impact zone.
14. The conditions stipulated in the lease deed and Environmental clearance especially the mitigation measures as proposed in EMP to the SEIAA has to be followed during the course of quarrying operation and also to as per the rules of TNMCR 1959, Mine act 1952, MMR 1961, Mine Rule 1955, Environment Protection Act 1986 and Indian Explosive act 1884 and Indian Explosive Rules 2008 and all the amendments issued by the concern State and Central Government authorities from time to time.

This Mining plan for Rough stone (Charnockite) and Gravel is under Rules 41 & 42 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 and modified after scrutiny comments as per the guidelines of the Concerned Department and Authorities.

This Mining Plan and mine design is prepared based on the requirement instructed by the applicant to me. If there is any change in the production schedule, change of technology, change in product mix during the course of operations, the applicant is advice to prepare a modified mining plan and get approval by the concerned authority for subsequent clearance and approval. The same will be monitored by the inspecting authority of Department of Geology and mining and other Concerned Departments under Rule 25 and sub rule (5)(d) in Rule 36 of Tamil Nadu Minor Mineral Concession Rules, 1959.

I hereby ensure that the information provided is correct to best of my knowledge and experience, some of the information contained in this report has been provided by external sources and by the applicant and is presented as the form as submitted by the applicant. The information is not intended to serve as legal advice related to the individual situation. I do not owe and specifically disclaim any liability resulting from the use during the course of quarrying operations after the grant of lease. The document may be scrutinized by the competent authority before approval.

Prepared by

P. Viswanathan

P. Viswanathan, M.Sc.,
Qualified Person

Place: Salem

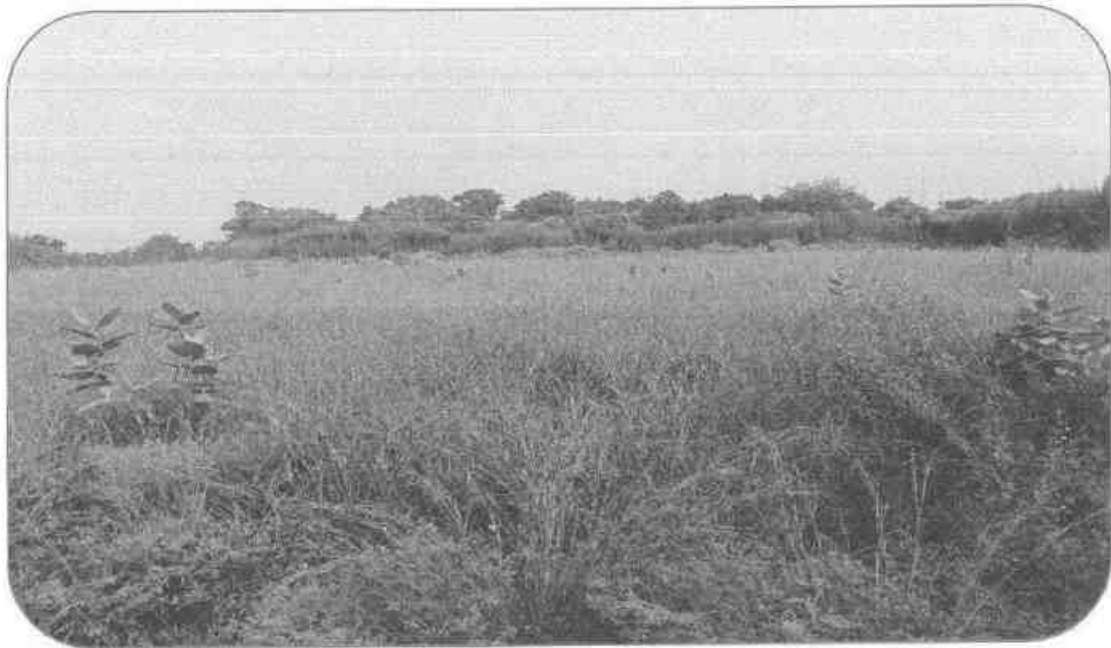
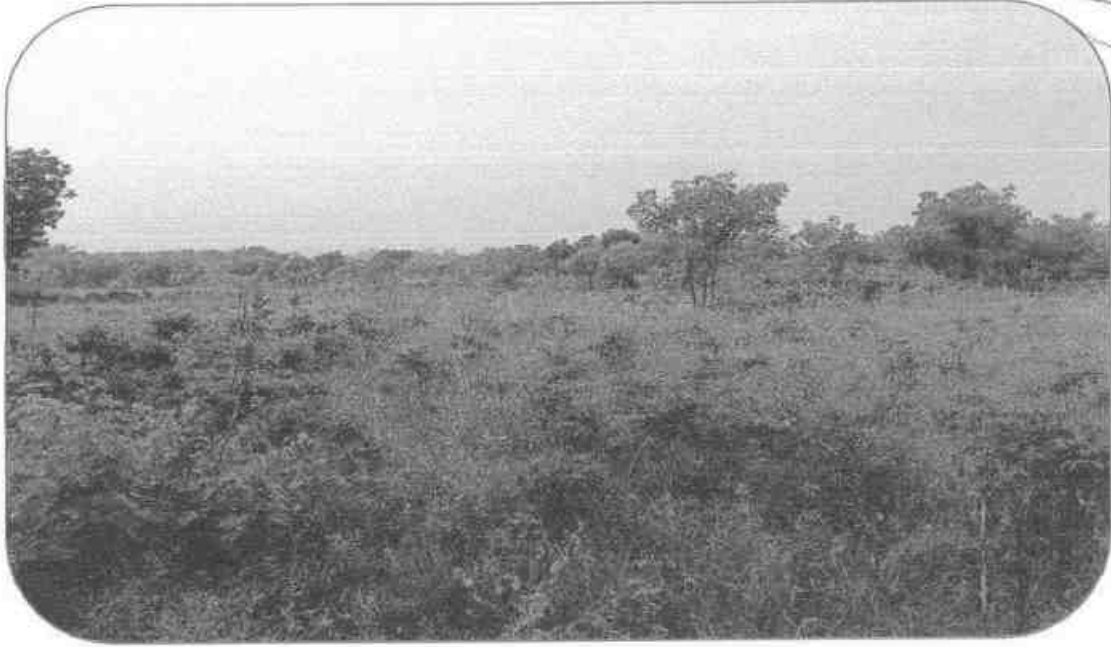
Date: 03.02.2025

This Mining Plan is Approved
subject to the conditions / stipulation
& indicated in the Mining Plan Approval
Letter No: 1262/Mines/24 dt 2-25
office of the A.D, Geology & Mining Coimbatore

This Mining Plan is Approved based on the incorporation of the particulars specified in the letter of the commissioner of Geology and Mining, Chennai ref No: 3563/LG/2012 Dated 19.11.2012 and subjected to further fulfillment of the condition laid down under Tamilnadu Minor Mineral Concession Rules 19th

[Signature]
ASSISTANT DIRECTOR
DEPARTMENT OF GEOLOGY & MINING
COIMBATORE DISTRICT

PHOTOGRAPHS OF THE BELLADHI & CHICKKARAMPALAYAM
ROUGH STONE AND GRAVEL QUARRY LEASE APPLIED AREA





உதவி இயக்குநர் அலுவலகம், புலியியல் மற்றும் சுரங்கத்துறை, மாவட்ட ஆட்சியர் அலுவலக வளாகம், கோயம்புத்தூர் - 18.

ந.க.எண்.1262/கனிமம்/2024

நாள்: 28.01.2025

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - கோயம்புத்தூர் மாவட்டம் - மேட்டுப்பாளையம் வட்டம் - சிக்காரம்பாளையம் கிராமம் - புல எண். 65/1A(பகுதி)-ல் 0.94.60 ஹெக்டேர் - பெள்ளாதி கிராமம் - புல எண். 343-ல் 2.38.50 ஹெக்டேர் மற்றும் 344/1-ல் 0.30.55 ஹெக்டேர் ஆக மொத்தம் 3.63.65 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க குவாரி குத்தகை உரிமம் கோரி தி/வா. ஸ்ரீ புளூ மெட்டல்ஸ் நிறுவனத்தினர் விண்ணப்பம் செய்தது - வரைவு சுரங்கத்திட்டம் சமர்ப்பிக்க அறிவுறுத்துதல் - தொடர்பாக.

- பார்வை: 1. தி/வா. ஸ்ரீ புளூ மெட்டல்ஸ், உரிமையாளர் திரு.S.ஞானசேகரன், 2/241, கண்ணார்பாளையம், காரமடை அஞ்சல், மேட்டுப்பாளையம் வட்டம், கோயம்புத்தூர் விண்ணப்பம் நாள் 25.11.2024 மற்றும் 20.01.2025.
2. இவ்வலுவலக கடிதம் இதே எண். நாள்: 25.11.2024.
3. வட்டாட்சியர், மேட்டுப்பாளையம் கடிதம் ந.க.எண். 59/2025/அ9 நாள்: 09.01.2025
4. வருவாய் கோட்டாட்சியர், கோயம்புத்தூர் வடக்கு அவர்களின் கடிதம் ந.க.எண்.4947/2024/அ3 நாள்: 20.01.2025.
5. வட்டார வளர்ச்சி அலுவலர் (கி.ஊ), காரமடை கடிதம் ந.க.எண்.930/2024/ஆ2 நாள்: 28.11.2024.
6. கோயம்புத்தூர் புலியியல் மற்றும் சுரங்கத்துறை உதவி புலியியலாளர் தணிக்கை குறிப்பு நாள்: 22.01.2025

பார்வை 1-ல் கோயம்புத்தூர் மாவட்டம், மேட்டுப்பாளையம் வட்டம், 2/241, கண்ணார்பாளையம் என்ற முகவரியில் இயங்கி வரும் தி/வா. ஸ்ரீ புளூ மெட்டல்ஸ் என்ற நிறுவனத்தின் உரிமையாளர் திரு.S.ஞானசேகரன் என்பவர் கோயம்புத்தூர் மாவட்டம், மேட்டுப்பாளையம் வட்டம், சிக்காரம்பாளையம் கிராமம், புல எண். 65/1A(பகுதி)-ல் 0.94.60 ஹெக்டேர், பெள்ளாதி கிராமம், புல எண். 343-ல் 2.38.50 ஹெக்டேர் மற்றும் 344/1-ல் 0.30.55 ஹெக்டேர் ஆக மொத்தம் 3.63.65 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் கோரி உரிய ஆவணங்களுடன் விண்ணப்பித்துள்ளார்.

பார்வை 3, 4, 5 மற்றும் 6-ல் கண்ட கடிதங்களில் மேட்டுப்பாளையம் வட்டாட்சியர், கோயம்புத்தூர் வடக்கு வருவாய் கோட்டாட்சியர், காரமடை வட்டார வளர்ச்சி அலுவலர் (கி.ஊ) மற்றும் புலியியல் மற்றும் சுரங்கத்துறை உதவி புலியியலாளர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கோயம்புத்தூர் மாவட்டம், மேட்டுப்பாளையம் வட்டம், சிக்காரம்பாளையம் கிராமம், புல எண். 65/1A(பகுதி)-ல் 0.94.60 ஹெக்டேர், பெள்ளாதி

கிராமம், புல எண். 343-ல் 2.38.50 ஹெக்டேர் மற்றும் 344/1-ல் 0.30.55 ஹெக்டேர் ஆக மொத்தம் 3.63.65 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் தி/வா. ஸ்ரீ புளூ மெட்டல்ஸ் என்ற நிறுவனத்திற்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

எனவே, கோயம்புத்தூர் மாவட்டம், மேட்டுப்பாளையம் வட்டம், சிக்காரம்பாளையம் கிராமம், புல எண். 65/1A(பகுதி)-ல் 0.94.60 ஹெக்டேர், பெள்ளாதி கிராமம், புல எண். 343-ல் 2.38.50 ஹெக்டேர் மற்றும் 344/1-ல் 0.30.55 ஹெக்டேர் ஆக மொத்தம் 3.63.65 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் 1959-ம் வருடாந்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.19 மற்றும் 20(2)(a)-ன் கீழ் 10 வருட காலங்களுக்கு சாதாரண கற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குத்தகை உரிம அனுமதி வழங்குவதற்கு உகந்த புலமாக கருதி அறிவிப்பு செய்யப்படுகிறது.

மேலும், தி/வா. ஸ்ரீ புளூ மெட்டல்ஸ் நிறுவனத்தினர் மூன்று மாத காலத்திற்குள் வரைவு சுரங்கத்திட்ட அறிக்கை (Draft Mining Plan) கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு தயார் செய்து கோயம்புத்தூர் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநரிடம் ஒப்புதல் பெற்றும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 41 & 42-ன் படி ஏற்பளிக்கப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவாணைச் சான்று பெற்று சமர்ப்பிக்குமாறும் அறிவுறுத்தப்படுகிறது.

நிபந்தனைகள்

1. அருகிலுள்ள பட்டா நிலங்கள் மற்றும் பொது மக்களுக்கும் எவ்வித இடையூறும் இன்றி குவாரி பணி மேற்கொள்ள வேண்டும்.
2. அருகில் உள்ள பட்டா நிலத்திற்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ள வேண்டும்.
3. அனுமதி கோரும் புலங்களின் தென்கிழக்கு பகுதியில் அமைந்துள்ள மின்கம்பி பாதைக்கும் மற்றும் மேற்கு பகுதியில் அமைந்துள்ள மின்மாற்றிக்கும் 50 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரிப்பணி மேற்கொள்ள வேண்டும்.

பெறுநர்:
தி/வா. ஸ்ரீ புளூ மெட்டல்ஸ்,
உரிமையாளர் திரு.S.ஞானசேகரன்,
2/241, கண்ணார்பாளையம்,
காரமடை அஞ்சல்,
மேட்டுப்பாளையம் வட்டம்,
கோயம்புத்தூர்


உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை
கோயம்புத்தூர்

28/1/25

25 FEB 2025

28 DEC 2024

4 சதுரம்

கிராமம்

எண் : 18

பெரியபாளையம்

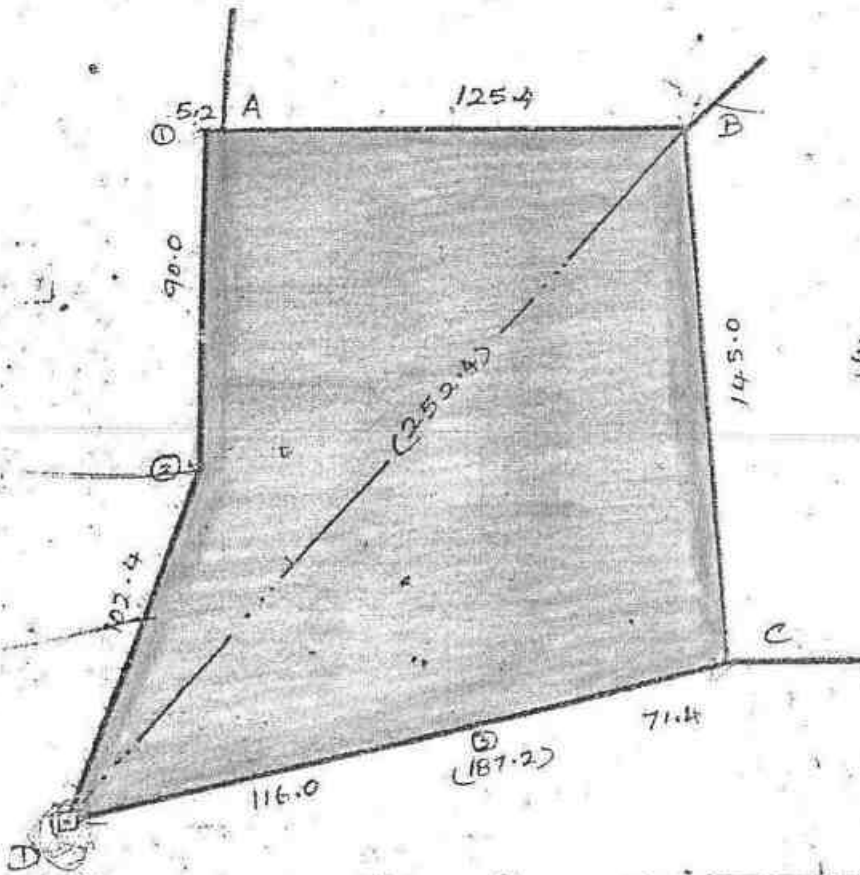
பெயர் : பெரியபாளையம்

343

பரப்பு: ஹெக்டேர்

2 ஏ.385

342



கிராம எண் : 19. சிதம்பரம் பாளையம்

LEASE APPLIED AREA

		C		
		187.2		
		116.0	0.6	3
		D		
		252.4		
		156.6	36.0	2
C	105.8	97.4		
		86.6	94.4	1
		86.4	91.4	A
		3		

26/8/2024
கிராம நிர்வாக அலுவலர்
நெ.18, பெள்ளாதி.
மேட்டுப்பாளையம் வட்டம்

அளவு. 1:2000 மீட்டர்



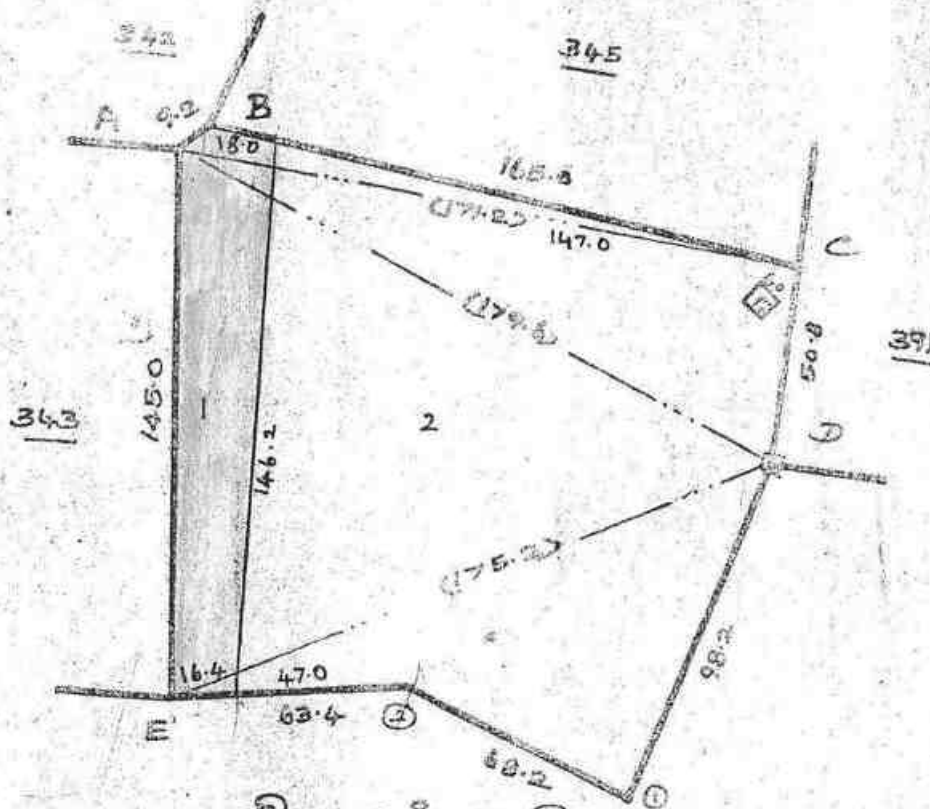
கிராமம் {
பெயர்.

25 FEB 2025
பெயர்.

புல எண். 343

பரப்பு: நெல்லை

அ. எ. 175



கிராம பெயர்: 19. சிவசுந்தரி பாலையாள்

சுற்றுலா மற்றும் வணிக அமைச்சு
நெ.18, பெள்ளாதி,
மேட்டுப்பாளையம் வட்டம்

TK/8A/232/1430 DE:29.04.2021 by
4th & 2nd of 344/102 - அங்கு
அத்தான் அங்குயப்பட்டு 5.5.21
2.2.2021

Loose Bound Area-

			E	
			175.2	
2	19.4		114.0	
1	69.8		67.8	
			50.8	
			13.6	8.6
			9.6	40.1
			C	
			171.2	
B	6.8		6.2	
			A	

வரைபடம்

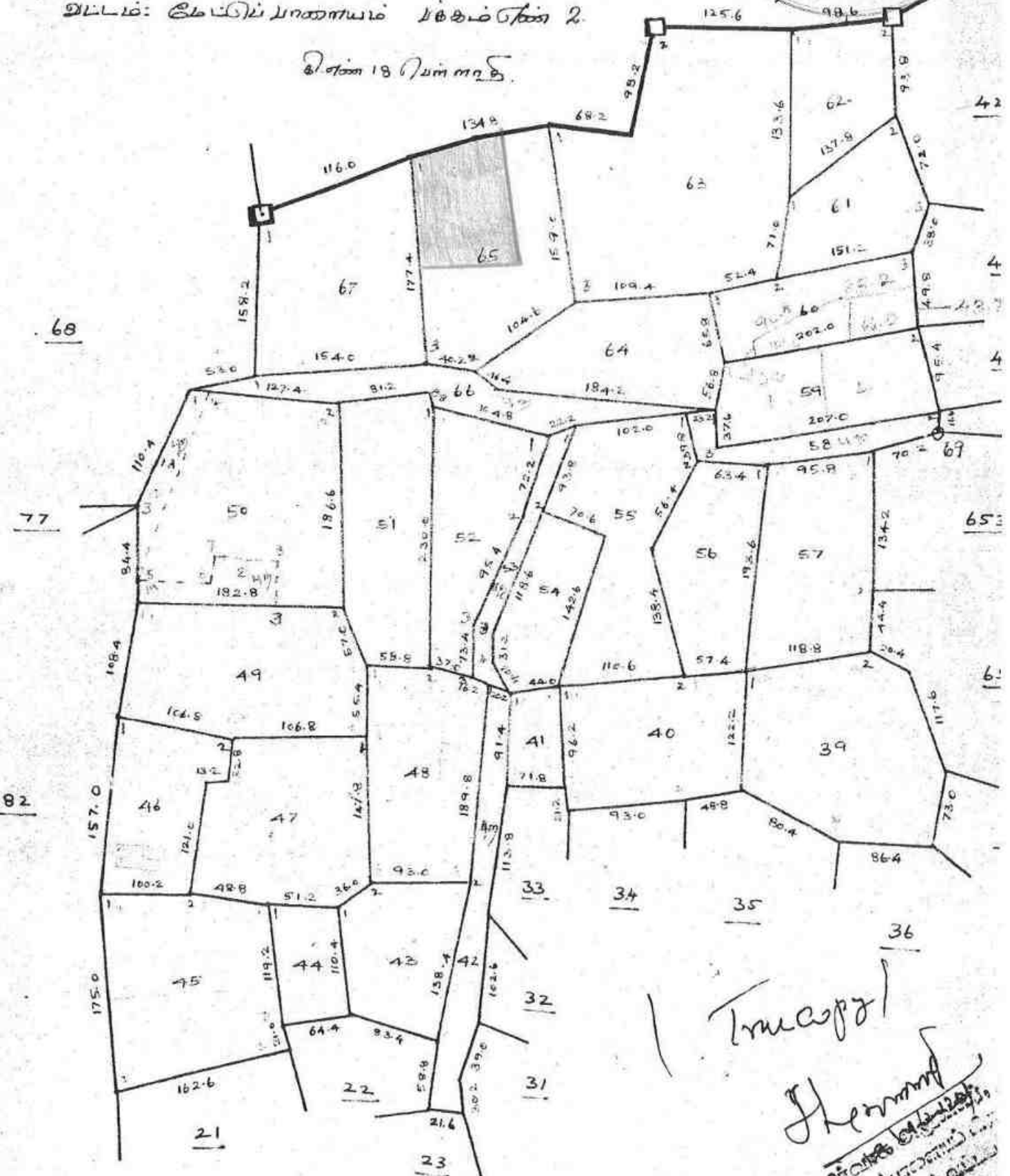
அளவு: 1:20000



கா. உடம்: கோயம்புத்தூர் புறமண்கள்: 39 to 67

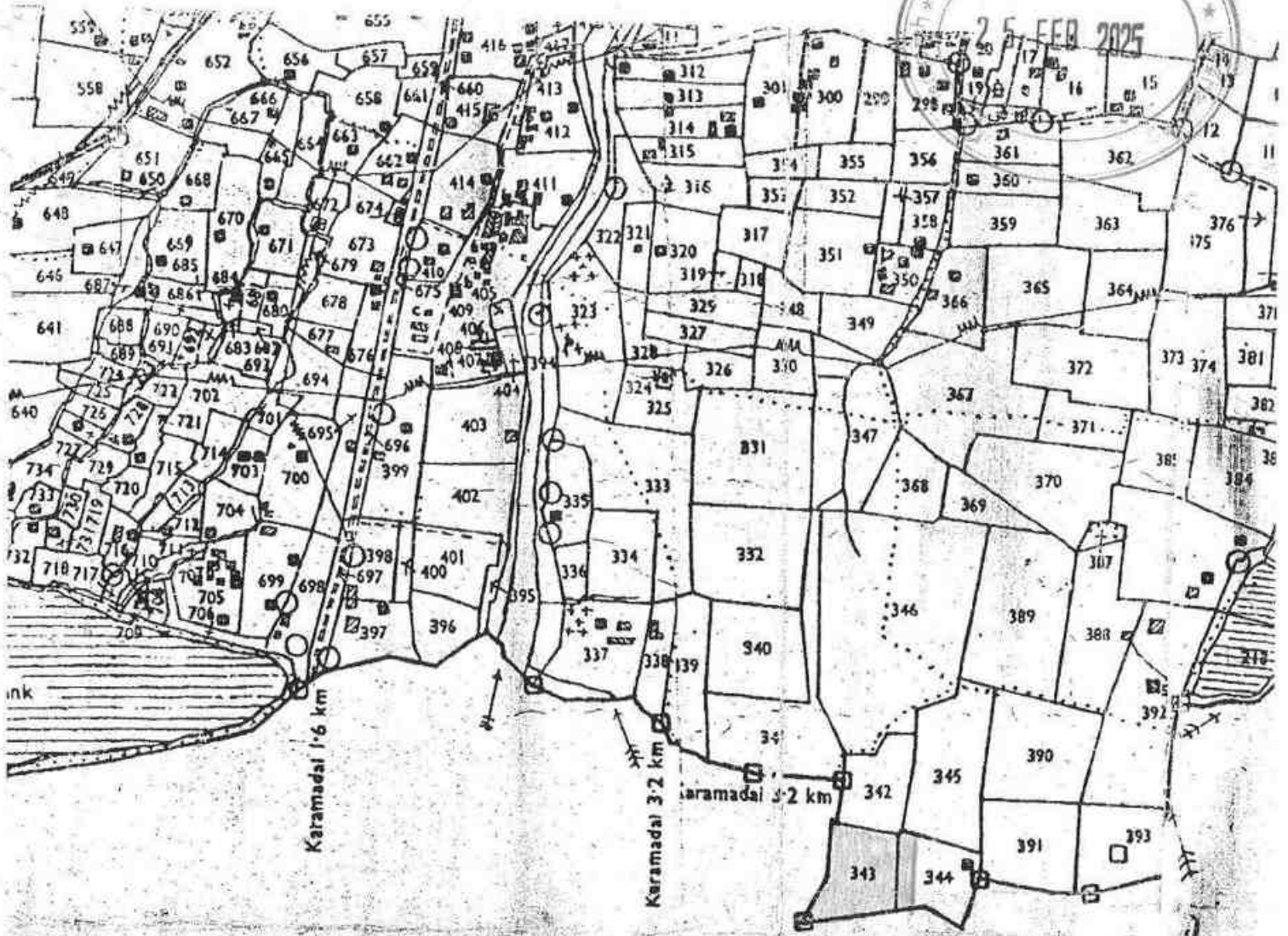
உடம்: கோயம்புத்தூர் அலுவலகம் பக்கம் 2.

பெரியகுடி அலுவலகம்.



Lease Applied Area-

Truapal
Sherrin
பெரியகுடி அலுவலகம்
பக்கம் - 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.



No. 14
CHIKKARAMPALAYAM

20/09/2024
சென்னை
நெ. ப. சென்னை
மேட்டுப்பாளையம் வட்டம்

Published by Thiru. K. M. SUBRAMAN, I.A.S.,
Director of Survey and Settlements &
Thiru. S. VARADHAPPAN,
Additional Director of Survey and Land Revenue, Madras
on behalf of the Government of Tamil Nadu 1994 Valluvar Andu

Lease Applied Area-



தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : மேட்டுப்பாளையம்

வருவாய் கிராமம் : பெள்ளாதி

பட்டா எண் : 1236

உரிமையாளர்கள் பெயர்

1.	-	...	-
2.	பழனிசாமி	மனைவி	ஜெயலட்சுமி
3.	ஞானசேகரன்	மனைவி	சந்திரா

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	
343	-	2 - 38.50	4.78	--	--	--	--	2021/0103/12/305933- ----- 31-07-2021
		2 - 38.50	4.78					

குறிப்பு :



மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து

1. பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/04/018/01236/10802 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

2. இத் தகவல்கள் 19-09-2024 அன்று 12:24:01 PM நேரத்தில் அச்சடிக்கப்பட்டது.

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



தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : மேட்டுப்பாளையம்

வருவாய் கிராமம் : சிக்காரம்பாளையம்

பட்டா எண் : 2949

உரிமையாளர்கள் பெயர்

1. ஞானசேகரன்

மனைவி

சந்திரா

2. பழனிசாமி

மனைவி

ஜெயலட்சுமி

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	
64	1A	0 - 30.38	0.84	--	--	--	--	2023/0103/12/502495- -2022/12/04/000122SD ----- 19-09-2023
65	1A	1 - 80.00	4.99	--	--	--	--	2023/0103/12/502495- -2022/12/04/000122SD ----- 19-09-2023
		2 - 10.38	5.83					

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து
- பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/04/019/02949/20934 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
 - இத் தகவல்கள் 19-09-2024 அன்று 11:05:34 AM நேரத்தில் அச்சடிக்கப்பட்டது.
 - கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : கோயம்புத்தூர்

வட்டம் : மேட்டுப்பாளையம்

வருவாய் கிராமம் : பெள்ளாதி

பட்டா எண் : 3819

உரிமையாளர்கள் பெயர்

1.	-	...	-
2.	ஞானசேகரன்	மனைவி	சந்திரா
3.	பழனிசாமி	மனைவி	ஜெயலட்சுமி

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	
344	1	0 - 30.55	0.61	--	--	--	--	2021/0103/12/298268- -2021/12/04/000134SD ----- 15-07-2021
		0 - 30.55	0.61					

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து
- பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/04/018/03819/30831 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
 - இத் தகவல்கள் 19-09-2024 அன்று 12:26:03 PM நேரத்தில் அச்சடிக்கப்பட்டது.
 - கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

25 FEB 2025

433 - ஆம் பசலியில் கையெழுத்தம் மாவட்டம்

கேள்வியுள்ள கிராமக் கணக்கு
வட்டம் (19.02.2025)

நில வரித் திட்டத்தின்படி புலன்களின் விபரம்					சாகுபடி யாளரின் பெயர்	முதல் போகம்					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
நில அளவை எண்.	உட்பிரிவு எண்.	பரப்பு	தீர்வை.	ஒரு போகம் அல்லது இரு போகம்	கைப்பற்று தாரருடைய பெயரும் எண்ணும் அல்லது அனுபோக தாரருடைய பெயர்.	நிலத்தின் எந்த பகுதி யாவது சாகுபடியாளரால் பயிரிடப்பட்டுள்ளதா.	எந்த மாதத்தில் பயிர் செய்யப்பட்டது எந்த மாதத்தில் அறுவடை செய்யப்பட்டது.	பயிரின் பெயர்.	பயிரான / அறுவடை யான பரப்பு.	உண்மையான பாய்ச்சல் ஆதாரம்.	விளைச்சல் அளவு விழுக்காடு.
64	1A	0.3038	0.84	2949	சீர்திரை (அ)		7 ஏக்கர்		0.05.0		30 %
65	1A	1.8000	4.99	2949	சீர்திரை (அ)						

15.02.25

திரு. கி. சண்முகம்
19.02.25
கிராம நிர்வாக அலுவலர்
என். 19, கித்தாரம்பாளையம்
மேட்டுப்பாளையம்

12-11-2021
20/09/2021
சென்னை
மேட்டுப்பாளையம் வட்டம்

	3	4	5	6	7	8	9	10	11	
						கு. பை.	ஹெ. ஏர்ஸ்.	கு. பை.		
3	64-பா	ர	4	...	8-2	4	2 77	0 08-0	0 22	1089 C.U. நஞ்சைய கவுடர்(1), N. சண்முகம்(2), N. கந்தசாமி(3).
	-பா	ர	4	...	8-2	4	2 77	0 25-0	0 69	656 C.U. ரங்கசாமி கவுடர்.
	-பா	ர	4	...	8-2	4	2 77	0 52-0	1 44	1089 C.U. நஞ்சைய கவுடர்(1), N. சண்முகம்(2), N. கந்தசாமி(3).
	-பா	ர	4	...	8-2	4	2 77	0 26-0	0 72	656 C.U. ரங்கசாமி கவுடர்.
								1 75-5	4 86	
	65-பா	ர	4	...	8-2	4	2 77	2 21-5	6 14	1089 C.U. நஞ்சைய கவுடர்(1), N. சண்முகம்(2), N. கந்தசாமி(3).
	-பா	ர	4	...	8-2	4	2 77	0 07-5	0 21	656 C.U. ரங்கசாமி கவுடர்.
	-பா	ர	4	...	8-2	4	2 77	0 01-0	0 06	1212 C.U. நஞ்சைய மற்றும் மூன்று பேர்களும். *
								2 30-0	6 43	
								0 92-5	...	
	66	அ	4	...	...	...	...			
	67	ர	4	...	8-2	4	2 77	2 16-0	5 98	875 கி. தாயம் மான்(1), ப. பத்மாவதி(2).
1	68-பா	ர	4	...	8-3	5	2 00	1 74 0	3 48	1281 U. சுப்பம்மாள் மற்றும் நான்கு பேர்களும். *
2	-பா	ர	4	...	8-3	5	2 00	2 95-5	5 91	121 க. கிருஷ்ண சாமி.
								4 69-5	9 39	
	69	ர	4	...	8-3	5	2 00	7 51-5	15 03	1278 பி. சின் உடை மற்ற பேர்

* விலரப்பட்டியலைப் பார்க்க

அ-பதிவேடு விவரங்கள்



பட்டம் : கோயம்புத்தூர்

பட்டம் : மேட்டுப்பாளையம்

கிராமம் : பெள்ளாதி

1. புல எண்	343	9. மண் வயனமும் ரகமும்	8 - 3
2. உட்பிரிவு எண்	-	10. மண் தரம்	5
3. பழைய புல உட்பிரிவு எண்	343	11. தீர்வை (ரூ - ஹெ)	2.00
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	2 - 38.50
5. அரசு / ரயத்துவாரி ரயத்துவாரி	-	13. மொத்த தீர்வை (ரூ - பை)	4.78
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	1236
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	-மற்றும் 2பேர்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 30802 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அலுவலக இணைய சேவை - அ...

<https://eservices.tn.gov.in/eserv>



அ-பதிவேடு விவரங்கள்

மாவட்டம் : கோயம்புத்தூர்
வட்டம் : மேட்டுப்பாளையம்
கிராமம் : பெள்ளாதி

1. புல எண்	344	9. மண் வயனமும் ரகமும்	8 - 3
2. உட்பிரிவு எண்	1	10. மண் தரம்	5
3. பழைய புல உட்பிரிவு எண்	344--	11. தீர்வை (ரூ - ஹெ)	2.00
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 30.55
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.61
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	3819
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு பேரகமா	-	16. பெயர்	-மற்றும் 2பேர்

குறிப்பு 1:



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 30831 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

भारतीय गैर न्यायिक

28 FEB 2024

पचास
रुपये

रु.50



INDIA

FIFTY
RUPEES

Rs.50

INDIA NON JUDICIAL

தமிழ்நாடு தமிழ்நாடு TAMILNADU

Rs 50/-

BB 885285

நாள் : 6.2.2023

Sri Blue metals
Karamadai

S. சிவசங்கரி
முத்திரைத்தாள் விற்பனையாளர்
மேட்டுப்பாளையம்
உ.எண்-7323/B1/2008/20

சம்மத கடிதம்

2024ம் வருடம் நவம்பர் மாதம் 22ம் தேதியில் கோயம்புத்தூர் மாவட்டம், மேட்டுப்பாளையம் வட்டம், சிக்காரம்பாளையம் கிராமம், கண்ணார்பாளையம் கதவு எண்.2/241 லக்கமிட்ட விலாசத்தில் வசிக்கும் 1. திரு.S.ஞானசேகரன் மனைவி திருமதி.G. சந்திரா (PAN AERP9887J) (ஆதார் எண். 469818341363) அலைபேசி எண்.9360272610) 1. கோயம்புத்தூர் மாவட்டம், மேட்டுப்பாளையம் வட்டம், சிக்காரம்பாளையம் கிராமம், கதவு எண். 2/246 லக்கமிட்ட விலாசத்தில் வசிக்கும் திரு.S.பழனிசாமி மனைவி திருமதி.P.ஜெயலட்சுமி (PANAGXPJ1557A) (ஆதார் எண்.874288408460) 2 ஆகியவர்களுக்கு பாத்தியப்பட்ட காலையானது சிக்காரம்பாளையம் கிராமம் க.ச.எண்.65/1Aல் 1.80.00 ஹெக்டேர் பரப்பு பெள்ளாதி கிராமம் க.ச.எண்.343ல் 2.38.50 ஹெக்டேர் 2. 344/1 0.30.55 ஹெக்டேர் மொத்த பரப்பு 4.49.05 ஹெக்டேர் உள்ளது. இந்த பூமியை இருவரும் சேர்ந்து, கோவை மாவட்டம், மேட்டுப்பாளையம் வட்டம், சிக்காரம்பாளையம் கிராமம், கண்ணார்பாளையம், 2/241 என்ற விலாசத்தில் திரு.D.சாமப்பன் மகன் திரு.S.ஞானசேகரன் என்பவர் நடத்தி வரும் ஸ்ரீ புரு மெட்டல் நிறுவனத்திற்கு கோவை மாவட்டம், ஆட்சித்தலைவர் அவர்களால் மேற்படி பூமியில் சாதாரண விலை மற்றும் கிராவல் மண் எடுக்க அனுமதி வழங்க ஒப்புதல் அளிக்கப்பட்ட நாளிலிருந்து மேற்படி பூமியில் கிராவல் மண் வெட்டிஎடுத்து செல்ல சம்மதம் திரு.ச.ம.பிரசாகரன்.

S.M. PRASHAKARAN B.A.,B.L.
ADVOCATE & NOTARY PUBLIC
(GOVT. OF. INDIA) Enr. No 1349/92
28, Revathi Building
2nd Street, Gopalapuram,
Coimbatore - 641 018.
Cell: 98941 31171

1. G. S. S.
2. P. Jay



ANNEXURE



இந்திய அரசாங்கம்
Government of India



குமாரேசுவரன் எஸ்
Gnanasekaran S

பொது எண் - DOB: 04/03/1952
ஆண், Male



4171 8521 8213

சாதாரண மனிதனின் அதிகாரம்



சமீபத்தில் திருப்பிக் கொடுக்கப்பட்டது
பிரதேச அபிவிருத்தி அதிகார சபை
Regional Development Authority of India

முதலாம் தகவல் - பொது தகவல்
சமீபத்தில் 01/01/2025 அன்று கையாடப்பட்டது.
அடிப்படையில் சமீபத்தில் தகவல்
கொடுக்கப்பட்டது.

Address: S/O
Samappagounder, 2/241,
KANNARPALAYAM,
KARAIKUDI,
Chikkampalayam,
Karamadai, Coimbatore,
Tamil Nadu, 641104

4171 8521 8213



help@ndia.gov.in

www.ndia.gov.in

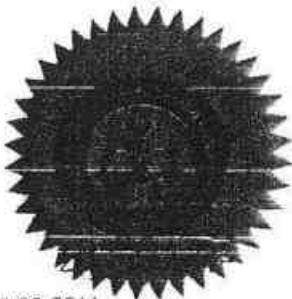


அறிவியல் புலம்
FACULTY OF SCIENCE

பெரியார் பல்கலைக்கழக ஆட்சிக்குழு 2010 ஆம் ஆண்டு ஏப்ரல் மாதம்
நடந்த பயன்பாட்டுப்புவியமைப்பியல் தேர்வு
அரசு கலைக் கல்லூரி, சேலம் - 636 007 (தன்னாட்சி) பயில்
P விஸ்வநாதன் என்பவர்

முதல் வகுப்பு A++ தரத்தில் தேர்ச்சி பெற்றார் என்று தம்
தேர்வாளர்கள் சான்றளித்தபடி அறிவியல் நிறைஞர் என்னு
பட்டத்தை அவருக்குப் பல்கலைக்கழக இலச்சினையுடன் வழங்குகிறது.

The Syndicate of the Periyar University hereby makes known
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



பதிவாளர்
Registrar

துணைவேந்தர்
Vice-Chancellor

நாள்
Dated 28-02-2011
சேலம் 636011, தமிழ்நாடு, இந்தியா.
Salem 636011, Tamil Nadu, India.

TIN. No. : 3312 2703755
C.S.T. No. : 880783 / 29.11.2005
Area Code : 142



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.

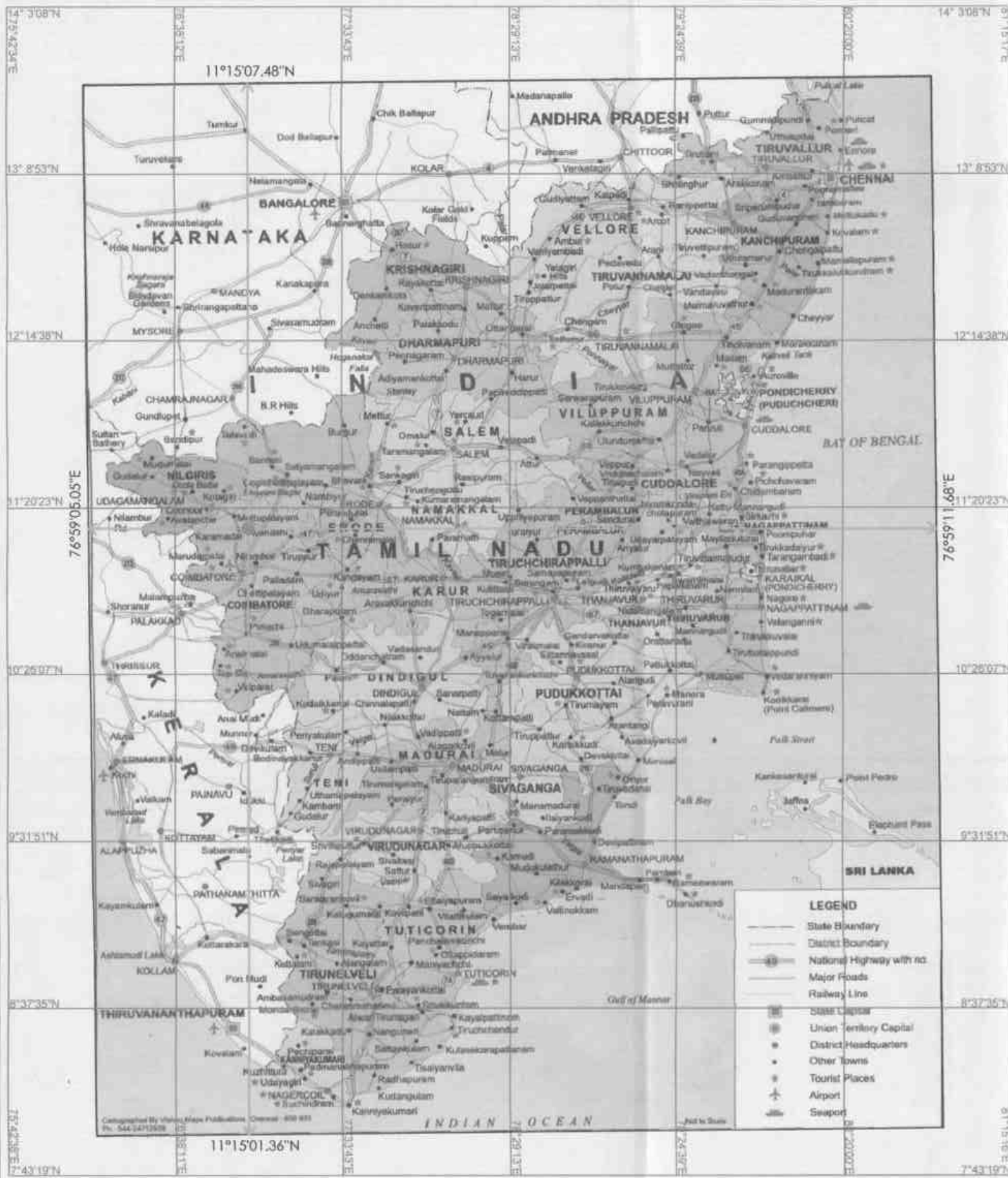
I wish him the best of luck in all his future endeavours.

For M/s.SUDHARSHAAN MINING CORPORATION,

SUDHARSHAAN MINING CORPORATION
SF-77, KUDUVAMPATTI ROAD,
SALEM - 636 008. Tamilnadu.

G.PASUPATHY,
Proprietor

28 Dec 2015



INDEX

Q.L.APPLIED AREA :

TOPO SHEET NO. : 58 - A/15 & 58-A/16

LATITUDE : 11° 14' 59.04"N to 11° 15' 07.61"N
LONGITUDE : 76° 59' 05.01"E to 76° 59' 11.83"E

APPLICANT:

M/s. SRI BLUE METALS,
DOOR NO:2/241,
KANNARPALAYAM KARAMADAI POST,
CHICKKAMPALAYAM VILLAGE,
METTUPALAYAM TALUK,
COIMBATORE -641 104.

LOCATION OF Q.L. APPLIED AREA:

S.F No'S : 343,344/1& 65/1A (Part).
EXTENT : 3.63.65 Ha.
VILLAGE : BELLADHI & CHICKKAMPALAYM,
TALUK : METTUPALAYAM,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

PLATE NO - I

DATE OF SURVEY : 31.01.2025

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 LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

P. Viswanathan

P.VISWANATHAN,M.Sc.,
QUALIFIED PERSON



11° 20' 32.99"N

76° 53' 35.37"E



11° 09' 33.65"N

TOPO SHEET NO. : 58 - A/15 & 58-A/16

LATITUDE : 11° 14' 59.04"N to 11° 15' 07.61"N
LONGITUDE : 76° 59' 05.01"E to 76° 59' 11.83"E

10km RADIUS

:



Q.L. APPLIED AREA

:



Express highway: with toll; with bridge; with distance stone
Roads metalled: according to importance
Roads, double carriageway: according to importance
Unmetalled road: Cart-track: Pack-track with pass: Foot-path
Streams: with track in bed; undefined: Canal
Dams: masonry or rock-filled; earthwork: Weir
River: dry with water channel; with island & rocks: Tidal river
Submerged rocks: Shoal: Swamp: Reeds
Wells: lined; unlined: Tubewell: Spring: Tanks: perennial; dry
Embankments: road or rail; tank: Broken ground
Railways: broad gauge: double: single with station; under constrn
Railways, other gauges: double: single with distance stone; do
Mineral line or tramway: Kiln: Cutting with tunnel
Contours with sub-features: Rocky slopes: Cliffs
Sand features: (1)flat: (2)sand-hills(permanent): (3)dunes(shifting)
Towns or Villages: inhabited; deserted: Fort
Huts: permanent; temporary: Tower: Antiquities
Temple: Chhatra: Church: Mosque: Idgah: Tomb: Graves
Lighthouse: Lightship: Buoys: lighted: unlighted: Anchorage
Mine: Vine on trellis: Grass: Scrub
Palms: palmyra; other: Plantain: Conifer: Bamboo: Other trees
Areas: cultivated; Wooded: Surveyed trees
Boundary, international
Boundary, state: demarcated; undemarcated
Boundary, district; subdivision; tahsil or taluk; forest
Boundary pillars: surveyed; unlocated
Heights: triangulated: station: point; approximate
Bench-mark: geodetic: tertiary; canal
Post office: Telegraph office: Overhead tank
Rest house or inspection bungalow: Circuit house: Police station
Camping Ground: Forest: reserved; protected
Spaces names: administrative; locality or tribal
Hospital: Dispensary: Veterinary: Hospital/Dispensary
Aerodrome: Helipad: Tourist site
Powerline: with pylons surveyed; with poles unsurveyed

APPLICANT:

M/s. SRI BLUE METALS,
DOOR NO:2/241,
KANNARPALAYAM KARAMADAI POST,
CHICKKARAMPALAYAM VILLAGE,
METTUPALAYAM TALUK, COIMBATORE -641 104.

LOCATION OF Q.L. APPLIED AREA:

S.F No'S : 343,344/1& 65/1A (Part),
EXTENT : 3.63.65 Ha,
VILLAGE : BELLADHI & CHICKKARAMPALAYM,
TALUK : METTUPALAYAM,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

PLATE NO - I-A

DATE OF SURVEY : 31.01.2025

TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 10Km RADIUS

SCALE. 1:1,00,000

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 LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

P. Viswanathan
P.VISWANATHAN, M.Sc.,
QUALIFIED PERSON



INDEX	
	Q.L. APPLIED AREA
	1 Km RADIUS
	500m RADIUS
	SEASONAL AGRICULTURE LAND
	TREES & COCONUT FARM
	HABITATION & INFRASTRUCTURE
	QUARRY PIT & CRUSHER UNIT
	WIND DIRECTION
	PANCHAYAT ROAD
	APPROACH ROAD
	BARREN LAND
	ODAI
	CART TRACK

APPLICANT:

M/s. SRI BLUE METALS.
DOOR NO:2/241,
KANNARPALAYAM KARAMADAI POST,
CHICKKAMPALAYAM VILLAGE,
METTUPALAYAM TALUK, COIMBATORE -641 104.

LOCATION OF Q.L. APPLIED AREA:

S.F.No'S : 343,344/1 & 65/1A (Part),
EXTENT : 3.63.65 Ha,
VILLAGE: BELLADHI & CHICKKAMPALAYAM,
TALUK : METTUPALAYAM,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

PLATE NO - I-B

DATE OF SURVEY : 31.01.2025

ENVIRONMENTAL & LAND USE PLAN

SCALE. 1:10,000

PREPARED BY:

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PLATE IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

P. VISWANATHAN, M.Sc.,
QUALIFIED PERSON

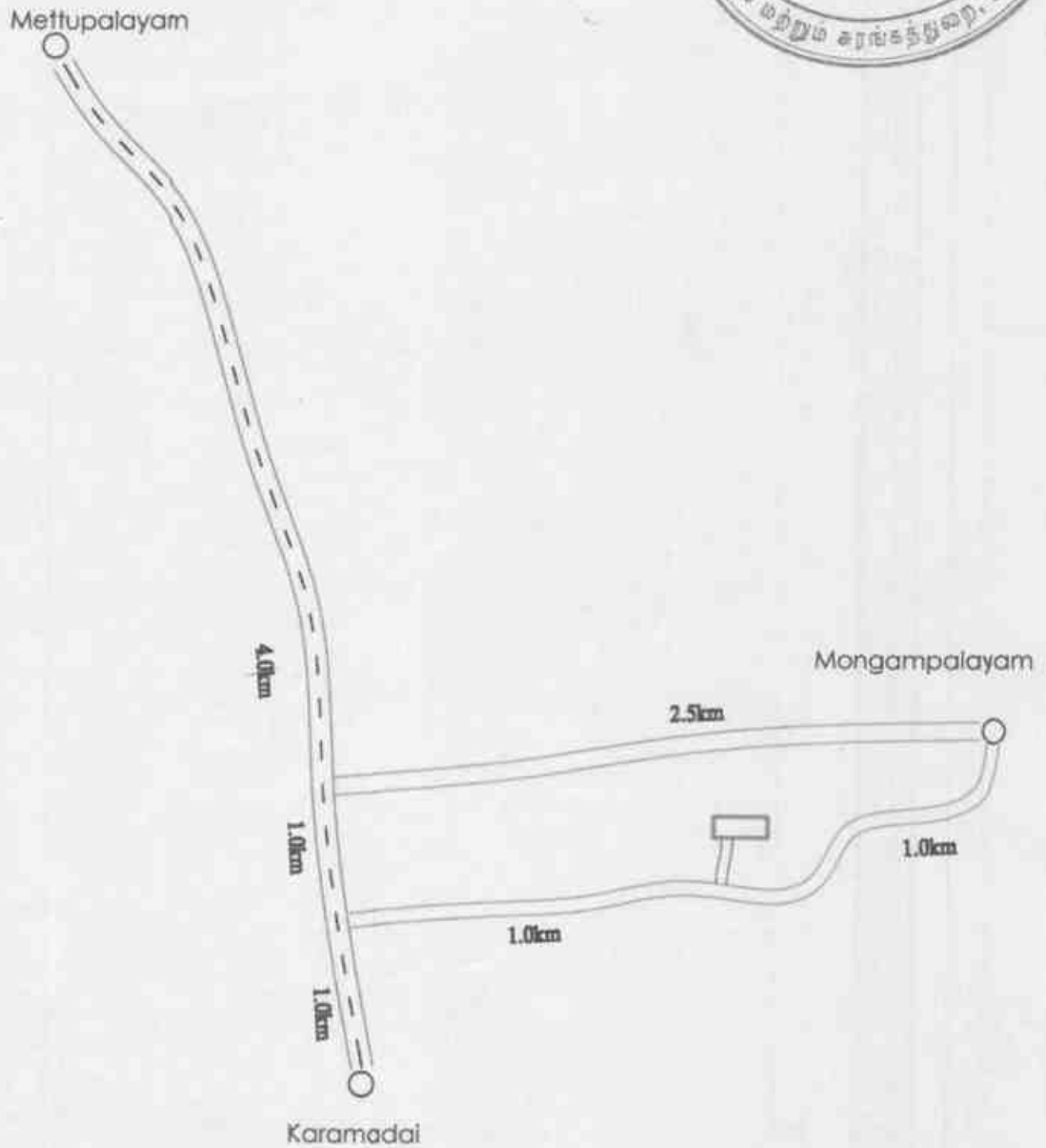
DESCRIPTION	PERCENTAGE	INDEX
QUARRY PITS&CRUSHER	(12%)	
TREES/COCO.FARM	(09%)	
SEASONAL AGRI LAND	(29%)	
ROADS/WATER BODIES	(10%)	
HABITATION & INFRA.	(08%)	
BARREN LAND	(32%)	
TOTAL	100%	

TOPO SHEET NO.: 58 - A/15 & 58-A/16

LATITUDE : 11° 14' 59.04"N to 11° 15' 07.61"N
LONGITUDE : 76° 59' 05.01"E to 76° 59' 11.83"E

JULY TO SEPTEMBER

PLATE NO : I-C
ROUTE MAP



INDEX

LEASE APPLIED AREA	
NATIONAL HIGHWAY	
VILLAGE ROAD	
APPROACH ROAD	

APPLICANT:

M/s. SRI BLUE METALS,
DOOR NO:2/241,
KANNARPALAYAM KARAMADAI POST,
CHICKKAMPALAYAM VILLAGE,
METTUPALAYAM TALUK,
COIMBATORE -641 104.

LOCATION OF Q.L. A.AREA:

S.F No'S : 343,344/1 & 65/1A (Part)
EXTENT : 3.63.65 Ha,
VILLAGE :
BELLADHI & CHICKKAMPALAYM,
TALUK : METTUPALAYAM,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

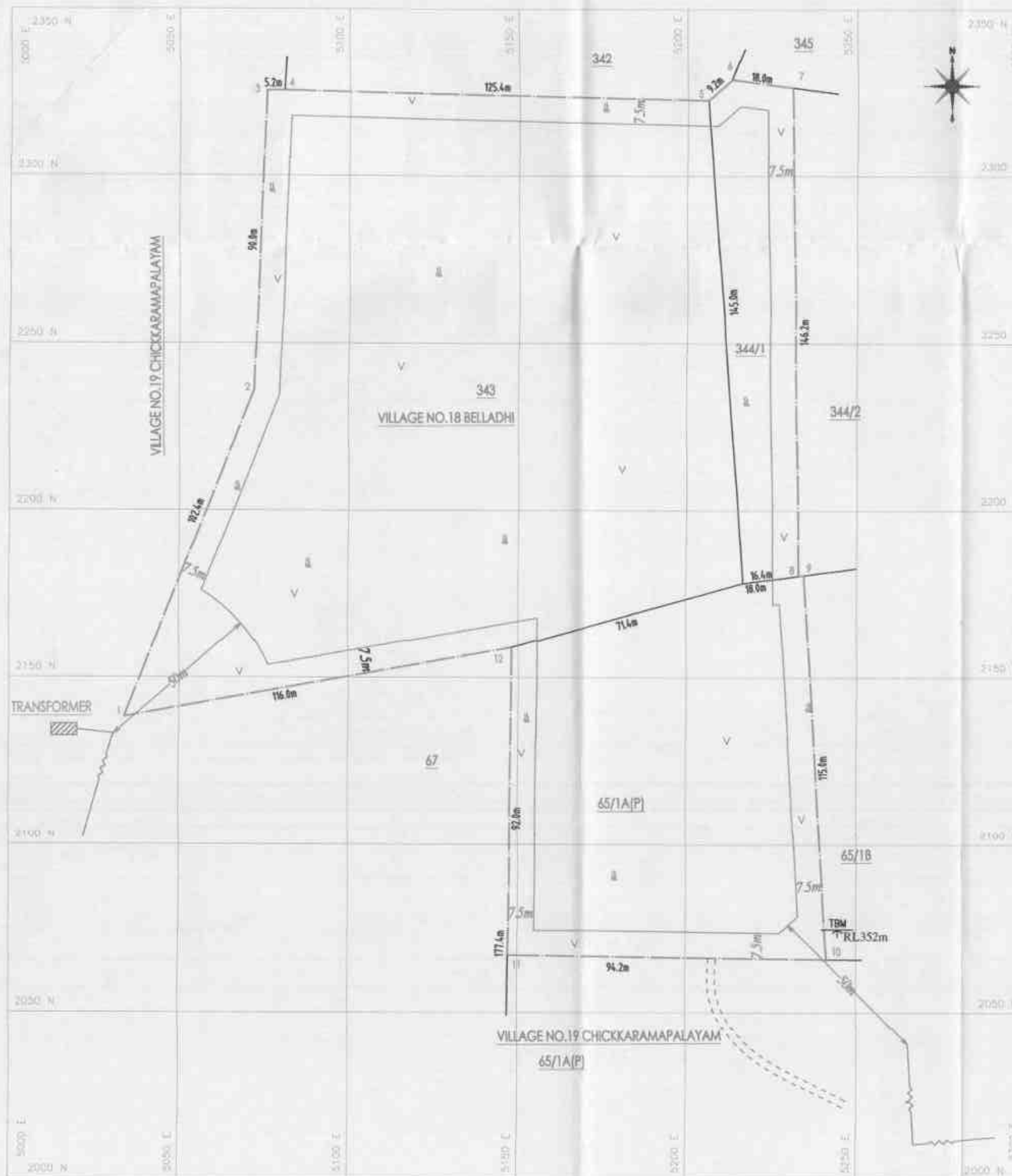
SCALE:

NOT TO SCALE

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 LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

P.VISWANATHAN, M.Sc.,
QUALIFIED PERSON



25 FEB 2025

S.N.	COORDINATE	COORDINATE
1	11° 15' 01.40"N	76° 59' 05.01"E
2	11° 15' 01.40"N	76° 59' 04.50"E
3	11° 15' 01.40"N	76° 59' 04.00"E
4	11° 15' 07.53"N	76° 59' 06.80"E
5	11° 15' 07.53"N	76° 59' 10.73"E
6	11° 15' 07.53"N	76° 59' 10.96"E
7	11° 15' 07.53"N	76° 59' 11.53"E
8	11° 15' 02.77"N	76° 59' 11.59"E
9	11° 15' 02.77"N	76° 59' 11.64"E
10	11° 14' 59.04"N	76° 59' 11.83"E
11	11° 14' 59.10"N	76° 59' 08.74"E
12	11° 15' 02.09"N	76° 59' 08.71"E

DATUM : UTM-WGS84, ZONE 43 NORTH

INDEX

- Q.L. APPLIED AREA BOUNDARY
- 50m & 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- GRAVEL
- SHRUBS
- APPROACH ROAD
- E.B. LINE

APPLICANT:

M/s. SRI BLUE METALS,
Prop. of Thiru. S. GNANASEKARAN,
NO: 2/ 241, KANNARPALAYAM,
KARAMADAI POST,
METTUPALAYAM TALUK,
COIMBATORE - 641 104.

LOCATION OF Q.L. APPLIED AREA:

S.F. No's : 343, 344/1 & 65/1A (Part),
EXTENT : 3.63.65 Ha.,
VILLAGE : BELLADHI & CHICKKARAMPALAYM,
TALUK : METTUPALAYAM,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

PLATE NO - II

DATE OF SURVEY : 31.01.2025

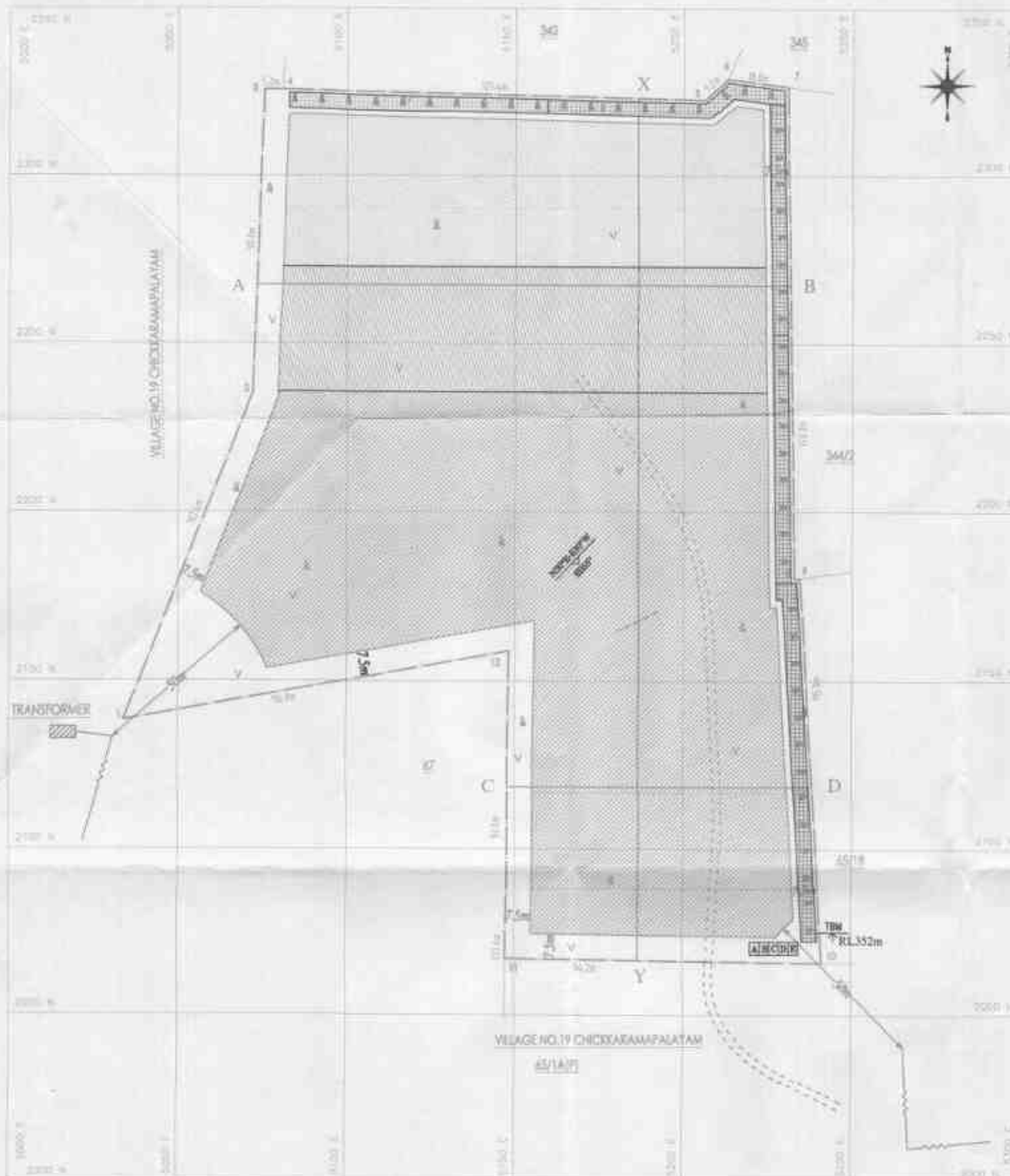
QUARRY LEASE PLAN & SURFACE PLAN

SCALE. 1:1000

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 LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

P. Viswanathan
P. VISWANATHAN, M.Sc.,
QUALIFIED PERSON



BOUNDARY CO-ORDINATES

23 FEB 2025

SL. NO.	COORDINATE	COORDINATE
1	11° 12' 31.40"N	76° 58' 56.01"E
2	11° 12' 34.17"N	76° 58' 56.30"E
3	11° 12' 37.83"N	76° 58' 56.47"E
4	11° 12' 37.83"N	76° 58' 56.47"E
5	11° 12' 37.83"N	76° 58' 56.47"E
6	11° 12' 37.83"N	76° 58' 56.47"E
7	11° 12' 37.83"N	76° 58' 56.47"E
8	11° 12' 37.83"N	76° 58' 56.47"E
9	11° 12' 37.83"N	76° 58' 56.47"E
10	11° 12' 37.83"N	76° 58' 56.47"E
11	11° 12' 37.83"N	76° 58' 56.47"E
12	11° 12' 37.83"N	76° 58' 56.47"E

DATUM : UTM WGS84, ZONE 43 NORTH

SITE SERVICES
(Proposed)

A - OFFICE
B - STORE ROOM
C - PRAY AND ROOM
D - REST SHED
E - TOILET

Proposed area to be Planted

I - yr Proposed area to be Planted	✓
II - yr Proposed area to be Planted	✓
III - yr Proposed area to be Planted	✓
IV - yr Proposed area to be Planted	✓
V - yr Proposed area to be Planted	✓

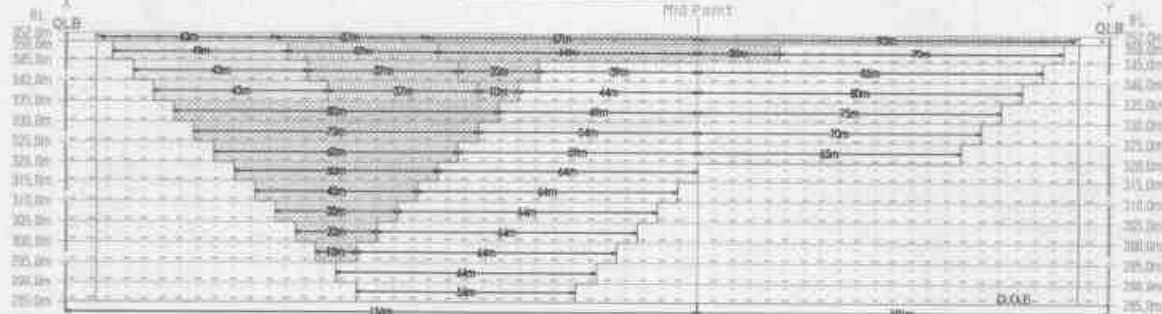
Proposed area to be Quarried

I - yr Proposed area to be Quarried	✓
II - yr Proposed area to be Quarried	✓
III - yr Proposed area to be Quarried	✓
IV - yr Proposed area to be Quarried	✓
V - yr Proposed area to be Quarried	✓

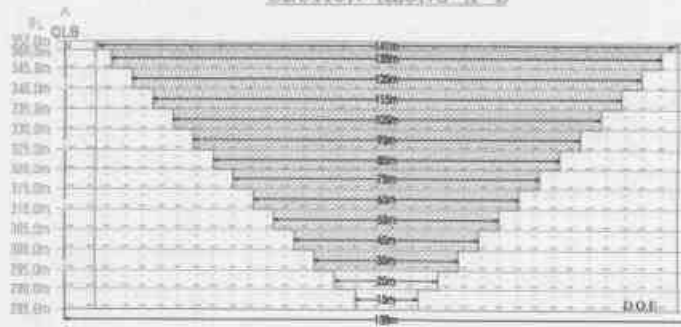
INDEX

Q.L. APPLIED AREA BOUNDARY
50m & 7.5m SAFETY DISTANCE
TEMPORARY BENCH MARK
GRAVEL
ROUGHSTONE
SHRUBS
SHRUBS
QUARRY ROAD
APPROACH ROAD
E.B. LINE
DEPTH OF ESTIMATION

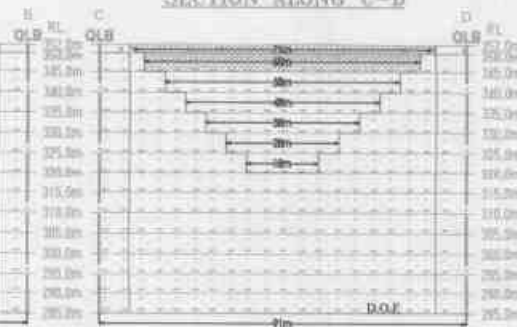
SECTION ALONG X-Y



SECTION ALONG A-B



SECTION ALONG C-D



APPLICANT:
M/S. SRI BLUE METALS,
DOOR NO: 2/241,
KANNARPALAYAM KARAMADAI POST,
CHICKARAMPALAYAM VILLAGE,
METTUPALAYAM TALUK,
COIMBATORE - 641 104.

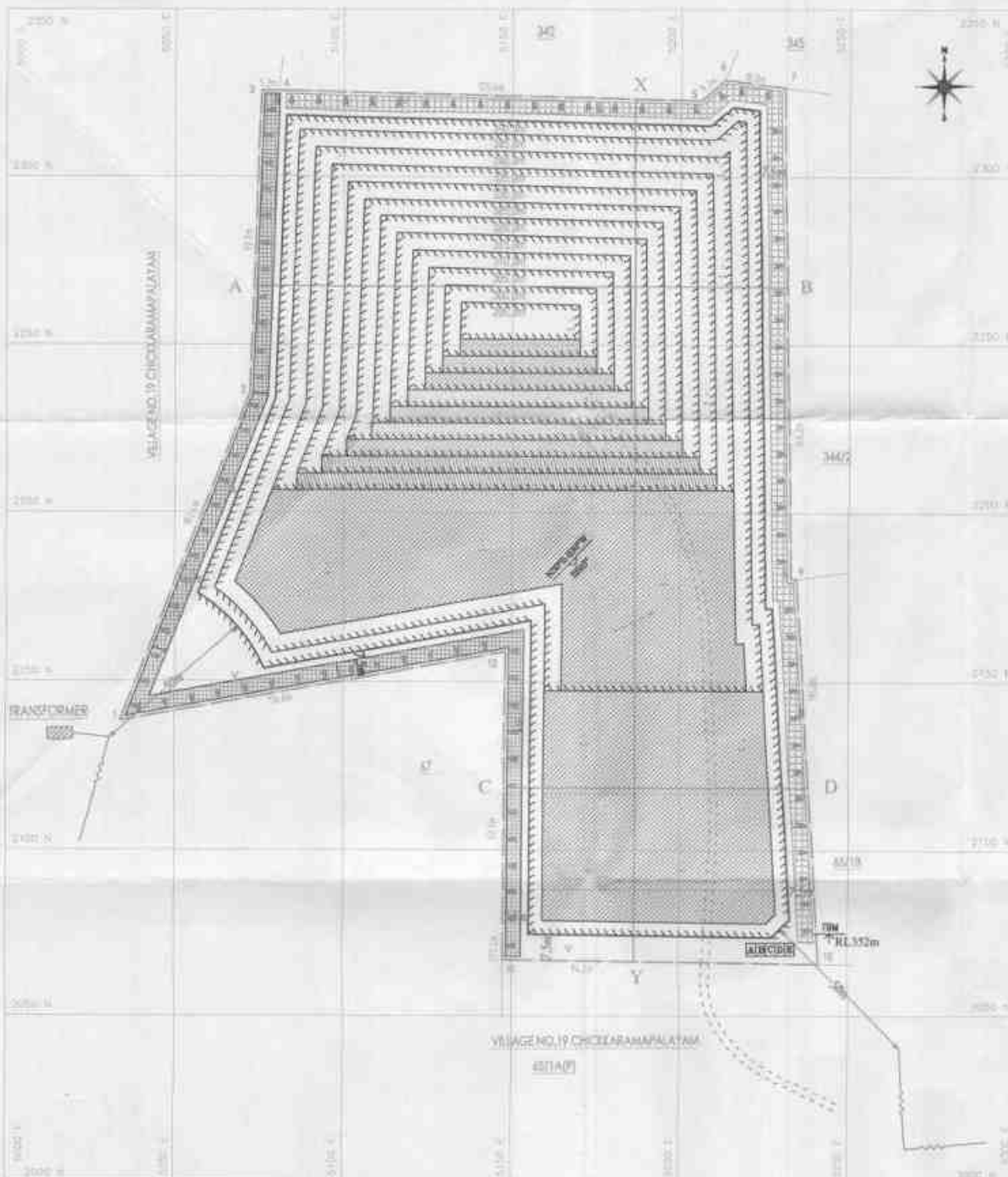
LOCATION OF Q.L. APPLIED AREA:
S/J No 5 : 343/344/T & 45/1A (Part),
EXTEND : 3.63.45 Ha,
VILLAGE : SELLADHI & CHICKARAMPALAYAM,
TALUK : METTUPALAYAM,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

PLATE NO - III
DATE OF SURVEY : 31.01.2025

**TOPOGRAPHY, GEOLOGICAL PLAN,
FIRST FIVE YEAR WISE
DEVELOPMENT & PRODUCTION
PLAN & SECTIONS**
SCALE : 1:1000

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 LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

P. S. S. S. S.
K. S. S. S. S. S.



SL. NO.	DATE	TIME	BY	REMARKS
1	25 FEB 2025	10:00 AM	...	...
2	...	...	...	...
3	...	...	...	...
4	...	...	...	...
5	...	...	...	...
6	...	...	...	...
7	...	...	...	...
8	...	...	...	...
9	...	...	...	...
10	...	...	...	...
11	...	...	...	...
12	...	...	...	...

DATUM : UTM-WGS84, ZONE 43 NORTH

ATTN SERVICES
 A - OFFICE
 B - STORE ROOM
 C - FIRST AID ROOM
 D - REST HOUSE
 E - TOILET

Proposed Pit Dimension (max)
 XY-AB= 147mX141mX37mrd
 XY-CD= 93mX74mX7mrd
 (for 1st V-year)

VI - yr Proposed area to be Quarried
 VII - yr Proposed area to be Quarried
 VIII - yr Proposed area to be Quarried
 IX - yr Proposed area to be Quarried
 X - yr Proposed area to be Quarried

VI - yr Proposed area to be Quarried
 VII - yr Proposed area to be Quarried
 VIII - yr Proposed area to be Quarried
 IX - yr Proposed area to be Quarried
 X - yr Proposed area to be Quarried

INDEX

- Q.L. APPLIED AREA BOUNDARY
- 50m & 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- GRAVEL
- ROUGHSTONE
- STRIKE & DIP
- SHRUBS
- QUARRY ROAD
- APPROACH ROAD
- EB LINE
- QUARRY PIT

APPLICANT:

M/S. SRI BLUE METALS,
 DOOR NO.2/241,
 KANNARPALAYAM KARAMADAI POST,
 CHICKKARAMPALAYAM VILLAGE,
 METTUPALAYAM TALUK,
 COIMBATORE - 641 104.

LOCATION OF Q.L. APPLIED AREA:

S.F. NO.5 : 343.344/1 & 65/1A (Part),
 EXTENT : 13.63.65 Ha.
 VILLAGE : BELLADHI & CHICKKARAMPALAYAM,
 TALUK : METTUPALAYAM,
 DISTRICT : COIMBATORE,
 STATE : TAMILNADU.

PLATE NO - III-A

DATE OF SURVEY : 31.01.2025

**TOPOGRAPHY, GEOLOGICAL PLAN,
 SECOND FIVE YEARWISE
 DEVELOPMENT & PRODUCTION
 PLAN & SECTIONS**

SCALE : 1:1000

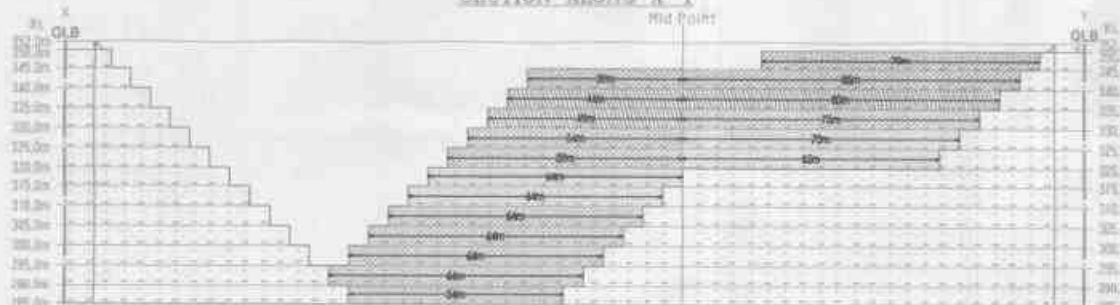
PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION ON THIS
 PLAN IS TRUE AND CORRECT TO THE BEST OF MY
 KNOWLEDGE BASED UPON THE LEGAL MAP
 AUTHORIZED BY STATE GOVERNMENT

P. J. ...
 P. J. ...
 QUALIFIED PERSON

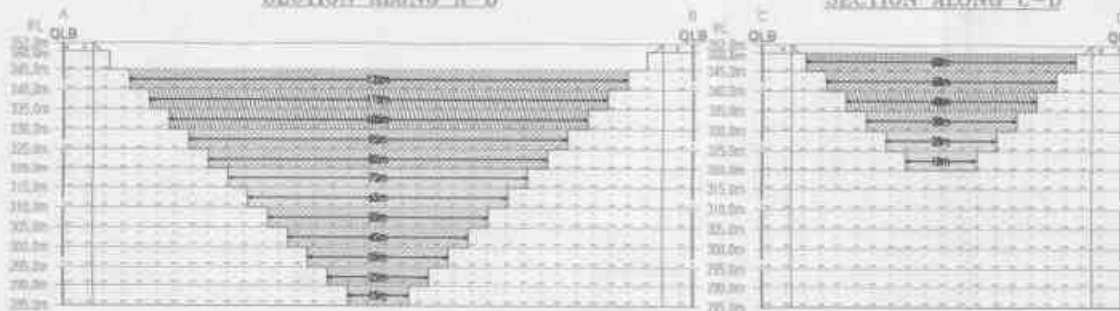
SECTION ALONG X-Y

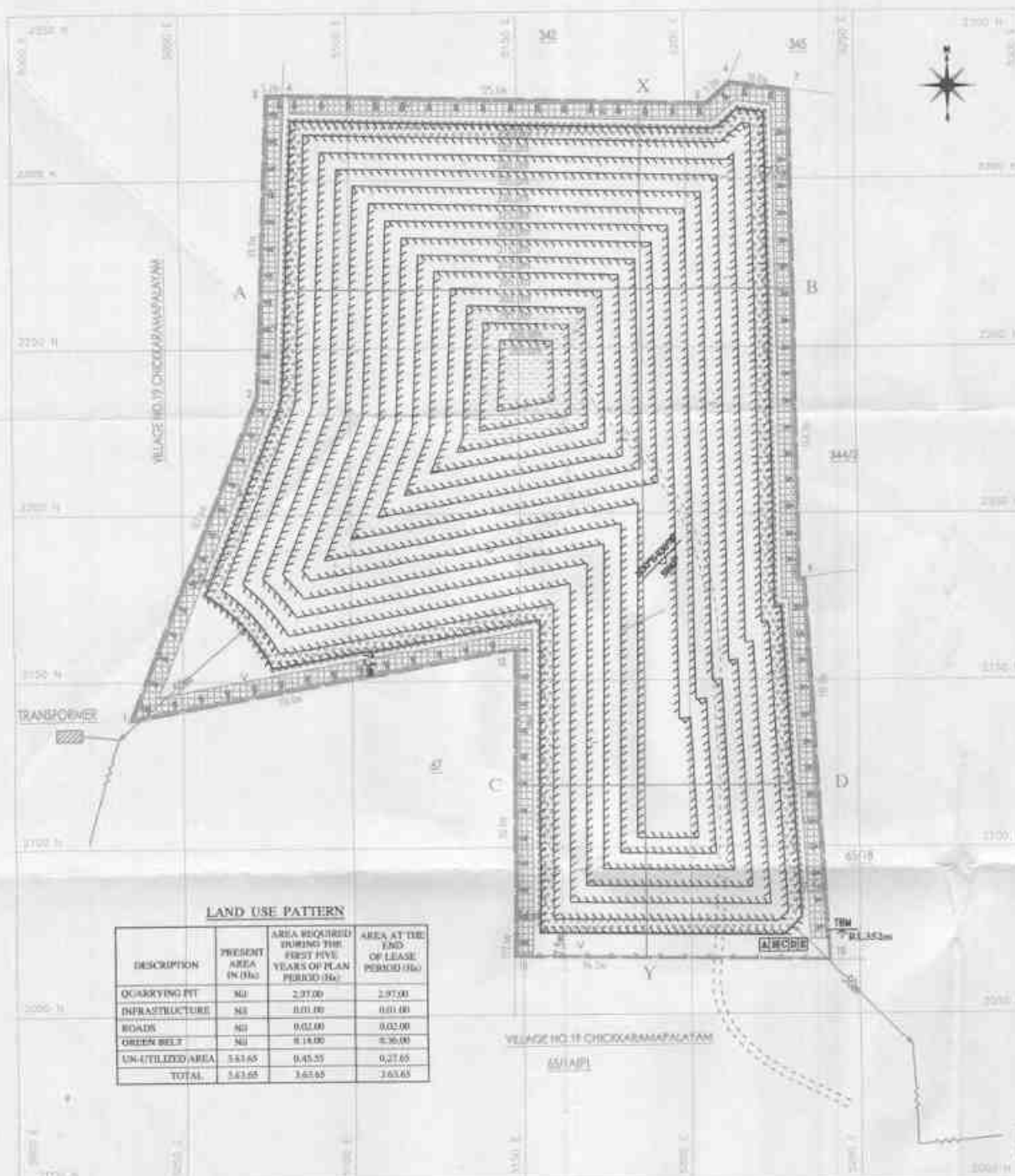
Mid Point



SECTION ALONG A-B

SECTION ALONG C-D

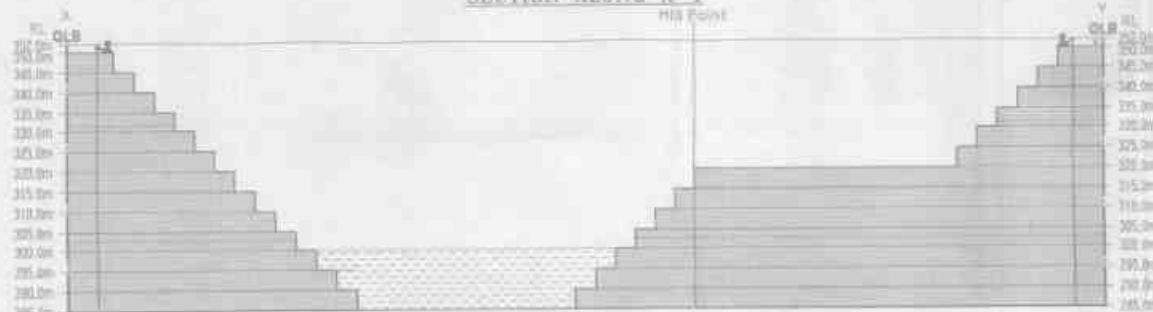




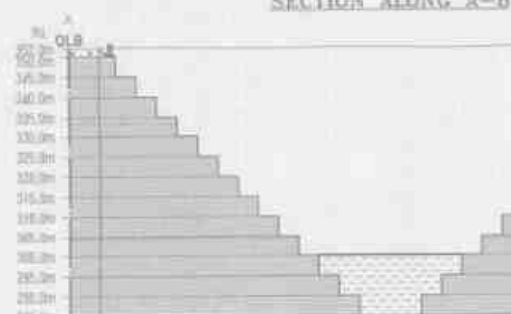
LAND USE PATTERN

DESCRIPTION	PRESSENT AREA IN Ha	AREA REQUIRED DURING THE FIRST FIVE YEARS OF PLAN PERIOD (Ha)	AREA AT THE END OF LEASE PERIOD (Ha)
QUARRYING PIT	Nil	2.97.00	2.97.00
INFRASTRUCTURE	Nil	0.01.00	0.01.00
ROADS	Nil	0.02.00	0.02.00
GREEN BELT	Nil	8.14.00	8.36.00
UN-UTILIZED AREA	543.65	0.45.55	0.27.65
TOTAL	543.65	11.55.55	11.63.65

SECTION ALONG X-Y



SECTION ALONG A-B



SECTION ALONG C-D



COORDINATE COORDINATES

S.N.	EASTING	NORTHING
1	343.344	234.104
2	343.344	234.104
3	343.344	234.104
4	343.344	234.104
5	343.344	234.104
6	343.344	234.104
7	343.344	234.104
8	343.344	234.104
9	343.344	234.104
10	343.344	234.104
11	343.344	234.104
12	343.344	234.104

DATUM : UTM-WGS84, ZONE 43 NORTH

SITE SERVICES

- A - OFFICE
- B - STORE ROOM
- C - FIRST AID ROOM
- D - REST SHED
- E - TOILET

Proposed Pit Dimension (max)
XY-AB= 147mX141mX62m(d)
XY-CD= 93mX74mX32m(d)

INDEX

- G.L. APPLIED AREA BOUNDARY
- 50m & 7.5m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- GRAVEL
- ROUGHSTONE
- STRIKE & DIP
- SHRUBS
- E.R. LINE
- APPROACH ROAD
- QUARRY HAUL ROAD
- QUARRY PIT
- PLANTATION
- BARBED WIRE FENCING
- EXISTING LAND FORM
- SOIL LAYER
- REHABILITATED LAND FORM
- PROPOSED GARLAND DRAIN
- OLD SURFACE LEVEL
- FINISHED SURFACE LEVEL
- RAIN WATER STORAGE

APPLICANT:

M/s. SRI BLUE METALS,
DOOR NO: 2/241,
KANNAPALAYAM KARAMADAI POST,
CHICKKARAMPALAYAM VILLAGE,
METTUPALAYAM TALUK,
COIMBATORE - 641 104.

LOCATION OF Q.L. APPLIED AREA:

S.F. No: 343.344/1 & 65/1 A (Part),
EXTENT : 3.63.65 Ha,
VILLAGE: BELLADHI & CHICKKARAMPALAYAM
TALUK : METTUPALAYAM,
DISTRICT : COIMBATORE,
STATE : TAMILNADU.

PLATE NO-IV

DATE OF SURVEY : 31.01.2025

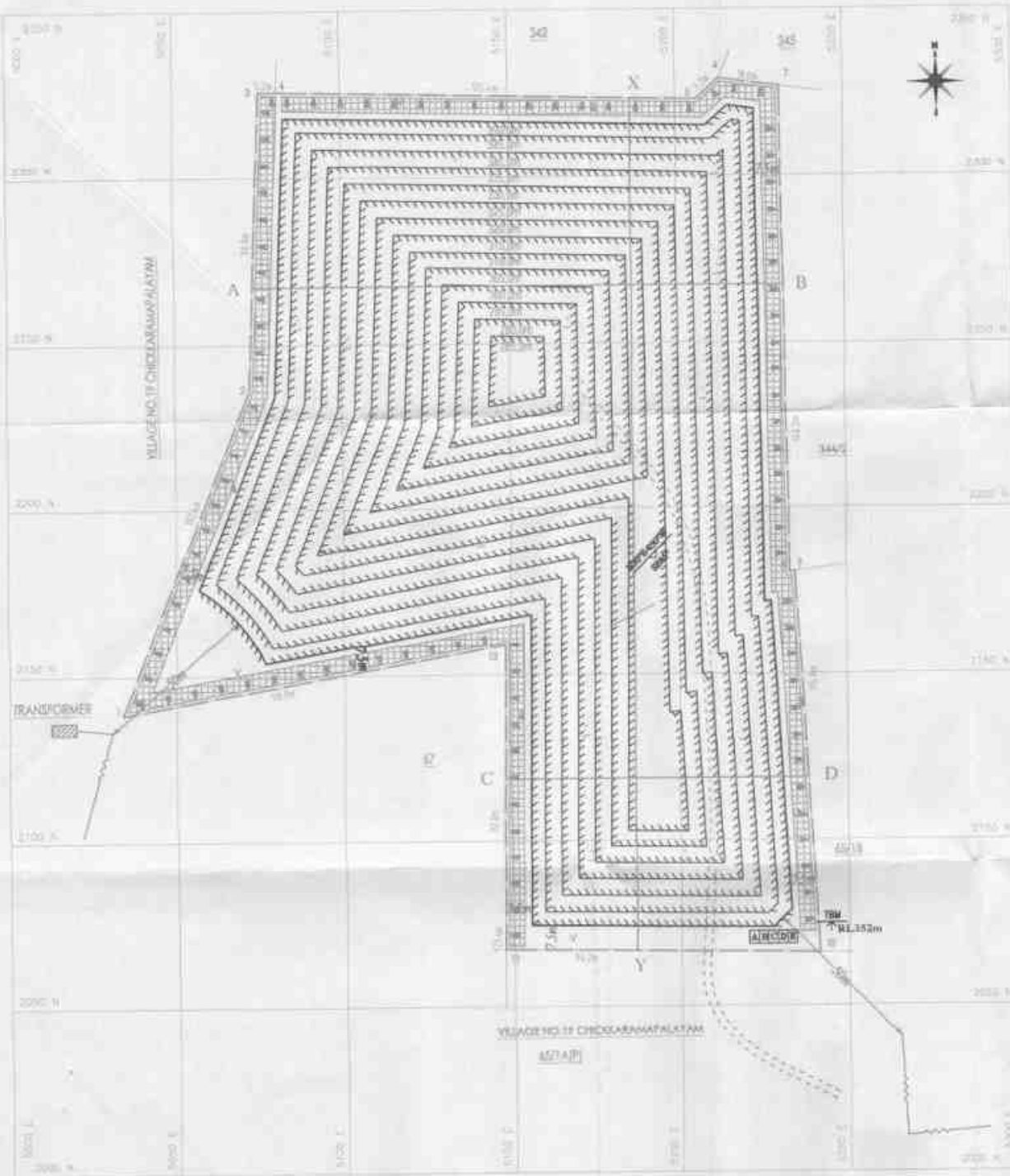
PROGRESSIVE QUARRY CLOSURE
PLAN & SECTIONS

SCALE: 1:1000

PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
PLAN IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE BASED UPON THE LEASE MAP
AUTHENTICATED BY STATE GOVERNMENT

P. K. Srinivasan
P. K. Srinivasan S.O.,
QUALIFIED PERSON



SOUNDING NO. 25-FEB-2025		
SL. NO.	LA. BEARING	25-FEB-2025
1	11° 10' 00" N 78° 50' 00" E	
2	11° 10' 00" N 78° 50' 00" E	
3	11° 10' 00" N 78° 50' 00" E	
4	11° 10' 00" N 78° 50' 00" E	
5	11° 10' 00" N 78° 50' 00" E	
6	11° 10' 00" N 78° 50' 00" E	
7	11° 10' 00" N 78° 50' 00" E	
8	11° 10' 00" N 78° 50' 00" E	
9	11° 10' 00" N 78° 50' 00" E	
10	11° 10' 00" N 78° 50' 00" E	
11	11° 10' 00" N 78° 50' 00" E	
12	11° 10' 00" N 78° 50' 00" E	

DATUM : UTM WGS84, ZONE 43 NORTH

SITE SERVICES	
A. OFFICE	
B. STORE ROOM	
C. OFFICE AND ROOM	
D. REST HOUSE	
E. DRAINAGE	

Ultimate Pit Dimension (max)
 XY-AB= 147mX141mX62m(d)
 XY-CD= 93mX74mX32m(d)

INDEX	
	Q.L. APPLIED AREA BOUNDARY
	50m & 7.5m SAFETY DISTANCE
	TEMPORARY BENCH MARK
	GRAVEL
	ROUGHSTONE
	STRIKE & DIP
	SHRUBS
	E.B. LINE
	APPROACH ROAD
	QUARRY HAUL ROAD
	QUARRY PIT
	PLANTATION

APPLICANT:
 M/A. SRI BLUE METALS,
 DOOR NO:2/241,
 KANNARPALAYAM KARAMADAI POST,
 CHICKKARAMPALAYAM VILLAGE,
 METTUPALAYAM TALUK,
 COIMBATORE -641 104

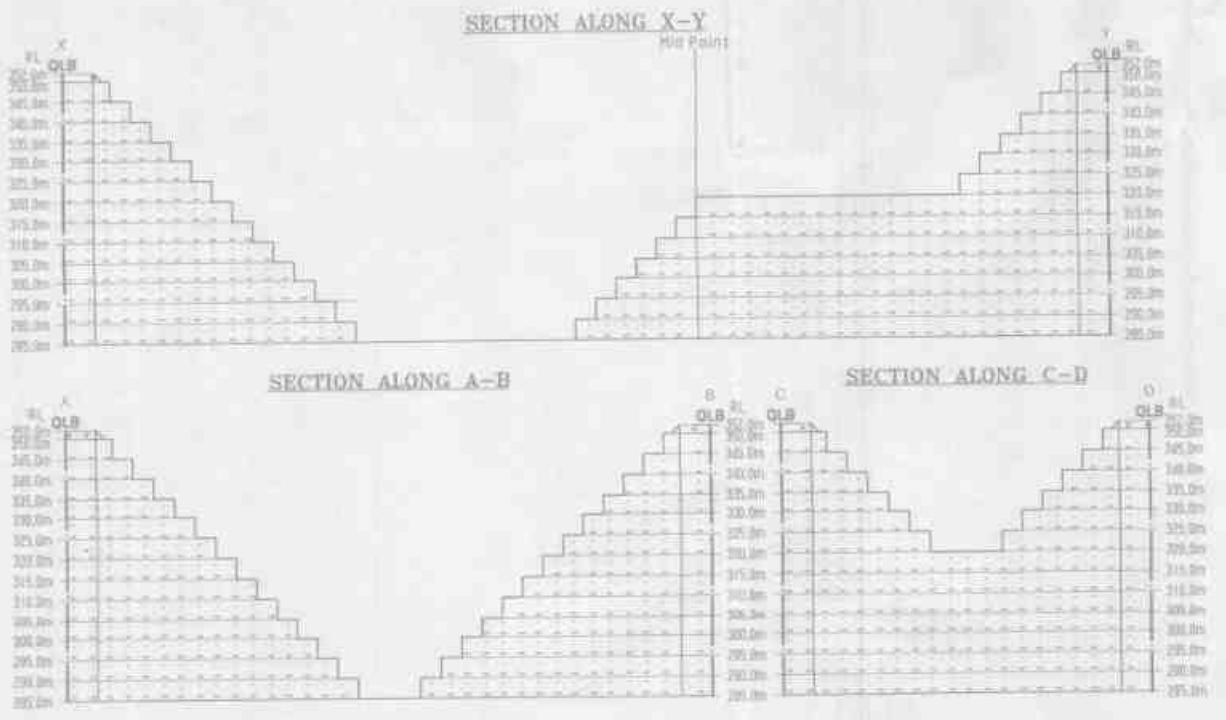
LOCATION OF Q.L. APPLIED AREA:
 S.F.No: 343,344/1 & 65/1A (Part),
 EXTENT : 3.63.55 Hrs.
 VILLAGE: BELLADHI & CHICKKARAMPALAYAM,
 TALUK : METTUPALAYAM,
 DISTRICT : COIMBATORE,
 STATE : TAMILNADU.

PLATE NO - V
 DATE OF SURVEY : 31.01.2025

CONCEPTUAL PLAN & SECTIONS
 SCALE: 1:1000

PREPARED BY:
 THIS IS TO CERTIFY THAT THE INFORMATION ON THIS PLATE IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE BASED UPON THE LEASE MAP AUTHENTICATED BY STATE GOVERNMENT

P. C. Srinivasan
 P. C. Srinivasan
 AUTHORIZED PERSON





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

To,

The owner
SIDDHARTHAMOULI P RSG
Bilichi Village Coimbatore North -641104

Subject: Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/TN/MIN/401916/2022 dated 16 Nov 2022. The particulars of the environmental clearance granted to the project are as below.

1. EC Identification No.	EC23B000TN118323
2. File No.	8834
3. Project Type	New
4. Category	B
5. Project/Activity including Schedule No.	N/A
6. Name of Project	M/s. Sri Blue Metals, over an Extent of 3.11.0 ha of Patta land in S.F.No. 77/1B and 421/2B (Part) of Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District
7. Name of Company/Organization	SIDDHARTHAMOULI P RSG
8. Location of Project	TAMIL NADU
9. TOR Date	N/A

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 18/01/2023

(e-signed)
Thiru.Deepak S.Bilgi
Member Secretary
SEIAA - (TAMIL NADU)

Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH.Please quote identification number in all future correspondence.

This is a computer generated cover page.





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

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/F.No.8834/EC.No:5444/2022 dated: 06.12.2022

Sir/Madam,

Sub: SEIAA-TN – Proposed Rough Stone quarry lease area over an extent of 3.11.0 Ha at S.F. No. 77/1B & 421/2B (Part), Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu by M/s. Sri Blue Metals – issue of Environmental Clearance – Regarding.

Ref: 1. ToR issued vide Lr No.SEIAA-TN/F.No.8834/ToR-1087/2021 Dated:17.03.2022.
2. Public Hearing conducted on 26.07.2022.
3. Online Proposal No. SIA/TN/MIN/401916/2021 Dated: 30.09.2022.
4. Project proponent submitted EIA Report to SEIAA-TN on 28.09.2022.
5. Minutes of the 330th SEAC meeting held on 17.11.2022.
6. Minutes of the 575th SEIAA meeting held on 06.12.2022.

Details of Minor Mineral Activity:-

This has reference to your application third and fourth cited. The proposal is for obtaining Environmental Clearance for mining / quarrying of minor minerals based on the particulars furnished in your application as shown below.

Sl. No	Details of the proposal	Details furnished
1.	Name of the Owner/Firm	M/s. Sri Blue Metals, Proprietor Thiru. S. Gnanasekaran, D.No.2/241, Kannarpalayam, Karamadai Post,

MEMBER SECRETARY
SEIAA-TN

		Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District - 641 104.
2.	Type of quarrying (Savudu/Rough Stone/Sand/Granite)	Rough Stone
3.	S.F No. of the quarry site with area break-up	77/1B & 421/2B (Part)
4.	Village in which situated	Chikkarampalayam
5.	Taluk in which situated	Mettupalayam
6.	District in which situated	Coimbatore
7.	Extent of quarry (in ha.)	3.11.0 Ha
8.	Period of quarrying proposed	5 years
9.	Type of mining	Opencast Mechanized Mining
10.	Production (Quantity in m ³)	223397 m ³ of Rough Stone
11.	Depth of quarrying	40m BGL
12.	Latitude & Longitude of all corners of the quarry site	11°14'47.63"N to 11°14'54.52"N 76°58'44.12"E to 76°58'53.96"E
13.	Top Sheet No.	58-A/16
14.	Man Power requirement per day:	35 Nos.
15.	Precise area communication	Na.Ka.No.1442/Kanimam/2020, dated:19.08.2021
16.	Mining Plan	Rc.No.1442/Mines/2020, dated.15.09.2021
17.	500m cluster letter	Rc.No.1442/Mines/2020, dated.15.09.2021
18.	Water requirement: 1. Drinking & domestic purposes (in KLD) 2. Dust suppression (in KLD) 3. Green Belt (in KLD)	3.5 KLD 0.8 KLD 1.2 KLD 1.5 KLD
19.	Power requirement: a. Domestic Purpose b. Industrial Purpose	TNEB 150 Liters of HSD/day

MEMBER SECRETARY
SEIAA-TN

20.	Depth of water table	65m-60m BGL
21.	Whether any habitation within 300m distance	No
22.	Project Cost (excluding EMP cost)	Rs. 56.33 Lakhs
23.	EMP cost	Rs. 133 Lakhs
24.	CER cost	Rs. 5 Lakhs
25.	VAO certificate regarding 300m radius cluster	Letter dated: 03.12.2020
26.	ToR Details	Lr No.SEIAA-TN/F.No.8834/ToR-1087/2021 Dated:17.03.2022
27.	Public Hearing	26.07.2022
28.	EIA Submission	28.09.2022
29.	<u>Validity:</u> This Environmental Clearance is granted for the restricted production – 223397 m³ Rough Stone for the period of 5 Years from the date of execution of the mining lease.	

The Proponent has furnished affidavit in Hundred Rupees stamp paper attested by the Notary stating that

I, M/s. SRI BLUE METALS, Proprietor Thiru.S.Gnanasekaran, having office at D.No.2/241, Kannarpalayam, Karamadai Post, Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu State – 641 104, solemnly declare and sincerely affirm that:

I have apply for getting Environment Clearance to SEIAA, Tamil Nadu State for quarry lease for quarrying of Rough stone Quarry over an extent 3.11.0ha of Patta land in S.F.Nos. 77/1B and 421/2B(Part) of Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu State.

1. I swear to state and confirm that within 10km area of the quarry site, I have applied for environment clearance, none of the following is situated.

- Protected areas notified under the wild life (Protection) Act, 1972,
- Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and Control of Pollution) Act, 1974,
- Eco-Sensitive areas as notified,
- Interstate boundaries within 10km radius from the boundary of the proposed site.


MEMBER SECRETARY
SEIAA-TN

2. I will spend the amount of Rs.5,00,000/- towards Corporate Environment Responsibility (Revised CER) for the following activities to the Government Higher Secondary School, Kannarpalayam before commencement of quarrying activities.

Sl. No.	Description	CER Cost INR
1	Renovation of Existing toilet	5,00,000/-
2	Carrying out plantation in around school compound 250 Nos	
3	Providing Environmental related books to school library	
4	Laying tiles for class room	

3. The total area of following quarries located within 500m radius from the periphery of my quarry site details as shown below:

Existing Quarries

SL. No.	Name of the Owner	Village & S.Nos.	Extent Hect	Lease Period	Remarks
1.	Thiru.S.Gnanasekaran	Chikkarampalaym S.F.No.77/2D(P)	1.01.2	01.10.2018 To 30.09.2023	-
2.	Tmt.R.Poorani	Chikkarampalaym S.F.No.80/I	1.27.0	22.12.2018 To 21.12.2023	-
3.	Tmt.Kaveriammal	Chikkarampalaym S.F.No.77/2B(P)	0.99.0	24.12.2018 To 23.12.2023	-
4.	Thiru.R.K.Selvakumar	Chikkarampalaym S.F.No.69 (Part)	2.19.0	17.10.2017 To 16.10.2022	-

Expired Quarries

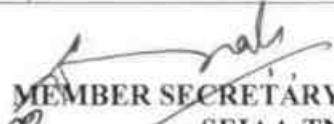
SL. No.	Name of the Owner	Village & S.Nos.	Extent Hect	Lease Period	Remarks
1.	Thiru.A.Nandhakumar	Chikkarampalaym S.F.No.78/1, 420	1.17.0	02.06.2016 To 01.06.2021	-

Abandoned Quarries

SL. No.	Name of the Owner	Village & S.Nos.	Extent Hect	Lease Period	Remarks
--- NIL ---					

Proposed Quarries

S. No.	Name and Address of the applicant	Village & S.F. No.	Extent (in Hects)	Classification of land


MEMBER SECRETARY
SEIAA-TN

1.	M/s. Sri Blue Metals	Chikkarampalayam Village, 77/1B & 421/2B(P)	3.11.0	Subject Area precise area communicated
2.	C.N. Mani	Chikkarampalayam Village, 75	2.47.5	Pending With SEIA
3.	S.Gnanasekaran	Chikkarampalayam Village, 74/2	2.37.0	Pending With SEIA
4.	Tvl.Palanivel Blue Metals	Chikkarampalayam Village, 428/1A, 60/1B & 61	1.75.5	Pending With SEIA
5.	M.Muthammal	77/2E(P), 77/2F(P), 79/1A(P)	1.82.0	Pending With SEIA

Future Proposed Quarries

SL. No.	Name of the Owner	Village & S.Nos.	Extent Hect	Lease Period	Remarks
--- NIL ---					

4. There will not be hindrance or disturbance to the people living during quarrying activities and transportation of the mineral.
5. There is no approved habitation within 300m radius from the periphery of my quarry.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. The required insurance will be taken in the name of the laborers working in my quarry site.
8. The existing road from the main road to quarry is in good condition. The same will be maintained and utilized for Transportation of quarry materials and machineries.
9. I will not engage any child labor in my quarry site and I aware that engaging child labor is punishable under the law.
10. All types of safety / protective equipment will be provided to all the laborers working in my quarry.
11. No permanent structures, temples etc., are located within 500m radius from the periphery of my quarry.

I ensure to do all the social and Environment commitment as mentioned in the Mining Plan to the best of my knowledge.


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Details of 500M radius Proposed quarry:

The Project Proponent has submitted a copy of the letter obtained from the Assistant Director, Department of Geology & Mining, Coimbatore District in his letter Rc.No.1442/Mines/2020, dated.15.09.2021 has stated that the details of other quarries (Proposed / Existing / Abandoned Quarries) within a radius 500m from the boundary of the proposed quarry site as follows:

i) Existing Quarries

Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Lease Period	Remarks
1.	Thiru.S.Gnanasekaran	Chikkarampalayam S.F.No.77/2D(P)	1.01.2	01.10.2018 to 30.09.2023	-
2.	Tmt.R.Poorani	Chikkarampalayam S.F.No.80/1	1.27.0	22.12.2018 to 21.12.2023	-
3.	Tmt.Kaveriammal	Chikkarampalayam S.F.No.77/2B(P)	0.99.0	24.12.2018 to 23.12.2023	-
4.	Thiru.R.K.Selvakumar	Chikkarampalayam S.F.No.69 (Part)	2.19.0	17.10.2017 to 16.10.2022	-

ii) Expired Quarries

Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Lease Period	Remarks
1.	Thiru.A.Nandhakumar	Chikkarampalayam S.F.No.78/1, 420	1.17.0	02.06.2016 to 01.06.2021	-

iii) Abandoned Quarries

Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Lease Period	Remarks
--- NIL ---					

iv) Proposed Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Remarks
1.	M/s. Sri Blue Metals	Chikkarampalayam,	3.11.0	Subject Area Precise area communicated


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		S.F.Nos.77/1B, 421/2B(Part)		
2.	C.N. Mani	Chikkarampalayam, S.F.No.75	2.47.5	Pending with SEIAA
3.	S.Gnanasekaran	Chikkarampalayam, S.F.No.74/2	2.37.0	Pending with SEIAA
4.	Tvl.Palanivel Blue Metals	Chikkarampalayam, S.F.Nos.428/1A, 60/1B & 61	1.75.5	Pending with SEIAA
5.	M.Muthammal	S.F.Nos.77/2E(P), 77/2F(P), 79/1A(P)	1.82.0	Pending with SEIAA

v) Future Proposed Quarries

Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Remarks
--- NIL ---				

Appraisal by SEAC:-

Proposed Rough stone project over an extent of 3.11.0 Ha in S.F.No. 77/1B & 421/2B Part, Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu by M/s. Sri Blue Metals - For Environmental Clearance.

The proposal was placed for appraisal in this 330th meeting of SEAC held on 17.11.2022. The details of the project furnished by the proponent are given in the website(www.parivesh.nic.in).

The SEAC noted the following:

1. The project proponent, **M/s. Sri Blue Metals** applied for Environmental Clearance for the proposed Rough stone project over an extent of 3.11.0 Ha in S.F.No. 77/1B&421/2B Part Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining of Mineral Projects" of the Schedule to the EIA Notification, 2006.

Based on the presentation made by the proponent, SEAC consider the safety aspects of the mining and decided to recommend the proposal for the grant of Environmental Clearance for the total production of 273414 m³ of Rough Stone with an ultimate depth restricted up to 47 m below ground level and not exceeding the annual peak production of 60830 m³ of


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rough stone, subject to the standard conditions as per the Annexure I of this minutes & normal conditions stipulated by MOEF &CC, in addition to the following specific conditions:

1. The prior Environmental Clearance granted for this mining project shall be valid for the project life including production value as laid down in the mining plan approved and renewed by competent authority, from time to time, subject to a maximum of thirty years, whichever is earlier, vide MoEF&CC Notification S.O. 1807(E) dated 12.04.2022.
2. The proponent shall mandatorily appoint the statutory Mines Manager and other statutorily competent persons such as Blaster, Mine Mate, Mine Foreman in relevant to the proposed quarry size as per the provisions of Mines Act 1952 and Metalliferrous Mines Regulations, 1961 respectively.
3. The PP shall communicate the 'Notice of Opening' of the quarry to the Director of Mines Safety, Chennai Region before obtaining the CTO from the TNPCB.
4. The proponent shall construct the 'S3 (or) G2' type of fencing all around the boundary of the proposed working quarry with gates for entry/exit before the commencement of the operation as recommended in the DGMS Circular, 11/1959 and shall furnish the photographs showing the same before obtaining the CTO from TNPCB.
5. Further, the PP shall construct the garland drain with proper size, gradient and length along the boundary of the pit leaving behind the mandatory safety zone of 7.5 m as it is designed to take care of run-off water (size, gradient and length) before obtaining the CTO from TNPCB.
6. Since the quarry is located in the cluster, the Project Proponent shall ensure strict compliance of the provisions given under the Mines Rules, 1955 for the health and welfare of the persons employed therein.
7. The PP shall furnish slope stability action plan to the concerned AD (Mines) for the systematic working by maintaining proper benches incorporating the haul road with proper gradient as the depth of the proposed quarry is exceeding 30 m, before obtaining CTO from TNPCB.
8. The PP shall carry out the scientific studies to assess the slope stability of the benches and quarry wall during the 3rd year, by involving a reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research (CIMFR) / Dhanbad, NIRM, IIT-Madras, NIT-Dept of Mining Engg, Surathkal and Anna University – CEG Campus. A


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copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB, AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance.

9. The PP shall carry out the shallow depth Jack hammer drilled holes (of 32-34 mm dia & 1.5 m depth) & NONEL initiation based 'controlled' blasting operation involving muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled within the permissible limits as stipulated by the DGMS as well as no fly rock travel beyond 20 m from the blast site.
10. Since the habitations are situated at a distance range of 350 to 800 m from the mine lease boundary, the PP shall carry out the scientific studies on controlled blasting within one year from the commencement of mining operations, for reducing the impact of blast-induced ground/air vibrations and fly rock, by involving a reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research (CIMFR) / Dhanbad, NIRM, IIT-Madras, NIT-Dept of Mining Engg, Surathkal and Anna University – CEG Campus. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB, AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance.
11. The PP shall use the jack hammer drill machine fitted with the dust extractor for the drilling operations such that the fugitive dust is controlled effectively at the source.
12. The PP shall ensure that the blasting operations are carried out by the blaster/Mine Mate/Mine Foreman employed by him as per the provisions of MMR 1961.
13. The Project Proponent shall ensure that the funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year-wise expenditure should be reported to the MoEF & CC Ministry and its Integrated Regional Office (IRO) located in Chennai.
14. The Project Proponent shall send a copy of the clearance letter marked to concerned Panchayat from whom any suggestion/representation has been received while processing the proposal.
15. 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 adhere to the EMP as committed.
16. As accepted by the Project Proponent the CER cost is Rs.5.0 lakhs and the amount shall be spent on the committed activities for Government Hr. Sec School, Kannarpalayam before obtaining CTO from TNPCB.


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ANNEXURE-I

1. The proponent shall mandatorily appoint the required number of statutory officials and the competent persons in relevant to the proposed quarry size as per the provisions of Mines Act 1952 and Metalliferrous Mines Regulations, 1961.
2. The proponent shall erect fencing all around the boundary of the proposed area with gates for entry/exit before the commencement of the operation and shall furnish the photographs/map showing the same before obtaining the CTO from TNPCB.
3. Perennial maintenance of haulage road/village / Panchayat Road shall be done by the project proponent as required in connection with the concerned Govt. Authority.
4. The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc.. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management, O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt. in the form of Short Term Permit (STP), Query license or any other name.
5. The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.
6. The proponent shall ensure that the slope of dumps is suitably vegetated in scientific manner with the native species to maintain the slope stability, prevent erosion and surface run off. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps.
7. Perennial sprinkling arrangement shall be in place on the haulage road for fugitive dust suppression. Fugitive emission measurements should be carried out during the mining operation at regular intervals and submit the consolidated report to TNPCB once in six months.


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8. The Project Proponent shall carry out slope stability study by a reputed academic/research institution such as NIRM, IIT, Anna University for evaluating the safe slope angle if the proposed dump height is more than 30 meters. The slope stability report shall be submitted to concerned Regional office of MoEF&CC, Govt. of India, Chennai as well as SEIAA, Tamilnadu.
9. The Proponent shall ensure that the Noise level is monitored during mining operation at the project site for all the machineries deployed and adequate noise level reduction measures undertaken accordingly. The report on the periodic monitoring shall be submitted to TNPCB once in 6 months.
10. Proper barriers to reduce noise level and dust pollution should be established by providing greenbelt along the boundary of the quarrying site and suitable working methodology to be adopted by considering the wind direction.
11. 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 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.
12. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper escapements 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.
13. **Noise and Vibration Related:** (i) The Proponent shall carry out only the Controlled Blasting operation using NONEL shock tube initiation system during daytime. Usage of other initiation systems such as detonating cord/fuse, safety fuse, ordinary detonators, cord relays, should be avoided in the blasting operation. The mitigation measures for control of ground vibrations and to arrest fly rocks should be implemented meticulously under the supervision of statutory competent persons possessing the I / II Class Mines Manager / Foreman / Blaster certificate issued by the DGMS under MMR 1961, appointed in the quarry. No secondary blasting of boulders shall be carried out in any occasions and only the Rock Breakers (or) other suitable non-explosive techniques shall be adopted if such secondary breakage is required. The Project


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Proponent shall provide required number of the security sentries for guarding the danger zone of 500 m radius from the site of blasting to ensure that no human/animal is present within this danger zone and also no person is allowed to enter into (or) stay in the danger zone during the blasting. (ii) Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs, (iii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone.

14. Ground water quality monitoring should be conducted once in every six months and the report should be submitted to TNPCB.
15. The operation of the quarry should not affect the agricultural activities & water bodies near the project site and a 50 m safety distance from water body should be maintained without carrying any activity. The proponent shall take appropriate measures for "Silt Management" and prepare a SOP for periodical de-siltation indicating the possible silt content and size in case of any agricultural land exists around the quarry.
16. The proponent shall provide sedimentation tank / settling tank with adequate capacity for runoff management.
17. The proponent shall ensure that the transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village Road and shall take adequate safety precautionary measures while the vehicles are passing through the schools / hospital. The Project Proponent shall ensure that the road may not be damaged due to transportation of the quarried rough stones; and transport of rough stones will be as per IRC Guidelines with respect to complying with traffic congestion and density.
18. To ensure safety measures along the boundary of the quarry site, security guards are to be posted during the entire period of the mining operation.
19. After mining operations are completed, the mine closure activities as indicated in the mine closure plan shall be strictly carried out by the Proponent fulfilling the necessary actions as assured in the Environmental Management Plan.
20. The Project proponent shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition that is fit for the growth of fodder, flora, fauna etc.


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21. The Project Proponent shall comply with the provisions of the Mines Act, 1952, MMR 1961 and Mines Rules 1955 for ensuring safety, health and welfare of the people working in the mines and the surrounding habitants.
22. The project proponent shall ensure that the provisions of the MMRD, 1956, the MCDR 2017 and Tamilnadu Minor Mineral Concession Rules 1959 are complied by carrying out the quarrying operations in a skillful, scientific and systematic manner keeping in view proper safety of the labour, structure and the public and public works located in that vicinity of the quarrying area and in a manner to preserve the environment and ecology of the area.
23. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be informed to the District AD/DD (Geology and Mining) District Environmental Engineer (TNPCB) and the Director of Mines Safety (DMS), Chennai Region by the proponent without fail.
24. The Project Proponent shall abide by the annual production scheduled specified in the approved mining plan and if any deviation is observed, it will render the Project Proponent liable for legal action in accordance with Environment and Mining Laws.
25. Prior clearance from Forestry & Wild Life including clearance from committee of the National Board for Wildlife as applicable shall be obtained before starting the quarrying operation, if the project site attracts the NBWL clearance, as per the existing law from time to time.
26. All the conditions imposed by the Assistant/Deputy Director, Geology & Mining, concerned District in the mining plan approval letter and the Precise area communication letter issued by concerned District Collector should be strictly followed.
27. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
28. The Project proponent shall install a Display Board at the entrance of the mining lease area/abutting the public Road, about the project information as shown in the **Appendix –II** of this minute.


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Appendix

List of Native Trees Suggested for Planting

1. *Aegle marmelos* – Vilvam
2. *Adenanthura pavonina* - Manjadi
3. *Albizia lebbek* – Vaagai
4. *Albizia amara* - Usil
5. *Bauhinia purpurea* - Mantharai
6. *Bauhinia racemosa* - Aathi
7. *Bauhinia tomentosa* – Iruvathi
8. *Buchanania axillaris* - Kattuma
9. *Borassus flabellifer* - Panai
10. *Butea monosperma* - Murukka maram
11. *Bobax ceiba* – Ilavu, Sevvilavu
12. *Calophyllum inophyllum* - Punnai
13. *Cassia fistula* - Sarakondrai
14. *Cassia roxburghii*- Sengondrai
15. *Chloroxylon sweitenia* - Purasa maram
16. *Cochlospermum religiosum* – Kongu, Manjal Ilavu
17. *Cordia dichotoma* – Mookuchali maram
18. *Creteva adansonii* – Mavalingum
19. *Dillenia indica* – Uva, Uzha
20. *Dillenia pentagyna* – Siru Uva, Sitruzha
21. *Diospyros ebenum* - Karungali
22. *Diospyros chloroxylon* – Vaganai
23. *Ficus amplissima* – Kal Itchi
24. *Hibiscus tiliaceus* – Aatru poovarasu
25. *Hardwickia binata* – Aacha
26. *Holoptelia integrifolia* - Aayili
27. *Lannea coromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthus tetraphylla* - Neikottai maram
30. *Limonia acidissima* - Vila maram


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31. *Litsea glutinosa* –Pisin pattai
32. *Madhuca longifolia* - Illuppai
33. *Manilkara hexandra* – Ulakkai Paalai
34. *Mimusops elengi* - Magizha maram
35. *Mitragyna parvifolia* - Kadambu
36. *Morinda pubescens* – Nuna
37. *Morinda citrifolia* – Vellai Nuna
38. *Phoenix sylvestre* - Eachai
39. *Pongamia pinnata* – Pungam
40. *Premna mollissima* – Munnai
41. *Premna serratifolia* – Narumunnai
42. *Premna tomentosa* - Purangai Naari, Pudanga Naari
43. *Prosopis cinerea* - Vanni maram
44. *Pterocarpus marsupium* - Vengai
45. *Pterospermum canescens* – Vennangu, Tada
46. *Pterospermum xylocarpum* - Polavu
47. *Puthranjiva roxburghii* – Puthranjivi
48. *Salvadora persica* – Ugaa Maram
49. *Sapindus emarginatus* - Manipungan, Soapu kai
50. *Saraca asoca* - Asoca
51. *Streblus asper* - Piraya maram
52. *Strychnos nuxvomica* – Yetti
53. *Strychnos potatorum* - Therthang Kottai
54. *Syzygium cumini* - Naval
55. *Terminalia bellerica* - Thandri
56. *Terminalia arjuna* - Ven marudhu
57. *Toona ciliate* – Sandhana vembu
58. *Thespesia populnea* - Puvarasu
59. *Walsuratrifoliata* – valsura
60. *Wrightia tinctoria* – Veppalai
61. *Pithecellobium dulce* – Kodukkapuli


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Annexure-'A'

1. The AD/DD, Dept. of Geology & Mining shall ensure operation of the proposed quarry after the submission slope stability study conducted through the reputed research & Academic Institutions such as NIRM, IITs, NITS Anna University, and any CSIR Laboratories etc.
2. The AD/DD, Dept. of Geology & Mining & Director General of Mine safety shall ensure strict compliance and implementation of bench wise recommendations/action plans as recommended in the scientific slope stability study of the reputed research & Academic Institutions as a safety precautionary measure to avoid untoward accidents during mining operation.
3. No trees in the area should be removed and all the trees numbered and protected. In case trees fall within the proposed quarry site the trees may be transplanted in the Greenbelt zone. The proponent shall ensure that the activities in no way result in disturbance to forest and trees in vicinity. The proponent shall ensure that the activity does not disturb the movement of grazing animals and free ranging wildlife. The proponent shall ensure that the activity does not disturb the biodiversity, the flora & fauna in the ecosystem. The proponent shall ensure that the activity does not result in invasion by invasive alien species. The proponent shall ensure that the activities do not disturb the resident and migratory birds. The proponent shall ensure that the activities do not disturb the vegetation and wildlife in the adjoining reserve forests and areas around.
4. The proponent shall ensure that the operations do not result in loss of soil biological properties and nutrients.
5. The activity should not result in CO₂ release and temperature rise and add to micro climate alternations.
6. The proponent shall ensure that the activity does not disturb the water bodies and natural flow of surface and ground water, nor cause any pollution, to water sources in the area.
7. The proponent shall ensure that the activities undertaken do not result in carbon emission, and temperature rise, in the area.
8. The proponent shall ensure that Monitoring is carried out with reference to the quantum of particulate matter during excavation; blasting; material transport and also from cutting waste dumps and haul roads.


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9. The proponent shall ensure that the activities do not disturb the agro biodiversity and agro farms. Actions to be taken to promote agro forestry, mixed plants to support biodiversity conservation in the mine restoration effort.
10. The proponent shall ensure that activity does not deplete the indigenous soil seed bank and disturb the mycorrhizal fungi, soil organism, soil community nor result in eutrophication of soil and water.
11. The activities should not disturb the soil properties and seed and plant growth. Soil amendments as required to be carried out, to improve soil health
12. Bio remediation using microorganisms should be carried out to restore the soil environment to enable carbon sequestration.
13. The proponent shall ensure that all mitigation measures listed in the EIA/EMP are taken to protect the biodiversity and natural resources in the area.
14. The proponent shall ensure that the activities do not impact the water bodies/wells in the neighboring open wells and bore wells. The proponent shall ensure that the activities do not in any way affect the water quantity and quality in the open wells and bore wells in the vicinity or impact the water table and levels. The proponent shall ensure that the activities do not disturb the river flow, nor affect the Odai, Water bodies, Dams in the vicinity.
15. The proponent shall ensure that in the green belt development more indigenous trees species (Appendix as per the SEAC Minutes) to be planted.
16. The proponent shall ensure the area is restored and rehabilitated with native trees as recommended in SEAC Minutes (in Appendix).
17. The proponent shall ensure that the mine restoration is done using mycorrhizal VAM, vermin-composting, Biofertilizers to ensure soil health and biodiversity conservation.
18. The proponent shall ensure that the topsoil is protected and used in planting activities in the area.
19. The proponent should ensure that there is no disturbance to the agriculture plantations, social forestry plantations, waste lands, forests, sanctuary or national parks. There should be no impact on the land, water, soil and biological environment and other natural resources due to the mining activities.
20. The proponent shall ensure that topsoil to be utilized for site restoration and Green belt alone within the proposed area.


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21. The proponent shall ensure that the activities do not impact green lands/grazing fields of all types surrounding the mine lease area which are food source for the grazing cattle.
22. The project proponent shall store/dump the waste generated within the earmarked area of the project site for mine closure as per the approved mining plan.

Directions for Reclamation of mine sites

1. The mining closure plan should strictly adhere to appropriate soil rehabilitation measures to ensure ecological stability of the area. Reclamation/Restoration of the mine site should ensure that the Geotechnical, physical, chemical properties are sustainable that the soil structure composition is buildup, during the process of restoration.
2. The proponent shall ensure that the mine closure plan is followed as per the mining plan and the mine restoration should be done with native species, and site restored to near original status. The proponent shall ensure that the area is ecologically restored to conserve the ecosystems and ensure flow of goods and services.
3. A crucial factor for success of reclamation site is to select sustainable species to enable develop a self-sustaining eco system. Species selected should easily establish, grow rapidly, and possess good crown and preferably be native species. Species to be planted in the boundary of project site should be un palatable for cattle's/ goats and should have proven capacity to add leaf-litter to soil and decompose. The species planted should be adaptable to the site conditions. Should be preferably pioneer species, deciduous in nature to allow maximum leaf-litter, have deep root system, fix atmospheric nitrogen and improve soil productivity. Species selected should have the ability to tolerate altered pit and toxicity of and site. They should be capable of meeting requirement of local people in regard to fuel fodder and should be able to attract bird, bees and butterflies. The species should be planted in mixed association.
4. For mining area reclamation plot culture experiments to be done to identify/ determine suitable species for the site.
5. Top soil with a mix of beneficial microbes (Bacteria/Fungi) to be used for reclamation of mine spoils. AM Fungi (Arbuscular mycorrhizal fungi), plant growth promoting Rhizo Bacteria and nitrogen fixing bacteria to be utilized.
6. Soil and moisture conservation and water harvesting structures to be used where ever possible for early amelioration and restoration of site.


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7. Top soil is most important for successful rehabilitation of mined sites. Topsoil contains majority of seeds and plant propagation, soil microorganism, Organic matter and plant nutrients. Wherever possible the topsoil should be immediately used in the area of the for land form reconstruction, to pre mining conditions.
8. Over burdens may be analyzed and tested for soil characteristics and used in the site for revegetation. Wherever possible seeds, rhizome, bulbs, etc of pioneering spices should be collected, preserved and used in restoring the site.
9. Native grasses seeds may be used as colonizers and soil binders, to prevent erosion and allow diverse self- sustaining plant communities to establish. Grasses may offer superior tolerance to drought, and climatic stresses.
10. Reclamation involves planned topographical reconstruction of site. Care to be taken to minimize erosion and runoff. Topsoils should have necessary physical, chemicals, ecological, properties and therefore should be stored with precautions and utilized for reclamation process. Stocked topsoil should be stabilized using grasses to protect from wind. Seeds of various indigenous and local species may be broad casted after topsoil and treated overburden are spread.
11. Alkaline soils, acidic soils, Saline soils should be suitably treated/amended using green manure, mulches, farmyard manure to increase organic carbon. The efforts should be taken to landscape and use the land post mining. The EMP and mine closure plan should provide adequate budget for reestablishing the site to pre-mining conditions. Effective steps should be taken for utilization of over burden. Mine waste to be used for backfilling, reclamation, restoration, and rehabilitation of the terrain without affecting the drainage and water regimes. The rate of rehabilitation should be similar to rate of mining. The land disturbed should be reshaped for long term use. Mining should be as far as possible be ecofriendly. Integration of rehabilitation strategies with mining plan will enable speedy restoration.
12. Efforts should to taken to aesthetically improve the mine site. Generally there are two approaches to restoration i.e Ecological approach which allows tolerant species to establish following succession process allowing pioneer species to establish. The other approach i.e plantation approach is with selected native species are planted. A blend of both methods may be resorted to restore the site by adding soil humas and mycorrhiza.
13. Action taken for restoration of the site should be specifically mentioned in the EC compliances.

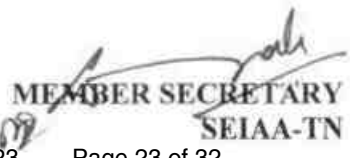

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Part-A: Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. Mining activity should be reviewed by the District Collector after three years and decide for further extension.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.


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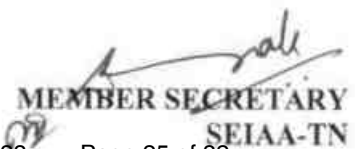
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 50mts. from any civil structure shall be kept from the periphery of any excavation area.
14. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
15. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
16. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
17. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
18. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
19. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF & CC, GoI on 16.11.2009.
20. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
21. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.


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- v. All noise generating machinery the compressor, generator to be enclosed in acoustic enclosure so as to reduce noise in working area.
22. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoEF& CC, GoI to control noise to the prescribed levels.
23. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
24. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
25. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
26. The following measures are to be adopted to control erosion of dumps:-
- Retention/ toe walls shall be provided at the foot of the dumps.
 - Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
27. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous& other wastes (Management, and Trans Boundary Movement) Rules, 2016 and its amendments thereof to the recyclers authorized by TNPCB.
28. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
29. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
30. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.


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31. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
32. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
33. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
34. It shall be ensured that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 5 hectares within the mining lease period of this application.
35. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 300m radius from the periphery of the quarry site.
36. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
37. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
38. Bunds to be provided at the boundary of the project site.
39. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
40. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
41. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
42. The Project Proponent shall provide solar lighting system to the nearby villages.


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43. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
44. Safety equipments to be provided to all the employees.
45. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
46. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
47. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
48. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
49. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
50. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
51. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
52. The Proponent shall ensure that the project activity including blasting, mining transportation etc should in no way have adverse impact to the other forests, such as reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc.
53. The proponent shall provide Green Belt development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 3m height.
54. The fugitive emissions should be monitored during the mining activity and should be reported to TNPCCB once in a month and the operation of the quarry should no way impact the agriculture activity & water bodies near the project site.
55. All the commitment made by the project proponent in the proposal shall be strictly followed.
56. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining


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activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.

57. The Project proponent has to strictly comply the outcome/direction of the Hon'ble NGT, Principle Bench, New Delhi in the O.A No.186 of 2016 (M.A.No.350/2016), O.A. No.200/2016, O.A.No.580/2016 (M.A.No.1182/2016), O.A.No.102/2017, O.A.No.404/2016 (M.A.No. 758/2016, M.A. No. 920 /2016, M.A.No.1122/2016, M.A.No. 12/2017 & M.A.No.843/2017), O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No.981/2016, M.A.No.982/2016 & M.A.No.384/2017).
58. All required sanitary and hygienic measures should be in place before starting construction activities and they have to be maintained throughout the construction phase.
59. The company shall stress upon the preventive aspects of occupational health.
60. A separate environment and safety management cell with qualified staff shall be set up before commissioning of construction activities and shall be retained throughout the lifetime of the industry, for implementation of the stipulated environmental safeguards.
61. A scientific site/ ecological rehabilitation and restoration plan on long term basis should be drawn to carryout restoration with native species and Bio diversity.
62. The Green/Blue plan should guide the restoration of the site. The rehabilitation/restoration plan should be submitted to SEIAA-TN within one month. If applicable.
63. The existing water bodies should not be disturbed to ensure sustainable environment for aquatic life forms.
64. The proponent should completely implement all environmental pollution control measures as detailed in the EIA report and in the additional report.
65. Avenue plantation wherever needed has to be carried out along the route for dust suppression.
66. The green belt developed for the prevention of dust pollution should not form a part of the larger green belt development envisaged in the EIA report.
67. Regular monitoring and check up for pulmonary and carcinogenic diseases to be carried out regularly, not only for the workers involved in the mines but also to the people in the villages adjoining the mines. Interaction with the Primary Health Centre & district medical officer should be on regular basis to monitor the incidence of the diseases if any and to provide suitable medical facility for the patients.


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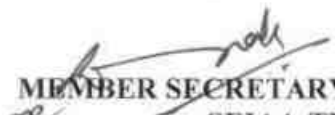
68. Monitoring of well water levels and water quality of the wells in the locations furnished in the EIA report shall be done during pre-monsoon and post monsoon period and results submitted to the Regional Office of MoEF, Chennai and SEIAA.
69. Monitoring of water quality and air quality in and around the project site in the selected monitoring points as mentioned in the EIA report shall be continued regularly involving Academic Institutions.
70. Hydro geological study including infiltration test shall be conducted by any reputed agency to estimate leachate quantity.
71. Regular medical check-up for mine workers and nearby residents around the project site involving community medical centre/NIMH shall be conducted.
72. As per norms, the health study should be conducted through competent/approved health organization and report submitted for one year.
73. The effective safe guard measures shall be provided to control particulate dust level in critical areas, transfer points and haul road within the mine area.
74. NOC from the State GWA for drawing ground water shall be obtained, if ground water table is intersected.
75. Green belt shall be provided as per norms of MoEF & CC, GOI, in consultation with local DFO.
76. All the recommendations made in the EIA report of the project shall be effectively implemented.
77. A booklet containing the Dos and Don'ts shall be prepared in vernacular languages for the use of the mine engineers/ managers and the workers to ensure that all necessary environmental, safety and health measures are undertaken.
78. All the environmental protection measures and safeguards as recommended in the EIA report shall be complied with.
79. Hydro geological study of the area shall be reviewed annually and report submitted to the Authority. No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the operation of the Mining activity.
80. A separate Environmental Management Cell equipped with full fledged laboratory facilities to carry out the various Environmental Management and Monitoring functions shall be set up under the control of a Senior Executive.


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81. The project proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MoEF at Chennai, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; RSPM, SO₂, NO_x or critical sector parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

Part B: General Conditions:

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


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11. All Personnel shall be provided with protective respiratory devices including safety shoes, masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the Environmental Clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this Environmental Clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the Environmental Clearance.


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20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
23. Any appeal against this Environmental Clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
24. The Environmental Clearance is issued based on the documents furnished by the project proponent. In case any documents found to be incorrect/not in order at a later date the Environmental Clearance issued to the project will be deemed to be revoked/ cancelled.


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Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Additional Chief Secretary to Government, Environment and Forests Department, Tamil Nadu.
3. The Additional Chief Secretary to Government, Industries Department, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.

5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
6. The Chairman, TNPC Board, 76, Mount Salai, Guindy, Chennai - 32.
7. The District Collector, Coimbatore District.
8. The Commissioner of Geology and Mines, Guindy, Chennai - 32.
9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. Spare.

Signature Not Verified

Digitally signed by Thiru.Deepak
S.Bilgi
Member Secretary
Date: 1/18/2023 11:05:30 AM
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Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), TAMIL NADU)

To,

The Proprietor
 M MUTHAMMAL

Chikkarampalayam, Mettupalayam Taluk Coimbatore District -641104

Subject: Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/TN/MIN/405297/2022 dated 13 Dec 2022. The particulars of the environmental clearance granted to the project are as below.

1. EC Identification No.	EC23B001TN114290
2. File No.	8393
3. Project Type	New
4. Category	B
5. Project/Activity including Schedule No.	1(a) Mining of minerals
6. Name of Project	Tmt.M. MUTHAMMAL ROUGH STONE & GRAVEL QUARRY over an Extent of 1.82..0 ha of Patta land in S.F.Nos: 77/2E (P), 77/2F (P), 79/1A (P) of Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamilnadu State
7. Name of Company/Organization	M MUTHAMMAL
8. Location of Project	TAMIL NADU
9. TOR Date	N/A

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 13/02/2023

(e-signed)
Thiru.Deepak S.Bilgi
 Member Secretary
 SEIAA - (TAMIL NADU)

Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH.Please quote identification number in all future correspondence.

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PARIVESH

*(Pro-Active and Responsive Facilitation by Interactive,
 and Virtuous Environmental Single-Window Hub)*





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

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/F.No.8393/EC.No:5492/2023 dated: 09.01.2023

Sir/Madam,

Sub SEIAA-TN – Proposed Rough Stone and Gravel quarry lease over an extent of 1.82.0 Ha at S.F.No. 77/2E (P), 77/2F (P) & 79/1A (P) of Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu by Tmt.M.Muthammal – issue of Environmental Clearance – Regarding.

Ref: 1. ToR issued vide Lr No.SEIAA-TN/F.No.8393/SEAC/ToR-973/2021 Dated: 05.07.2021.
2. Public Hearing conducted on 26.07.2022.
3. Online Proposal No. SIA/TN/MIN/405297/2022 dated: 04.11.2022.
4. Project proponent submitted EIA Report to SEIAA-TN on 07.11.2022.
5. Minutes of the 337th SEAC meeting held on 13.12.2022.
6. Minutes of the 582nd SEIAA meeting held on 09.01.2023.

Details of Minor Mineral Activity: -

This has reference to your application third and fourth cited. The proposal is for obtaining Environmental Clearance for mining/quarrying of minor minerals based on the particulars furnished in your application as shown below.

S.No	Particulars	Details furnished
1.	Name of the Owner/Firm	Tmt. M. Muthammal, W/o. R. Mahendran, No.64-G, Sirumugai Road,


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		Siva Nagar, Karamadai, Mettupalayam Taluk, Coimbatore District - 641 104.
2.	Type of quarrying	Rough Stone and Gravel
3.	S.F No. of the quarry site up	77/2E (P), 77/2F (P) & 79/1A (P)
4.	Village in which situated	Chikkarampalayam
5.	Taluk in which situated	Mettupalayam
6.	District in which situated	Coimbatore
7.	Extent of quarry (in ha.)	1.82.0 Ha
8.	Period of quarrying proposed	5 years
9.	Type of mining	Opencast Mechanized Mining
10.	Production (Quantity in m ³)	63,384 m ³ of Rough Stone with annual peak production 19,388 m ³
11.	Depth of quarrying	31m BGL
12.	Latitude & Longitude of all corners of the quarry site	11°14'45.62"N to 11°14'50.65"N 76°58'49.83"E to 76°58'57.68"E
13.	Topo Sheet No.	58 - A/16
14.	Man Power requirement	15 Nos.
15.	Precise area communication	Na.Ka.No.267/Kanimam/2020, Dated:31.12.2020
16.	Mining Plan	Rc.No.267/Mines/2020, Dated:29.01.2021
17.	500m cluster letter	Rc.No.267/Mines/2020, Dated:29.01.2021
18.	Water requirement: 1. Drinking & Domestic Purpose 2. Dust suppression 3. Green Belt	2.0 KLD 0.5 KLD 1.0 KLD 0.5 KLD
19.	Power requirement a. Domestic Purpose b. Industrial Propose	TNEB 100 Liters of HSD / day
20.	Depth of water table	60-65m bgl

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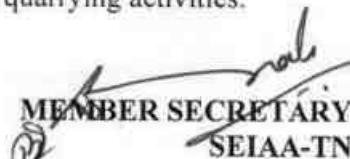
21.	Project Cost (including EMP cost)	Rs. 27.57 lakhs
22.	EMP cost	Capital Cost – Rs. 30,43,814/- Recurring Cost – Rs. 12,73,960/-
23.	CER cost	Rs. 7.5 lakhs
24.	VAO certificate regarding habitation within 300m radius	Letter dated: 04.02.2021
25.	ToR Issued	Lr No.SEIAA-TN/F.No.8393/SEAC/ ToR-973/2021 Dated: 05.07.2021
26.	Public hearing	26.07.2022
27.	EIA report submitted on	07.11.2022
28.	<u>Validity:</u> This Environmental Clearance is granted for the production of 63,384 m³ of Rough Stone for the period of 5 Years from the date of execution of the mining lease and ultimate depth of mining upto 31m BGL.	

The Proponent has furnished affidavit in stamp paper attested by the Notary stating that

I, M.Muthammal, W/o. R.Mahendran, residing at No.64-G, Sirumugai Road, Siva Nagar, Karamadai, Mettupalayam Taluk, Coimbatore District – 641 104, Tamil Nadu State, solemnly declare and sincerely affirm that:

I have apply for getting Environment Clearance to SEIAA, Tamil Nadu State for quarry lease for quarrying of Rough stone and Gravel Quarry over an extent 1.82.0ha of Patta lands in S.F.Nos.77/2E (P), 77/2F (P) & 79/1A (P) of Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu State.

1. I swear to state and confirm that within 10km area of the quarry site, I have applied for environment clearance, none of the following is situated.
 - a. Protected areas notified under the wild life (Protection) Act, 1972,
 - b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and Control of Pollution) Act, 1974,
 - c. Eco-Sensitive areas as notified,
 - d. Interstate boundaries within 10km radius from the boundary of the proposed site.
2. I spend the amount of Rs.7,50,000/- towards Corporate Environment Responsibility (Revised CER) for the following activities to the Panchayat Union Middle School, Chikarampalayam, Karamadai before commencement of quarrying activities.


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Sl. No.	Description	CER Cost INR
1	Renovation of Existing toilet	Rs.7,50,000/-
2	Carrying out plantation in around school compound 250 Nos	
3	Providing Environmental related books to school library	
4	Renovation of Roof	
5	Construction of Kitchen in the School	

3. The total area of following quarries located within 500m radius from the periphery of my quarry site details as shown below:

Existing Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect	Lease Period	Remarks
1.	Tmt.Poorani	Chikkarampalayam 80/1	1.27.0	22.12.2018 To 21.12.2023	-
2.	Thiru.A.Nandakumar	Chikkarampalayam 78/1, 420	1.17.0	02.06.2016 To 01.06.2021	-
3.	Thiru.C.N.Mani	Chikkarampalayam 77/1B, 421/2B	3.11.0	02.03.2016 TO 01.03.2021	-
4.	Tmt.Kaveriammal	Chikkarampalayam 77/2B	0.99.0	24.12.2018 To 23.12.2023	-
5.	Thiru.S.Gnanasekaran	Chikkarampalayam 77/2D	1.01.2	01.10.2018 To 30.09.2023	-

Expired Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect	Lease Period	Remarks
1.	Thiru.Rangaraj	Chikkarampalayam 76/1(P)	1.21.0	26.05.1998 To 25.05.2003	-
2.	Thiru.R.Venkitasamy	Chikkarampalayam 67/2	0.61.0	09.06.2003 To 08.06.2008	-
3.	Thiru.T.Rajendran	Chikkarampalayam 67	0.90.5	07.07.1996 To 06.07.2001	-

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Abandoned Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect	Lease Period	Remarks
--- NIL ---					

Proposed Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect	Remarks
1.	Tmt.M.Muthammal	Chikkarampalayam 77/2(E) (P)	1.82.0	Subject Area Precise area communicated
2.	Thiru.C.N.Mani	Chikkarampalayam 75	2.47.5	Precise area communicated
3.	Thiru.P.Siddarthamouli	Chikkarampalayam 76/1A	1.21.50	Precise area communicated

Future Proposed Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect	Remarks
--- NIL ---				

4. There will not be hindrance or disturbance to the people living during quarrying activities and transportation of the mineral.
5. There is no approved habitation within 300m radius from the periphery of my quarry.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. The required insurance will be taken in the name of the laborers working in my quarry site.
8. The existing road from the main road to quarry is in good condition. The same will be maintained and utilized for Transportation of quarry materials and machineries.
9. I will not engage any child labor in my quarry site and I aware that engaging child labor is punishable under the law.
10. All types of safety / protective equipment will be provided to all the laborers working in my quarry.
11. No permanent structures, temples etc., are located within 500m radius from the periphery of my quarry.

I ensure to do all the social and Environment commitment as mentioned in the Mining Plan to the best of my knowledge.


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Details of 500M radius Proposed quarry:

The Project Proponent has submitted a copy of the letter obtained from Assistant Director, Department of Geology & Mining, Coimbatore District in his letter Re.No.267/Mines/2020, Dated:29.01.2021 has stated that the details of other quarries (Proposed / Existing / Abandoned Quarries) within a radius 500m from the boundary of the proposed quarry site as follows:

i) Existing Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Lease period	Remarks
1.	Tmt.Poorani	Chikkarampalayam 80/1	1.27.0	22.12.2018 to 21.12.2023	
2.	Thiru.A.Nandakumar	Chikkarampalayam 78/1 420	1.17.0	02.06.2016 to 01.06.2021	
3.	Thiru.C.N.Mani	Chikkarampalayam 77/1B 421/2B	3.11.0	02.03.2016 to 01.03.2021	
4.	Tmt.Kaveriammal	Chikkarampalayam 77/2B	0.99.0	24.12.2018 to 23.12.2023	
5.	Thiru.S.Gnanasekaran	Chikkarampalayam 77/2D	1.01.2	01.10.2018 to 30.09.2023	

ii) Expired Quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Lease period	Remarks
1.	Thiru.Rangaraj	Chikkarampalayam 76/1 (P)	1.21.0	26.05.1998 to 25.05.2003	
2.	Thiru.R.Venkitasamy	Chikkarampalayam 67/2	0.61.0	09.06.2003 to 08.06.2008	
3.	Thiru.T.Rajendran	Chikkarampalayam 67	0.90.5	07.07.1996 to 06.07.2001	

iii) Abandoned quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Lease period	Remarks
--Nil--					

iv) Proposed quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Remarks


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1.	Tmt.M.Muthammal	Chikkarampalayam 77/2E(P) 77/2F(P) and 79/1A(P)	1.82.0	Subject Area Precise area communicated
2.	Thiru.C.N.Mani	Chikkarampalayam 75	2.47.5	Precise area communicated
3.	Thiru.P.Siddarthamouli	Chikkarampalayam 76/1A	1.21.50	Precise area communicated

v) Future Proposed quarries

Sl. No.	Name of the Owner	Village & S.F. Nos.	Extent in Hect.	Remarks
---NIL---				

Appraisal by SEAC: -

Proposed Rough Stone & Gravel quarry lease over an extent of 1.82.0 Ha in S.F.Nos. 77/2E, 77/2F(P), 79/1A, Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu by Tmt. M. Muthammal - For Environmental Clearance.

The proposal was placed for appraisal in this 337th meeting of SEAC held on 13.12.2022. The details of the project furnished by the proponent are available on the website (parivesh.nic.in). The project proponent gave detailed presentation.

SEAC noted the following:

1. The project proponent, **Tmt. M. Muthammal** has applied for Environmental Clearance for the proposed Rough Stone & Gravel quarry lease over an extent of 1.82.0 Ha in S.F.Nos. 77/2E, 77/2F(P), 79/1A, Chikkarampalayam Village, Mettupalayam Taluk, Coimbatore District, Tamil Nadu.
2. The project/activity is covered under Category "B2" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006, as amended

Based on the presentation made by the proponent, SEAC decided to recommend the proposal for the grant of Environmental Clearance for the total production of 63,384 m³ Rough stone with annual peak production 19388 m³ and the ultimate depth of mining restricted upto 31m below ground level, subject to the standard conditions as per the Annexure I of this minutes & normal conditions stipulated by MOEF &CC, in addition to the following specific conditions:

1. **The prior Environmental Clearance granted for this mining project shall be valid for the project life including production value as laid down in the mining plan approved and renewed by competent authority, from time to time, subject to a maximum of**


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thirty years, whichever is earlier, vide MoEF&CC Notification S.O. 1807(E) dated 12.04.2022.

2. The proponent shall mandatorily appoint the statutory competent persons such as Blaster, Mine Mate, Mine Foreman in relevant to the proposed quarry size as per the provisions of Mines Act 1952 and Metalliferous Mines Regulations, 1961 respectively.
3. The PP shall communicate the 'Notice of Opening' of the quarry to the Director of Mines Safety, Chennai Region before obtaining the CTO from the TNPCB.
4. The proponent shall construct the 'S3 (or) G2' type of fencing all around the boundary of the proposed working quarry with gates for entry/exit before the commencement of the operation as recommended in the DGMS Circular, 11/1959 and shall furnish the photographs showing the same before obtaining the CTO from TNPCB.
5. Further, the PP shall construct the garland drain with proper size, gradient and length along the boundary of the pit leaving behind the mandatory safety zone of 7.5 m as it is designed to take care of run-off water (size, gradient and length) before obtaining the CTO from TNPCB.
6. Since the quarry is located in the cluster, the Project Proponent shall ensure strict compliance of the provisions given under the Mines Rules, 1955 for the health and welfare of the persons employed therein.
7. The PP shall furnish **slope stability action plan** to the concerned AD (Mines) for the systematic working by maintaining proper benches incorporating the haul road with proper gradient as the depth of the proposed quarry is exceeding 30 m, before obtaining CTO from TNPCB.
8. The PP shall carry out the green belt development including the plantation within the mine lease area before obtaining the CTO from the TNPCB.
9. The PP shall undertake suitable measures for welfare amenities of the workers employed in the quarry as per the provisions laid under the Mines Rules 1955.
10. The PP shall carry out the scientific studies to assess the slope stability of the benches and quarry wall when the depth of the quarry touches 30 m (or) after the completion of 4 years of operation whichever is earlier, by involving a reputed Research and Academic Institution such as CSIR-Central Institute of Mining & Fuel Research (CIMFR) / Dhanbad, NIRM, IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus, etc. A copy of such scientific study report shall be submitted to the SEIAA, MoEF, TNPCB,


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AD/Mines-DGM and DMS, Chennai as a part of Environmental Compliance without any deviation.

11. The PP shall use the jack hammer drill machine fitted with the dust extractor for the drilling operations such that the fugitive dust is controlled effectively at the source.
12. The PP shall ensure that the blasting operations are carried out by only the statutory persons like Blaster/Mine Mate/Mine Foreman directly employed by him as per the provisions of MMR 1961 and it shall not be carried out by the persons other than the above statutory personnel.
13. The PP shall meticulously carry out the mitigation measures as spelt out in the revised EMP.
14. The Project Proponent shall ensure that the funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year-wise expenditure should be reported to the MoEF& CC Ministry and its Integrated Regional Office (IRO) located in Chennai.
15. The Project Proponent shall send a copy of the clearance letter marked to concerned Panchayat from whom any suggestion/representation has been received while processing the proposal.
16. 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 adhere to the EMP as committed.
17. As accepted by the Project Proponent the CER cost is **Rs.7.5 Lakh** and the amount shall be spent on the committed activities for Government School, before obtaining CTO from TNPCB.

ANNEXURE-I

1. The proponent shall mandatorily appoint the required number of statutory officials and the competent persons in relevant to the proposed quarry size as per the provisions of Mines Act 1952 and Metalliferous Mines Regulations, 1961.
2. The proponent shall erect fencing all around the boundary of the proposed area with gates for entry/exit before the commencement of the operation and shall furnish the photographs/map showing the same before obtaining the CTO from TNPCB.
3. Perennial maintenance of haulage road/village / Panchayat Road shall be done by the project proponent as required in connection with the concerned Govt. Authority.
4. The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total

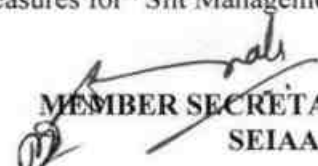

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excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc.. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management, O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt. in the form of Short Term Permit (STP), Query license or any other name.

5. The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.
6. The proponent shall ensure that the slope of dumps is suitably vegetated in scientific manner with the native species to maintain the slope stability, prevent erosion and surface run off. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps.
7. Perennial sprinkling arrangement shall be in place on the haulage road for fugitive dust suppression. Fugitive emission measurements should be carried out during the mining operation at regular intervals and submit the consolidated report to TNPCB once in six months.
8. The Project Proponent shall carry out slope stability study by a reputed academic/research institution such as NIRM, IIT, Anna University for evaluating the safe slope angle if the proposed dump height is more than 30 meters. The slope stability report shall be submitted to concerned Regional office of MoEF&CC, Govt. of India, Chennai as well as SEIAA, Tamilnadu.
9. The Proponent shall ensure that the Noise level is monitored during mining operation at the project site for all the machineries deployed and adequate noise level reduction measures undertaken accordingly. The report on the periodic monitoring shall be submitted to TNPCB once in 6 months.
10. Proper barriers to reduce noise level and dust pollution should be established by providing greenbelt along the boundary of the quarrying site and suitable working methodology to be adopted by considering the wind direction.


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11. 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 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.
12. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted in proper escapements 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.
13. **Noise and Vibration Related:** (i) The Proponent shall carry out only the Controlled Blasting operation using NONEL shock tube initiation system during daytime. Usage of other initiation systems such as detonating cord/fuse, safety fuse, ordinary detonators, cord relays, should be avoided in the blasting operation. The mitigation measures for control of ground vibrations and to arrest fly rocks should be implemented meticulously under the supervision of statutory competent persons possessing the I / II Class Mines Manager / Foreman / Blaster certificate issued by the DGMS under MMR 1961, appointed in the quarry. No secondary blasting of boulders shall be carried out in any occasions and only the Rock Breakers (or) other suitable non-explosive techniques shall be adopted if such secondary breakage is required. The Project Proponent shall provide required number of the security sentries for guarding the danger zone of 500 m radius from the site of blasting to ensure that no human/animal is present within this danger zone and also no person is allowed to enter into (or) stay in the danger zone during the blasting. (ii) Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs, (iii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone.
14. Ground water quality monitoring should be conducted once in every six months and the report should be submitted to TNPCB.
15. The operation of the quarry should not affect the agricultural activities & water bodies near the project site and a 50 m safety distance from water body should be maintained without carrying any activity. The proponent shall take appropriate measures for "Silt Management"


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and prepare a SOP for periodical de-siltation indicating the possible silt content and size in case of any agricultural land exists around the quarry.

16. The proponent shall provide sedimentation tank / settling tank with adequate capacity for runoff management.
17. The proponent shall ensure that the transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village Road and shall take adequate safety precautionary measures while the vehicles are passing through the schools / hospital. The Project Proponent shall ensure that the road may not be damaged due to transportation of the quarried rough stones; and transport of rough stones will be as per IRC Guidelines with respect to complying with traffic congestion and density.
18. To ensure safety measures along the boundary of the quarry site, security guards are to be posted during the entire period of the mining operation.
19. After mining operations are completed, the mine closure activities as indicated in the mine closure plan shall be strictly carried out by the Proponent fulfilling the necessary actions as assured in the Environmental Management Plan.
20. The Project proponent shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition that is fit for the growth of fodder, flora, fauna etc.
21. The Project Proponent shall comply with the provisions of the Mines Act, 1952, MMR 1961 and Mines Rules 1955 for ensuring safety, health and welfare of the people working in the mines and the surrounding habitants.
22. The project proponent shall ensure that the provisions of the MMRD, 1956, the MCDR 2017 and Tamilnadu Minor Mineral Concession Rules 1959 are complied by carrying out the quarrying operations in a skillful, scientific and systematic manner keeping in view proper safety of the labour, structure and the public and public works located in that vicinity of the quarrying area and in a manner to preserve the environment and ecology of the area.
23. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be informed to the District AD/DD (Geology and Mining) District Environmental Engineer (TNPCB) and the Director of Mines Safety (DMS), Chennai Region by the proponent without fail.


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24. The Project Proponent shall abide by the annual production scheduled specified in the approved mining plan and if any deviation is observed, it will render the Project Proponent liable for legal action in accordance with Environment and Mining Laws.
25. Prior clearance from Forestry & Wild Life including clearance from committee of the National Board for Wildlife as applicable shall be obtained before starting the quarrying operation, if the project site attracts the NBWL clearance, as per the existing law from time to time.
26. All the conditions imposed by the Assistant/Deputy Director, Geology & Mining, concerned District in the mining plan approval letter and the Precise area communication letter issued by concerned District Collector should be strictly followed.
27. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
28. The Project proponent shall install a Display Board at the entrance of the mining lease area/abutting the public Road, about the project information as shown in the **Appendix –II** of this minute.

Appendix

List of Native Trees Suggested for Planting

1. *Aegle marmelos* – Vilvam
2. *Adenanthura pavonina* - Manjadi
3. *Albizia lebbek* – Vaagai
4. *Albizia amara* - Usil
5. *Bauhinia purpurea* - Mantharai
6. *Bauhinia racemosa* - Aathi
7. *Bauhinia tomentosa* – Iruvathi
8. *Buchanania axillaris* - Kattuma
9. *Borassus flabellifer* - Panai
10. *Butea monosperma* - Murukka maram
11. *Bobax ceiba* – Ilavu, Sevvilavu
12. *Calophyllum inophyllum* - Punnai
13. *Cassia fistula* - Sarakondrai
14. *Cassia roxburghii*- Sengondrai
15. *Chloroxylon sweitenia* - Purasa maram


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16. *Cochlospermum religiosum* – Kongu, Manjal Ilavu
17. *Cordia dichotoma* – Mookuchali maram
18. *Creteva adansonii* – Mavalingum
19. *Dillenia indica* – Uva, Uzha
20. *Dillenia pentagyna* – Siru Uva, Sitruzha
21. *Diospyros ebenum* - Karungali
22. *Diospyros chloroxylon* – Vaganai
23. *Ficus amplissima* – Kal Itchi
24. *Hibiscus tiliaceus* – Aatru poovarasu
25. *Hardwickia binata* – Aacha
26. *Holoptelia integrifolia* - Aayili
27. *Lannea coromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthus tetraphylla* - Neikottai maram
30. *Limonia acidissima* - Vila maram
31. *Litsea glutinosa* -Pisin pattai
32. *Madhuca longifolia* - Illuppai
33. *Manilkara hexandra* – Ulakkai Paalai
34. *Mimusops elengi* - Magizha maram
35. *Mitragyna parvifolia* - Kadambu
36. *Morinda pubescens* – Nuna
37. *Morinda citrifolia* – Vellai Nuna
38. *Phoenix sylvestre* - Eachai
39. *Pongamia pinnata* – Pungam
40. *Premna mollissima* – Munnai
41. *Premna serratifolia* – Narumunnai
42. *Premna tomentosa* - Purangai Naari, Pudanga Naari
43. *Prosopis cinerea* - Vanni maram
44. *Pterocarpus marsupium* - Vengai
45. *Pterospermum canescens* – Vennangu, Tada
46. *Pterospermum xylocarpum* - Polavu
47. *Puthranjiva roxburghii* – Puthranjivi
48. *Salvadora persica* – Ugaa Maram


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production 19388 m³ shall not exceed as per approved modified mining plan issued by the Department of Geology & Mining subject to the standard conditions as per Annexure - (I) & all other specific conditions as recommended by SEAC & other normal conditions stipulated by MOEF & CC in addition to the following conditions & Conditions stated vide Annexure 'A'.

1. The project proponent shall store/dump the and Top soil/Weathered Rock generated within the earmarked area of the project site and the utilize the same for mine closure as per the approved mining plan.
2. As per the MoEF & CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 accepted by the Project proponent, the revised CER cost is Rs. 7.5 Lakhs and the amount shall be spent for the committed activities to the Panchayat Union Middle School, Chikkrampalayam Village before obtaining CTO from TNPCB.
3. The project proponent shall obtain prior permission from Regional Inspector of *Directorate General of Mines Safety, Chennai* before obtaining CTO from TNPCB.

Annexure-'A'

1. The AD/DD, Dept. of Geology & Mining shall ensure operation of the proposed quarry after the submission slope stability study conducted through the reputed research & Academic Institutions such as NIRM, IITs, NITS Anna University, and any CSIR Laboratories etc.
2. The AD/DD, Dept. of Geology & Mining & Director General of Mine safety shall ensure strict compliance and implementation of bench wise recommendations/action plans as recommended in the scientific slope stability study of the reputed research & Academic Institutions as a safety precautionary measure to avoid untoward accidents during mining operation.
3. No trees in the area should be removed and all the trees numbered and protected. In case trees fall within the proposed quarry site the trees may be transplanted in the Greenbelt zone. The proponent shall ensure that the activities in no way result in disturbance to forest and trees in vicinity. The proponent shall ensure that the activity does not disturb the movement of grazing animals and free ranging wildlife. The proponent shall ensure that the activity does not disturb the biodiversity, the flora & fauna in the ecosystem. The proponent shall ensure that the activity does not result in invasion by invasive alien species. The proponent shall ensure that the activities do not disturb the resident and migratory birds. The proponent shall ensure that the activities do not disturb the vegetation and wildlife in the adjoining reserve forests and areas around.


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4. The proponent shall ensure that the operations do not result in loss of soil biological properties and nutrients.
5. The activity should not result in CO₂ release and temperature rise and add to micro climate alternations.
6. The proponent shall ensure that the activity does not disturb the water bodies and natural flow of surface and ground water, nor cause any pollution, to water sources in the area.
7. The proponent shall ensure that the activities undertaken do not result in carbon emission, and temperature rise, in the area.
8. The proponent shall ensure that Monitoring is carried out with reference to the quantum of particulate matter during excavation; blasting; material transport and also from cutting waste dumps and haul roads.
9. The proponent shall ensure that the activities do not disturb the agro biodiversity and agro farms. Actions to be taken to promote agro forestry, mixed plants to support biodiversity conservation in the mine restoration effort.
10. The proponent shall ensure that activity does not deplete the indigenous soil seed bank and disturb the mycorrhizal fungi, soil organism, soil community nor result in eutrophication of soil and water.
11. The activities should not disturb the soil properties and seed and plant growth. Soil amendments as required to be carried out, to improve soil health
12. Bio remediation using microorganisms should be carried out to restore the soil environment to enable carbon sequestration.
13. The proponent shall ensure that all mitigation measures listed in the EIA/EMP are taken to protect the biodiversity and natural resources in the area.
14. The proponent shall ensure that the activities do not impact the water bodies/wells in the neighboring open wells and bore wells. The proponent shall ensure that the activities do not in any way affect the water quantity and quality in the open wells and bore wells in the vicinity or impact the water table and levels. The proponent shall ensure that the activities do not disturb the river flow, nor affect the Odai, Water bodies, Dams in the vicinity.
15. The proponent shall ensure that in the green belt development more indigenous trees species (Appendix as per the SEAC Minutes) to be planted.
16. The proponent shall ensure the area is restored and rehabilitated with native trees as recommended in SEAC Minutes (in Appendix).


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17. The proponent shall ensure that the mine restoration is done using mycorrhizal VAM, vermin-composting, Biofertilizers to ensure soil health and biodiversity conservation.
18. The proponent shall ensure that the topsoil is protected and used in planting activities in the area.
19. The proponent should ensure that there is no disturbance to the agriculture plantations, social forestry plantations, waste lands, forests, sanctuary or national parks. There should be no impact on the land, water, soil and biological environment and other natural resources due to the mining activities.
20. The proponent shall ensure that topsoil to be utilized for site restoration and Green belt alone within the proposed area.
21. The proponent shall ensure that the activities do not impact green lands/grazing fields of all types surrounding the mine lease area which are food source for the grazing cattle.
22. The project proponent shall store/dump the waste generated within the earmarked area of the project site for mine closure as per the approved mining plan.

Directions for Reclamation of mine sites

1. The mining closure plan should strictly adhere to appropriate soil rehabilitation measures to ensure ecological stability of the area. Reclamation/Restoration of the mine site should ensure that the Geotechnical, physical, chemical properties are sustainable that the soil structure composition is buildup, during the process of restoration.
2. The proponent shall ensure that the mine closure plan is followed as per the mining plan and the mine restoration should be done with native species, and site restored to near original status. The proponent shall ensure that the area is ecologically restored to conserve the ecosystems and ensure flow of goods and services.
3. A crucial factor for success of reclamation site is to select sustainable species to enable develop a self-sustaining eco system. Species selected should easily establish, grow rapidly, and possess good crown and preferably be native species. Species to be planted in the boundary of project site should be un palatable for cattle's/ goats and should have proven capacity to add leaf-litter to soil and decompose. The species planted should be adaptable to the site conditions. Should be preferably pioneer species, deciduous in nature to allow maximum leaf-litter, have deep root system, fix atmospheric nitrogen and improve soil productivity. Species selected should have the ability to tolerate altered pit and toxicity of and site. They should be capable of meeting requirement of local people in regard to fuel


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fodder and should be able to attract bird, bees and butterflies. The species should be planted in mixed association.

4. For mining area reclamation plot culture experiments to be done to identify/ determine suitable species for the site.
5. Top soil with a mix of beneficial microbes (Bacteria/Fungi) to be used for reclamation of mine spoils. AM Fungi (Arbuscular mycorrhizal fungi), plant growth promoting Rhizo Bacteria and nitrogen fixing bacteria to be utilized.
6. Soil and moisture conservation and water harvesting structures to be used where ever possible for early amelioration and restoration of site.
7. Top soil is most important for successful rehabilitation of mined sites. Topsoil contains majority of seeds and plant propagation, soil microorganism, Organic matter and plant nutrients. Wherever possible the topsoil should be immediately used in the area of the for land form reconstruction, to pre mining conditions.
8. Over burdens may be analyzed and tested for soil characteristics and used in the site for revegetation. Wherever possible seeds, rhizome, bulbs, etc of pioneering spices should be collected, preserved and used in restoring the site.
9. Native grasses seeds may be used as colonizers and soil binders, to prevent erosion and allow diverse self- sustaining plant communities to establish. Grasses may offer superior tolerance to drought, and climatic stresses.
10. Reclamation involves planned topographical reconstruction of site. Care to be taken to minimize erosion and runoff. Topsoils should have necessary physical, chemicals, ecological, properties and therefore should be stored with precautions and utilized for reclamation process. Stocked topsoil should be stabilized using grasses to protect from wind. Seeds of various indigenous and local species may be broad casted after topsoil and treated overburden are spread.
11. Alkaline soils, acidic soils, Saline soils should be suitably treated/amended using green manure, mulches, farmyard manure to increase organic carbon. The efforts should be taken to landscape and use the land post mining. The EMP and mine closure plan should provide adequate budget for reestablishing the site to pre-mining conditions. Effective steps should be taken for utilization of over burden. Mine waste to be used for backfilling, reclamation, restoration, and rehabilitation of the terrain without affecting the drainage and water regimes. The rate of rehabilitation should be similar to rate of mining. The land disturbed


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should be reshaped for long term use. Mining should be as far as possible be ecofriendly. Integration of rehabilitation strategies with mining plan will enable speedy restoration.

12. Efforts should to taken to aesthetically improve the mine site. Generally there are two approaches to restoration i.e Ecological approach which allows tolerant species to establish following succession process allowing pioneer species to establish. The other approach i.e plantation approach is with selected native species are planted. A blend of both methods may be resorted to restore the site by adding soil humas and mycorrhiza.
13. Action taken for restoration of the site should be specifically mentioned in the EC compliances.

Part-A: Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. Mining activity should be reviewed by the District Collector after three years and decide for further extension.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.


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6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 50mts. from any civil structure shall be kept from the periphery of any excavation area.
14. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
15. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
16. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
17. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
18. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
19. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF& CC, GoI on 16.11.2009.
20. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.


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- ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
21. The following measures are to be implemented to reduce Noise Pollution
- i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
 - v. All noise generating machinery the compressor, generator to be enclosed in acoustic enclosure so as to reduce noise in working area.
22. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoEF& CC, GoI to control noise to the prescribed levels.
23. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
24. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
25. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
26. The following measures are to be adopted to control erosion of dumps: -
- i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
27. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous& other wastes (Management, and Trans Boundary Movement) Rules, 2016 and its amendments thereof to the recyclers authorized by TNPCB.
28. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.


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29. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
30. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
31. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
32. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
33. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
34. It shall be ensured that the total extent of nearby quarries (existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 5 hectares within the mining lease period of this application.
35. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 300m radius from the periphery of the quarry site.
36. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
37. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
38. Bunds to be provided at the boundary of the project site.


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39. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
40. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
41. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
42. The Project Proponent shall provide solar lighting system to the nearby villages.
43. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
44. Safety equipments to be provided to all the employees.
45. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
46. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
47. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
48. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
49. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
50. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
51. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
52. The Proponent shall ensure that the project activity including blasting, mining transportation etc should in no way have adverse impact to the other forests, such as reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc.
53. The proponent shall provide Green Belt development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 3m height.


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54. The fugitive emissions should be monitored during the mining activity and should be reported to TNPCB once in a month and the operation of the quarry should no way impact the agriculture activity & water bodies near the project site.
55. All the commitment made by the project proponent in the proposal shall be strictly followed.
56. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
57. All required sanitary and hygienic measures should be in place before starting construction activities and they have to be maintained throughout the construction phase.
58. The company shall stress upon the preventive aspects of occupational health.
59. A separate environment and safety management cell with qualified staff shall be set up before commissioning of construction activities and shall be retained throughout the lifetime of the industry, for implementation of the stipulated environmental safeguards.
60. A scientific site/ ecological rehabilitation and restoration plan on long term basis should be drawn to carryout restoration with native species and Bio diversity.
61. The Green/Blue plan should guide the restoration of the site. The rehabilitation/restoration plan should be submitted to SEIAA-TN within one month. If applicable.
62. The existing water bodies should not be disturbed to ensure sustainable environment for aquatic life forms.
63. The proponent should completely implement all environmental pollution control measures as detailed in the EIA report and in the additional report.
64. Avenue plantation wherever needed has to be carried out along the route for dust suppression.
65. The green belt developed for the prevention of dust pollution should not form a part of the larger green belt development envisaged in the EIA report.
66. Regular monitoring and check up for pulmonary and carcinogenic diseases to be carried out regularly, not only for the workers involved in the mines but also to the people in the villages adjoining the mines. Interaction with the Primary Health Centre & district medical officer should be on regular basis to monitor the incidence of the diseases if any and to provide suitable medical facility for the patients.


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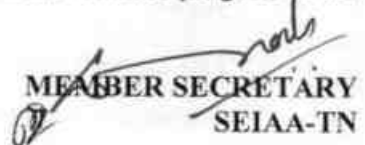
67. Monitoring of well water levels and water quality of the wells in the locations furnished in the EIA report shall be done during pre-monsoon and post monsoon period and results submitted to the Regional Office of MoEF, Chennai and SEIAA.
68. Monitoring of water quality and air quality in and around the project site in the selected monitoring points as mentioned in the EIA report shall be continued regularly involving Academic Institutions.
69. Hydro geological study including infiltration test shall be conducted by any reputed agency to estimate leachate quantity.
70. Regular medical check-up for mine workers and nearby residents around the project site involving community medical centre/NIMH shall be conducted.
71. As per norms, the health study should be conducted through competent/approved health organization and report submitted for one year.
72. The effective safe guard measures shall be provided to control particulate dust level in critical areas, transfer points and haul road within the mine area.
73. NOC from the State GWA for drawing ground water shall be obtained, if ground water table is intersected.
74. Green belt shall be provided as per norms of MoEF& CC, GOI, in consultation with local DFO.
75. All the recommendations made in the EIA report of the project shall be effectively implemented.
76. A booklet containing the Dos and Don'ts shall be prepared in vernacular languages for the use of the mine engineers/ managers and the workers to ensure that all necessary environmental, safety and health measures are undertaken.
77. All the environmental protection measures and safeguards as recommended in the EIA report shall be complied with.
78. Hydro geological study of the area shall be reviewed annually and report submitted to the Authority. No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the operation of the Mining activity.
79. A separate Environmental Management Cell equipped with full fledged laboratory facilities to carry out the various Environmental Management and Monitoring functions shall be set up under the control of a Senior Executive.
80. The project proponent shall upload the status of compliance of the stipulated environmental clearance conditions, including results of monitored data on their website and shall update


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the same periodically. It shall simultaneously be sent to the Regional Office of the MoEF at Chennai, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; RSPM, SO₂, NO_x or critical sector parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

Part B: General Conditions:

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


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- workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
 13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
 14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
 15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
 16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
 17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
 18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
 19. The SEIAA, Tamil Nadu may cancel the Environmental Clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this Environmental Clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the Environmental Clearance.
 20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
 21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution)


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Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.

22. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
23. Any appeal against this Environmental Clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
24. The Environmental Clearance is issued based on the documents furnished by the project proponent. In case any documents found to be incorrect/not in order at a later date the Environmental Clearance issued to the project will be deemed to be revoked/ cancelled.


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Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Additional Chief Secretary to Government, Environment, Climate Change and Forests Department, Tamil Nadu.
3. The Additional Chief Secretary to Government, Industries, Investment Promotion & Commerce Department, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
6. The Chairman, TNPC Board, 76, Mount Salai, Guindy, Chennai - 32.
7. The District Collector, Coimbatore District.

8. The Commissioner of Geology and Mines, Guindy, Chennai - 32.
9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. Spare.



Signature Not Verified

Digitally signed by Thiru.Deepak
S.Bilgi

Member Secretary

Date: 2/13/2023 5:48:36 PM

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CHENNAI METTEX LAB PRIVATE LIMITED[®]

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Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: **Mr. Gnanasekaran**
Karamadai, Coimbatore.

Test Certificate No : CML/25-26/T018751

Test Certificate Date : 28.05.2025

Location of Sampling : AAQ-1 Project Area
Sampling Plan & Procedure : CML/LAB/ENV/SOP/AAQ (IS 5182 & USEPA Compendium)
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/030 & 24.11.2025
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/013 & 25.11.2025

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	SPM	PM _{2.5}	PM ₁₀	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₆ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
11.03.2025	07.00-07.00	62.98	19.8	44.3	7.0	19.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.03.2025	07.15-07.15	62.7	19.7	44.5	6.9	18.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2025	07.00-07.00	62.6	19.7	43.1	6.3	19.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2025	07.15-07.15	64.7	19.4	43.8	6.4	19.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
22.03.2025	07.00-07.00	65.2	19.3	43.5	6.5	18.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2025	07.15-07.15	65.4	19.9	43.2	6.9	19.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.03.2025	07.00-07.00	64.1	19.4	43.7	6.2	18.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.03.2025	07.15-07.15	64.3	19.2	43.5	6.0	19.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
02.04.2025	07.00-07.00	64.2	18.7	43.2	7.2	18.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.04.2025	07.15-07.15	64.3	18.3	42.9	7.6	18.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.04.2025	07.00-07.00	64.8	20.2	42.2	6.6	18.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.04.2025	07.15-07.15	63.7	19.5	43.2	7.5	19.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.04.2025	07.00-07.00	65.5	18.9	42.8	6.5	19.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.04.2025	07.15-07.15	64.8	19.1	43.5	6.1	19.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.04.2025	07.00-07.00	64.8	19.2	43.3	6.5	19.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.04.2025	07.15-07.15	62.9	19.7	44.8	6.3	20.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
29.04.2025	07.00-07.00	65.4	19.9	43.2	6.5	18.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.04.2025	07.15-07.15	65.4	19.5	45.6	6.9	19.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.05.2025	07.00-07.00	66.3	19.6	45.5	6.7	20.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.05.2025	07.15-07.15	64.9	19.3	45.1	6.4	18.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.05.2025	07.00-07.00	64.6	19.2	44.5	6.1	19.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.05.2025	07.15-07.15	65.2	19.3	44.0	6.5	19.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.05.2025	07.00-07.00	65.7	19.6	44.4	6.2	18.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.05.2025	07.15-07.15	64.4	19.6	43.6	6.2	19.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

End of Report

For Chennai Mettex Lab Private Limited



[Signature]

Reviewed & Authorised by
P. KAVITHA
Technical Manager

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TEST REPORT

ISSUED TO: Mr. Gnanasekaran
Karamadai, Coimbatore.

Test Certificate No : CML/25-26/ T018752

Test Certificate Date : 28.05.2025

Location of Sampling : AAQ-2 Near Existing Quarry

Sampling Plan & Procedure : CML/LAB/ENV/SOP/AAQ (IS 5182 & USEPA Compendium)

Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/031 & 24.11.2025

Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/014 & 25.11.2025

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	SPM	PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₆ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
11.03.2025	07.15-07.15	57.2	19.7	39.6	7.2	21.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.03.2025	07.30-07.30	57.9	20.1	41.5	7.1	21.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2025	07.15-07.15	58.3	20.3	39.6	7.6	21.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2025	07.30-07.30	58.6	18.5	40.7	7.2	21.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
22.03.2025	07.15-07.15	58.1	18.8	41.3	7.5	22.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2025	07.30-07.30	58.6	18.7	39.8	7.6	21.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.03.2025	07.15-07.15	57.4	18.2	38.9	7.3	21.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.03.2025	07.30-07.30	57.9	20.7	40.4	7.5	21.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
02.04.2025	07.15-07.15	57.3	20.0	42.6	7.6	21.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.04.2025	07.30-07.30	57.4	20.3	41.2	7.4	22.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.04.2025	07.15-07.15	58.7	19.9	40.2	7.8	21.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.04.2025	07.30-07.30	58.6	19.3	41.5	7.3	21.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.04.2025	07.15-07.15	58.4	19.5	42.2	7.2	21.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.04.2025	07.15-07.15	59.8	20.6	41.9	7.2	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.04.2025	07.00-07.00	56.6	20.5	41.3	7.4	22.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.04.2025	07.15-07.15	56.1	20.7	40.2	7.6	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
29.04.2025	07.00-07.00	56.7	19.2	40.5	7.7	21.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.04.2025	07.15-07.15	56.6	20.3	41.7	7.3	21.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.05.2025	07.00-07.00	56.1	21.9	41.3	7.5	21.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.05.2025	07.15-07.15	55.9	20.1	41.5	7.6	21.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.05.2025	07.00-07.00	55.2	20.7	41.5	7.9	21.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.05.2025	07.15-07.15	56.7	21.2	40.2	8.2	20.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.05.2025	07.00-07.00	56.3	20.3	40.3	7.7	20.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.05.2025	07.15-07.15	56.8	19.9	40.7	7.6	20.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

End of Report

For Chennai Mettex Lab Private Limited



Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

ISSUED TO **Mr. Gnanasekaran**
Karamadai, Coimbatore.

Test Certificate No : CML/25-26/ T018753

Test Certificate Date : 28.05.2025

Location of Sampling : AAQ-3 Mongampalayam (NE)

Sampling Plan & Procedure : CML/LAB/ENV/SOP/AAQ (IS 5182 & USEPA Compendium)

Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/032 & 24.11.2025

Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/030 & 25.11.2025

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	SPM	PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₆ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs.)	60 (24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8 hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
11.03.2025	07.15-07.15	65.5	19.2	43.2	5.3	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.03.2025	07.30-07.30	65.5	19.6	41.8	5.7	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2025	07.15-07.15	65.9	18.4	42.6	5.9	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2025	07.30-07.30	65.6	21.6	43.5	6.3	23.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
22.03.2025	07.15-07.15	66.3	19.6	40.9	6.8	22.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2025	07.30-07.30	66.7	20.5	41.6	6.4	22.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.03.2025	07.15-07.15	66.4	21.6	40.1	6.9	22.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.03.2025	07.30-07.30	67.1	18.6	41.7	6.8	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
02.04.2025	07.15-07.15	66.3	18.5	42.5	6.7	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.04.2025	07.30-07.30	66.2	19.7	41.8	6.2	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.04.2025	07.15-07.15	65.2	20.6	41.9	7.3	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.04.2025	07.30-07.30	66.7	21.6	42.4	7.5	22.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.04.2025	07.15-07.15	64.3	21.8	40.6	7.6	24.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.04.2025	07.15-07.15	64.3	19.6	40.3	7.9	24.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.04.2025	07.00-07.00	65.0	19.9	40.7	7.1	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.04.2025	07.15-07.15	63.7	21.5	41.8	6.6	23.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
29.04.2025	07.00-07.00	64.6	20.4	42.2	6.8	22.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.04.2025	07.15-07.15	64.2	18.8	42.4	6.9	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.05.2025	07.00-07.00	65.9	19.2	41.6	6.1	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.05.2025	07.15-07.15	66.9	21.5	41.8	6.7	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.05.2025	07.00-07.00	66.7	20.9	40.7	5.9	22.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.05.2025	07.15-07.15	66.6	22.3	43.3	6.8	23.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.05.2025	07.00-07.00	66.1	21.7	42.7	7.3	24.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.05.2025	07.15-07.15	65.4	20.1	40.8	7.5	24.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

ISSUED TO: Mr. Gnanasekaran
Karamadai, Coimbatore.

Test Certificate No : CML/25-26/ T018754

Test Certificate Date : 28.05.2025

Location of Sampling : AAQ-4 Vadavalli (East)

Sampling Plan & Procedure : CML/LAB/ENV/SOP/AAQ (IS 5182 & USEPA Compendium)

Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/033 & 24.11.2025

Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/031 & 25.11.2025

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	SPM	PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	C ₆ H ₆ , ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs.)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
11.03.2025	07.00-07.00	62.3	19.6	40.5	5.3	21.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.03.2025	07.15-07.15	62.6	18.9	39.2	5.5	21.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2025	07.00-07.00	62.4	18.5	40.6	5.6	21.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2025	07.15-07.15	62.7	18.2	41.0	5.8	21.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
22.03.2025	07.00-07.00	62.9	18.1	40.8	5.1	22.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2025	07.15-07.15	63.6	18.9	41.5	5.9	22.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.03.2025	07.00-07.00	63.7	19.1	40.1	5.3	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.03.2025	07.15-07.15	63.8	19.5	41.7	5.2	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
02.04.2025	07.00-07.00	63.6	19.8	40.0	5.2	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.04.2025	07.15-07.15	63.4	19.5	40.1	5.8	22.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.04.2025	07.00-07.00	62.8	18.3	40.9	5.2	21.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.04.2025	07.15-07.15	62.7	18.8	40.4	5.4	21.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.04.2025	07.00-07.00	62.1	19.6	40.6	5.6	21.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.04.2025	07.15-07.15	62.5	18.1	40.9	5.4	20.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.04.2025	07.00-07.00	61.3	19.9	40.2	5.3	20.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.04.2025	07.15-07.15	61.7	18.5	41.7	5.1	20.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
29.04.2025	07.00-07.00	61.9	18.3	40.1	5.8	22.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.04.2025	07.15-07.15	64.3	18.8	41.6	5.6	22.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.05.2025	07.00-07.00	64.6	19.2	41.5	5.1	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.05.2025	07.15-07.15	64.1	18.5	40.8	5.5	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.05.2025	07.00-07.00	63.2	19.8	41.1	5.6	21.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.05.2025	07.15-07.15	63.9	19.6	41.5	5.4	23.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.05.2025	07.00-07.00	63.4	19.2	40.3	5.2	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.05.2025	07.15-07.15	63.7	18.6	40.9	5.7	24.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

End of Report

For Chennai Mettex Lab Private Limited



Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

ISSUED TO Mr. Gnanasekaran
Karamadai, Coimbatore.

Test Certificate No : CML/25-26/ T018755

Test Certificate Date : 28.05.2025

Location of Sampling : AAQ-5 Koodathanur (NW)

Sampling Plan & Procedure : CML/LAB/ENV/SOP/AAQ (IS 5182 & USEPA Compendium)

Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/034 & 24.11.2025

Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/032 & 25.11.2025

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	SPM	PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	CoHc, ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs.)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
11.03.2025	07:30-07:30	66.3	20.7	41.3	8.3	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.03.2025	07:45-07:45	66.4	20.4	42.4	8.5	22.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2025	07:30-07:30	65.2	21.5	41.8	8.7	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2025	07:45-07:45	65.8	20.9	42.4	8.1	24.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
22.03.2025	07:30-07:30	63.2	20.5	44.3	8.6	24.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2025	07:45-07:45	63.7	21.9	43.7	8.7	22.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.03.2025	07:30-07:30	64.6	21.7	40.6	7.3	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.03.2025	07:45-07:45	64.8	21.5	42.5	8.5	24.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
02.04.2025	07:30-07:30	64.2	20.6	43.6	7.2	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.04.2025	07:45-07:45	64.3	20.8	42.7	7.1	24.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.04.2025	07:30-07:30	64.7	20.4	41.6	7.6	23.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.04.2025	07:45-07:45	63.2	21.3	42.9	7.8	22.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.04.2025	07:30-07:30	63.8	20.8	43.8	7.1	24.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.04.2025	07:15-07:15	64.6	21.7	42.5	7.8	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.04.2025	07:00-07:00	64.8	21.6	41.9	6.6	24.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.04.2025	07:15-07:15	64.1	22.8	41.3	6.3	25.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
29.04.2025	07:00-07:00	63.2	21.2	42.7	6.1	23.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.04.2025	07:15-07:15	63.7	21.3	41.3	6.5	24.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.05.2025	07:00-07:00	63.1	20.5	43.6	6.8	23.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.05.2025	07:15-07:15	64.3	20.3	42.5	6.5	24.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.05.2025	07:00-07:00	64.8	21.7	44.8	7.6	23.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.05.2025	07:15-07:15	63.7	21.3	42.5	7.1	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.05.2025	07:00-07:00	63.1	20.8	41.3	7.8	22.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.05.2025	07:15-07:15	65.5	21.5	42.7	7.1	24.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

End of Report

For Chennai Mettex Lab Private Limited



Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

ISSUED TO Mr. Gnanasekaran
Karamadal, Coimbatore.

Test Certificate No : CML/25-26/ T018756

Test Certificate Date : 28.05.2025

Location of Sampling : AAQ-6 Ramapalayam (North)

Sampling Plan & Procedure : CML/LAB/ENV/SOP/AAQ (IS 5182 & USEPA Compendium)

Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/035 & 24.11.2025

Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/033 & 25.11.2025

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	SP/m	PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	Cd, ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs.)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
11.03.2025	08:00-08:00	65.3	18.3	39.5	6.2	22.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.03.2025	08:15-08:15	65.7	18.8	39.2	6.5	23.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2025	08:00-08:00	65.6	19.4	38.5	6.4	22.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2025	08:15-08:15	65.7	18.9	38.8	6.8	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
22.03.2025	08:00-08:00	66.1	18.3	38.6	6.8	24.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2025	08:15-08:15	66.2	19.7	38.7	7.2	21.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.03.2025	08:00-08:00	66.7	19.7	39.6	7.5	21.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.03.2025	08:15-08:15	66.2	18.2	39.8	7.4	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
02.04.2025	08:00-08:00	66.5	19.8	38.6	7.5	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.04.2025	08:15-08:15	65.8	20.3	38.1	7.7	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.04.2025	08:00-08:00	65.9	19.3	38.5	7.4	22.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.04.2025	08:15-08:15	65.7	20.1	38.4	7.1	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.04.2025	08:00-08:00	66.8	20.2	39.2	6.8	21.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.04.2025	07:15-07:15	66.9	20.4	39.3	6.5	22.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.04.2025	07:00-07:00	67.5	20.9	39.2	6.6	21.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.04.2025	07:15-07:15	67.3	20.3	39.6	7.2	24.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
29.04.2025	07:00-07:00	67.8	19.5	39.7	7.6	23.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.04.2025	07:15-07:15	66.5	19.7	38.2	7.9	22.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.05.2025	07:00-07:00	66.7	19.4	39.5	7.2	23.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.05.2025	07:15-07:15	66.8	19.5	38.3	7.1	22.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.05.2025	07:00-07:00	67.3	20.3	38.5	6.2	23.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.05.2025	07:15-07:15	67.9	20.7	39.5	6.5	22.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.05.2025	07:00-07:00	67.1	20.2	39.3	6.5	21.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.05.2025	07:15-07:15	67.5	18.3	40.5	6.8	23.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

ISSUED TO: Mr. Gnanasekaran
Karamadai, Coimbatore.

Test Certificate No : CML/25-26/ T018757

Test Certificate Date : 28.05.2025

Location of Sampling : AAQ-7 Onnipalayam (SE)

Sampling Plan & Procedure : CML/LAB/ENV/SOP/AAQ (IS 5182 & USEPA Compendium)

Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/037 & 24.11.2025

Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/034 & 25.11.2025

Monitoring		Particulates, $\mu\text{g}/\text{m}^3$			Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
Date	Period, hrs.	SPM	PM2.5	PM10	SO ₂	NO ₂	NH ₃	O ₃ (8-hly Avg.)	CO (8-hly Avg.)	Pb, $\mu\text{g}/\text{m}^3$	As, ng/m^3	Ni, ng/m^3	Cd, ng/m^3	BaP, ng/m^3
NAAQ Norms*		(24 hrs.)	60(24 hrs.)	100 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
11.03.2025	08:00-08:00	60.9	20.4	41.7	6.9	20.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.03.2025	08:15-08:15	60.7	20.9	40.9	6.4	20.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.03.2025	08:00-08:00	61.3	20.3	40.3	6.3	20.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.03.2025	08:15-08:15	61.7	20.5	41.7	6.8	21.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
22.03.2025	08:00-08:00	61.6	20.7	42.3	6.6	21.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.03.2025	08:15-08:15	61.2	20.6	41.7	7.2	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.03.2025	08:00-08:00	60.7	21.3	40.2	7.7	21.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.03.2025	08:15-08:15	68.6	21.4	42.6	7.5	21.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
02.04.2025	08:00-08:00	69.2	21.8	40.5	7.8	21.0	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.04.2025	08:15-08:15	69.7	21.5	41.3	7.5	20.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.04.2025	08:00-08:00	69.2	21.9	41.7	7.8	20.5	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.04.2025	08:15-08:15	69.3	21.3	42.3	6.3	20.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.04.2025	08:00-08:00	69.1	20.9	41.3	6.8	20.0	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.04.2025	07:15-07:15	60.2	20.1	42.7	6.7	21.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.04.2025	07:00-07:00	60.7	22.5	42.9	6.9	21.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.04.2025	07:15-07:15	61.2	21.9	41.6	7.9	21.6	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
29.04.2025	07:00-07:00	61.7	23.3	43.5	7.3	21.9	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.04.2025	07:15-07:15	61.3	24.6	42.3	7.2	21.4	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.05.2025	07:00-07:00	61.7	22.8	41.9	6.8	20.7	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.05.2025	07:15-07:15	62.2	21.8	43.3	7.5	21.3	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.05.2025	07:00-07:00	62.8	25.3	42.5	7.6	20.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.05.2025	07:15-07:15	62.7	23.9	44.7	7.7	21.1	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.05.2025	07:00-07:00	62.9	23.4	43.6	7.8	20.2	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.05.2025	07:15-07:15	61.1	21.6	42.8	7.9	21.8	<5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

ISSUED TO: Mr. Gnanasekaran
Karamadal, Coimbatore

Test Certificate No : CML/25-26/ T018760 Test Certificate Date : 28.05.2025
Sample Description : Ambient Noise Monitoring
Location of Sampling : N1 – Project Area
Location of Sampling : N2 – Near Existing Quarry (SW)
Location of Sampling : N3 – Mongampalayam (NE)
Sampling Plan & Procedure: CML/LAB/ENV/SOP/N&L & IS 9989:1981
Sampling Instrument : CML/ENV/SLM/001, CML/ENV/SLM/003 & CML/ENV/SLM/009

Sample Description		Noise (Sound Pressure) Level Monitoring									
Sampled by		Laboratory			Sampling Time			Every 60 minutes			
Location		N1 – Project Area			N2 – Project Area (NE)			N3 – Near Existing Quarry (E)			
S. No	Time (Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)	Min dB(A)	Max dB(A)	Leq dB(A)	Min dB(A)	Max dB(A)	Leq dB(A)	
1.	0600	37.9	41.6	40.1	31.5	38.1	35.9	31.9	38.4	36.3	
2.	0700	38.9	42.8	41.3	32.6	40.7	38.3	33.5	31.6	32.7	
3.	0800	39.6	42.6	41.4	33.9	41.4	39.1	31.6	38.4	36.2	
4.	0900	33.9	45.5	43.3	31.4	39.5	37.1	32.7	41.2	38.8	
5.	1000	38.5	47.3	44.8	32.5	40.2	37.9	34.9	43.4	41.0	
6.	1100	38.1	48.7	46.1	33.8	41.4	39.1	36.2	45.7	43.2	
7.	1200	37.6	43.1	41.2	35.6	43.6	41.2	34.1	43.9	41.3	
8.	1300	37.6	39.2	38.5	31.8	38.4	36.2	32.9	40.4	38.1	
9.	1400	37.2	45.2	42.8	33.9	41.7	39.4	38.4	46.1	43.8	
10.	1500	38.5	49.5	46.8	32.5	40.9	38.5	34.6	43.3	40.8	
11.	1600	39.2	46.3	44.1	34.8	43.6	41.1	32.9	40.8	38.4	
12.	1700	41.6	41.7	41.7	32.6	40.4	38.1	34.1	43.4	40.9	
13.	1800	41.8	39.1	40.7	35.1	43.1	40.7	33.6	41.6	39.2	
14.	1900	42.5	40.7	41.7	36.1	40.2	38.6	32.8	40.8	38.4	
15.	2000	33.7	41.3	39.0	34.2	43.6	41.1	34.1	43.4	40.9	
16.	2100	38.2	44.7	42.6	36.5	47.1	44.5	36.9	45.5	43.1	
17.	2200	34.4	36.2	35.4	33.8	41.2	38.9	32.7	41.9	39.4	
18.	2300	34.6	36.1	35.4	33.9	42.1	39.7	34.2	39.7	37.8	
19.	0000	35.8	37.8	36.9	31.5	39.4	37.0	32.6	35.1	34.0	
20.	0100	36.2	39.9	38.4	32.9	40.2	37.9	31.3	35.5	33.9	
21.	0200	35.6	39.4	37.9	33.4	41.7	39.3	32.3	38.7	36.6	
22.	0300	34.8	38.5	37.0	31.7	38.5	36.3	33.4	36.9	35.5	
23.	0400	35.5	36.9	36.3	32.6	40.8	38.4	31.2	36.7	34.8	
24.	0500	36.4	38.4	37.5	31.3	38.6	36.3	32.6	35.8	34.5	
Day Mean dB(A)				41.8	Day Mean dB(A)			39.2	Day Mean dB(A)		39.5
Night Mean dB(A)				37.1	Night Mean dB(A)			37.9	Night Mean dB(A)		35.3

End of Report

For Chennai Mettex Lab Private Limited



Signature
Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

ISSUED TO: Mr. Gnanasekaran
Karamadai, Coimbatore

Test Certificate No : CML/25-26/ T018761 Test Certificate Date : 28.05.2025
Sample Description : Ambient Noise Monitoring
Location of Sampling : N4 – Vadavalli (East)
Location of Sampling : N5 – Koodathanur (NW)
Location of Sampling : N6 – Ramapalayam (North)
Sampling Plan & Procedure: CML/LAB/ENV/SOP/N&L & IS 9989:1981
Sampling Instrument : CML/ENV/SLM/001, CML/ENV/SLM/003 & CML/ENV/SLM/009

Sample Description					Noise (Sound Pressure) Level Monitoring						
Sampled by		Laboratory			Sampling Time			Every 60 minutes			
Location		N4 – Therampalayam (NE)			N5 – Bellaipalayam (NE)			N6 – Karamadai (SW)			
S. No	Time (Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)	Min dB(A)	Max dB(A)	Leq dB(A)	Min dB(A)	Max dB(A)	Leq dB(A)	
1.	0600	34.5	38.6	37.0	32.6	38.8	36.7	31.5	38.1	35.9	
2.	0700	35.6	38.6	37.4	34.9	37.6	36.5	32.6	40.7	38.3	
3.	0800	34.2	40.5	38.4	32.6	34.5	33.7	33.9	41.4	39.1	
4.	0900	35.5	41.5	39.5	33.6	36.8	35.5	31.4	39.5	37.1	
5.	1000	31.5	41.5	38.9	32.8	40.2	37.9	32.5	40.2	37.9	
6.	1100	32.2	35.5	34.2	31.2	41.5	38.9	33.8	41.4	39.1	
7.	1200	34.5	38.5	36.9	36.4	43.5	41.3	35.6	43.6	41.2	
8.	1300	33.9	38.1	36.5	33.9	41.4	39.1	31.8	38.4	36.2	
9.	1400	31.4	32.2	31.8	32.7	43.9	41.2	33.9	41.7	39.4	
10.	1500	36.8	40.2	38.8	36.5	42.2	40.2	32.5	40.9	38.5	
11.	1600	35.7	40.4	38.7	32.3	40.9	38.5	34.8	43.6	41.1	
12.	1700	32.3	38.2	36.2	34.2	43.2	40.7	32.6	40.4	38.1	
13.	1800	33.4	40.5	38.3	34.7	44.9	42.3	35.1	43.1	40.7	
14.	1900	31.9	42.2	39.6	31.6	40.7	38.2	36.1	40.2	38.6	
15.	2000	35.7	40.3	38.6	32.8	40.3	38.0	34.2	43.6	41.1	
16.	2100	33.4	42.5	40.0	33.6	41.4	39.1	36.5	47.1	44.5	
17.	2200	38.4	40.2	39.4	32.5	40.3	38.0	33.8	41.2	38.9	
18.	2300	32.9	37.8	36.0	36.4	45.2	42.7	33.9	42.1	39.7	
19.	0000	34.6	39.8	37.9	33.6	35	34.4	31.5	39.4	37.0	
20.	0100	35.5	36.7	36.1	34.9	35.8	35.4	32.9	40.2	37.9	
21.	0200	31.5	35.6	34.0	31.5	34.2	33.1	33.4	41.7	39.3	
22.	0300	32.2	35.8	34.4	32.3	35.5	34.2	31.7	38.5	36.3	
23.	0400	35.5	36.8	36.2	31.7	34.8	33.5	32.6	40.8	38.4	
24.	0500	34.5	35.5	35.0	32.2	34.5	33.5	31.3	38.6	36.3	
Day Mean dB(A)				37.6	Day Mean dB(A)			38.6	Day Mean dB(A)		39.4
Night Mean dB(A)				35.7	Night Mean dB(A)			35.2	Night Mean dB(A)		39.2
											37.9

End of Report

For Chennai Mettex Lab Private Limited



Handwritten Signature
Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: Mr. Gnanasekaran
Karamadai, Coimbatore

Test Certificate No : CML/25-26/ T018762 Test Certificate Date : 28.05.2025
Sample Description : Ambient Noise Monitoring
Location of Sampling : N7 - Onnipalayam (SE)
Sampling Plan & Procedure: CML/LAB/ENV/SOP/N&L & IS 9989:1981
amplifying Instrument : CML/ENV/SLM/001

Sample Description			Noise (Sound Pressure) Level Monitoring	
Sampled by		Laboratory	Sampling Time	Every 60 minutes
Location		N7 - Onnipalayam (SE)		
S. No	Time (Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	0600	32.6	36.6	35.0
2	0700	34.5	40.2	38.2
3	0800	35.2	39.5	37.9
4	0900	36.8	38.4	37.7
5	1000	36.9	37.6	37.3
6	1100	38.1	45.5	43.2
7	1200	34.9	40.5	38.5
8	1300	37.2	41.3	39.7
9	1400	36.2	43.6	41.3
10	1500	35.9	44.8	42.3
11	1600	36.5	38.4	37.6
12	1700	32.5	40.9	38.5
13	1800	34.4	43.4	40.9
14	1900	31.2	39.7	37.3
15	2000	36.9	46.5	43.9
16	2100	32.5	40.8	38.4
17	2200	36.1	44.3	41.9
18	2300	34.1	39.9	37.9
19	0000	32.9	37.8	36.0
20	0100	33.5	36.9	35.5
21	0200	33.7	35.8	34.9
22	0300	32.5	34.5	33.6
23	0400	33.4	36.6	35.3
24	0500	33.5	35.5	34.6
Day Mean dB(A)				39.4
Night Mean dB(A)				35.4

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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ISSUED TO: Mr. Gnanasekaran

Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606958/001

Sample Description : Soil -1 : Project Area
(as stated by customer)

T.C Date : 28 05 2025

T.C No : CML/25-26/T018769

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

S. No	Test Parameters	Protocols	Results
01	Colour	By Visual	Brown
02	pH @ 25°C	IS 2720 Part 26 - 1987 (electrometric method)	7.92
03	Conductivity @ 25°C	IS 14767 - 2000	560 µmhos/cm
04	Texture :		
	Clay	Gravimetric Method	40.4 %
	Sand		40.8 %
	Silt		14.6 %
05	Water Holding Capacity	By Gravimetric Method	40.1 %
06	Bulk Density	By Cylindrical Method	1.02 g/cm ³
07	Porosity	By Gravimetric Method	21.4 %
08	Calcium as Ca	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	142.4 mg/kg
09	Magnesium as Mg		24.4 mg/kg
10	Manganese as Mn		26.2 mg/kg
11	Zinc as Zn		0.30 mg/kg
12	Boron as B		0.51 mg/kg
13	Chloride as Cl	CPCB Protocol & APHA 24 th Edn. 2023-4500 Cl -B	140 mg/kg
14	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	124.1 %
15	Potassium as K	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	40.1 mg/kg
16	Total Phosphorus as P	IS 10158 : 1982 (Stannous chloride method)	42.5 mg/kg
17	Total Nitrogen as N	IS 14684 : 1999	188 mg/kg
18	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
19	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
20	Copper as Cu		BDL (DL : 1.0 mg/kg)
21	Lead as Pb		0.44 mg/kg
22	Iron as Fe		1.42 mg/kg
23	Organic Matter	IS : 2720 Part 22: 1972	1.18 %
24	Organic Carbon	Methods of analysis of soils, plants, waters and fertilizers by HLS Tandon	0.70 %
25	Cation Exchange Capacity	USEPA 9080 – 1986	38.6 meq/100g of soil
26	Sodium Adsorption Ratio	IS:11624 -1986 (Reaff:2015)	1.02 mmole/l

Note : APHA – American Public Health Association. BDL – Below Detection Limit. DL – Detection Limit.

Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit.

End of Report

For Chennai Mettlex Lab Private Limited

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TEST REPORT

Page No.1 of 1

ISSUED TO: Mr. Gnanasekaran

Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606958/002

Sample Description : Soil - 2 : Near Existing Quarry (SW)
(as stated by customer)

T.C Date : 28.05.2025

T.C No : CML/25-26/T018770

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

S. No	Test Parameters	Protocols	Results
01	Colour	By Visual	Dark Brown
02	pH @ 25°C	IS 2720 Part 26 - 1987 (electrometric method)	7.84
03	Conductivity @ 25°C	IS 14767 - 2000	420 µmhos/cm
04	Texture :		
	Clay	Gravimetric Method	38.6 %
	Sand		41.4 %
	Silt		16.4 %
05	Water Holding Capacity	By Gravimetric Method	32.4 %
06	Bulk Density	By Cylindrical Method	1.03 g/cm ³
07	Porosity	By Gravimetric Method	20.4 %
08	Calcium as Ca	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	122.6 mg/kg
09	Magnesium as Mg		20.8 mg/kg
10	Manganese as Mn		24.4 mg/kg
11	Zinc as Zn		0.31 mg/kg
12	Boron as B		0.73 mg/kg
13	Chloride as Cl	CPCB Protocol & APHA 24 th Edn. 2023-4500 Cl -B	136 mg/kg
14	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	130 %
15	Potassium as K	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	28.8 mg/kg
16	Total Phosphorus as P	IS 10158 : 1982 (Stannous chloride method)	30.1 mg/kg
17	Total Nitrogen as N	IS 14684 : 1999	242 mg/kg
18	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
19	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
20	Copper as Cu		BDL (DL : 1.0 mg/kg)
21	Lead as Pb		0.30 mg/kg
22	Iron as Fe		1.46 mg/kg
23	Organic Matter	IS : 2720 Part 22: 1972	1.76 %
24	Organic Carbon	Methods of analysis of soils, plants, waters and fertilizers by HLS Tandon	1.04 %
25	Cation Exchange Capacity	USEPA 9080 – 1986	32.4 meq/100g of soil
26	Sodium Adsorption Ratio	IS:11624 - 1986 (Reaff:2015)	1.67 µm mole/l

Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit.

End of Report

For Chennai Mettex Lab Private Limited



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TEST REPORT

Page No.1 of 1

ISSUED TO: Mr. Gnanasekaran

Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606958/003

Sample Description : Soil -3 : Mongampalayam (NE)
(as stated by customer)

T.C Date : 28.05.2025

T.C No : CML/25-26/T018771

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

S. No	Test Parameters	Protocols	Results
01	Colour	By Visual	Brown
02	pH @ 25°C	IS 2720 Part 26 - 1987 (electrometric method)	7.36
03	Conductivity @ 25°C	IS 14767 - 2000	490 µmhos/cm
04	Texture :		
	Clay	Gravimetric Method	50.6 %
	Sand		34.2 %
	Silt		6.8 %
05	Water Holding Capacity	By Gravimetric Method	46.4 %
06	Bulk Density	By Cylindrical Method	1.37 g/cm ³
07	Porosity	By Gravimetric Method	24.6 %
08	Calcium as Ca	CPCB Protocol & APHA 24 th Edn. 2023-4500 Cl -B	110.6 mg/kg
09	Magnesium as Mg		28.6 mg/kg
10	Manganese as Mn		26.4 mg/kg
11	Zinc as Zn		0.52 mg/kg
12	Boron as B		0.64 mg/kg
13	Chloride as Cl	CPCB Protocol & APHA 24 th Edn. 2023-4500 Cl -B	154 mg/kg
14	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff.2015)	111 %
15	Potassium as K	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	30.0 mg/kg
16	Total Phosphorus as P	IS 10158 : 1982 (Stannous chloride method)	37.7 mg/kg
17	Total Nitrogen as N	IS 14684 : 1999	346 mg/kg
18	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
19	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
20	Copper as Cu		BDL (DL : 1.0 mg/kg)
21	Lead as Pb		0.64 mg/kg
22	Iron as Fe		2.60 mg/kg
23	Organic Matter	IS : 2720 Part 22: 1972	1.98 %
24	Organic Carbon	Methods of analysis of soils, plants, waters and fertilizers by HLS Tandon	1.10 %
25	Cation Exchange Capacity	USEPA 9080 – 1986	34.4 meq/100g of soil
26	Sodium Adsorption Ratio	IS:11624 -1986 (Reaff.2015)	1.28 cm mole/l

Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit.

End of Report



For Chennai Mettex Lab Private Limited

[Signature]

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TEST REPORT

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ISSUED TO: Mr. Gnanasekaran

Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606958/004

Sample Description : Soil - 4 : Koodathanasur (NW)
(as stated by customer)

T.C Date : 28.05.2025

T.C No : CML/25-26/T018772

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

S. No	Test Parameters	Protocols	Results
01	Colour	By Visual	Brown
02	pH @ 25°C	IS 2720 Part 26 - 1987 (electrometric method)	8.14
03	Conductivity @ 25°C	IS 14767 - 2000	620 µmhos/cm
04	Texture :		
	Clay	Gravimetric Method	52.4 %
	Sand		34.8 %
	Silt		7.6 %
05	Water Holding Capacity	By Gravimetric Method	46.4 %
06	Bulk Density	By Cylindrical Method	1.26 g/cm ³
07	Porosity	By Gravimetric Method	22.4 %
08	Calcium as Ca	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	140.4 mg/kg
09	Magnesium as Mg		30.2 mg/kg
10	Manganese as Mn		26.4 mg/kg
11	Zinc as Zn		0.43 mg/kg
12	Boron as B		0.80 mg/kg
13	Chloride as Cl	CPCB Protocol & APHA 24 th Edn. 2023-4500 Cl -B	143 mg/kg
14	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff.2015)	117 %
15	Potassium as K	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	41.3 mg/kg
16	Total Phosphorus as P	IS 10158 : 1982 (Stannous chloride method)	41.4 mg/kg
17	Total Nitrogen as N	IS 14684 : 1999	358 mg/kg
18	Cadmium as Cd	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
19	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
20	Copper as Cu		BDL (DL : 1.0 mg/kg)
21	Lead as Pb		0.48 mg/kg
22	Iron as Fe		1.96 mg/kg
23	Organic Matter	IS : 2720 Part 22: 1972	1.74 %
24	Organic Carbon	Methods of analysis of soils, plants, waters and fertilizers by HLS Tandon	1.62 %
25	Cation Exchange Capacity	USEPA 9080 - 1986	41.4 meq/100g of soil
26	Sodium Adsorption Ratio	IS:11624 -1986 (Reaff.2015)	1.45 v.m.mole/l

Note : APHA - American Public Health Association, BDL - Below Detection Limit, DL - Detection Limit.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorised by
B. KAVITHA
Technical Manager

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TEST REPORT

Page No.1 of 1

ISSUED TO: Mr. Gnanasekaran

Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606958/005

Sample Description : Soil - 5 : Onnipalayam (SE)
(as stated by customer)

T.C Date : 28.05.2025

T.C No : CML/25-26/T018773

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

S. No	Test Parameters	Protocols	Results
01	Colour	By Visual	Brown
02	pH @ 25°C	IS 2720 Part 26 - 1987 (electrometric method)	7.82
03	Conductivity @ 25°C	IS 14767 - 2000	690 µmhos/cm
04	Texture :		
	Clay	Gravimetric Method	16.4 %
	Sand		54.2 %
	Silt		7.8 %
05	Water Holding Capacity	By Gravimetric Method	38.6 %
06	Bulk Density	By Cylindrical Method	1.02 g/cm ³
07	Porosity	By Gravimetric Method	22.8 %
08	Calcium as Ca	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	126.6 mg/kg
09	Magnesium as Mg		30.6 mg/kg
10	Manganese as Mn		34.4 mg/kg
11	Zinc as Zn		0.31 mg/kg
12	Boron as B		0.94 mg/kg
13	Chloride as Cl	CPCB Protocol & APHA 24 th Edn. 2023-4500 Cl -B	163.2 mg/kg
14	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff.2015)	102 %
15	Potassium as K	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	37.6 mg/kg
16	Total Phosphorus as P	IS 10158 : 1982 (Stannous chloride method)	37.5 mg/kg
17	Total Nitrogen as N	IS 14684 : 1999	242 mg/kg
18	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
19	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
20	Copper as Cu		BDL (DL : 1.0 mg/kg)
21	Lead as Pb		0.47 mg/kg
22	Iron as Fe		1.66 mg/kg
23	Organic Matter	IS : 2720 Part 22: 1972	1.05 %
24	Organic Carbon	Methods of analysis of soils, plants, waters and fertilizers by HLS Tandon	0.61 %
25	Cation Exchange Capacity	USEPA 9080 – 1986	33.0 meq/100g of soil
26	Sodium Adsorption Ratio	IS:11624 -1986 (Reaff:2015)	1.53 m.mole/l

Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit.

End of Report



For Chennai Mettex Lab Private Limited

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Reviewed & Authorised by

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TEST REPORT

Page No.1 of 2

ISSUED TO: Mr. Gnanasekaran

Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606957/001

Sample Description : SW-1 Belladhi Lake (West)
(as stated by customer)

T.C Date : 28.05.2025

T.C No : CML/25-26/T018763

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:2021	10 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:2022 (electrometric method)	7.22
Conductivity @ 25°C	IS 3025 Part 14:2013	550 µmhos/cm
Turbidity	IS 3025 Part 10:2023	4.8 NTU
Total Dissolved Solids	IS 3025 Part 16:2023	308 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (EDTA titrimetric method)	200 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (EDTA titrimetric method)	56 mg/l
Magnesium as Mg	IS 3025 Part 46:2023	14.5 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:2023	160 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Argentometric Method)	62 mg/l
Sulphate as SO ₄	IS 3025 Part 24/Sec 1:2022	26 mg/l
Iron as Fe	IS 3025 Part 53:2003 (1,10 phenanthroline method)	0.17 mg/l
*Residual Free Chlorine	IS 3025 Part 26:2021	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 24 th Edn. 2023:4500 F.D	0.12 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Chromotropic acid method)	11.4 mg/l
Copper as Cu	IS 3025 Part 65:2022	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Mercury as Hg	IS 3025 Part 65:2022	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2022	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)

...Contd....2

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Email : test@mettexlab.com | Web : www.mettexlab.com

Lab No: 2606957/001 T.C No: CML/25-26/T018763 Dated : 28.05.2025

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TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2022	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39:2021	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43/Sec 1 - 2022	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 3025 Part 68:2019	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27/Sec 1-2021 (Colorimetric method)	BDL (DL:0.01 mg/l)
BOD @ 27°C for 3 days	IS 3025 Part 44:2023	6 mg/l
Chemical Oxygen Demand	IS 3025 Part 58:2023	30 mg/l
Dissolved Oxygen	IS 3025 Part 38:1989 (Azide Modification)	7.4 mg/l
Barium as Ba	IS 3025 Part 65:2022	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Nesslerization method)	BDL (DL:0.01 mg/l)
Sulphide as H ₂ S	IS 3025 Part 29:2022	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 17 -2022	4.8 mg/l
Discipline: Biological		Group: Water
Total Coliform	APHA 24 th Edn. 2023-9221 B	1600 MPN/100ml
Escherichia coli	APHA 24 th Edn. 2023-9221 F	170 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number, *To be applicable only when water is chlorinated.		

End of Report

For Chennai Mettex Lab Private Limited

G.S. Radha

Reviewed & Authorised by
G.S. RADHA
Technical Manager
Authorised Signatory



P. Kavitha

Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

Page No.1 of 2

ISSUED TO: Mr. Gnanasekaran

Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606957/002

Sample Description : SW-2 Bhavani River (NW)
(as stated by customer)

T.C Date : 28.05.2025

T.C No : CML/25-26/T018764

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:2021	5 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:2022 (electrometric method)	7.36
Conductivity @ 25°C	IS 3025 Part 14:2013	740 µmhos/cm
Turbidity	IS 3025 Part 10:2023	3.6 NTU
Total Dissolved Solids	IS 3025 Part 16:2023	414 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (EDTA titrimetric method)	160 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (EDTA titrimetric method)	40 mg/l
Magnesium as Mg	IS 3025 Part 46:2023	14.5 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:2023	158 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Argentometric Method)	94 mg/l
Sulphate as SO ₄	IS 3025 Part 24/Sec 1:2022	28.4 mg/l
Iron as Fe	IS 3025 Part 53:2003 (1,10 phenanthroline method)	0.14 mg/l
*Residual Free Chlorine	IS 3025 Part 26:2021	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 24 th Edn. 2023:4500 F,D	0.11 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Chromotropic acid method)	4.2 mg/l
Copper as Cu	IS 3025 Part 65:2022	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Mercury as Hg	IS 3025 Part 65:2022	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2022	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)

...Contd....2

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Lab No: 2606957/002 T.C No: CML/25-26/T018764 Dated : 28.05.2025

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TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2022	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39:2021	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43/Sec 1 - 2022	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 3025 Part 68:2019	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27/Sec 1-2021 (Colorimetric method)	BDL (DL:0.01 mg/l)
BOD @ 27°C for 3 days	IS 3025 Part 44:2023	6.4 mg/l
Chemical Oxygen Demand	IS 3025 Part 58:2023	38 mg/l
Dissolved Oxygen	IS 3025 Part 38:1989 (Azide Modification)	6.8 mg/l
Barium as Ba	IS 3025 Part 65:2022	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Nesslerization method)	BDL (DL:0.01 mg/l)
Sulphide as H ₂ S	IS 3025 Part 29:2022	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 17 - 2022	5.4 mg/l
Discipline: Biological		Group: Water
Total Coliform	APHA 24 th Edn. 2023-9221 B	1600 MPN/100ml
Escherichia coli	APHA 24 th Edn. 2023-9221 F	210 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number, *To be applicable only when water is chlorinated.		

End of Report

For Chennai Mettex Lab Private Limited

G.S. Radha
Reviewed & Authorised by
G.S. RADHA
Technical Manager
Authorised Signatory



P. Kavitha

Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

Page No.1 of 2

ISSUED TO: Mr. Gnanasekaran

Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606957/003

Sample Description : BW-1 Near Project Area (SE)
(as stated by customer)

T.C Date : 28.05.2025

T.C No : CML/25-26/T018765

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:2021	Less than 5 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:2022 (electrometric method)	7.32
Conductivity @ 25°C	IS 3025 Part 14:2013	750 µmhos/cm
Turbidity	IS 3025 Part 10:2023	Less than 1 NTU
Total Dissolved Solids	IS 3025 Part 16:2023	420 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (EDTA titrimetric method)	180 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (EDTA titrimetric method)	32 mg/l
Magnesium as Mg	IS 3025 Part 46:2023	24.3 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:2023	156 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Argentometric Method)	88.6 mg/l
Sulphate as SO ₄	IS 3025 Part 24/Sec 1-2022	26.4 mg/l
Iron as Fe	IS 3025 Part 53:2003 (1,10 phenanthroline method)	0.16 mg/l
*Residual Free Chlorine	IS 3025 Part 26:2021	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 24 th Edn. 2023:4500 F.D	0.13 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Chromotropic acid method)	8.4 mg/l
Copper as Cu	IS 3025 Part 65:2022	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Mercury as Hg	IS 3025 Part 65:2022	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2022	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)

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Lab No: 2606957/003 T.C No: CML/25-26/T018765 Dated : 28.05.2025

Page No.2 of 2

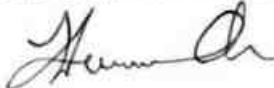
TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2022	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39:2021	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43/Sec 1 - 2022	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 3025 Part 68:2019	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27/Sec 1-2021 (Colorimetric method)	BDL (DL:0.01 mg/l)
Barium as Ba	IS 3025 Part 65:2022	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Nesslerization method)	BDL (DL:0.01 mg/l)
Sulphide as H ₂ S	IS 3025 Part 29:2022	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 17 -2022	BDL (DL:1.0 mg/l)
Discipline: Biological		Group: Water
Total Coliform	APHA 24 th Edn. 2023-9221 B	230 MPN/100ml
Escherichia coli	APHA 24 th Edn. 2023-9221 F	< 1.8 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number, <1.8 MPN/100ml can be taken as "No microbial growth", *To be applicable only when water is chlorinated.		

End of Report

For Chennai Mettex Lab Private Limited


Reviewed & Authorised by
G.S. RADHA
Technical Manager
Authorised Signatory




Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory



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TEST REPORT

Page No.1 of 2

ISSUED TO: Mr. Gnanasekaran

Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606957/004

Sample Description : BW-2 Vadavalli (East)
(as stated by customer)

T.C Date : 28.05.2025

T.C No : CML/25-26/T018766

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:2021	Less than 5 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:2022 (electrometric method)	7.22
Conductivity @ 25°C	IS 3025 Part 14:2013	690 µmhos/cm
Turbidity	IS 3025 Part 10:2023	Less than 1 NTU
Total Dissolved Solids	IS 3025 Part 16:2023	386 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (EDTA titrimetric method)	176 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (EDTA titrimetric method)	36 mg/l
Magnesium as Mg	IS 3025 Part 46:2023	19.4 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:2023	142 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Argentometric Method)	84.4 mg/l
Sulphate as SO ₄	IS 3025 Part 24/Sec 1-2022	20.6 mg/l
Iron as Fe	IS 3025 Part 53:2003 (1,10 phenanthroline method)	0.14 mg/l
*Residual Free Chlorine	IS 3025 Part 26:2021	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 24 th Edn. 2023:4500 F,D	0.16 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Chromotropic acid method)	8.6 mg/l
Copper as Cu	IS 3025 Part 65:2022	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Mercury as Hg	IS 3025 Part 65:2022	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2022	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)

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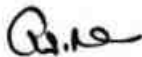
Lab No: 2606957/004 T.C No: CML/25-26/T018766 Dated : 28.05.2025

Page No.2 of 2

TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2022	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39:2021	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43/Sec 1 - 2022	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 3025 Part 68:2019	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27/Sec 1-2021 (Colorimetric method)	BDL (DL:0.01 mg/l)
Barium as Ba	IS 3025 Part 65:2022	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Nesslerization method)	BDL (DL:0.01 mg/l)
Sulphide as H ₂ S	IS 3025 Part 29:2022	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 17 -2022	BDL (DL:1.0 mg/l)
Discipline: Biological		Group: Water
Total Coliform	APHA 24 th Edn. 2023-9221 B	180 MPN/100ml
Escherichia coli	APHA 24 th Edn. 2023-9221 F	< 1.8 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number, <1.8 MPN/100ml can be taken as "No microbial growth", *To be applicable only when water is chlorinated.		

End of Report

For Chennai Mettex Lab Private Limited


Reviewed & Authorised by
G.S. RADHA
Technical Manager
Authorised Signatory




Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

Page No.1 of 2

ISSUED TO: Mr. Gnanasekaran
Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606957/005

Sample Description : OW-1 Near Project Area (SE)
(as stated by customer)

T.C Date : 28.05.2025

T.C No : CML/25-26/T018767

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:2021	Less than 5 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:2022 (electrometric method)	7.36
Conductivity @ 25°C	IS 3025 Part 14:2013	580 µmhos/cm
Turbidity	IS 3025 Part 10:2023	Less than 1 NTU
Total Dissolved Solids	IS 3025 Part 16:2023	324 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (EDTA titrimetric method)	178 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (EDTA titrimetric method)	28 mg/l
Magnesium as Mg	IS 3025 Part 46:2023	26.7 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:2023	136 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Argentometric Method)	76.4 mg/l
Sulphate as SO ₄	IS 3025 Part 24/Sec 1-2022	22.4 mg/l
Iron as Fe	IS 3025 Part 53:2003 (1,10 phenanthroline method)	BDL (DL:0.1 mg/l)
*Residual Free Chlorine	IS 3025 Part 26:2021	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 24 th Edn. 2023:4500 F.D	0.18 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Chromotropic acid method)	9.2 mg/l
Copper as Cu	IS 3025 Part 65:2022	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Mercury as Hg	IS 3025 Part 65:2022	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2022	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)

...Contd....2

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Lab No: 2606957/005 T.C No: CML/25-26/T018767 Dated : 28.05.2025

Page No.2 of 2

TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2022	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39:2021	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43/Sec 1 - 2022	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 3025 Part 68:2019	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27/Sec 1-2021 (Colorimetric method)	BDL (DL:0.01 mg/l)
Barium as Ba	IS 3025 Part 65:2022	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Nesslerization method)	BDL (DL:0.01 mg/l)
Sulphide as H ₂ S	IS 3025 Part 29:2022	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 17 -2022	BDL (DL:1.0 mg/l)
Discipline: Biological		Group: Water
Total Coliform	APHA 24 th Edn. 2023-9221 B	170 MPN/100ml
Escherichia coli	APHA 24 th Edn. 2023-9221 F	< 1.8 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number, <1.8 MPN/100ml can be taken as "No microbial growth", *To be applicable only when water is chlorinated.		

End of Report

For Chennai Mettex Lab Private Limited

G.S. RADHA
Reviewed & Authorised by
G.S. RADHA
Technical Manager
Authorised Signatory



P. KAVITHA
Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory



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TEST REPORT

Page No.1 of 2

ISSUED TO: Mr. Gnanasekaran
Karamadai, Coimbatore

Cust. Ref : SRF Dated : 20.05.2025.

Lab No : 2606957/006

Sample Description : OW-2 Onnipalayam (SE)
(as stated by customer)

T.C Date : 28.05.2025

T.C No : CML/25-26/T018768

Date Of Receipt : 21.05.2025

Analysis Commenced On: 21.05.2025

Analysis Completed On : 28.05.2025

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:2021	Less than 5 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:2022 (electrometric method)	7.41
Conductivity @ 25°C	IS 3025 Part 14:2013	610 µmhos/cm
Turbidity	IS 3025 Part 10:2023	Less than 1 NTU
Total Dissolved Solids	IS 3025 Part 16:2023	342 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (EDTA titrimetric method)	174 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (EDTA titrimetric method)	44 mg/l
Magnesium as Mg	IS 3025 Part 46:2023	14.5 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:2023	134 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Argentometric Method)	78.8 mg/l
Sulphate as SO ₄	IS 3025 Part 24/Sec 1-2022	22.8 mg/l
Iron as Fe	IS 3025 Part 53:2003 (1,10 phenanthroline method)	0.32 mg/l
*Residual Free Chlorine	IS 3025 Part 26:2021	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 24 th Edn. 2023:4500 F,D	0.19 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Chromotropic acid method)	8.8 mg/l
Copper as Cu	IS 3025 Part 65:2022	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Mercury as Hg	IS 3025 Part 65:2022	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2022	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)

...Contd....2

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Lab No: 2606957/006 T.C No: CML/25-26/T018768 Dated : 28.05.2025

Page No.2 of 2

TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2022	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2022	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39:2021	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43/Sec 1 - 2022	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 3025 Part 68:2019	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27/Sec 1-2021 (Colorimetric method)	BDL (DL:0.01 mg/l)
Barium as Ba	IS 3025 Part 65:2022	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Nesslerization method)	BDL (DL:0.01 mg/l)
Sulphide as H ₂ S	IS 3025 Part 29:2022	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2022	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 65:2022	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 17 -2022	BDL (DL:1.0 mg/l)
Discipline: Biological		Group: Water
Total Coliform	APHA 24 th Edn. 2023-9221 B	110 MPN/100ml
Escherichia coli	APHA 24 th Edn. 2023-9221 F	< 1.8 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number, <1.8 MPN/100ml can be taken as "No microbial growth", *To be applicable only when water is chlorinated.		

End of Report

For Chennai Mettex Lab Private Limited

A.S.
Reviewed & Authorised by
G.S. RADHA
Technical Manager
Authorised Signatory



P. Kavitha
Reviewed & Authorised by
P. KAVITHA
Technical Manager
Authorised Signatory



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National Accreditation Board for Education and Training

Certificate of Accreditation

Geo Exploration and Mining Solutions, Salem

No. 17, Advaita Ashram Road, Fairlands, Salem, Tamil Nadu – 636 004

*Geo Exploration and Mining Solutions, Salem is Re-Accredited (RA3) as **Category-A organization** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations (Version 3), for the preparation of EIA/EMP reports in the sectors listed below, as per the specified categories*

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals including opencast / underground mining	1	1 (a) (i)	A
2.	Mineral beneficiation	7	2 (b)	A
3.	Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes	31	7 (c)	A
4.	Building and construction projects	38	8 (a)	B

Note: Names of approved experts and sectors are mentioned in RAAC minutes dated August 21, 2025, 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/25/3827 dated August 25, 2025. The accreditation needs to be renewed before the expiry date by Geo Exploration and Mining Solutions, Salem following due process of assessment.

Valid up to
August 06, 2028

Issue Date
August 25, 2025



Certificate No.
NABET/EIA/25-28/RA 0424


 Prof (Dr) Varinder S Kanwar
 (CEO – NABET)

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.