

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT` AND ENVIRONMENT MANAGEMENT PLAN

FOR OBTAINING
Environmental Clearance under EIA Notification – 2006

Schedule Sl. No. 1 (a) (i): Mining Project

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

CLUSTER EXTENT = 17.75.5hectares

At

Thennilai East Village, Pugalur Taluk,
Karur District, Tamil Nadu

ToR Identification No. TO24B0108TN5261399N Dated:29.11.2024, File No.11213

NAME AND ADDRESS OF THE PROPOSED PROJECT PROPONENT

Name and Address	Extent & S.F.No.	Mineral Production
M/s.Teru Murugan Blue Metal Managing Partner: Mr.P.Subramani Survey No.506, Kattu Munnur, Pugalur Taluk, Karur District – 639 111.	6.83.50Ha & 134 and 135/1	Rough Stone-1187520m ³ Gravel-119280m ³

ENVIRONMENTAL CONSULTANT

GEO TECHNICAL MINING SOLUTIONS



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Valid till: 31.12.2026



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**Baseline study period-October through December 2024
JAN-2025**



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TERMS OF REFERENCE (ToR) COMPLIANCE

ToR File No.11213

TOR Identification No. TO24B0108TN5261399N, dated.29/11/2024

M/s. Teru Murugan Blue Metal, Rough Stone and Gravel Quarry

Specific Terms of Reference for (Mining of Minerals)

1. Seiaa Specific Conditions:

S.No	Terms of Reference	Remarks
1	Earlier, the proposal was placed in the 760 th Authority meeting held on 01.10.2024. The authority noted that this proposal was placed for appraisal in 497 th meeting of SEAC held on 13.09.2024. SEAC has furnished its recommendations for granting Terms of Reference subject to the conditions stated therein. After detailed discussions, the authority decided to obtain additional details from the PP for taking further course of action on the proposal. Following this, the PP submitted a response vide letter dated 21.11.2024. The subject was then placed before 773rd authority meeting held on 25.11.2024 & 26.11.2024. The Authority accepts the reply furnished by the PP and takes the recommendation of SEAC. The authority decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of the production should not exceed the production should not exceed 19,14,240m ³ of rough stone & 1,19,280m ³ of Gravel with an ultimate depth of mining is 50m BGL. The annual peak production is 4,22,112 m ³ of rough stone and 47,472 m ³ of Gravel. As per the approved mining plan,	After the detailed discussions of SEAC, as per the ToR conditions the quantity of production has not exceed 19,14,240m ³ of rough stone and 1,19,280m ³ of gravel with the ultimate depth of mining 50m BGL. The details of these quantity are in the discussed in the Section 2.5 under Chapter II in the EIA report page 13 and in the Figure 2.5, page number 15.

	under cluster of undertaking the combined Environmental Impact Assessment Study and Preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions & the conditions mentioned in 'Annexure B' of this minute.	

2. Seac Conditions - Site Specific

	Terms of Reference		Remarks
2.1	1	The project proponent shall furnish the videos and photographs of the previous mine.	As it is a fresh quarry, the conditions are not applicable.
	2	The PP shall provide the controlled blasting methodology design keeping the cluster of operating mines in mind which includes the procurement, transportation and storage of explosives and safe blasting procedures.	The conceptual blasting design is discussed in the Section 2.6 under Chapter II in the EIA report page 13-21.
	3	The project proponent shall furnish the previous CER details.	As it is a fresh quarry, the conditions are not applicable.

3. Seac Standard Conditions

3.1	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	As it is a fresh quarry, the conditions are not applicable.
		(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.		The VAO certificate is attached in Annexure IV.
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc		The map showing the details of structures such as dwelling houses, places of worship, industries, factories, sheds, etc. within the radius of 500m from the proposed project area will be submitted in the final EIA report.
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.		Detailed hydrological study will be submitted in the final EIA report.

	5	The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report.	The details of Bio diversity from the reputed institution will be submitted in the final 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.	The DFO letter will be submitted in the final EIA report.
	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.	As it is a fresh lease area, the Slope Stability report is not required.
	8	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the	As it is a fresh lease area, the Slope Stability report is not required.

	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.	The affidavit for blasting will be enclosed in the final EIA report.
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.	A conceptual design of blasting has been given in Section 2.6 under Chapter II in the EIA report page 13-21.
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	The photographic evidence showing the project proponents of past mining activities will be submitted in the final EIA report.
12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,	
13	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	As it is a new quarry, the conditions are not applicable.
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/Toposheet, 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).	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as shown in Figure 2.4, under Chapter II in the EIA report page 12.
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,	The drone video will be submitted during final EIA presentation.
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.	Photographs of adequate fencing, green belt along the periphery of the project area and the photographs showing nearby water bodies will be included in final EIA report.
18	The Project Proponent shall provide the details of mineral reserves and mineable	The Resources and Reserves of Rough Stone were calculated based on cross-

	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.	section method by plotting sections to cover the maximum lease area for the proposed project. The plate used for reserve estimation has been presented in Figure 2.5 & 2.6 results of geological resources and reserves have been shown in Table 2.4. under Chapter II in the EIA report page 13-15.
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.	Details of manpower required for this project have been given in Table 2.14 under Chapter II in the EIA report page 22.
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.	The hydrogeological study is discussed in the Section 3.2.2 under Chapter III in the EIA report page 37-44.

21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data were collected for the environmental components including land, soil, water, air, noise, biology, socio-economy, and traffic and the results have been discussed under Chapter III in the EIA report page 23-84.
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.	Results of cumulative impact study due to mining operations are given in Section 7.4 under Chapter VII in the EIA report page 115-117.
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	As part of rainwater harvesting measures, the rain water from garland drainage system will be diverted to nearby check dams after treating the water in settling tanks.
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	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 has been discussed in Section 3.1 in the EIA report page 25-30 under Chapter III. The details of surrounding sensitive ecological

		and submitted. Impact, if any, of change of land use should be given.	features have been provided in Table 3.37 under Chapter III in the EIA report page 83. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.8 under Chapter II in the EIA report page 18.
	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.	This condition is not applicable to this project because no dumps have been proposed outside the lease area.
	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.	As part of rainwater harvesting measures, the rain water from garland drainage system will be diverted to nearby check dams after treating the water in settling tanks.
	28	Impact on local transport infrastructure due to the Project should be indicated.	Details regarding the impact of the project on traffic are given in Section

		3.7 under Chapter III in the EIA report page 80-82.
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.	A detailed tree survey was carried out within 300 m radius and the results have been discussed in Section 3.5 under Chapter III in the EIA report page 58-71.
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.9 under Chapter II in the EIA report page 19.
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.	The EIA coordinator and the FAE for ecology and biodiversity visited the study area and educated the local students about the importance of protecting the biological environment.
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	A detailed greenbelt development plan has been provided in Section 4.6 under Chapter IV in the EIA report page 96-101.

	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	The FAE of ecology and biodiversity has advised the project proponent that saplings of one year old raised in the eco-friendly bags should be purchased and planted with the spacing of 3 m between each plant around the proposed project area as per the advice of local forest authorities/botanist.
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.	A disaster management plan for the project has been provided in Section 7.3 under Chapter VII in the EIA report page 114-115.
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.	A risk assessment plan for the project has been provided in Section 7.2 under Chapter VII in the EIA report page 111-113.
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	Occupational health impacts of the project and preventive measures have been discussed in detail in Section 4.8 under Chapter IV in the EIA report 101-102.

	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.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 120-121.
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.	No negative impact on socio-economic environment of the study area is anticipated and this project shall benefit the socio-economic environment by offering employment for 28 people directly as discussed in Section 8.1 under Chapter VIII in the EIA report page 119.
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 in any court against this project.
39	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.	Benefits of the project details have been given under Chapter VIII in the EIA report page 119-121.
40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	The benefits of the project are discussed in the Chapter VIII in the EIA report page 119-121.

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.	It is fresh lease area and the condition is not applicable.
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.	A detailed environment management plan has been prepared following the suggestion made by SEAC, as shown in Chapter X in the EIA report page 123-128. The sworn affidavit stating to abide the EMP for the entire life of mine will be submitted during final EIA report.
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	The EIA report has been prepared keeping in mind the fact that concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may lead to withdrawal of this terms of reference besides attracting penal provisions in the Environment (Protection) Act, 1986.

Standard Terms of Reference for (Mining of minerals):

1.

1.1	An EIA-EMP Report shall be prepared for peak capacity (.... MTPA) operation in an ML/project area of ha based on the	Yes, it is based on the generic structure specified in Appendix III of the EIA Notification, 2006. i.e., the peak capacity

	generic structure specified in Appendix III of the EIA Notification, 2006.	of the proposed quarry is 33,25,056MTPA and operation in an ML/project area of 6.83.5ha.
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 modelling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.	The 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 October - December 2024 with CPCB guidelines. The detailed baseline environmental monitoring studies were carried out and the results are discussed in the Chapter III and the approved mining plan is attached in the Annexure III.
1.3	Proper KML file with pin drop and coordinate of mine at 500-1000 m interval be provided	The KML file with proper pin drop and coordinate of the mine will be uploaded during the online submission.
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	The details of environmentally sensitive ecological features in the study area are given in the Table 3.37 under Chapter III in the EIA report page 83.

	Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also	
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.	The map showing the lease area with cluster details is shown in the Figure 1.1, Chapter I in the EIA report page 4. The agriculture and water bodies details are given in the Table 3.37 under Chapter III in the EIA report page 83.
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.	The contour map will be submitted in the final EIA report.
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 diverted.	The catchment area map will be submitted in the final EIA report.

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.	The reserve details are discussed in the Section 2.5 under Chapter II in the EIA report page 13.
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.	The details of mining method, technology, equipment, etc is discussed in the Section 2.6 under Chapter II in the EIA report page 13-21.
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channelling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.	There is no any drainage within or around the lease area. The drainage map is shown in Figure 3.4 under Chapter III, in the EIA report page 29.
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,	It is a rough stone mine over an extent 6.83.5ha falls in B1 category. There are no any water courses in the lease area. It is a Patta land owned by the PP, hence there is no RR required.

	township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.																															
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 analysed. Extent of area under surface rights and under mining rights should be specified. Area under Surface Rights.																															
	<table><tr><th>S.No</th><th>ML/Project Land use</th><th>Area under Surface Area Rights (ha)</th><th>Area Under Mining Rights (ha)</th><th>Area under Both (ha)</th></tr><tr><td>1</td><td>Agricultural 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>6.83.5</td><td>6.83.5</td><td>6.83.5</td></tr></table>	S.No	ML/Project Land use	Area under Surface Area Rights (ha)	Area Under Mining Rights (ha)	Area under Both (ha)	1	Agricultural land	---	---	---	2	Forest Land	---	---	---	3	Grazing Land	---	---	---	4	Settlements	---	---	---	5	Others (specify)	6.83.5	6.83.5	6.83.5	
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	ii	Drainage & settling Tanke	0.10.71	
	iii	Area under quarry	5.89.00	
	iv	Unutilized area	Nil	
	Total		6.83.5	
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 comments/observation from the CWLW of the State Govt. should also be obtained and furnished.			The details on flora and fauna have been provided in Section 3.5 under Chapter III in the EIA report page 58-71.
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			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

	season for AAQ collection period should be provided. The detail of NABL/MoEF&CC certification of the respective laboratory and NABET accreditation of the consultant to be provided.	the project site were carried out covering October through December 2024 with CPCB guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified Greenlink Analytical and Research Laboratory (India) Private Ltd & Excellence Laboratory for the environmental attributes including soil, water, air, and noise and by FAEs for ecology and biodiversity, traffic, and socio-economy.
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 as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.	The detailed study is discussed in the Chapter III in the EIA report page 23-84.

1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided	10km baseline study can be conducted only when total cluster area extent of the projects is above 25ha. Here, the proposed cluster area of the projects is less than 25ha, (i.e,17.75.5ha) and so baseline monitoring study is done for 5 km only. The baseline study of the air quality is discussed in the Section 3.3 under the Chapter III in the EIA report page 45-54.
1.17	A detailed traffic study along with presence of habitation in 100m 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.	There is no need of road widening, the details of traffic study are discussed in the Section 3.7 under Chapter III in the EIA report page 80-82. Carbon released from quarrying machineries and tippers during quarrying would be 10800kg per day, 2916042kg per year and 14580208kg over five years.
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 also include the status of infrastructural facilities and amenities present in the study area and a	The socio-economic study is discussed in the Section 3.6 under Chapter III in the EIA report page 71-80.

	comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.	
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.	There is no forest within 10km. The Ecology and biodiversity study is discussed in the Section 3.5 under Chapter III in the EIA report page 58-71. To mitigate carbon emission due to mining activities, we recommend planting trees around the quarry to offset the carbon emission during quarrying. A tree can sequester 118088kg of carbon per year. Therefore, we recommend planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc.
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.	The occupational health and safety of the personnel and manpower for the mine is submitted in the Section 4.8 under Chapter IV in the EIA report page 101-102.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted.	The hydrological studies as per GEC 2015 guidelines will be prepared and submitted in the final EIA report.
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	As part of rainwater harvesting measures, the rain water from garland drainage system will be diverted to nearby check dams after treating the water in settling tanks.

	declining trend of groundwater availability and/or if the area falls within dark/grey zone.													
1.23	Study on land subsidence including modelling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.	The lease area consists of 2m of gravel follows the hard charnockite rock observed from geology map in the Figure 3.1 in the EIA report page 26 and in VES measurement in the Figure 3.12 in the EIA report page 44.												
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.	<table> <tr> <th>Purpose</th><th>Quantity</th><th>Source</th></tr> <tr> <td>Dust Suppression</td><td>1.0 KLD</td><td rowspan="4">The water requirement is purchased from the authorized water vendor.</td></tr> <tr> <td>Green Belt development</td><td>1.0 KLD</td></tr> <tr> <td>Drinking & Domestic</td><td>1.0 KLD</td></tr> <tr> <td>Total</td><td>3.0 KLD</td></tr> </table>	Purpose	Quantity	Source	Dust Suppression	1.0 KLD	The water requirement is purchased from the authorized water vendor.	Green Belt development	1.0 KLD	Drinking & Domestic	1.0 KLD	Total	3.0 KLD
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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	Quarry project proponent controls air pollution by water sprinkling method on roads and quarry sites and green belt development method is adopted.												
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored	The PP is advised to use LNG/CNG trucks in mining operation because these trucks can control air pollution and noise pollution.												
1.27	PP to evaluate the greenhouse emission gases from the mine operation/ washery	There is no greenhouse emission in the project lease area.												

	plant and corresponding carbon absorption plan.	
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster Preparedness and Management Plan should be provided.	The details are discussed in the Section 7.2 & 7.3 under Chapter VII in the EIA report page 111-115.
1.29	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.	The details regarding are discussed in the Section 4.4.3 under Chapter IV in the EIA report page 91.
1.30	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.	The details are given in the Section 2.6 under Chapter II in the EIA report page 13-21.
1.31	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	Quarry project proponent controls air pollution by water sprinkling method on roads and quarry sites and green belt development method is adopted

	frequency of their use in impacting air quality should be provided.	
1.32	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined-out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.	The present mining is proposed to an average depth of 35m BGL has been envisaged as workable depth for safe & economic mining during the lease period. The mined-out area with fenced on top of open cast working with SI fencing. No immediate proposals for closure of pit as the rough stone persist still at deeper level. The details of mine closure budget are discussed in the Section 2.6.4 under Chapter II in the EIA report page 18-19.
1.33	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.	The details are given in the Section 4.6 under Chapter IV in the EIA report page 96-101.
1.34	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.	The detailed EMP is given in the Chapter X in the EIA report page 123-128.
1.35	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	Not Applicable. The proposed lease area belongs to the lessee and there is no any habitation in the lease area.

	displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.	
1.36	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.	The CSR plan is discussed in the Section 8.6 in Chapter VIII in the EIA report page 120.
1.37	Corporate Environment Responsibility:	
1.38	a)	The Company must have a well laid down Environment Policy approved by the Board of Directors.
1.39	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.
1.40	c)	The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.
1.41	d)	To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board

		of Directors of the company and/or shareholders or stakeholders at large.					
1.42	e)	Environment Management Cell and its responsibilities to be clearly spleel out in EIA/ EMP report					
1.43	f)	In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.					
1.44	Status of any litigations/ court cases filed/pending on the project should be provided.		No litigation is pending in any court against this project.				
1.45	PP shall submit clarification from DFO that mine does not fall under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.		The DFO letter is attached in the Final EIA report.				
1.46	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.		The clearance copy of approved mining plan letter is attached in the Annexure III.				
1.47	Details on the Forest Clearance should be given as per the format given:						
	Total ML Project Area	Total Forest land (ha) If more than one provide details of each FC	Date of FC	Extent of Forest Land	Balance area for which FC is yet to be obtained	Status of apply for diversion of forest land	
	NA	NA	NA	NA	NA	NA	
1.48	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			Approved Mining plan of the expansion proposal is attached in the Annexure III and the mine closure plan is discussed in the Section 2.6.4 in Chapter II in the EIA report page 18-19.			

1.49	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.	The public hearing comments will be submitted during final EIA report.
1.50	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes	The drone video survey will be submitted in the final EIA report.
1.51	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.	The required documents for the proposed quarry are provided in the chronology order in Annexure III.
1.52	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)	The first page of the EIA report mentions the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification).
1.53	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	The provisions of ToR are shown in tabular form with respective chapter section and page no. Also, the sequence of respective ToR within the EIA-EMP report is mentioned in all chapter section.

	within the EIA-EMP report in all the chapter's section.	
1.54	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.	The proposed mine lease area is open cast semi mechanized mining operation. The impact and its mitigation measures are discussed under the Chapter IV in the EIA report page 85-104.

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.	A cluster management committee including all the proponents of the rough stone quarrying projects within the cluster of 500 m radius will be constituted for the effective implementation of green belt development plan, water sprinkling, blasting, etc.
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.,	The members of the cluster management committee will be instructed to carry out EMP in coordination.
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	The list of members of the committee formed will be submitted to AD/Mines before the execution of mining lease.
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	All the information has been discussed in Section 2.6 under Chapter II in the EIA report page 13-21.

	individual quarry in the form of route map and network.	
5	The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.	It will be informed to the committee.
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.	It will be advised to the cluster management committee 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 will be given in detail.
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.	A proper action plan regarding the restoration will be followed by the committee.
8	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	The information on the health of the workers and the local people will be updated periodically.
Agriculture & Agro-Biodiversity		
9	Impact on surrounding agricultural fields around the proposed mining Area.	There shall be negligible air emissions or effluents from the project site. During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly, as shown in Section 4.6

		under Chapter IV in the EIA report page 96-101.
10	Impact on soil flora & vegetation around the project site.	The details on flora have been provided in Section 3.5 under Chapter III in the EIA report page 58-71. 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 vegetations including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetations all along the boundary of the proposed mining area shall committed mentioned in EMP.	Details of vegetation in the lease area have been provided in Section 3.5 under Chapter III in the EIA report page 58-71. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV in the EIA report page 96-101.
12	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	The ecological details have been provided in Section 3.5 under Chapter III in the EIA report page 58-71 and measures have been provided in Section 4.6 under Chapter IV in the EIA report page 96-101.
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	All the essential environmental protective measures will be followed by the proponent to manage the surrounding environment and restore the ecosystem, as discussed in Chapter IV in the EIA report page 85-104.
14	The project proponent shall study and furnish the impact of project on plantations	The impact of project on the land environment has been discussed in

	in adjoining patta lands, Horticulture, Agriculture and livestock.	Section 4.1 under Chapter IV in the EIA report page 85.
Forests		
15	The project proponent shall detail study on impact of mining on Reserve forests free ranging wildlife.	The project proponent shall do barbed wire fencing work and develop a green belt around the lease area to prevent wildlife from entering the site.
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	The impacts of the project on ecology and biodiversity have been discussed in Section 4.6 under Chapter IV in the EIA report page 96-100.
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	The impacts of the project on standing trees and the existing trees have been discussed in Section 4.6 under Chapter IV in the EIA report page 96-100.
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	The protected areas, National Parks, Corridors and Wildlife pathways near project site within 10 km radius has been provided in Table 3.37 under Chapter III in the EIA report page 83.
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	The hydrogeological study is discussed in the Section 3.2.2 under Chapter III in the EIA report page 37-44.

	documentation in this regard may be provided, covering the entire mine lease period.	
20	Erosion Control measures.	Garland drainage structures will be constructed around the lease area to control the erosion, as discussed in Section 4.3 under Chapter IV in the EIA report page 86-87.
21	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	The matter has been discussed under Chapter IV in the EIA report page 85-104.
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and	An analysis for food chain in aquatic ecosystem has been discussed in Section 3.5 under Chapter III in the EIA report page 58-71.
23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	The impacts of the proposed project on the surrounding environment have discussed in Chapter IV in the EIA report page 95-104.
24	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	The impact of the proposed project on aquatic plants and animals in water bodies has been discussed in Section 4.6 under Chapter IV in the EIA report page 96-101.
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the	The impact of mining on soil environment has been discussed in

	soil physical, chemical components and microbial components.	Section 4.2 under Chapter IV in the EIA report page 86.
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	The impacts on water bodies, streams, lakes have been discussed in Section 4.3 under Chapter IV in the EIA report page 86-87.
27	The EIA shall include the impact of mining activity on the following:	
	a) Hydrothermal / Geothermal effect due to destruction in the Environment.	The proposed mining area and the surrounding falls under hard rock formation i.e., Charnockite Formation and the district has not recorded any Hydrothermal / Geothermal effect and as per the Seismic Zonation Map of India, the district falls under the Zone II of seismic zones classification. The resultant of this open cast mining shall not have any Hydrothermal/Geothermal effect on the surrounding environment.
	b) Bio-geochemical processes and its foot prints including environmental stress.	No, Bio-geochemical processes and its foot prints including environmental stress are anticipated and at the end of life of mine the proposed quarry shall be left as an artificial reservoir structure and allowed to collect rain water and shall enrich the ecosystem.
	c) Sediment geochemistry in the surface streams.	Sediment geochemistry is discussed in the Table 3.5 under the Chapter III in the EIA report page 32.
Energy		
28	The measures taken to control Noise, Air, Water, Dust Control and steps adopted to	The measures taken to control noise, air, water, and dust have been given

	efficiently utilise the Energy shall be furnished.	under Chapter IV in the EIA report page 85-104.
Climate Change		
29	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	The carbon emission and the measures to mitigate carbon emission have been discussed in Section 4.6 under Chapter IV in the EIA report page 96-101.
30	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.	The matter has been discussed in Chapter IV in the EIA report page 85-104.
31	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.	There is no emission impact to local livelihood from this quarry project. All the vehicles used for transportation of the quarry materials will be maintained regularly to keep the GHGs emissions within statutory limits.
Mine Closure Plan		
32	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details for the progressive mine closure plan are shown in Table 2.9 under Chapter II in the EIA report page 19.
EMP		
33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease	A detailed Environment Management plan has been given under Chapter X in the EIA report page 123-128.

	period as per precise area communication order issued.	
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.	A detailed Environment Management plan has been given in Tables 10.1 & 10.2 under Chapter X in the EIA report page 124-128.
Risk Assessment		
35	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	The risk assessment and management plan for this project has been provided in Section 7.2 under Chapter VII in the EIA report page 111-113.
Disaster Management Plan		
36	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 114-115.
Others		
37	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.	The VAO certificate of 300 m radius have been attached in the attached in the Annexure IV.
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 will be submitted in the final EIA report.

	the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.	
39	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	The plastic waste management has been given in Section 7.5 under Chapter VII in the EIA report page 118.

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.	Not applicable. This is not a violation category project. This proposal falls under B1 category.
2.	A copy of the document in support of the fact that the proponent is the rightful lessee of the mine should be given.	The proposed site for quarrying is a private land. A copy of the document showing that the proponent is the rightful lessee has been enclosed along with the approved mining plan in Annexure III.
3.	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and	All the documents are in the name of the lessee.

	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/ 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).	All corner coordinates of the mine lease area have been superimposed on a high- resolution Google Earth Image, as shown in Figure 2.3 under Chapter II in the EIA report page 11.
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.	Toposheets of Survey of India have been used for showing sampling locations of air, soil, water, and noise, as shown in Chapter III in the EIA report page 23-84.
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 lease 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	The Environmental Policy is discussed in the Section 10.1 under Chapter X in the EIA report page 123-124.

	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	It is an opencast quarrying operation proposed to operate in Manual 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.	The study area considered for this study is of 5 km radius for air, soil, water, and noise level sample collections, while the study area is 10 km radius for ecology and biodiversity studies 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	Land use of the study area delineating forest area, agricultural land, grazing

	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, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features has been discussed in Section 3.1 under Chapter III in the EIA report page 25-30. The details of surrounding sensitive ecological features have been provided in Table 3.7 under Chapter III in the EIA report page 83. Land use plan of the project area showing pre- operational, operational and post- operational phases are discussed in Table 2.8 under Chapter II in the EIA report page 18.
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.	It is not applicable as no dumps have been proposed outside the lease area. The entire quarried out rough stone will be transported to the needy customers.
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	It is not applicable as there is no forest land involved within the proposed project area. The details have been discussed in Table 3.37 under Chapter III in the EIA report page 83.

	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.	It is not applicable as 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 as there are neither forests nor forest dwellers / forest dependent communities in the mine lease area. There shall be no forest impacted families (PF) or people (PP). Thus, the rights of Traditional Forest Dwellers will not be compromised on account of the project.
15.	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	Reserve Forest is found within the study area. The matter has been discussed Section 3.5.1 under Chapter III in the EIA report page 59-71.
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.	There is no any wildlife/protected area within 10 km radius from the periphery of the project area. Information regarding the same has been given in Table 3.37 under Chapter III in the EIA report page 83.
17.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors,	There are No National Parks, Biosphere Reserves, Wildlife

	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.	Corridors, and Tiger/Elephant Reserves within 10 km radius from the periphery of the project area. Information regarding the same has been given in Table 3.37 under Chapter III in the EIA report page 83.
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.	A detailed biological study was carried out in both core and buffer zones and the results have been discussed in Section 3.5 under Chapter III in the EIA report page 58-71.
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,	Not Applicable. Project area / Study area is not declared. in 'Critically Polluted' Area and does not come under 'Aravalli Range.

	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 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 village(s) including their R&R and socio-economic aspect should be discussed in the Report	Not Applicable. There are no approved habitations of SCs/STs and other weaker sections in the lease area. Therefore, R&R Plan / Compensation Plan for the Project Affected People (PAP) are not provided.

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 the period of October - December 2024 as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.1-3.8 under Chapter III in the EIA report page 25-83.
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-	Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view 11.2.0. The model results have been given in Section 4.4 under the Chapter IV in the EIA report page 87-91.

	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.	The water requirement for the project, its availability and source have been provided in Table 2.11 under Chapter II in the EIA report page 19.
25.	Necessary clearance from the competent Authority for drawl of requisite quantity of water for the project should be provided.	Not Applicable. Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis. Drinking water will be sourced from the approved water vendors.
26.	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	Part of the working pit will be allowed to collect rain water during the spell of rain. The water thus collected will be used for greenbelt development and dust suppression. The mine closure plan has been prepared for converting the excavated pit into rain water harvesting structure and serve as water reservoir for the project village during draught season.
27.	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact studies and mitigation measures of water environment including surface water and ground water have been discussed in Section 4.3 under Chapter IV in the EIA report page 86-87.

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.	The ground water table is found at the depth of 60m below ground level. The ultimate depth of quarry is 50m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.2 under Chapter III in the EIA report page 30-44.
29.	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out	Not Applicable. There are no streams, seasonal or other water bodies passing within the project area. Therefore, no modification or diversion of water bodies is anticipated
30.	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.	The highest elevation of the project area is 199m AMSL. Ultimate depth of the mine is 50m BGL. Depth to the water level in the area is 60m BGL
31.	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up. Front on commencement of the Project. Phase-wise plan of plantation and	Greenbelt development plan has been given in Section 4.6 under Chapter IV in the EIA report page 96-101.

	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.	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 have been provided in Section 3.7 under Chapter III in the EIA report page 80-82.
33.	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Infrastructure & other facilities will be provided to the mine workers after the grant of quarry lease and the same has been discussed in Section 2.6.6 under Chapter II in the EIA report page 19.
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.	Progressive mine closure plan has been prepared for this project and is given in Section 2.6.4 under Chapter II in the EIA report page 19.

35.	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impacts of the project and preventive measures have been explained in detail in Section 4.8 under Chapter IV in the EIA report page 101-102.
36.	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications are anticipated due to this project. Details of CSR and CER activities have been discussed in Sections 8.6 and 8.7 under Chapter VIII in the EIA report page 120-121.
37.	Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	No negative impact on socio-economic environment of the study area is anticipated and this project shall benefit the socio-economic environment by offering employment for 28 people directly as discussed in Section 8.1 under Chapter VIII in the EIA report page 119.
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.	A detailed Environment Management Plan has been prepared and provided in Tables 10.1 & 10.2 under Chapter X in the EIA report page 124-128.
39.	Public Hearing points raised and commitment of the Project Proponent on the same along	The outcome of public hearing will be submitted during the final EIA report.

	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	No litigation is pending in any court against this project.
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost is Rs.1,20,05,700/- CER Cost is Rs.5,00,000/- In order to implement the environmental protection measures, an amount of Rs.15594038 as capital cost and recurring cost as Rs.4865096 as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10 years will be Rs. 2,27,24,605 as shown in Tables 10.1 & 10.2 under Chapter X in the EIA report page 124-128.
42.	A disaster management plan shall be prepared and included in the EIA/EMP Report.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 114-115.
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.	Benefits of the project details have been given under Chapter VIII in the EIA report page 119-121.

44	Besides the above, the below mentioned general points are also to be followed:	
a)	Executive Summary of the EIA/EMP Report.	Executive summary has been enclosed as a separate booklet.
b)	All documents to be properly referenced with index and continuous page numbering.	All the documents have been 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 have been mentioned.
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.	Original Baseline monitoring reports will be submitted in the final EIA report.
e)	Where the documents provided are in a language other than English, an English translation should be provided.	All the documents provided here are in English language.
f)	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The questionnaire will be submitted in the final EIA report.
g)	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) dated 4 th August, 2009 have been followed while preparing the EIA report
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	No changes are made in the basic scope and the project parameters.

	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.	As it is a new lease area, the condition is 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.	All the plans including surface & geological plans, and progressive closure plan have been included in Annexure III.

CHAPTER I

INTRODUCTION

1.0 PREAMBLE

Environmental Impact Assessment (EIA) study is a process used to identify the environmental, social and economic impacts of a project prior to decision-making. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensure that these impacts are considered during the project designing. According to the Ministry of Environment and Forests, Govt. of India, EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14th August 2018, all the mining projects are broadly classified into two categories, i.e., category A and category B, based on the spatial extent of the projects. The category B projects are further divided into B1 and B2 on the basis of the guidelines issued of the Ministry of Environment and Forests. All mining projects included in category B1 require an EIA report for obtaining environmental clearance from the State Environment Impact Assessment Authority (SEIAA). As the proposed project falls within the cluster of quarries of overall extent of greater than 5 ha and less than 50 ha in the case of non-coal mine lease, the proposed project falls under the category B1 and the project requires preparation and submission of an EIA report after public consultation to SEIAA for obtaining environmental clearance 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.

In compliance with TOR Identification No.TO24B0108TN5261399N Dated:29.11.2024, File No.11213 this EIA report has been prepared for the project proponent M/s.Teru Murugan Blue Metal applied for rough stone and gravel quarry lease in the patta land falling in S.F.No.134 & 135/1 over an extent of 6.83.5ha of Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu. This EIA report takes into account the rough stone and gravel quarry within the cluster of 500m radius from the periphery of the proposed project site. The cluster contains one proposed quarry known as P1 and three existing project E1, E2 and E3. All the projects mentioned above have been taken for cluster extent calculation as per MoEF & CC Notification S.O. 2269 (E) Dated 1st July 2016 the total extent of all the quarries is 17.75.5ha, also known as the cluster extent. The quarries involved in the calculation of cluster extent are shown in Figure 1.1.

Table 1.1 Details of Quarries within the cluster area of 500 m radius

Proposed Quarry					
Code	Name of the Owner	S.F. No	Village	Extent (ha)	Status
P1	Tvl.Teru Murugan Blue Metal	134 and 135/1	Thennilai East	6.83.50	Proposed Area
Existing Quarry					
E1	Tvl.Teru Murugan Blue Metal	126/2(P), 127/1(P), 133/1(P), 133/2(P)	Thennilai East	4.55.0	19.12.2022 to 18.12.2027
E2	P.K. Subramani	509/1 (P)	Munnur	4.84.0	31.08.2023 to 30.08.2028
E3	K.Ramasamy	853/1 (Part)	Thennilai East	1.53.0	26.11.2023 to 25.11.2028
Total Cluster Extent				17.75.5	

Source: AD Letter - Rc.No.138/Mines/2024 dated: 27.08.2024.

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

1.1 PURPOSE OF THE REPORT

The purpose of the report is to study baseline environmental conditions in and around the proposed project area for the period of **October-December 2024** according to the provisions of MoEF & CC Office Memorandum dated 29.08.2017 and MoEF & CC Notification, S.O. 996 (E) dated 10.04.2015, to analyse impacts and provide mitigation measures.

1.2 ENVIRONMENTAL CLEARANCE

The Environmental Clearance process for the project will comprise of four stages. These stages are screening, scoping, public consultation & appraisal.

Screening

Screening is the first stage of the EIA process. In this stage, the State level Expert Appraisal Committee (SEAC) examined the application of EC made by the proponent in Form 1 through online (Proposal No. SIA/TN/MIN/494514/2024, Dated:29.08.2024) and decided that the project requires detailed environmental studies for the preparation of EIA report. Therefore, the proponent submitted application for Terms of Reference (ToR) on: 30.08.2024.

Scoping

The proposal was placed in the 497th meeting of SEAC on 13.09.2024. Based on the presentation and documents furnished by the project proponent, SEAC decided to recommend the proposal for the grant of Terms of Reference (ToR) and the recommendation for ToR is subjected to the outcome of the Honourable NGT, Principal Bench, New Delhi (O.A No.186 of 2016

(M.A.No.350/2016) and O.A. No.200/2016 and O.A.No.580/2016 (M.A.No.1182/2016) and O.A.No.102/2017 and 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) and 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).

Public Consultation

In this stage, an application along with the draft of EIA and EMP report will be made to the Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing ensuring public participation at the project site or in its close proximity in the district. During public hearing, an opportunity will be given to the people living nearby the project site to express their opinions about the impact of the proposed project on the environment. The outcome of the public hearing meeting will be submitted in the final EIA report.

Appraisal

In this stage, an application along with final EIA report including the outcome of the public consultations will be made to the SEIAA. The application thus made will be scrutinized by the SEAC. Then, the SEAC will make recommendations to grant EC or reject the application to the SEIAA.

1.3 TERMS OF REFERENCE (ToR)

The SEAC framed a comprehensive Terms of Reference (ToR) based on the information provided in the Form 1 and information collected from the proposed project site visit and issued TOR Identification No.TO24B0108TN5261399N Dated:29.11.2024, File No.11213

1.4 POST ENVIRONMENT CLEARANCE MONITORING

For category B projects, irrespective of its clearance by MoEF/SEIAA, the project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and the details of MoEF website where it is displayed.

After obtaining EC, the project proponent will submit a half-yearly compliance report of stipulated environmental clearance terms and conditions to MoEF & CC Regional Office & SEIAA on 1st June and 1st December of every year.

1.5 TRANSFERABILITY OF ENVIRONMENTAL CLEARANCE

A prior environmental clearance granted for a specific project or activity to an applicant may be transferred during its validity to another legal person entitled to undertake the project or activity on application by the transferor or the transferee with a written “no objection” by the transferor, to, and by the regulatory authority concerned, on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period (EIA Guidance Manual for Mining of Minerals, 2010).

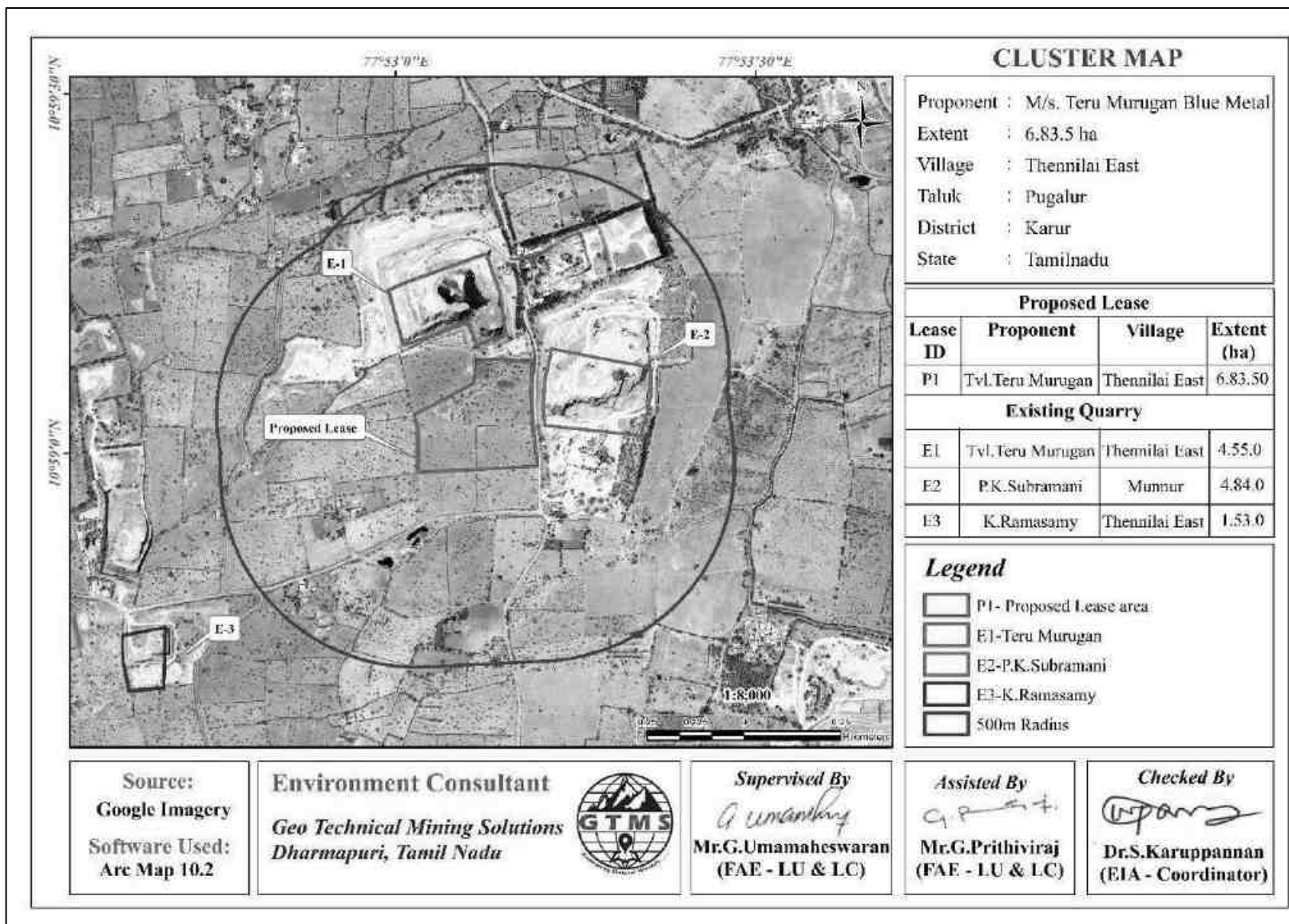


Figure 1.1 Location of the proposed and existing rough stone and gravel quarries in the cluster of 500m radius

1.6 IDENTIFICATION OF THE PROJECT PROPONENT

The profile of the project proponent who has involved in this quarrying project has been given in Table 1.2.

Table 1.2 Details of Project Proponent

Name of the Project Proponent	M/s.Teru Murugan Blue Metal Managing Partner Mr.P.Subramani
Address	Survey No.506, Kattu Munnur, Pugalur Taluk, Karur District – 639 111
Status	Proprietor

1.7 BRIEF DESCRIPTION OF THE PROJECT

The proposed project deals with excavation of rough stone and gravel which is primarily used in construction projects. The method adopted for rough stone and gravel excavation is open cast semi mechanized mining method involving formation of benches with 6m height and 6m width. The proposed project site is located in Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu. Some of the important features of the proposed project have been provided in Table 1.3.

Table 1.3 Salient Features of the Proposed Project

Name of the Quarry	M/s. Teru Murugan Blue Metal, Rough stone and gravel quarry	
Type of Land	Patta Land	
Extent	6.83.5ha	
Toposheet No	58 F/13	
Location of Project Site	Latitude: 10°58'58.42"N to 10°59'7.87"N Longitude: 77°53'1.51"E to 77°53'11.81"E	
Highest Elevation	199m AMSL	
Proposed depth of Mining	26m BGL	
Ultimate Depth	50m BGL	
Geological Resources	Rough Stone in m ³	Gravel in m ³
	3279744	136656
Mineable Reserves	Rough Stone in m ³	Gravel in m ³
	1914240	119280
Proposed reserves for five years	Rough Stone in m ³	Gravel in m ³
	1187520	119280
Method of Mining	Open cast mechanized mining	
Topography	Flat Topography	
Machinery proposed	Jack Hammer	5
	Compressor	3
	Tipper	11
	Hydraulic Excavator	2
Blasting Method	The quarrying operation is proposed to carried out by open cast mining in conjunction with conventional method using	

	jack hammer drilling and blasting for shattering effect and loosen the rough stone.
Proposed Manpower Deployment	28 Nos
Project Cost	Rs.1,20,05,700
CER Cost	Rs. 5,00,000
Proposed Water Requirement	3.0 KLD

1.8 SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact of the quarries in the cluster on the study area and formulate the effective mitigation measures for each individual lease. 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, and dust generation has been provided in this report. The baseline monitoring study has been carried out during the period of **October-December 2024** for various environmental components such as land, soil, air, water, noise, ecology, etc. 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. The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of sample analysis, etc., are given in Table 3.1 in chapter III.

1.9 Legislation Applicable to Mining of Mineral Sector

A few important legislations are given below:

- ❖ The Mines Act, 1952.
- ❖ The Mines and Mineral (Development and Regulation) Act, 1957.
- ❖ Mines Rules, 1955.
- ❖ Mineral Concession Rules, 1960
- ❖ Mineral Conservation and Development Rules, 1988.
- ❖ State Minor Mineral Concession Rules, 1960.
- ❖ Granite Conservation and Development Rule, 1999.
- ❖ The Water (Prevention and Control of pollution) Act, 1974.
- ❖ The Air (Prevention and Control of pollution) Act, 1981.
- ❖ The Environment (Protection) Act, 1986.
- ❖ The Forest (Conservation) Act, 1988.
- ❖ The Wildlife (Protection) Act, 1972.

Note: As per the OM vide F.No.IA3-22/10/22-IA.III(E177258), the baseline monitoring data were collected during the period of October-December 2022 and utilized for preparation of this EIA report.

CHAPTER II

PROJECT DESCRIPTION

2.0 GENERAL INTRODUCTION

The open cast mining method, also known as open-pit mining has been proposed to extract the mineral deposit. It is the most commonly used surface mining method all over the world and is generally suitable for mining low-grade mineral deposits that are found close to the surface of the earth and distributed uniformly over a large area. Open pits are also termed quarries when the pits are used for the extraction of building materials and dimension stones.

Opencast mining starts with the development of benches, the widths of which will be determined in such a way to accommodate the use of heavy machinery. The walls of open pits will be dug at an angle that will be decided based on well-established industry standards to provide safety. In some cases where the walls are composed of weak material such as soil and highly weathered rocks, dewatering holes will be drilled horizontally to relieve the water pressure to avoid wall collapse inside the mine site.

The required mine-related infrastructures will be established close to the open pit. The mining infrastructures may include an administration building, a maintenance garage, and a warehouse. The materials mined from open pits will be brought to the surface using trucks. The waste rocks will be piled up in a suitable location, usually close to the open pit. The structure produced by the waste rock pile is known as a waste dump. The dimension of the waste dump will be determined based on industrial safety standards to prevent the rocks from falling into the surrounding area.

2.1 DESCRIPTION OF THE PROJECT

The proponent, **M/s. Teru Murugan Blue Metal** is involved in the undertaking of establishment, construction, development, and closure of opencast mines. He, through the exploration phase, identified the proposed project site as the one that has a great potential of producing an economically viable quantity of rough stone and gravel. Therefore, the proponent had applied for quarry lease on 03.05.2024 to extract rough stone and gravel. The precise area communication letter was issued by Assistant Director Department of Geology and Mining, Karur vide Rc.No.138/Mines/2024 Dated:11.07.2024. Based on the precise area communication letter, mining plan was prepared. The mining plan thus prepared was approved by Assistant Director Department of Geology and Mining, Karur Rc.No.138/Mines/2024 Dated:20.08.2024 The overall view of the project site is shown in Figure 2.1.



Figure 2.1 Overall View of Proposed Project Site

2.2 LOCATION AND ACCESSIBILITY

The proposed quarry project is located in Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu as shown in Figure 2.2. The area lies between Latitudes from 10°58'58.42"N to 10°59'7.87"N and Longitudes from 77°53'1.51"E to 77°53'11.81"E. The maximum altitude of the project area is 199m AMSL. Accessibility details to the proposed project site have been given in Table 2.1.

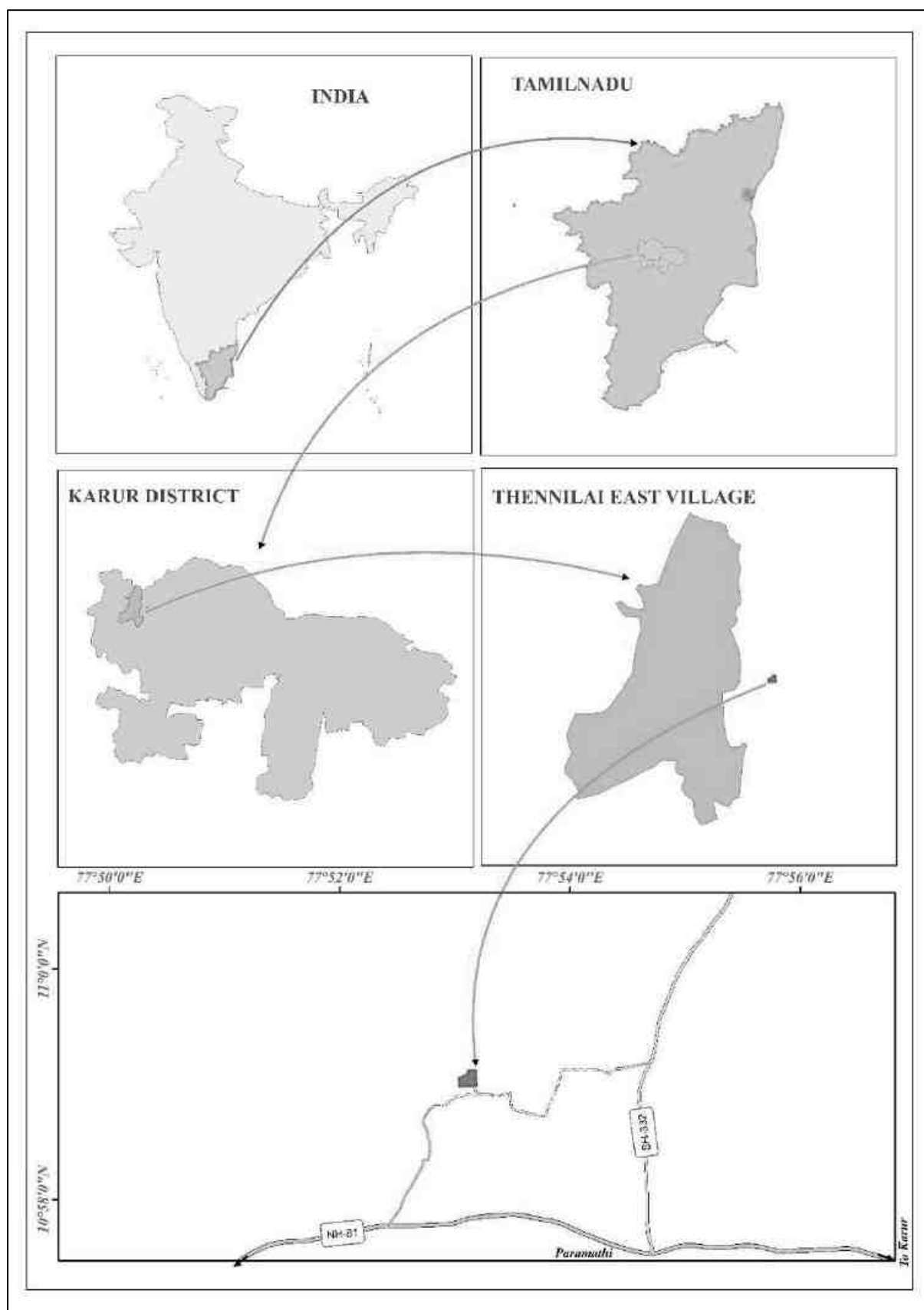


Figure 2.2 Location Map Showing the Project Site

Table 2.1 Site Connectivity to the Project Area

Nearest Roadways	NH-81- Karur to Coimbatore SH-332 - K.Paramathi to Noyal	0.81km S 2.66km-E
Nearest Town	K.Paramathi	2.6km SE
Nearest Railway Station	Noyal	9.65km NE
Nearest Airport	Coimbatore	92.5km W
Nearest Seaport	Thoothukudi	248km S
Nearest Village	Kadaikkaranpalaiyam	0.57km NW
	Alampalaiyam	1.6km N
	Munnur	1.8km E
	Kattumunnur	1.6km S

2.3 LEASEHOLD AREA

- ❖ The extent of the proposed project site is 6.83.5ha.
- ❖ The proposed project is site specific.
- ❖ There is no mineral beneficiation or processing proposed inside the project area.
- ❖ There is no forest land involved in the proposed area and is devoid of major vegetation and trees.

2.3.1 Corner Coordinates

The boundary corner geographic coordinates are given in Table 2.2 and the proposed project site with boundary coordinates has been shown in Figure 2.3 & 2.4.

Table 2.2 Corner Coordinates of Proposed Project

Pillar ID	Latitude	Longitude	Pillar ID	Latitude	Longitude
1	10°59'7.64"N	77°53'11.32"E	8	10°59'2.09"N	77°53'1.81"E
2	10°59'5.01"N	77°53'11.26"E	9	10°59'3.25"N	77°53'1.51"E
3	10°59'2.41"N	77°53'11.39"E	10	10°59'5.12"N	77°53'5.11"E
4	10°58'59.07"N	77°53'11.81"E	11	10°59'5.87"N	77°53'6.53"E
5	10°58'58.93"N	77°53'11.80"E	12	10°59'7.11"N	77°53'6.61"E
6	10°58'58.42"N	77°53'1.80"E	13	10°59'7.79"N	77°53'6.95"E
7	10°58'58.57"N	77°53'1.80"E	14	10°59'7.87"N	77°53'8.91"E

2.4 GEOLOGY

The lease area geologically occurs over Hornblende – Biotite Gnesis. The Hornblende – Biotite Gnesis, commercially called as rough stone occurs within the migmatite rock. Also, the lease area geomorphologically occurs Pediment Pediplain Complex.

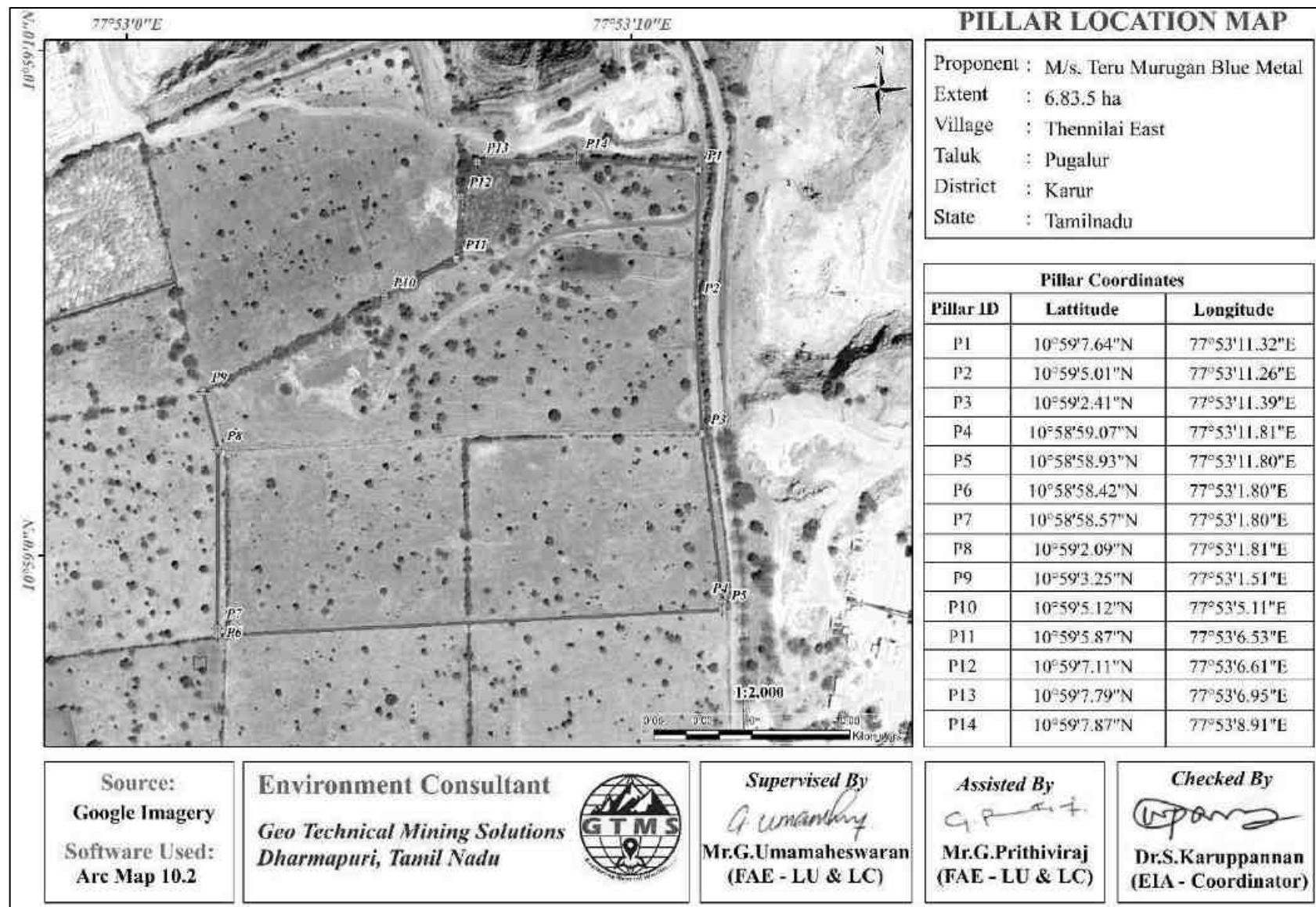


Figure 2.3 Google Earth Image Showing Lease Area with Pillars

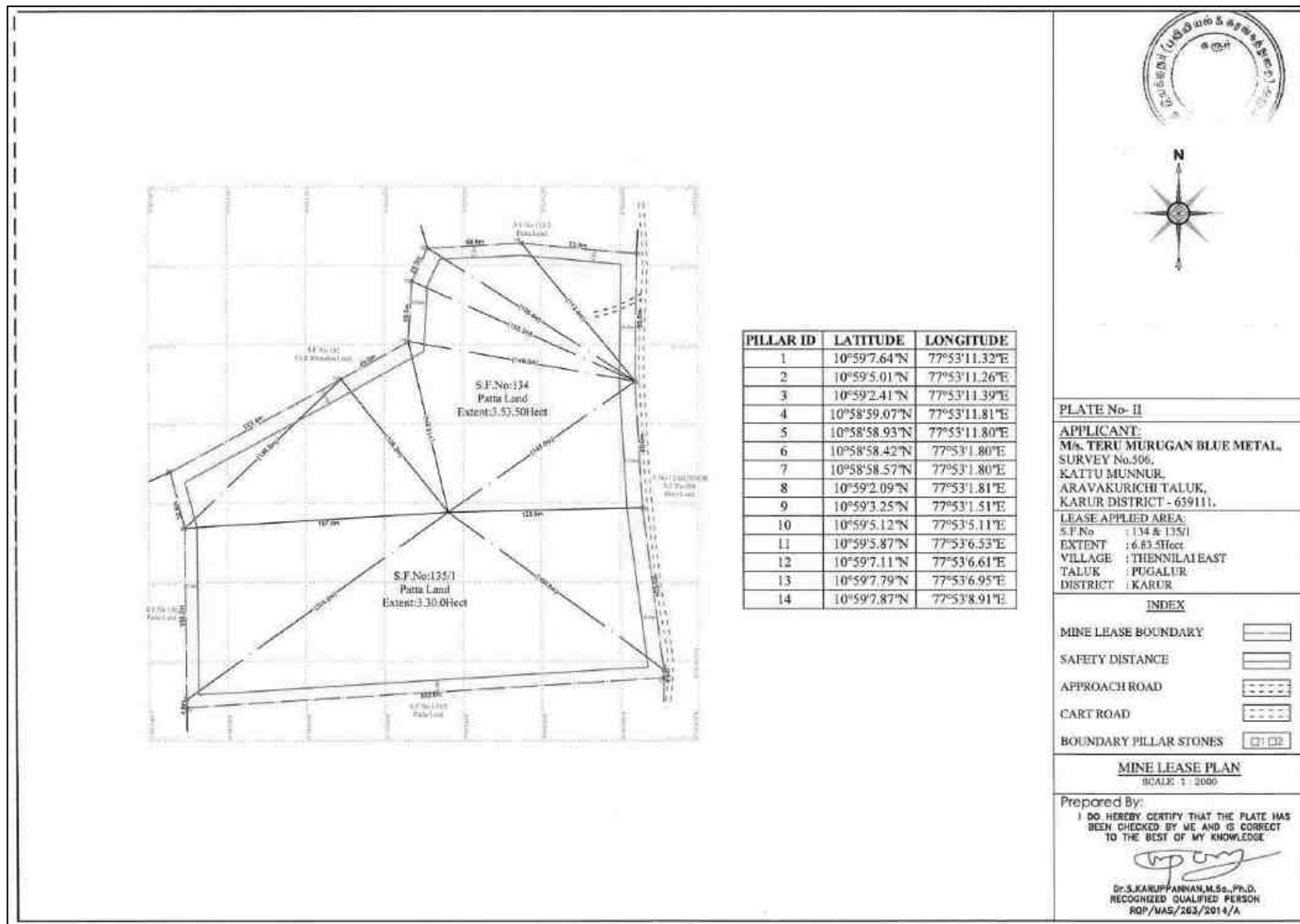


Figure 2.4 Mine Lease Plan

2.5 QUANTITY OF RESERVES

The Resources and Reserves of rough stone and gravel were calculated based on cross-section method by plotting sections to cover the maximum lease area for the proposed project. Based on the availability of geological resources, the mineable reserves are calculated by considering excavation system of bench formation and leaving essential safety distance of 7.5 m and 10m safety distance as per precise area communication letter and deducting the locked-up reserves during bench formation (also called as Bench Loss). The mineable reserves are calculated up to the depth of 50m below the ground level considering there is no waste / overburden / side burden (100% Recovery anticipated) for the proposed project. The plate used for reserve estimation has been attached in approved mining plan results of geological resources and reserves have been shown in Table 2.3.

Table 2.3 Estimated Resources and Reserves of the Project

Resource Type	Rough Stone in m ³	Gravel in m ³
Geological Resource in m ³	3279744	136656
Mineable Reserves in m ³	1914240	119280
Proposed production for 5 years in m ³	1187520	119280

Based on the year wise development and production plan and sections, the year wise production results have been given in Table 2.4, Year-Wise Production plan has been shown in Figure 2.5 & 2.6

Table 2.4 Year-Wise Production Details

Year	Rough Stone in (m ³) / 5 years	Gravel in (m ³) / 3 years
I	192456	38544
II	207048	33264
III	193248	47472
IV	172656	---
V	422112	---
Total	1187520	119280

Source: Approved Mining Plan & ToR

2.6 MINING METHOD

The quarrying operation is proposed to be carried out by open cast semi-mechanized mining method with the bench height and width of 6m each. The open cast semi-mechanized method involving drilling and blasting is proposed to extract rough stone. The extracted rough stone will be loaded manually to the trucks for dispatch to the customers. In this project, NONEL blasting will be adopted to extract rough stone.

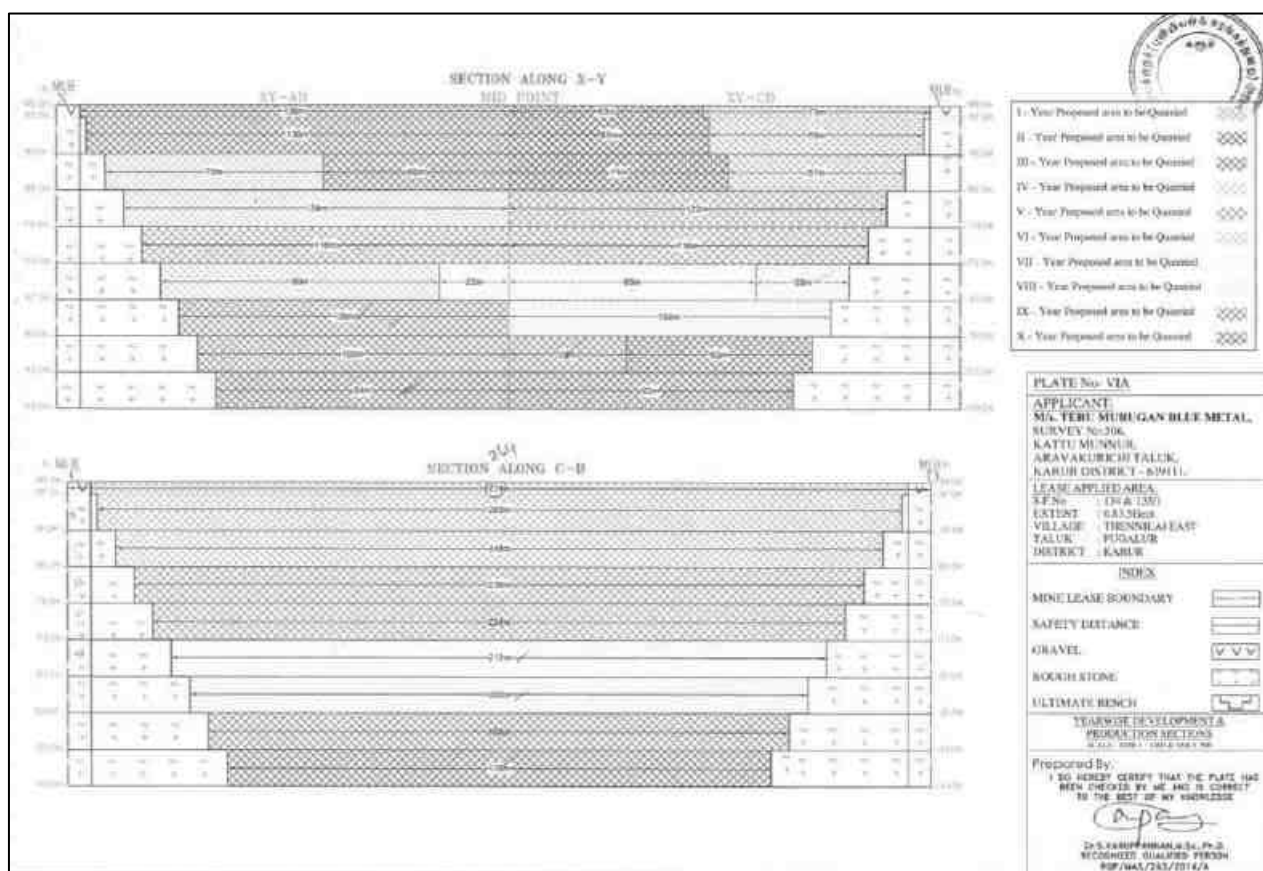
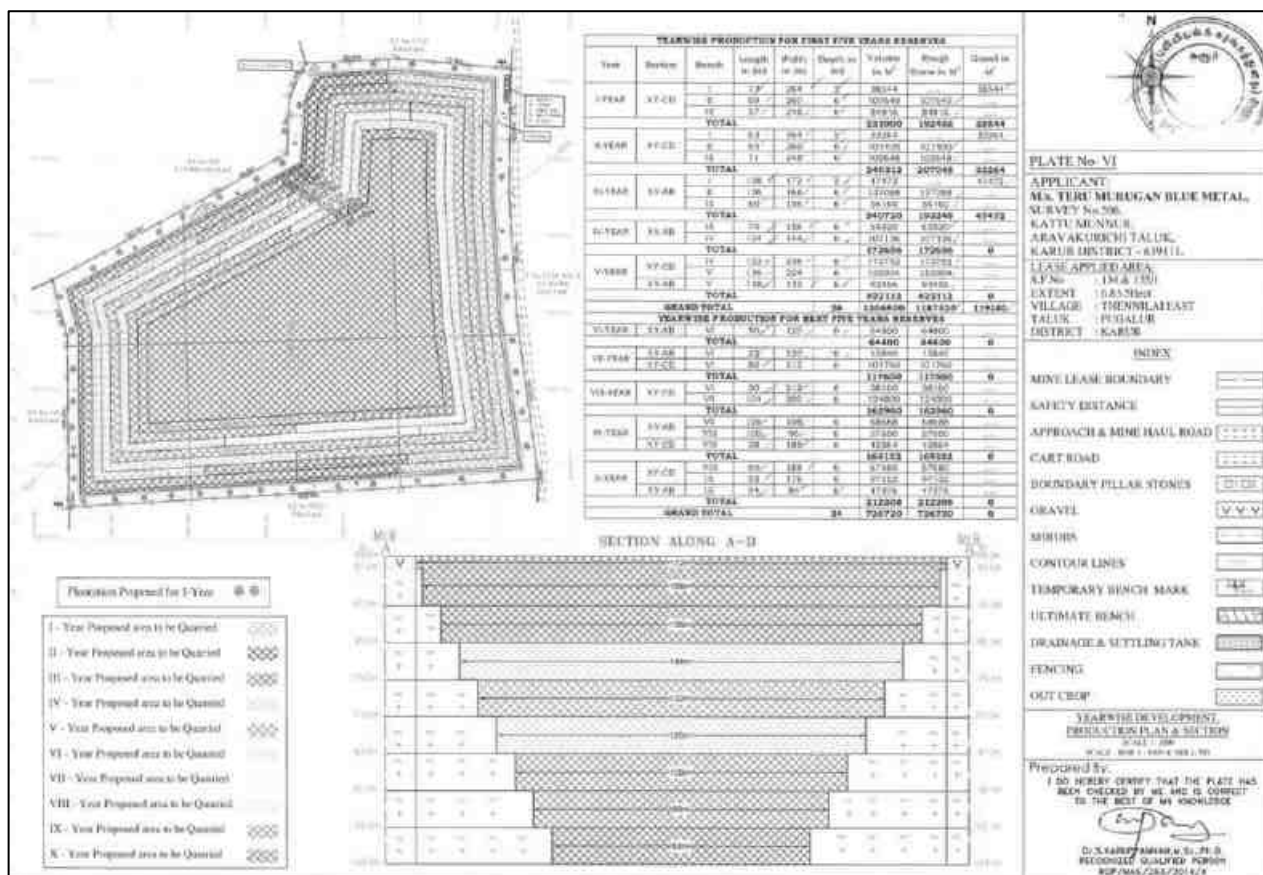


Figure 2.6 Year-Wise Development Production Plan & Section

Conceptual Blasting Design

In this project, NONEL blasting will be employed to win rough stone. This method will involve closed spaced perimeter holes to reduce the overbreak/backbreak on a blast. The objective of the blasting design is to prevent fly rocks from damaging the nearby structures.

Rules of Thumb for Blast Design

Based on practical experience and technical information, a set of rules for blasting have been provided as below ([Chapter 8 \(nps.gov\)](#)). These rules will be applied to blast rocks in the proposed project.

Rule 1: The detonation velocity (VOD) of the explosive should be close to the same value of the sonic velocity (VSO) of the rock to be blasted.

The sonic velocity of a rock is considered to be a reliable indicator of its structural integrity and resistance to fragmentation. As the VOD of the explosive approaches close to the VSO of the rock, the blasting would result in relatively smaller size of fragmentation with uniformity. There is no value in using an explosive that has a VOD greatly in excess of the VSO of the rock, since there is little or no improvement in fragmentation above the VSO. When selecting an explosive to match up the VSO of a rock mass, variance of <10% in the velocities is acceptable.

Rule 2: Generally, select the densest explosive possible.

When the density of explosives is higher, the potential energy of the explosives can be greater and the more of it can be placed within a borehole of a given size.

Rule 3: Select explosives according to the characteristics of the rock formation to be blasted.

When planes of separation in the rock are smaller than the degree of fragmentation required, the rock can often be blasted by using lower density and lower detonation velocity explosives.

Rule 4: When using slurry or water gel explosives, always determine the critical temperature below which the explosive will fail to reliably detonate.

Almost all slurry explosives have a critical temperature below which they may not detonate, or may not sustain detonation in elongated columns. The explosives should not be used when the temperature of the explosive at time of loading is below that critical temperature.

Rule 5: The distance between holes (spacing) should not be greater than one-half the depth of the borehole.

When the distance between holes in a row is greater than one-half the depth of the hole, the angles of breakage intersect above the bottom of the holes. This causes both a great deal of vertical throw and a very uneven bottom.

Rule 6: Stemming should be equal to the burden.

Stemming is useful to confine and maximize efficient use of the explosive's energy. It also reduces noise as much as possible. If the stemming is greater than the burden, the rock at the top of the borehole will have less cracking from reflection and refraction of compressive and tensile waves. Therefore, stemming should be equal to burden. Drill fines can be used for loading the borehole.

Rule 7: Subdrill (if necessary) should be between 0.3 and 0.5 of spacing/burden.

Subdrill should be equal to 0.3 of burden. It will work when there is row-for-row delay. In blasts where the delay system is both row-for-row and hole-for-hole, the subdrill should be determined by the largest dimension, which can be the spacing or the burden. An average subdrill of 0.4 of spacing is best to use for planning purposes. Based on the above-mentioned rules, blasting design has been conceptualized and has been provided in Table 2.5.

Table 2.5 Conceptual Blasting Design

Blasthole Diameter (D) in mm	32
Burden (B) in m	1.5
Spacing (S) in m	1.30
Subdrill in m	0.45
Charge length (C) in m	0.64
Stemming	1.5
Hole Length (L) in m	2.6
Bench Height (BH) in m	2.1
Mass of explosive/hole in g	400
Stemming material size in mm	3.2
Burden stiffness ratio	1.43
Blast volume/hole in m ³	4.16
Production of rough stone/day in m ³	880
Number of blastholes/day	212
Blasthole pattern	Staggered
Mass of explosive /day in kg	84.64
Powder factor in kg/m ³	0.10
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL
Fly rock distance in m	19

2.6.1 Magnitude of Operation

Based on the results of estimated production for the 5 years, details about the size of operation have been provided in Table 2.6.

Table 2.6 Operational Details for Proposed Project

	Rough Stone in m³/ 5 years	Gravel in m³/3 years
Proposed production for 5 years	1187520	119280
Number of Working Days /Annum	270	270
Production of /Day (m ³)	880	147
No. of Lorry Loads	147	24

2.6.2 Extent of Mechanization

List of machineries proposed for the quarrying operation is given in Table 2.7.

Table 2.7 Machinery Details

S. No.	Type	No.of.Unit	Size /Capacity	Make	Motive Power
1	Jack Hammers	5	Hand held	--	Diesel
2	Compressor	3	Air	--	Diesel
3	Hydraulic Excavator	2	3.0 m ³	--	Diesel
4	Tipper	11	---	--	Diesel

2.6.3 Progressive Quarry Closure Plan

The progressive quarry closure plan of the proposed project shows past, present, and future land use statistics. According to the land use results, as shown in Table 2.8 At Present about 6.83.5ha of land is unutilized. Whereas, at the end of the mine life, about 5.89.00ha of land is used for area under quarry, about 0.76.76ha of land is used for green belt, 0.05.0ha will be used for roads, 0.02.0ha is used for infrastructure and about 0.10.71ha of land is used for drainage & settling tank.

Table 2.8 Land use data at present, during scheme of mining, and at the end of mine life

Description	Present Area (ha)	Area at the end of life of quarry (ha)
Area under quarry	Nil	5.89.00
Infrastructure	Nil	0.02.0
Roads	Nil	0.05.0
Green Belt & Dump	Nil	0.76.76
Drainage & Settling Tank	Nil	0.10.71
Unutilized area	6.83.5	Nil
Total	6.83.5	6.83.5

2.6.4 Progressive Quarry Closure Budget

As the proposed project has the enormous potential for continuous operations even after the expiry of lease period, mine closure plan is not proposed for now. Based on the progressive mine closure plan for the scheme period, the mine closure cost is given in Table 2.9.

Table 2.9 Mine Closure Budget

Activity	Capital Cost
1367 plants inside the lease area	273400
2051 plants outside the lease area	615150
Wire Fencing	1367000
Renovation of Garland Drain	68350
Total	Rs. 23,23,900

Source: Environment Management Plan

2.6.5 Conceptual Mining Plan

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc. Details of ultimate pit dimensions have been derived from given in Table 2.10. Conceptual Plan has been shown in Figure 2.7

Table 2.10 Ultimate Pit Dimension

Pit	Length (m)	Width (m) (Max)	Depth (m)
I	138	264	50

Source: Approved Mining Plan & ToR

2.6.6 Infrastructures

Infrastructures like mines office, temporary rest shelters for workers, latrine and urinal facilities have been proposed as per the mine rule and will be established after the grant of quarry lease. There is no proposal for the mineral processing or ore beneficiation plants in this project.

2.6.6.1 Other Infrastructure Requirement

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

2.6.7 Water Requirement

Detail of water requirement in 3.0 KLD is given in Table 2.11.

Table 2.11 Water Requirement for the Project

Purpose	Quantity	Source
Dust Suppression	1.0 KLD	Existing bore wells nearby the lease area
Green Belt development	1.0 KLD	Existing bore wells nearby the lease area
Drinking & Domestic	1.0 KLD	Existing bore wells and approved water vendors
Total	3.0KLD	

Source: Prefeasibility Report

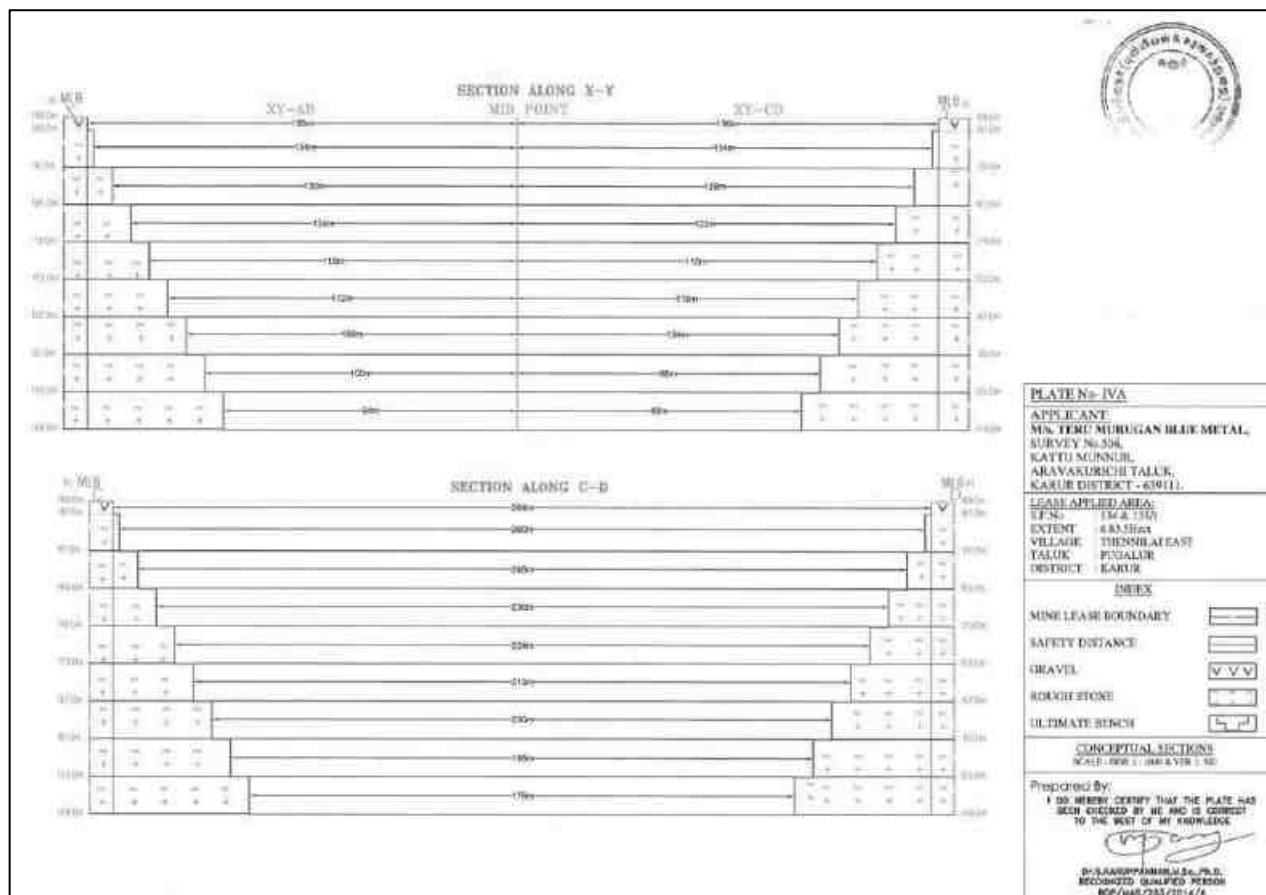
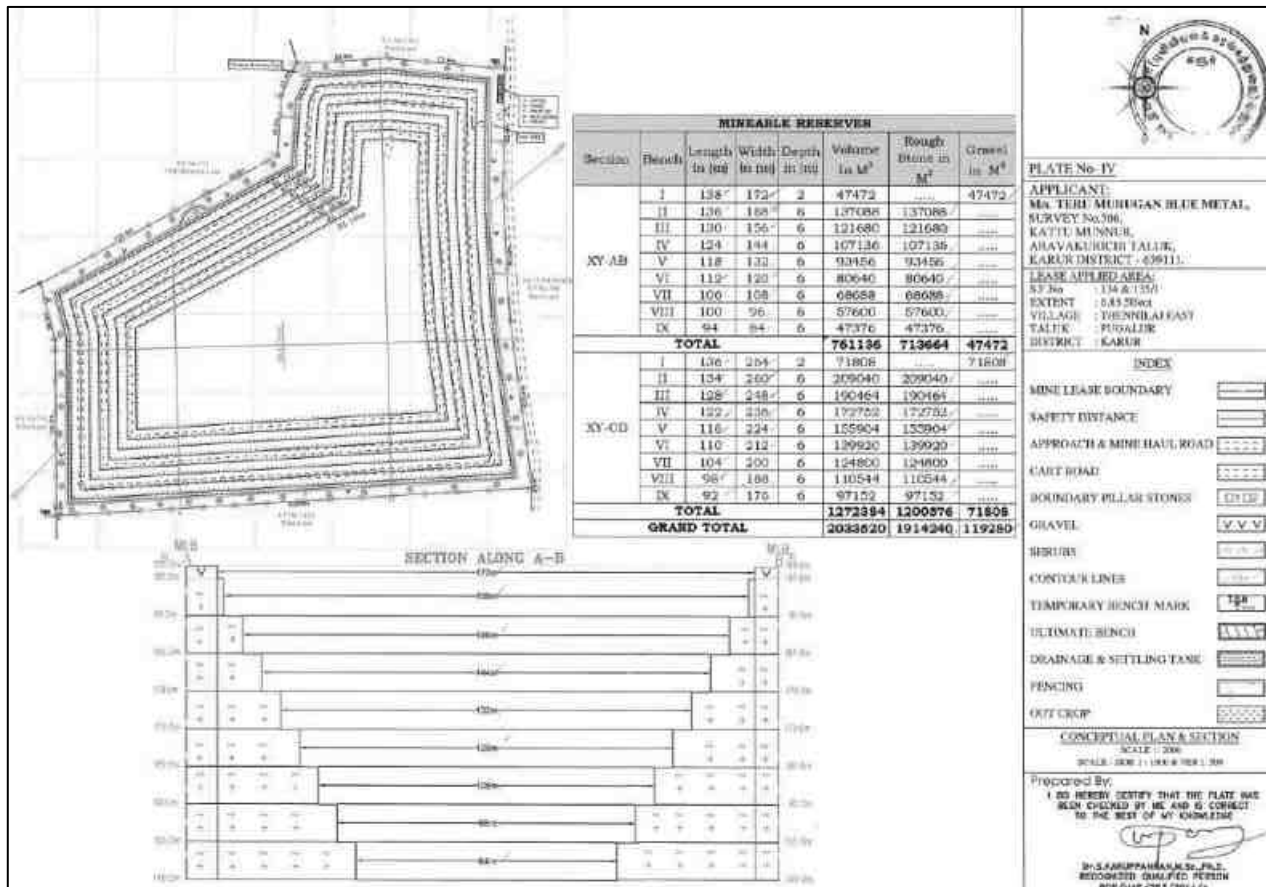


Figure 2.7 Conceptual Plan & Sections

2.6.8 Energy Requirement

High speed Diesel (HSD) will be used for quarrying machineries. As per the data shown in Table 2.12. Around 5440376 litres of HSD will be used for rough stone and gravel extraction during this 5 years plan period. The diesel will be brought to the site from nearby diesel pumps.

Table 2.12 Fuel Requirement Details

Fuel Requirement for Excavator			
Details	Rough Stone (1187520 m³)	Gravel (119280 m³)	Total Diesel (litre)
Average Rate of Fuel Consumption (l/hr)	16	10	---
Working Capacity (m ³ /hr)	20	60	---
Time Required (hours)	59376	1988	---
Total Diesel Consumption for 5 years (litre)	950016	19880	969896
Fuel Requirement for Compressor			
Average Rate of Fuel Consumption/hole (litre)	0.4	---	---
Number of Drillholes/day	212	---	---
Total Diesel Consumption for 5 years (litre)	114480	---	114480
Fuel Requirement for Tipper			
Average Rate of Fuel Consumption/Trip (litre)	20	20	---
Carrying Capacity in m ³	6	6	---
Number of Trips / days	147	25	---
Number of Trips / 5 years	197920	19880	---
Total Diesel Consumption for 5 years (litre)	3958400	397600	4356000
Total Diesel Consumption by Excavator, Compressor and Tipper			5440376

2.6.9 Capital Requirement

The project proponent will invest **Rs.1,20,05,700/-** to the project. The breakup summary of the investment has been given in Table 2.13.

Table 2.13 Capital Requirement Details

S. No.	Description	Cost (Rs.)
1	Fixed Asset Cost	55,67,000/-
2	Machinery cost	30,00,000/-
3	EMP Cost	34,90,000/-
Total Project Cost		1,20,05,700/-

Source: Approved Mining Plan

2.7 MANPOWER REQUIREMENT

The skilled, competent qualified statutory persons will be engaged for quarrying operation, preference will be given to the local community. Number of employees required for this project have been provided in Table 2.14.

Table 2.14 Employment Potential for the proposed project

S. No.	Category	Role	Nos.
1.	Highly Skilled	Mine Manager	1
		Mine Engineer	1
		Mine Geologist	1
		Blaster	1
2.	Unskilled	Musdoor/ Labours	24
Total			28

Source: Prefeasibility Report

2.8 PROJECT IMPLEMENTATION SCHEDULE

The commercial operation will commence after the grant of Environmental Clearance. CTO and CTE 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. Expected time schedule for the quarrying operation is given Table 2.15.

Table 2.15 Expected Time Schedule

S. No.	Particulars	Time Schedule (in Months)					Remarks if any
		1 st	2 nd	3 rd	4 th	5 th	
1	Environmental Clearance						
2	Consent to Establish						Project Establishment Period
3	Consent to operate						Production starting period.
Time line may vary; subjected to rules and regulations /& other unforeseen circumstances							

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

CHAPTER III

DESCRIPTION OF THE 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. The environmental consultant for both the clusters are the same. The monitoring of ambient air quality, noise levels, water quality and soil analysis for the nearby cluster were done in post monsoon season from October to December 2022 through the third party NABL accredited laboratory. The baseline monitoring done for 5km radius (TERMS OF REFERENCE [TOR] FOR EIA REPORT FOR ACTIVITIES / PROJECTS REQUIRING ENVIRONMENTAL CLEARANCE Prepared by Administrative Staff College of India, Bellavista, Khairatabad, AUGUST 2009, Page No.86) not varied as much. Therefore, we utilize the baseline data for this cluster which is collected for the adjacent cluster in the year 2022 between October to December as per the Office Memorandum F. No. IA3-22/10/2022-IA.III [E 177258] issued by Government of India Ministry of Environment, Forest and Climate Change (IA Division) dated 8th June 2022. We also collected the baseline data in one location i.e, in the core for the present cluster in the post monsoon season October to December 2024 for cross verification. Field monitoring studies to evaluate the base line status of the project site were carried out covering **October through December 2024** with CPCB guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified **Greenlink Analytical and Research Laboratory (India) Private Ltd** for the environmental attributes including soil, water, air, and noise and by FAEs for ecology and biodiversity, traffic, and socio-economy.

Study Area

The study area has been divided into two zones: core zone and buffer zone. Core zone is considered as lease area and buffer zone as 5 km radius from the periphery of the cluster, except for ecological study, which considers 10 km as buffer zone. Both core and buffer zones are taken as the study area. The data was collected from the study area to understand the existing environment conditions of the above-mentioned environmental components. Sampling methodologies for the various environmental parameters, including frequency of sampling, method of sample analysis, etc., are briefly given in 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 5 km radius of the study area	Once during the study period	Study Area	Satellite Imagery & Primary Survey
*Soil	Physico- Chemical characteristics	Once during the study period	8 (1 in core & 7 in 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	9 (2 surface water & 7 ground water)	IS 10500& CPCB Standards
Meteorology	Wind speed Wind direction Temperature Cloud cover Dry bulb temperature Rainfall	1 hourly continuous mechanical/aut omatic weather station	1	Site specific primary data & secondary data from IMD Station
*Ambient Air Quality	PM ₁₀ PM _{2.5} SO ₂ NO _x	24 hours, twice a week	9 (1 core & 8 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient noise	Hourly observation for 24 hours per location	10 (1 core & 9buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing flora and fauna	Through field visit during the study period	Study area	Primary Survey by Quadrat & 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.

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

3.1 LAND ENVIRONMENT

3.1.1 Geology and Geomorphology

Study area is geologically mainly composed of Hornblende Biotite gneiss, as shown in Figure 3.1. Among the geomorphic units, pediment and pediplain complex dominate the study area, as shown in Figure 3.2. The lease area occurs in pediment pediplain terrain.

3.1.2 Land Use/ Land Cover

Land Use and Land Cover (LULC) map, as shown in Figure 3.3 was prepared using Sentinel II image for the study area of 5 km radius to provide a baseline status of the study area covering 5 km radius around the proposed mine site. Totally, 7 LULCs were mapped. The areal extent of each LULC is provided in Table 3.2. Of the total area, mining area covers only 121.6 ha accounting for 1.39 %, of which lease area of 6.83.5 ha contributes only about 0.077%. This small percentage of mining activities shall not have any significant impact on the land environment.

Table 3.2 LULC Statistics of the Study Area

S. No.	Classification	Area (ha)	Area (%)
1	Crop lands	6605.61	75.35
2	Built area	1286.2	14.67
3	Water bodies	23.96	0.27
4	Mining Industrial area	121.6	1.39
5	Plantation	10.6	0.12
6	Bare ground	43.08	0.49
7	Rangeland	675.04	7.70
Total		8766.09	100.0

Source: Sentinel II Satellite Imagery

3.1.3 Topography

The proposed lease area Exhibits flat topography the height elevation in 199m AMSL observed in North Side of the lease area the Slope is towards South Side and falls in Toposheet No 58-F/13.

3.1.4 Drainage Pattern

Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin over time that reveals characteristics of the kind of rocks and geological structures in a landscape. The proposed area shows dendritic drainage pattern indicating uniform lithology beneath the surface, as shown in Figure 3.4.

3.1.5 Seismic Sensitivity

The proposed lease area is situated in a Seismic Zone II, as defined by National Centre for Seismology ([Official Website of National Centre of Seismology](#)). The Zone II is defined as the region where only minor damage is expected from seismic events. In this respect, the proposed lease area is located in a low earthquake hazard area.

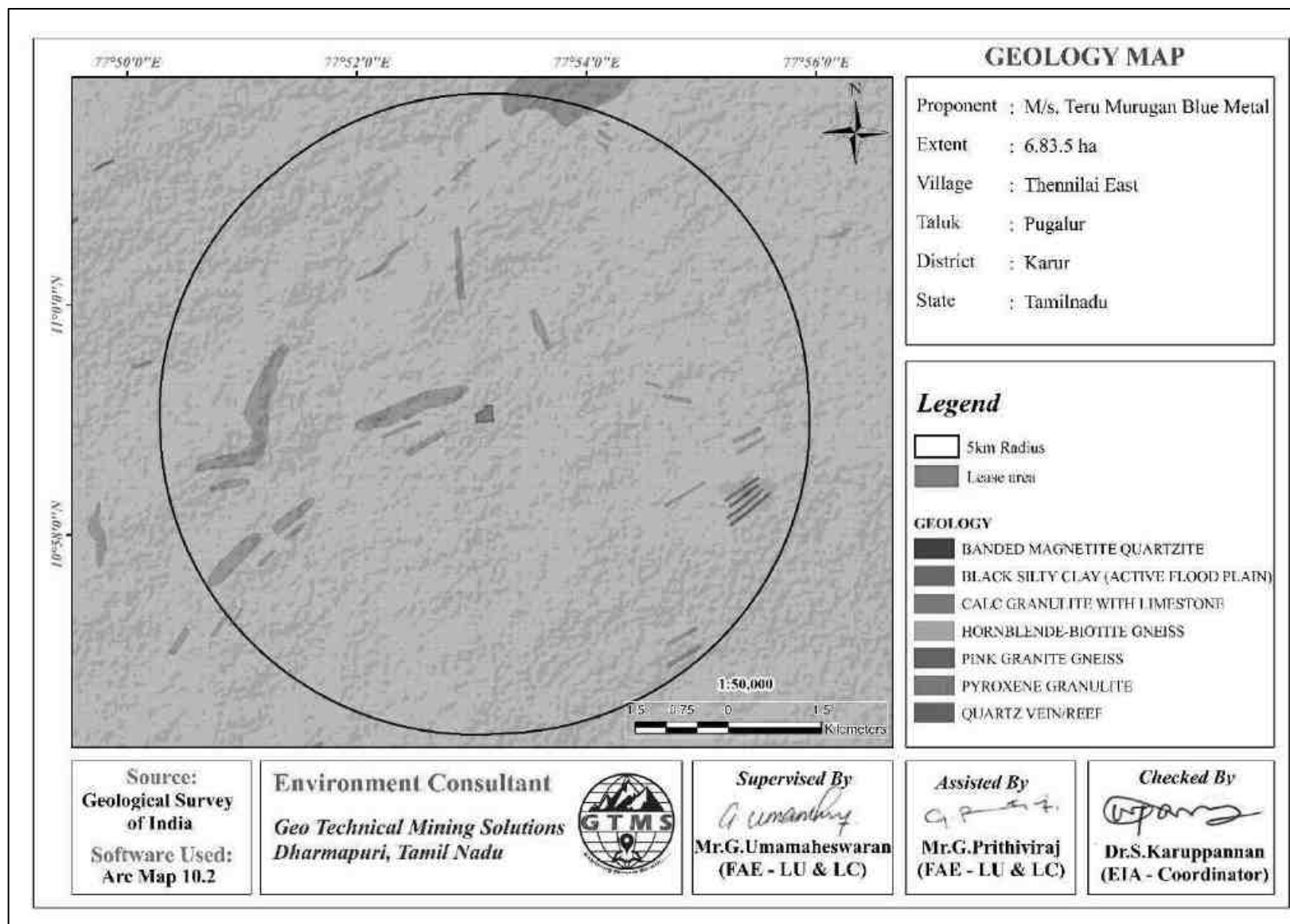


Figure 3.1 Geology Map of 5 km Radius from Proposed Project Site

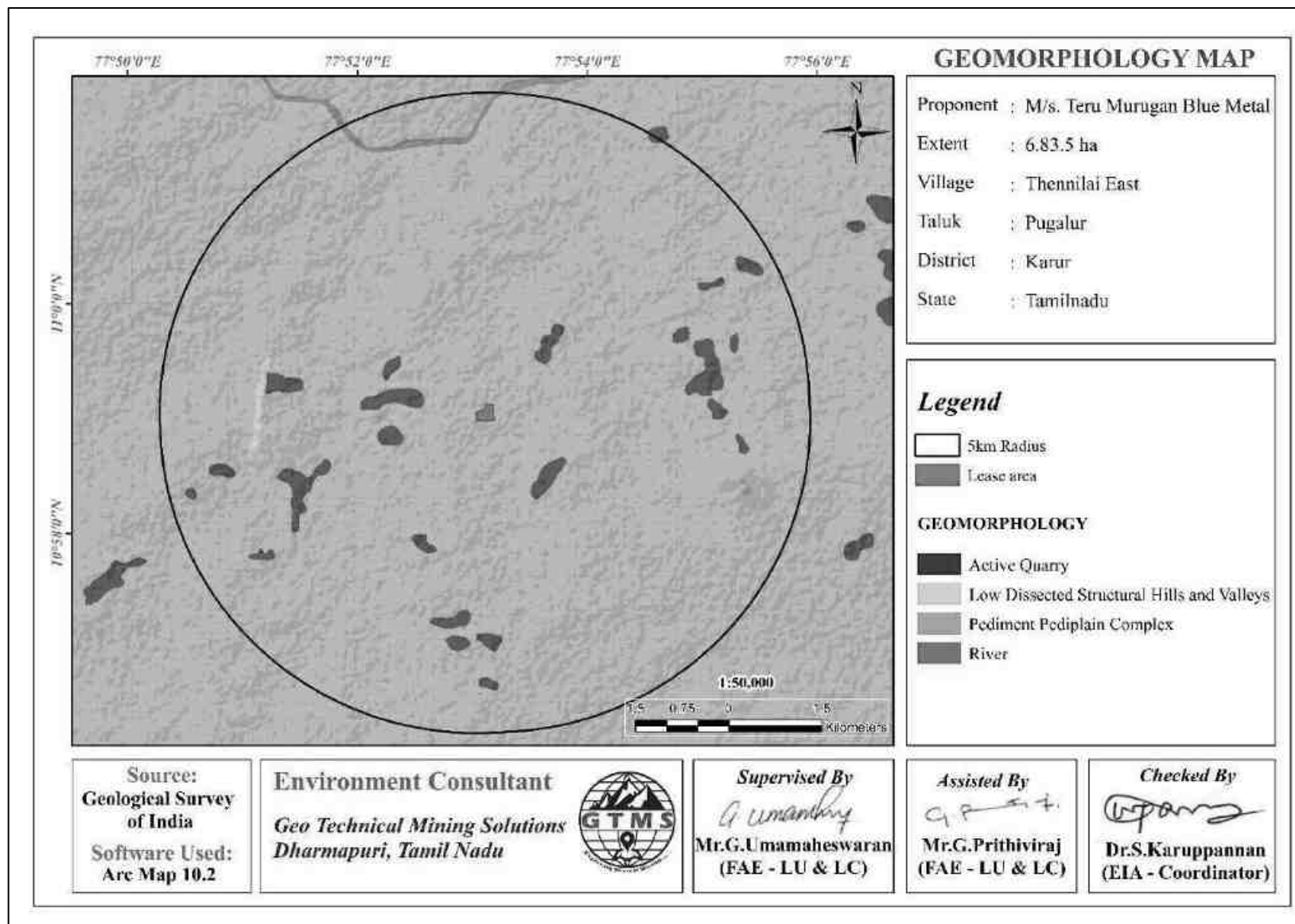


Figure 3.2 Geomorphology Map of 5 km Radius from Proposed Project Site

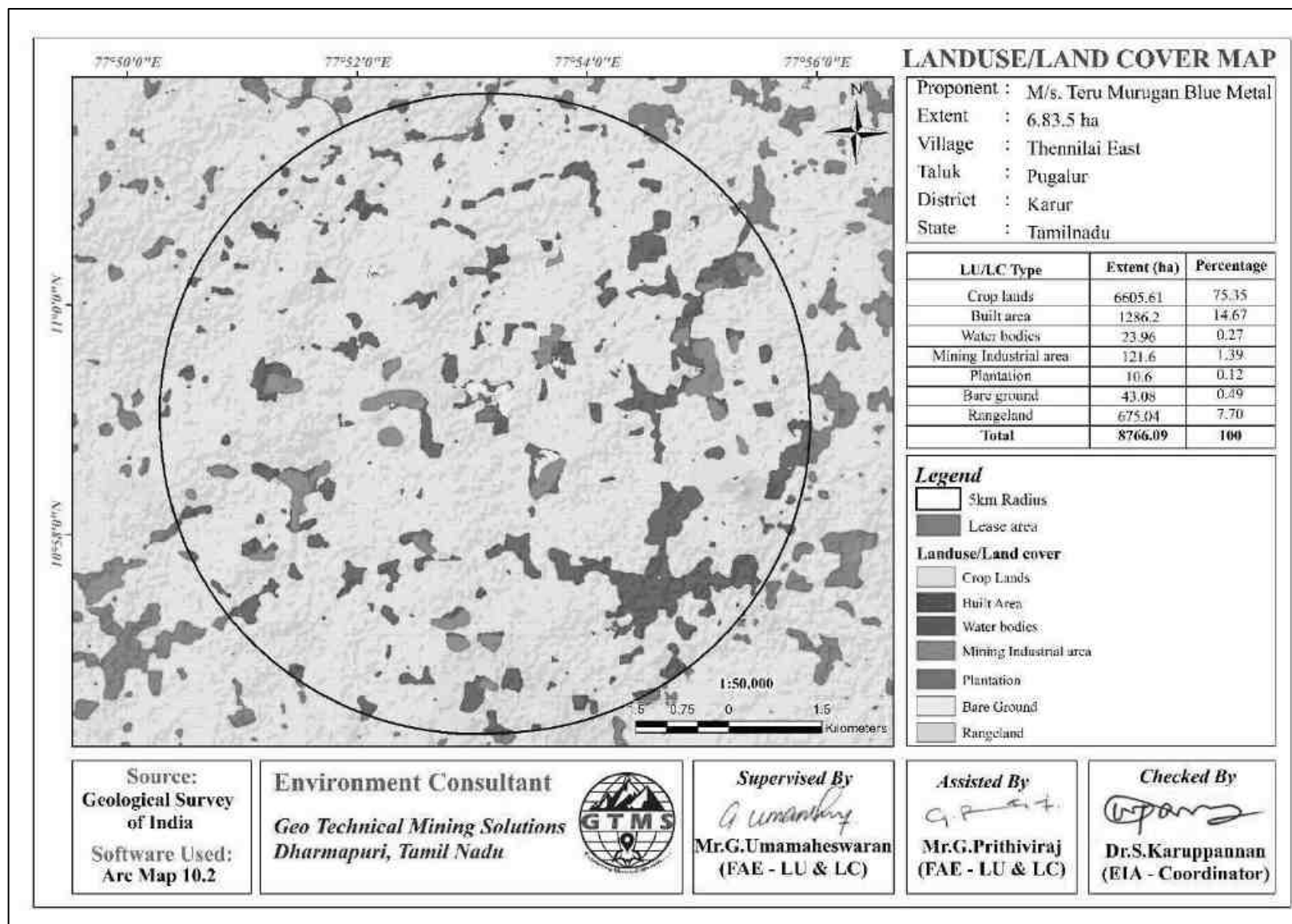


Figure 3.3 LULC Map of 5 km Radius from Proposed Project Site

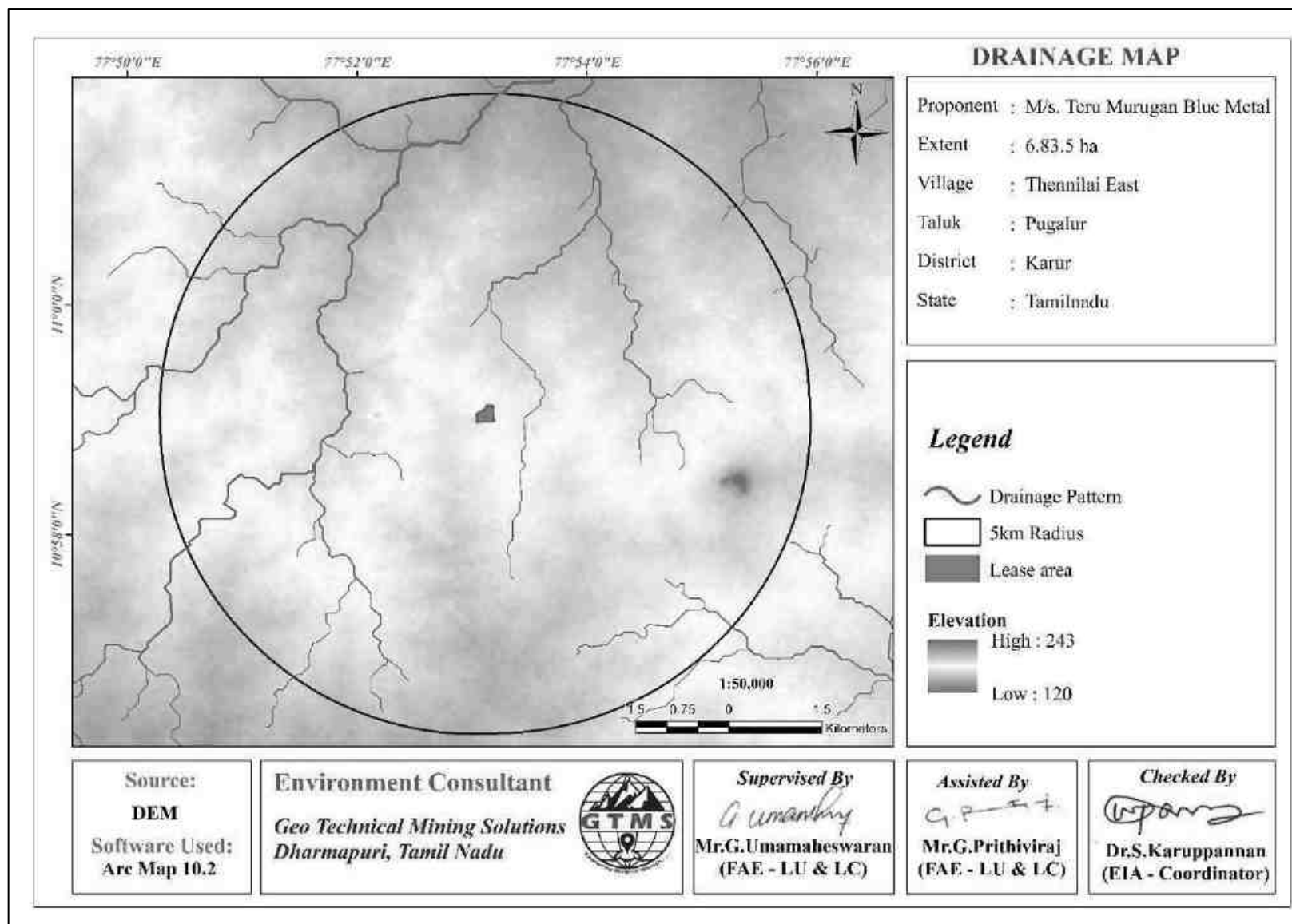


Figure 3.4 Drainage Map of 5 km Radius from Proposed Project Site

3.1.6 Soil

Composite soil samples were collected from 8 locations of the study area to determine the baseline soil characteristics of the soil. The locations were selected for soil sampling based on soil types, vegetative cover, and industrial & residential activities including infrastructure facilities. Soil samples were collected up to 90 cm depth, filled in polythene bags, coded and sent to laboratory for analysis. The locations of the sampling sites are shown in Table 3.3 and Figure 3.5. The samples thus collected were analysed for physical and chemical characteristics. The physical and chemical characteristic results of soil samples are provided in Table 3.5.

Table 3.3 Soil Sampling Locations

Sampling ID	Location	Distance (km)	Direction	Coordinates
S01	Nearby Core	0.29	E	10°59'04.69"N 77°53'20.77"E
S02	Paramathi	4.47	SE	10°57'36.06"N 77°55'12.65"E
S03	Noyyal River	4.29	N	11°01'25.08"N 77°52'41.22"E
S04	Vengalapatti	2.84	W	10°58'70.67"N 77°51'27.86"E
S05	Kuppam	5.03	NE	11°0'45.84"N 77°55'23.83"E
S06	Kattumunnur	1.84	S	10°57'59.22"N 77°53'17.65"E
S07	Munnur	2.24	E	10°59'13.87"N 77°54'25.10"E
S08	Core	---	---	10°59'5.28"N 77°53'9.62"E

Source: On-site monitoring/sampling Excellence Laboratory Private Ltd and Greenlink Analytical and Research Laboratory (India) Private Ltd, in association with GTMS.

Physical Characteristics & Chemical Characteristics

The soil samples in the study area show loamy textures varying between Silt Loam and sandy loam. pH of the soil varies from 6.5 to 8.2 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 127 to 342 μ S/cm. The physical and chemical properties of soil is shown in the Table 3.5.

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 baseline quality of surface and ground water.

Table 3.4 Water Sampling Locations

Sampling ID	Location	Distance(km)	Direction	Coordinates
OW01	Pudur	0.043	S	10°58'44.45"N 77°53'2.61"E
OW02	Nearby Core	0.18	E	10°59'7.04"N 77°52'57.05"E
BW01	Nearby Core	0.16	SE	10°58'55.68"N 77°53'16.02"E
BW02	Velayuthampalayam	4.92	E	10°58'50.44"N 77°55'53.77"E
BW03	Kattumunnur	2.02	S	10°57'54.30"N 77°53'23.44"E
BW04	Pumandapalaiyam	2.41	N	11°0'26.08"N 77°53'14.37"E
BW05	Kuppam	5.15	NE	11°0'46.79"N 77°55'28.05"E
SW01	Noyyal River	4.32	N	11°1'26.61"N 77°52'43.68"E
SW02	Topur Canal	4.24	NW	10°59'45.54"N 77°50'48.22"E

Source: On-site monitoring/sampling Excellence Laboratory Private Ltd and Greenlink Analytical and Research Laboratory Private Ltd, in association with GTMS.

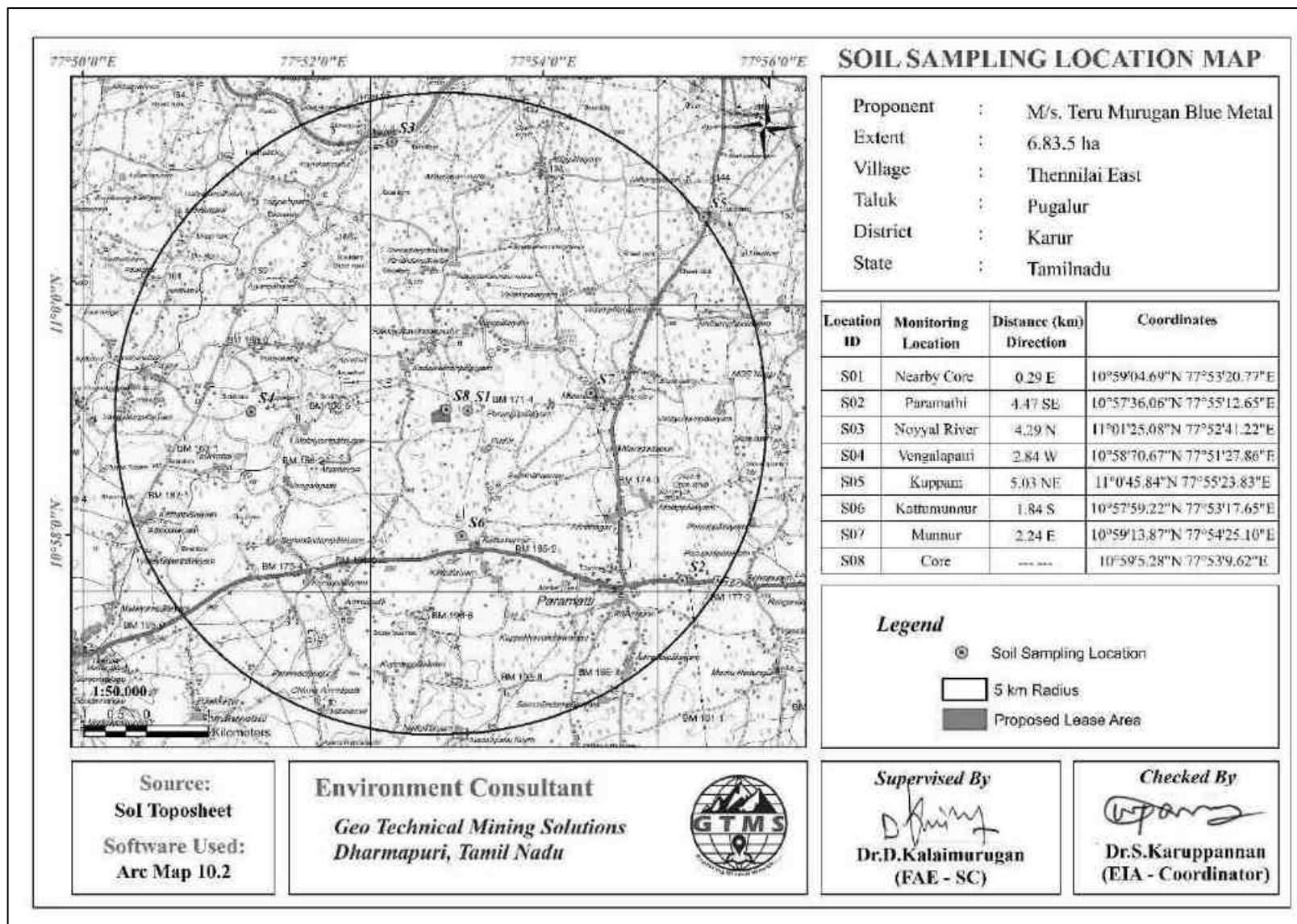


Figure 3.5 Map Showing Soil Sampling Locations within 5 km Radius around Proposed Project Site

Table 3.5 Soil Quality of the Study Area

S. No	Parameters	Unit	S01	S02	S03	S04	S05	S06	S07	Parameters	Unit	S08
1	pH Value @25°C	-	8.0	8.0	7.7	8.1	6.5	8.2	6.9	pH value @ 25°C	-	7.21
2	EC @ 25°C	µS/cm	164	185	185	127	237	342	154	Specific EC@25°C	µS/cm	160.0
3	Total Carbon	%	5.7	4.8	4.6	4.4	6.3	5.2	3.2	Total Organic Carbon	%	0.53
4	Nitrogen (N)	%	1.3	1.2	1.3	1.4	1.05	1.2	1.1	Nitrogen	kg/ha	167.0
5	Potassium (K)	%	0.15	0.08	0.12	0.12	0.26	0.14	0.13	Potassium	kg/ha	127.0
6	Phosphate (P)	%	5.2	1.7	2.0	1.9	2.14	2.1	3.8	Phosphorous	mg/kg	60.0
7	Calcium (Ca)	mg/kg	256	388	134	278	245	350	161	Calcium as Ca	mg/kg	835.0
8	Manganese (Mn)	mg/kg	34	87	29	32	76	71	23	Magnesium as Mg	mg/kg	657
9	Organic Matter	%	0.24	0.27	0.26	0.88	0.34	0.44	0.97	Moisture	%	13.8
10	Chlorides (Cl)	mg/kg	288	194	187	297	215	690	390	Total Organic matter	%	0.98
11	Bulk Density	g/cm ²	5.2	3.4	3.0	3.8	3.3	3.8	2.9	Chloride	mg/100g	96.0
12	Cadmium (Cd)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	Bulk Density	kg/cm ³	1315.0
13	CEC	meq%	24	10	15	21	24	10	15	Porosity	%	42.0
14	Chromium (Cr)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	Copper as Cu	ppm	43.0
15	Copper (Cu)	mg/kg	18	12	19	16	12	10	10	Nickel as Ni	ppm	1.582
16	Iron (Fe)	mg/kg	5345	20537	17648	25986	37397	16978	9845	Zinc as Zn	ppm	22.85
17	Lead (Pb)	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	Iron as Fe	ppm	16921
18	Sulphates (SO ₄)	%	0.18	0.21	0.40	0.28	0.15	0.33	0.25	Lead as Pb	ppm	5.92
19	Zinc (Zn)	mg/kg	21	21	22	24	33	38	22	Texture	-	Silt loam
20	Boron (B)	mg/kg	1.34	0.89	0.23	1.23	0.61	0.32	0.31	Sand	%	25.30
21	Magnesium (Mg)	mg/kg	96	122	84	121	114	131	111	Silt	%	24.60
										Clay	%	50.10
22	Texture	-	Sanday clay loam	Silty loam	Sanday clay loam	Sanday clay loam	Silty loam	Silty loam	Silty loam	Source: On-site monitoring/Sampling Results by Green link Analytical and Research Laboratory (India) Private Ltd in association with GTMS		
23	Sandy	%	65%	30%	63%	70%	64%	67%	25%			
24	Silty	%	25%	15%	32%	25%	16%	09%	17%			
25	Clay	%	10%	55%	5%	5%	20%	24%	58%			
Source: On-site monitoring/Sampling Results by Excellence Laboratory Private Ltd in association with GTMS												

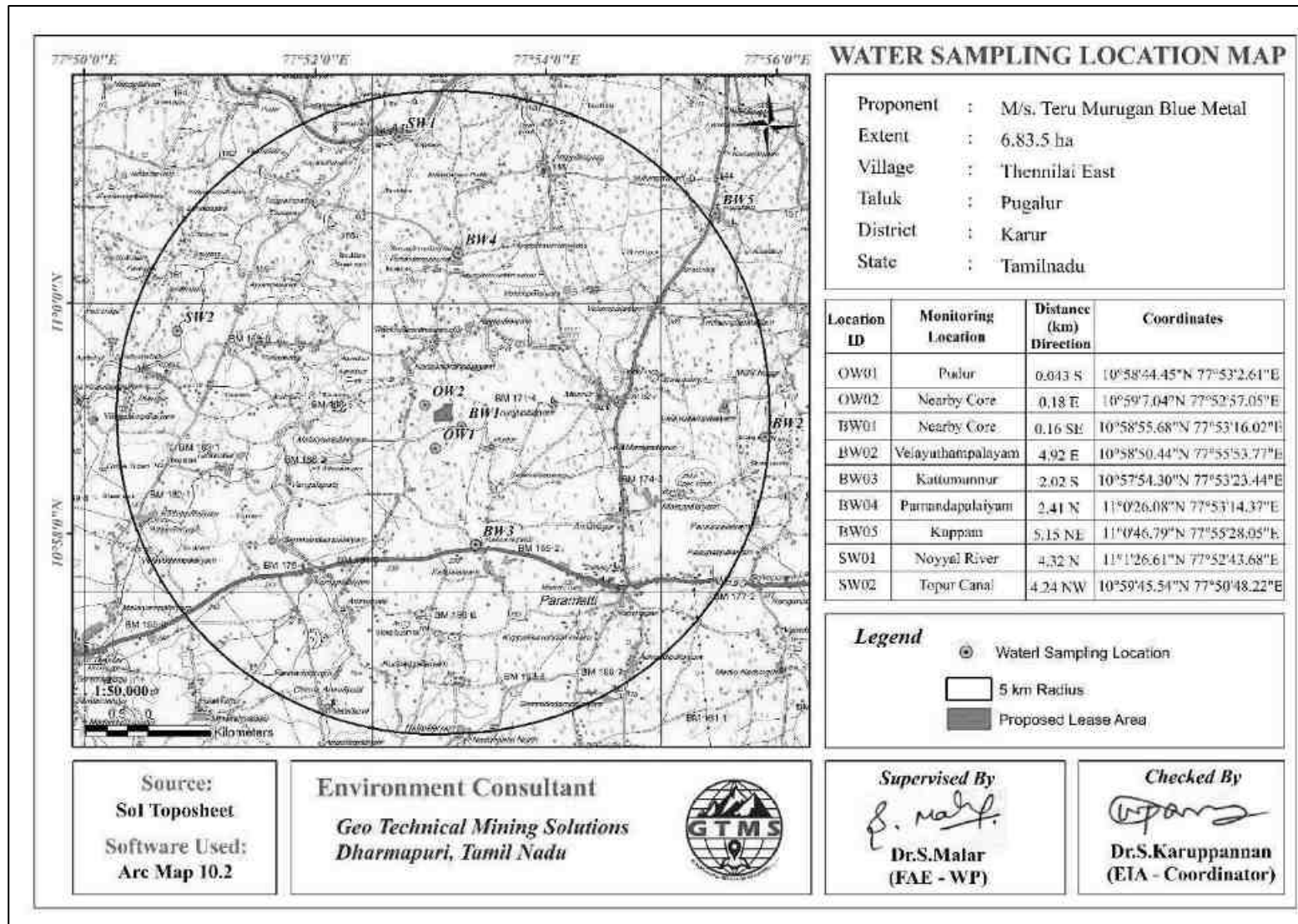


Figure 3.6 Map Showing Water Sampling Locations within 5 km Radius around Proposed Project Site

Table 3.6 Ground and Surface Water Quality Result

S. No	Parameters	Units	Results								Max. Permissible limits (IS:10500:2012)
			OW01	BW01	BW02	BW03	BW04	BW05	SW01	SW02	
1	<i>Coliforms Bacteria</i>	MPN	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
2	<i>E. Coli</i>	MPN	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
3	Aluminium (Al)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.2
4	Ammonia (NH ₃)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
5	Anionic Detergents (MBAS)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1.0
6	Barium (Ba)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.7
7	Boron (B)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.0
8	Cadmium (Cd)	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	0.003
9	Calcium (Ca)	mg/l	105	121	85	130	146	135	58	105	200
10	Chloride (Cl)	mg/l	248	422	297	263	242	214	175	248	1000
11	Colour	Hazen	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	15
12	Copper (Cu)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	15
13	Cyanide (CN)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.05
14	Fluoride (F)	mg/l	0.06	0.19	0.31	0.30	0.73	0.19	0.01	0.01	1.5
15	Free Residual Chloride (FRC)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Min. 1.0
16	Iron (Fe)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.0
17	Lead (Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
18	Magnesium (Mg)	mg/l	39	67	74	37	35	45	24	39	100

19	Manganese (Mn)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.3
20	Mercury (Mg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
21	Molybdenum (Mo)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07
22	Nitrate (NO3)	mg/l	1.1	2.6	1.9	3.7	3.6	4.2	2.3	1.1	45
23	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
24	pH value @ 25°C	No	7.0	6.9	7.3	7.1	7.2	7.4	6.7	7.0	6.5-8.5
25	Phenolic Compounds	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002
26	Selenium (Se)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
27	EC @ 25°C	mg/l	1740	1990	2400	1613	2460	3570	750	820	NA
28	Sulphates (SO4)	mg/l	104	122	196	109	210	210	124	104	400
29	Sulphide (H ₂ S)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
30	Total Alkalinity	mg/l	319	305	458	360	426	283	285	319	600
31	Arsenic (As)	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01
32	Chromium (Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
33	TDS	mg/l	970	890	560	1049	810	720	310	270	2000
34	TH (CaCO ₃)	mg/l	424	1737	242	475	424	1022	204	424	600
35	TSS	mg/l	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA
36	Turbidity	NTU	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	5.0
37	Zinc (Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	15

Source: Sampling Results by Excellence Laboratory Private Ltd in association with GTMS.

Table 3.6a Ground Water Quality Result

S. No.	Parameters	Units	Results	Permissible Limits as Per IS 10500:2012
			OW1	
1	pH value @ 25°C	No	7.21	6.5 – 8.5
2	TDS	mg/l	1250.0	2000
3	EC @ 25°C	µS/cm	1910.0	---
4	Turbidity	NTU	<0.1	5
5	Colour	Hazen	<1.0	15
6	Calcium (Ca)	mg /l	114.0	200
7	Magnesium (Mg)	mg/l	46.2	100
8	Chlorides (Cl)	mg /l	155.2	1000
9	Sulphates (SO ₄)	mg/l	63.5	400
10	Silica (as SiO ₂)	mg/l	14.5	---
11	Total Residual Chlorine	mg/l	BDL(DL-0.1)	0.2
12	Sodium (Na)	mg/l	41.0	---
13	Total Hardness (CaCO ₃)	mg/l	480.0	600
14	Total Alkalinity (CaCO ₃)	mg/l	200.0	600
15	Fluoride (F)	mg/l	0.92	1
16	Odour	-	Agreeable	Agreeable
17	Taste	-	Agreeable	Agreeable
18	Total Solids	mg/l	1260.0	---
19	Dissolved Oxygen	mg/l	1.4	---
20	Phosphorous	mg/l	2.68	---
21	Potassium	mg/l	7.85	---
22	Nitrite (NO ₂)	mg/l	BDL(DL-0.1)	---
23	Phenolphthalein Alkalinity	mg/l	12.0	200
24	Total Coliform	CFU/ml	Absent	Absent
25	Escherichia Coli	CFU/ml	Absent	Absent

Source: Sampling Results by Greenlink Analytical and Research Laboratory in association with GTMS.

3.2.1 Surface and Ground Water Quality Resources and Result

Noyyal river and Topur Canal are two prominent surface water resources present in the study area. This river and lake were ephemeral in nature, which convey water only after rainfall events. Two surface water sample, known as SW1 were collected from the Noyyal river (4.32 km N) and SW2 were collected from the Topur Canal (4.24 km NW) to assess the baseline water quality, as shown in Table 3.4 and Figure 3.6.

Groundwater in the study area occurs in the crystalline rocks of Archaean age and recent alluvium. The movement of the groundwater is controlled by the intensity of weathering and fracturing of crystalline rocks. Dug wells and bore wells are the most common ground water abstraction structures in the area. However, in dry season, people in the study area heavily rely on bore wells for their domestic and agriculture purpose. Seven groundwater samples, known as OW01, OW1(Nearby core), BW01, BW02, BW03, BW04 and BW05 were collected

from bore wells and open well were analysed for physico-chemical conditions and bacteriological contents in order to assess baseline quality of ground water. Table 3.6 and Table 6a summarizes surface and ground water quality data of the collected sample. Result for surface and ground water sample indicate that the physical, chemical and biological parameters are within permissible limits in compared with standards of IS10500:2012.

3.2.2 Hydrogeological Studies

The area within 2 km radius consists of numerous open wells and deep wells. Groundwater level data were collected both from open wells and bore wells for two monsoon seasons as discussed in the following section.

Rainfall

Rainfall data for the study area were collected for the period of 1981-2021([POWER | Data Access Viewer \(nasa.gov\)](#)). Long term monthly average rainfall was estimated from the data of 1981-2022 and compared with the monthly rainfall for the year 2022, shown in Figure 3.7. The Figure 3.7 shows that rainfall is generally high in the months of June through October in every year. Particularly, rainfall in May, July and August of 2022 is higher than the previous years.

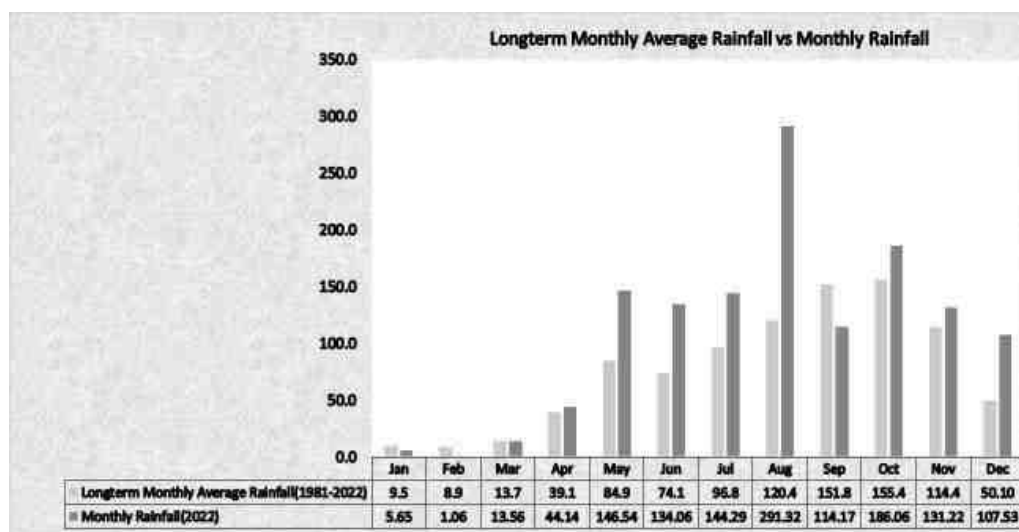


Figure 3.7 Long-Term Monthly Average Rainfall Vs Monthly Rainfall

3.2.3.1 Groundwater Levels and Flow Direction

Data regarding depth to groundwater levels are essential to infer the direction of groundwater movement within the study area. Knowledge of groundwater flow direction is must in choosing location for background groundwater quality monitoring well and in locating recharge and discharge areas. Therefore, data regarding groundwater elevations were collected from 9 open wells and 9 bore wells at various locations within 2 km radius around the proposed

project sites for the period from March through May 2024 (Pre-Monsoon Season) and from October through December 2024, (Post Monsoon Season).

The open well water level data thus collected onsite are provided in Tables 3.7 and 3.8. According to the data, average depths to the static water table in open wells range from 19.23 to 22.60m BGL in pre monsoon and 17.43 to 19.27m BGL in post monsoon. The bore well data thus collected onsite are provided in Tables 3.9 and 3.10. The average depths to static potentiometric surface in bore wells for the period of October through December (Post-Monsoon Season) vary from 63.33 to 65.53m and from 66.47 to 70.80m for the period of March through May, (Pre-Monsoon Season). Data on the depths to static water table and potentiometric surface were used to draw contour lines connecting groundwater elevation (also known as equipotential hydraulic head) to determine the groundwater flow direction perpendicular to the contour lines. From the maps of open well groundwater flow direction shown in Figures 3.8-3.9, it is understood that most of the open well groundwater for the post- and pre-monsoon seasons flows towards the open well number 4 located in North direction of the proposed project site. The groundwater flow maps in Figures 3.10-3.11 show that most of the bore well groundwater for the post- and pre-monsoon seasons flow towards the bore well number 4. It is located in Northeast direction of the proposed project site. On the basis of the groundwater flow information, both open wells and bore wells mentioned above can be chosen for water quality monitoring purpose as the wells may get easily affected by the contaminants resulting from the mining activities of the sites in future.

Table 3.7 Pre-Monsoon Water Level of Open Wells within 2 km Radius

Station ID	Depth to Static Water Table BGL (m)				Latitude	Longitude
	Mar-2024	Apr-2024	May- 2024	Average		
OW01	20.2	20.8	21.2	20.73	10°58'53.47"N	77°53'19.87E
OW02	21.2	21.5	21.8	21.50	10°58'46.41"N	77°53'4.95"E
OW03	20.6	20.9	21.5	21.00	10°59'26.95"N	77°52'48.50E
OW04	19.8	20.1	20.4	20.10	10°59'26.54"N	77°53'8.38"E
OW05	19.1	19.5	20.1	19.57	10°59'1.87"N	77°54'7.08"E
OW06	22.4	22.6	22.8	22.60	10°58'7.53"N	77°53'24.82E
OW07	21.4	21.8	22.1	21.77	10°58'24.65"N	77°52'24.53E
OW08	21.8	22.1	22.5	22.13	10°58'46.22"N	77°52'30.71E
OW09	18.4	19.2	20.1	19.23	10°59'46.85"N	77°53'51.16E

Table 3.8 Post-Monsoon Water Level of Open Wells within 2 km Radius

Station ID	Depth to Static Water Table BGL(m)				Latitude	Longitude
	Oct-2024	Nov- 2024	Dec-2024	Average		
OW01	19.2	19.1	18.6	18.97	10°58'53.47"N	77°53'19.87"E
OW02	19.4	19.2	18.7	19.10	10°58'46.41"N	77°53'4.95"E
OW03	19.1	18.6	17.8	18.50	10°59'26.95"N	77°52'48.50"E

OW04	18.5	18.2	17.6	18.10	10°59'26.54"N	77°53'8.38"E
OW05	18.7	18.1	17.4	18.07	10°59'1.87"N	77°54'7.08"E
OW06	20.1	19.5	18.2	19.27	10°58'7.53"N	77°53'24.82"E
OW07	19.6	18.4	17.2	18.40	10°58'24.65"N	77°52'24.53"E
OW08	19.8	19.2	18.6	19.20	10°58'46.22"N	77°52'30.71"E
OW09	17.8	17.4	17.1	17.43	10°59'46.85"N	77°53'51.16"E

Table 3.9 Pre-Monsoon Water Level of Bore Wells within 2 km Radius

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Mar-2024	Apr-2024	May- 2024	Average		
BW01	67.1	68.2	69.5	68.27	10°59'27.44"N	77°52'48.72"E
BW02	69.5	70.2	71.2	70.30	10°59'17.34"N	77°52'49.76"E
BW03	65.8	66.3	67.8	66.63	10°59'45.24"N	77°53'3.90"E
BW04	65.5	66.4	67.5	66.47	10°59'47.24"N	77°53'33.84"E
BW05	68.1	69.3	70.1	69.17	10°58'47.03"N	77°53'30.21"E
BW06	68.2	69.8	70.3	69.43	10°59'3.90"N	77°54'3.30"E
BW07	69.4	70.1	70.8	70.10	10°57'56.53"N	77°53'21.20"E
BW08	68.2	69.4	70.6	69.40	10°58'20.03"N	77°52'33.82"E
BW09	70.5	70.8	71.1	70.80	10°58'58.99"N	77°52'47.72"E

Source: Onsite monitoring data

Table 3.10 Post-Monsoon Water Level of Bore Wells within 2 km Radius

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Oct-2024	Nov-2024	Dec-2024	Average		
BW01	66.1	65.8	64.5	65.47	10°59'27.44"N	77°52'48.72"E
BW02	66.2	65.7	64.6	65.50	10°59'17.34"N	77°52'49.76"E
BW03	64.5	63.4	62.1	63.33	10°59'45.24"N	77°53'3.90"E
BW04	64.8	64.1	63.8	64.23	10°59'47.24"N	77°53'33.84"E
BW05	65.2	64.6	63.7	64.50	10°58'47.03"N	77°53'30.21"E
BW06	66.2	65.4	64.2	65.27	10°59'3.90"N	77°54'3.30"E
BW07	65.5	65.1	64.5	65.03	10°57'56.53"N	77°53'21.20"E
BW08	65.1	64.8	64.1	64.67	10°58'20.03"N	77°52'33.82"E
BW09	66.6	65.2	64.8	65.53	10°58'58.99"N	77°52'47.72"E

Source: Onsite monitoring data

3.2.3.2 Electrical Resistivity Investigation

Electrical resistivity investigation is especially useful in the areas where there are no adequate exploratory well data about the aquifer conditions. The present study makes use of vertical electric sounding (VES) to delineate earth's subsurface layers. The electrical resistivity investigation uses four electrodes set up where current is sent through outer electrodes into the ground and the inner electrodes measure the potential difference.

Result

The Geophysical VES data obtained from the project site have been shown in Table 3.11. The field data obtained from a detailed geophysical investigation were plotted using excel spreadsheet for interpretation. The plot for the purpose of interpretation has been shown in Figure 3.12.

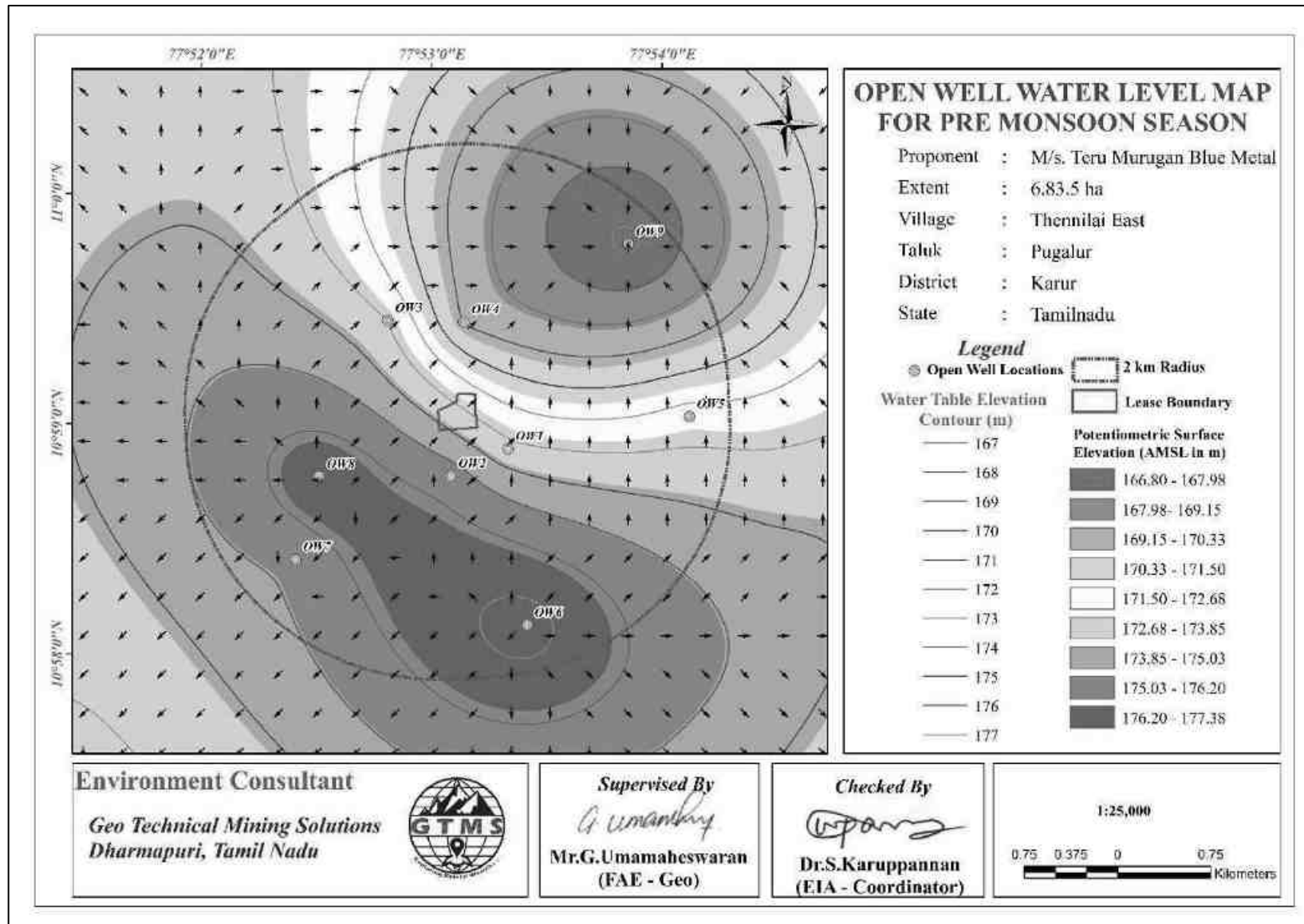


Figure 3.8 Open Well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

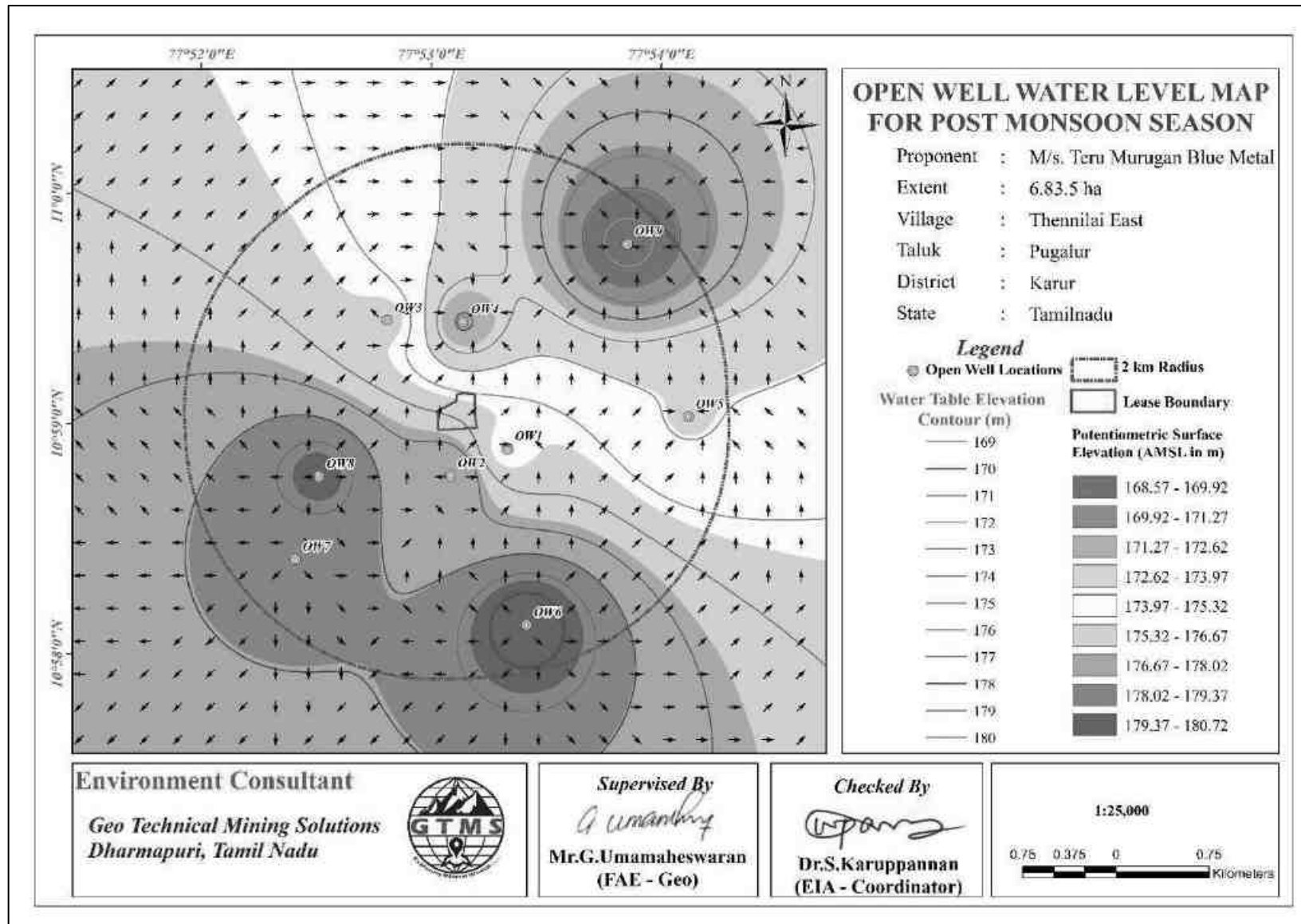


Figure 3.9 Open Well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

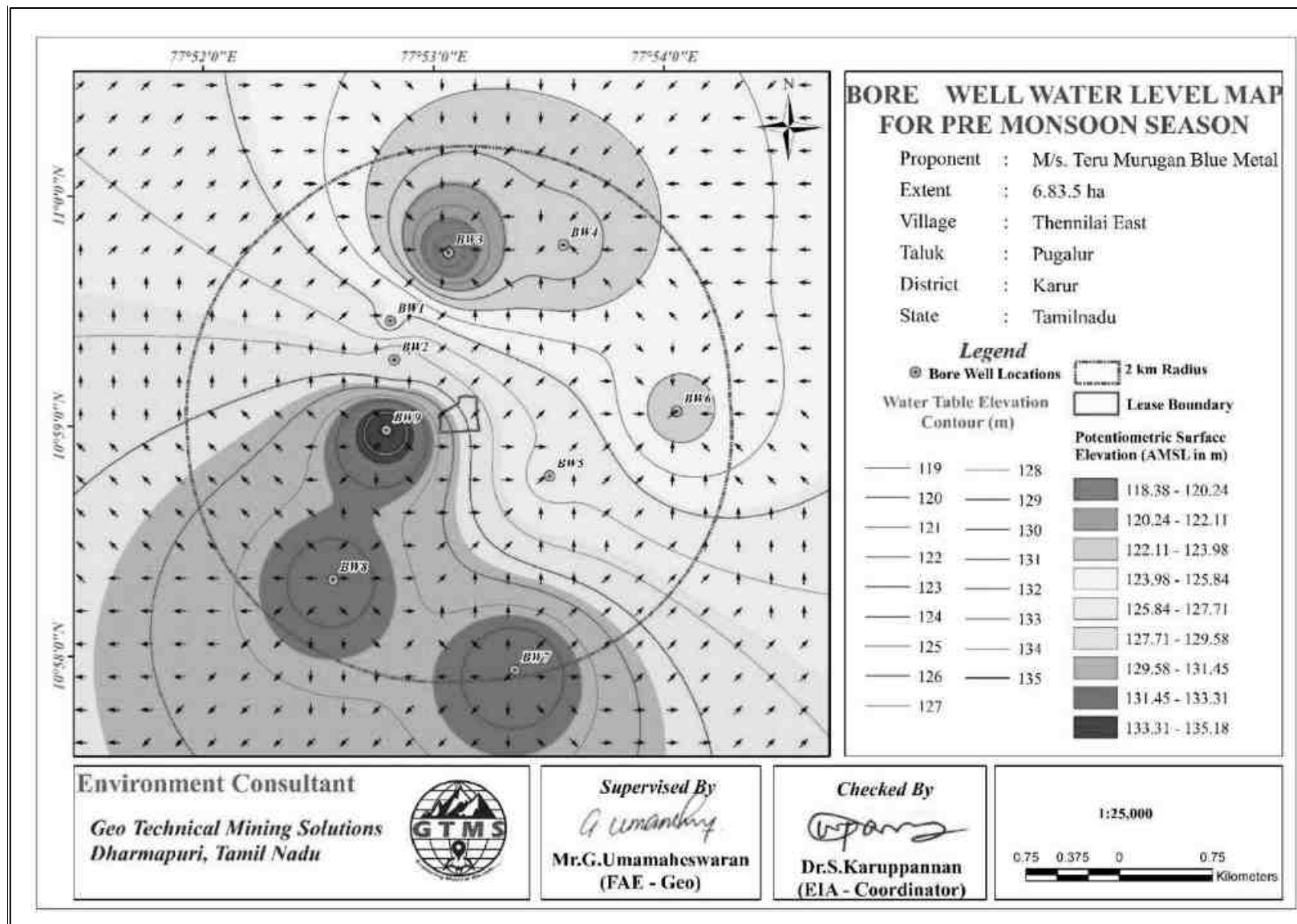


Figure 3.10 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

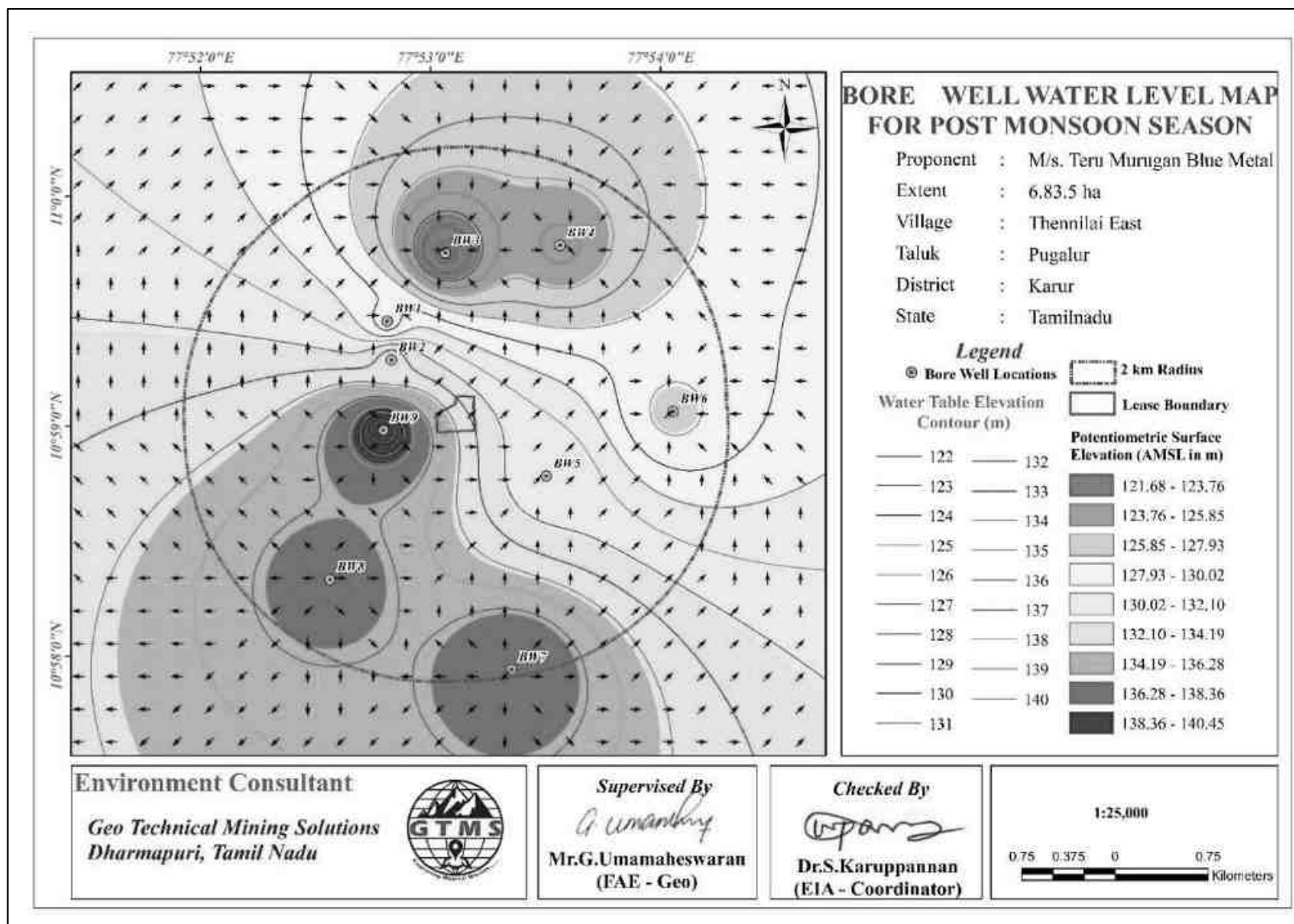


Figure 3.11 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

Table 3.11 Vertical Electrical Sounding Data

Location Coordinates - 10°59'2.47"N, 77°53'6.79"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in Ω	Apparent Resistivity in Ωm
1	5	2	16.50	7.410	122.26
2	10	2	75.43	2.446	184.48
3	15	5	62.86	4.540	285.38
4	20	5	117.86	3.260	384.22
5	25	5	188.58	2.630	495.96
6	25	10	82.50	5.940	490.05
7	30	10	125.72	4.209	529.12
8	35	10	176.79	4.060	717.76
9	40	10	235.73	3.680	867.48
10	45	10	302.51	3.550	1073.91
11	50	20	165.01	7.210	1189.65
12	60	20	251.44	3.128	786.42
13	70	20	353.59	3.507	1239.9
14	80	20	471.45	2.717	1281.12
15	90	20	605.03	2.556	1546.68
16	100	20	754.32	2.367	1785.32

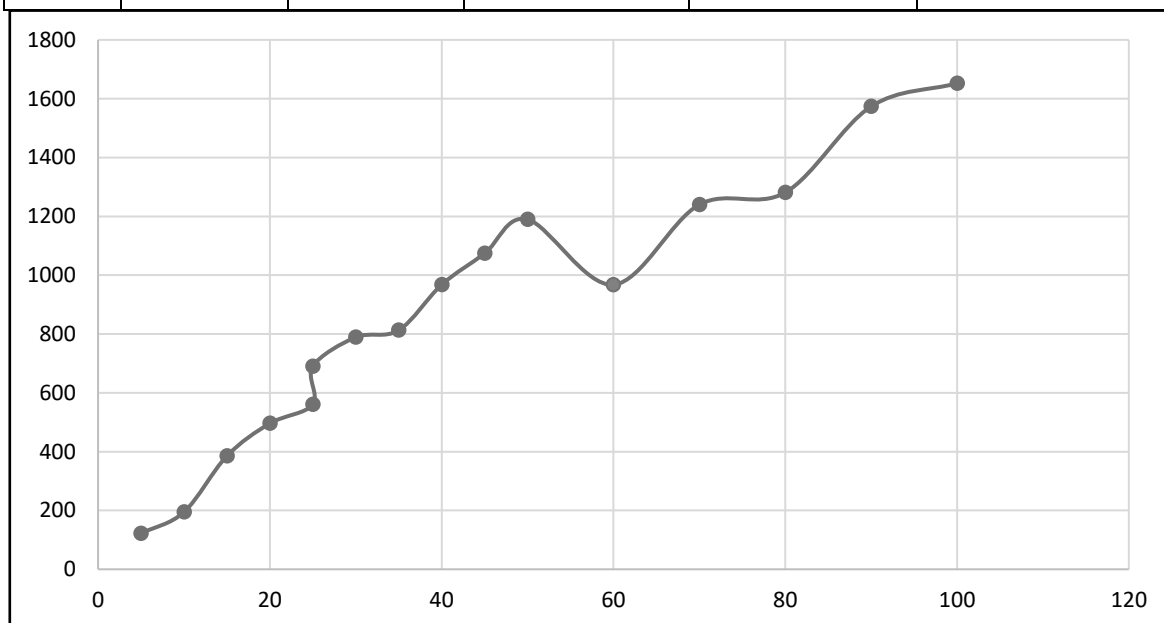


Figure 3.12 Graph Showing Occurrence of Water Bearing Fracture Zones at the Depth of 60 m Below Ground Level in Proposed Project

The rock formation of low resistivity values indicates occurrence of water at the depth of about 60m below ground level. The ultimate depth of proposed project is 50m below ground level. Therefore, the mining operation will not affect the aquifer throughout the entire mine life period.

3.3 AIR ENVIRONMENT

The baseline studies on air environment include identification of specific air pollutants and their existing levels in ambient air. The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities.

3.3.1 Meteorology

3.3.1.1 Climatic Variables

A temporary meteorological station was installed at the project sites by covering cluster quarries. The station was installed at a height of 3m above the ground level as there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature. Meteorological data obtained from the onsite monitoring station are provided in Table 3.12.

Table 3.12 Onsite Meteorological Data

S. No.	Parameters		OCT,2024	NOV,2024	DEC,2024
1	Temperature (°C)	Min	20.59	19.17	18.10
		Max	35.46	31.00	31.05
		Avg	26.59	24.98	24.55
2	Relative Humidity (%)	Min	40.53	55.53	56.22
		Max	99.13	100.00	100.00
		Avg	81.50	85.40	85.13
3	Wind Speed (m/s)	Min	0.17	0.66	0.04
		Max	5.80	5.95	5.29
		Avg	2.05	2.84	1.83
4	Wind Direction (degree)	Min	0.00	0.20	0.60
		Max	359.10	359.80	359.50
		Avg	210.39	103.63	128.71
5	Surface Pressure(kPa)	Min	98.04	97.76	97.51
		Max	98.83	98.93	99.05
		Avg	98.44	98.55	98.40

Source: On-site monitoring/sampling by **Greenlink Analytical and Research Laboratory (India) Private Ltd** in association with GTMS

3.3.1.2 Wind Pattern

Wind pattern will largely influence the dispersion pattern of air pollutants and noise from the proposed project site. Analysis of wind pattern requires hourly site-specific data of wind speed and direction. Two types of wind rose were generated: historical seasonal wind rose for the period of October to December of the years from 2020 to 2023 and the seasonal wind rose for the study period of October through December 2024. The wind rose diagrams thus produced are shown in Figures 3.13-3.13a. Figure 3.14 reveals that:

- ❖ The measured average wind velocity during the study period is 2.22 m/s.
- ❖ Predominant wind was dominant in the directions ranging from Northeast to Southwest.

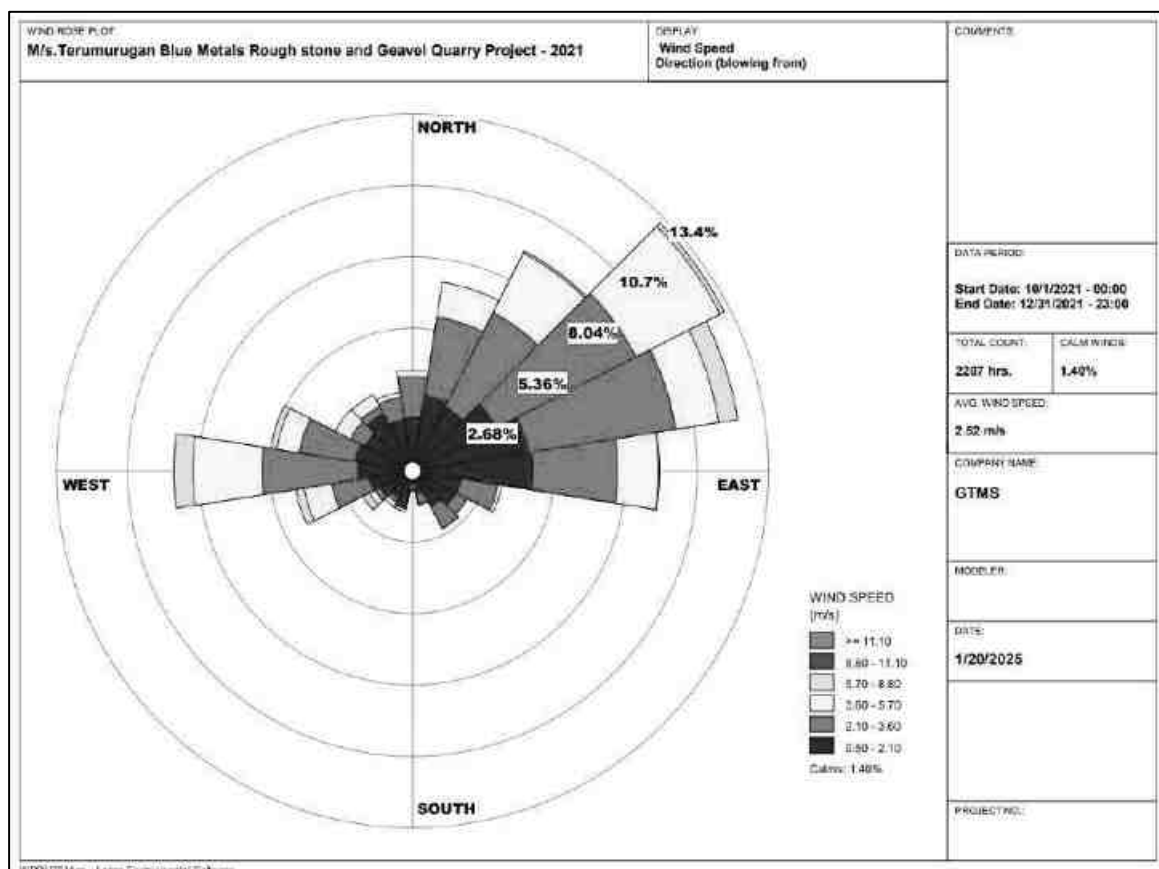
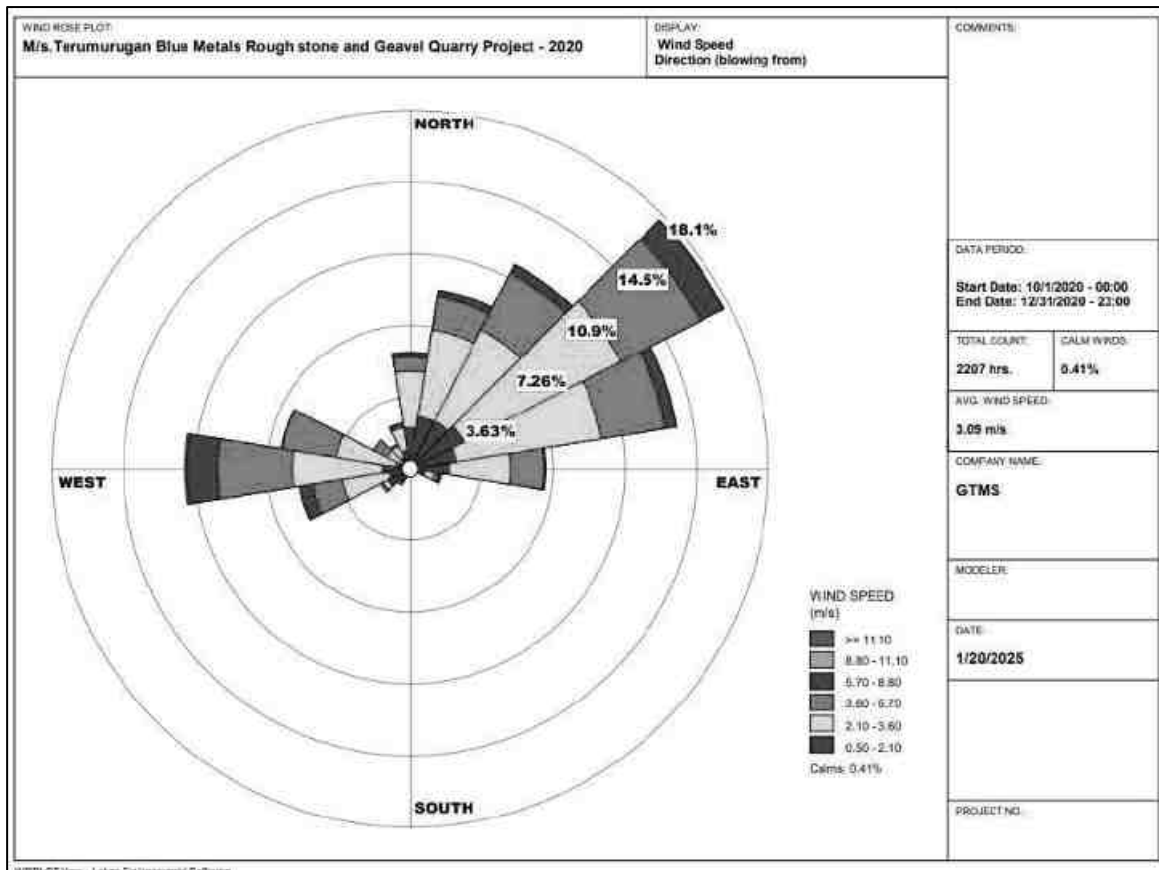


Figure 3.13 Windrose Diagram for 2020 and 2021 (October to December)

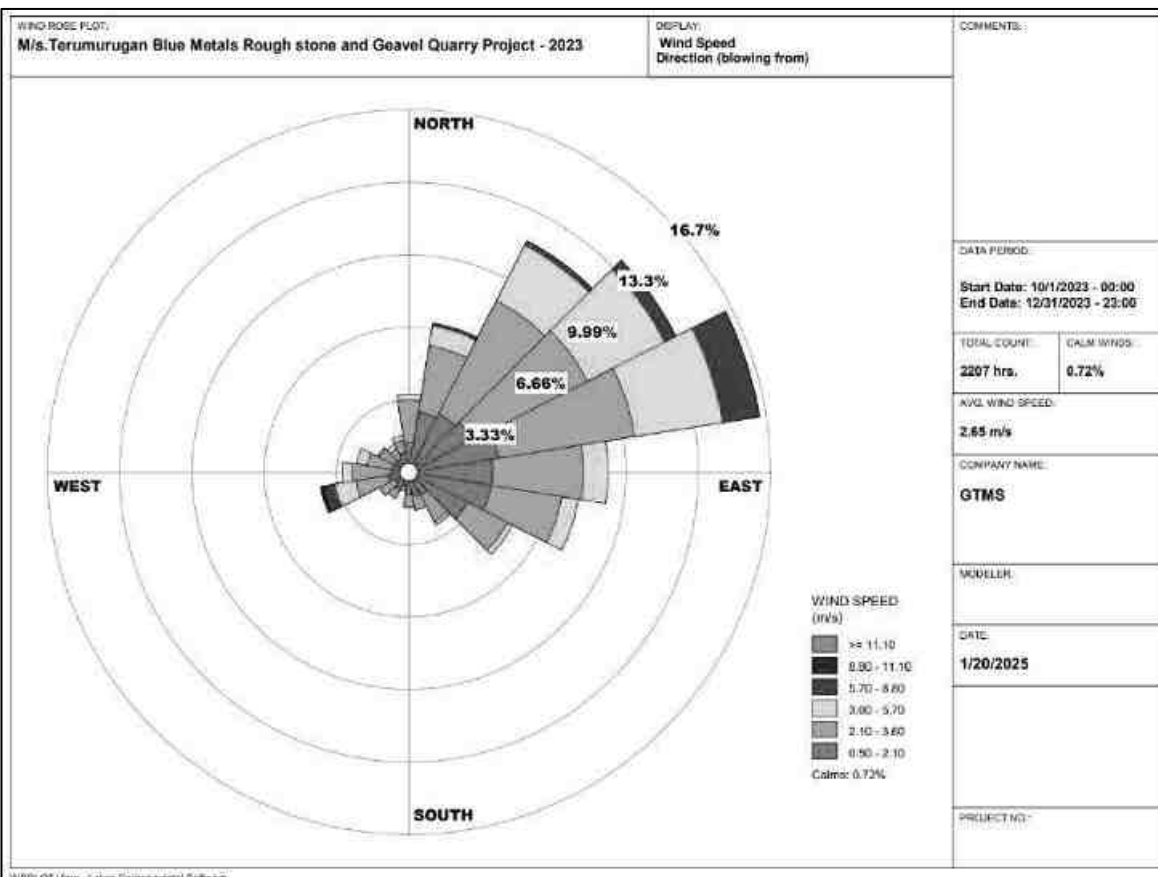
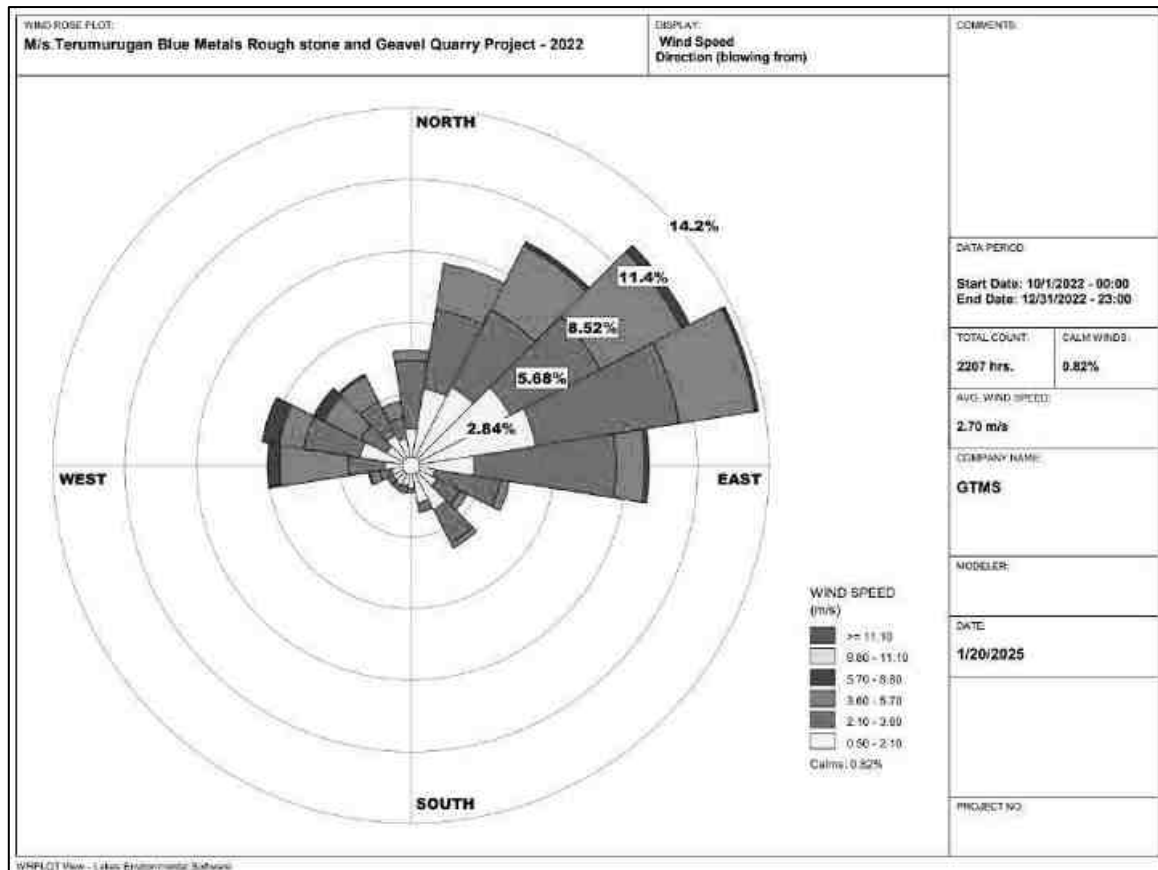


Figure 3.13a Windrose Diagram for 2022 and 2023 (October to December)

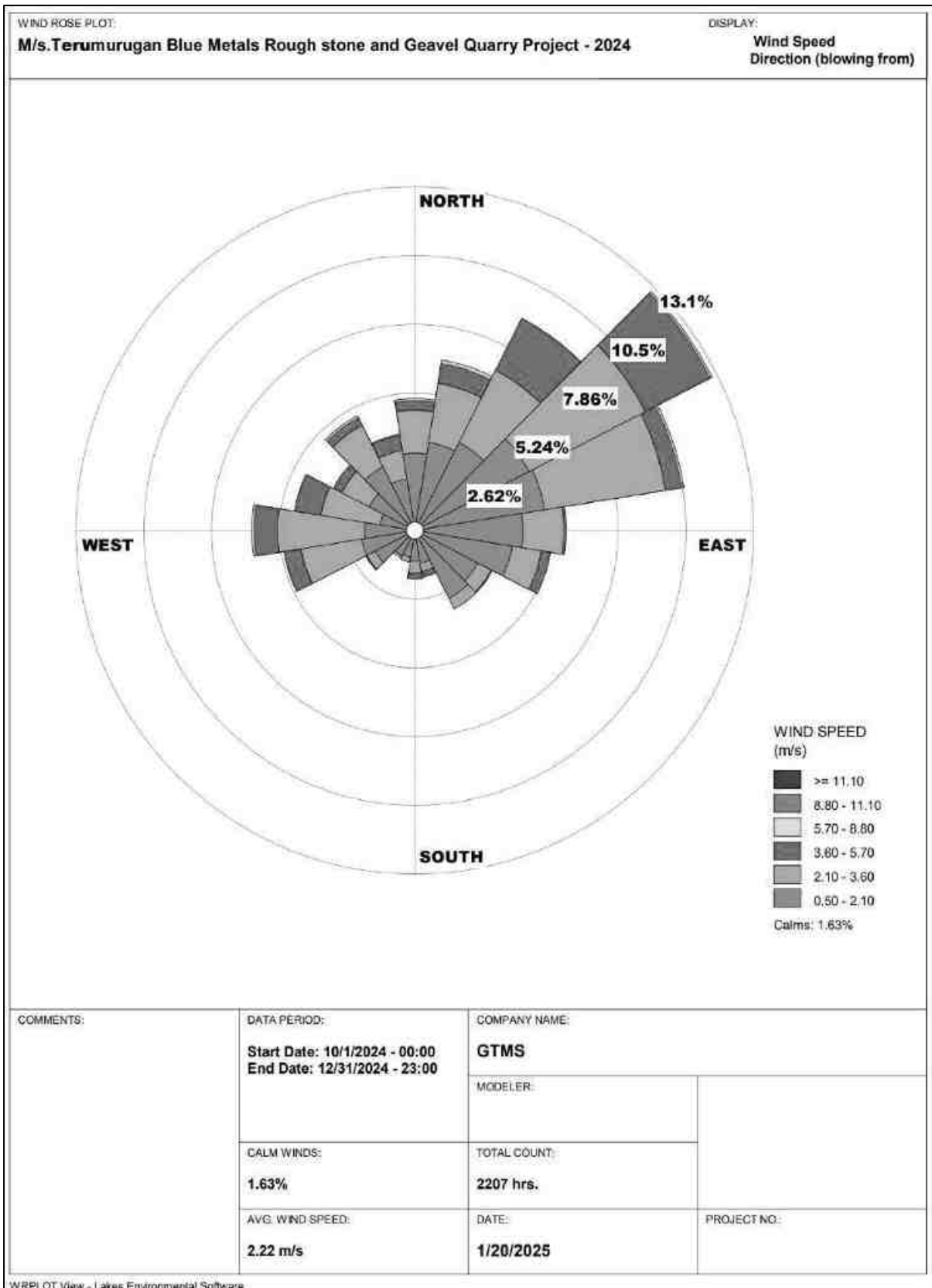


Figure 3.14 Onsite Wind Rose Diagram

3.3.2 Ambient Air Quality Study

The baseline ambient air quality is studied 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

Table 3.13 Methodology and Instrument Used for AAQ Analysis

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

Source: Sampling Methodology based *Greenlink Analytical and Research Laboratory (India) Private Ltd* & CPCB Notification

Table 3.14 National Ambient Air Quality Standards

S. No.	Pollutant	Time Weighted Average	Concentration in ambient air	
			Industrial, Residential, Rural & other areas	Ecologically Sensitive area (Notified by Central Govt.)
1	SO ₂ (µg/m ³)	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	NO _x (µg/m ³)	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	PM ₁₀ (µg/m ³)	Annual Avg. 24 hours	60.0 100.0	60.0 100.0
4	PM _{2.5} (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

Methodology

Ambient air quality monitoring was carried out with a frequency of two samples per week at nine (09) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period October to December, 2022 and 2024 as per the CPCB, MoEF guidelines and notifications.

It was ensured that the equipment was placed preferably at a height of at least $3 \pm 0.5\text{m}$ above the ground level at each monitoring station for negating the effects of wind-blown ground dust. The equipment was placed at space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results. The baseline data of ambient air were generated for $\text{PM}_{2.5}$, PM_{10} , sulphur dioxide (SO_2) and nitrogen dioxide (NO_x). The sampling locations are shown in Figure 3.15 and average concentrations of air pollutants are summarized in Tables 3.15 and are shown in Figures 3.16-3.20.

Table 3.15 Ambient Air Quality (AAQ) Monitoring Locations

Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates
AAQ1	Nearby Core	0.10	E	10°58'57.77"N, 77°53'14.90"E
AAQ2	Kattumunnur	2.47	SSE	10°57'40.87"N, 77°53'31.13"E
AAQ3	Venkalpatty	2.56	SW	10°58'25.47"N, 77°51'44.47"E
AAQ4	Karaipalayam	3.10	SW	10°57'39.80"N, 77°51'57.65"E
AAQ5	Thennilai East	3.99	SW	10°58'35.06"N, 77°50'52.71"E
AAQ6	K.Paramathi	3.95	SE	10°57'34.39"N, 77°54'49.88"E
AAQ7	Athipalayam	4.11	NNE	11°01'13.29"N, 77°53'57.51"E
AAQ8	Velampalaiyam	2.51	NE	11°00'03.65"N, 77°54'11.26"E
AAQ9	Core	---	---	10°59'7.26"N, 77°53'10.69"E

Source: On-site monitoring/sampling Excellence Laboratory Private Ltd and Greenlink Analytical and Research Laboratory (India) Private Ltd, in association with GTMS.

Private Ltd in association with GTMS

Results

As per the monitoring data, $\text{PM}_{2.5}$ ranges from $16.2\mu\text{g}/\text{m}^3$ to $20.1\mu\text{g}/\text{m}^3$; PM_{10} from $33.9\mu\text{g}/\text{m}^3$ to $38.7\mu\text{g}/\text{m}^3$; SO_2 from $6.5\mu\text{g}/\text{m}^3$ to $9.3\mu\text{g}/\text{m}^3$; NO_x from $14.0\mu\text{g}/\text{m}^3$ to $20.2\mu\text{g}/\text{m}^3$. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

Air quality Index

The AQI shows that the air quality of the study area falls within good category 36 causing minimal impact to human health.

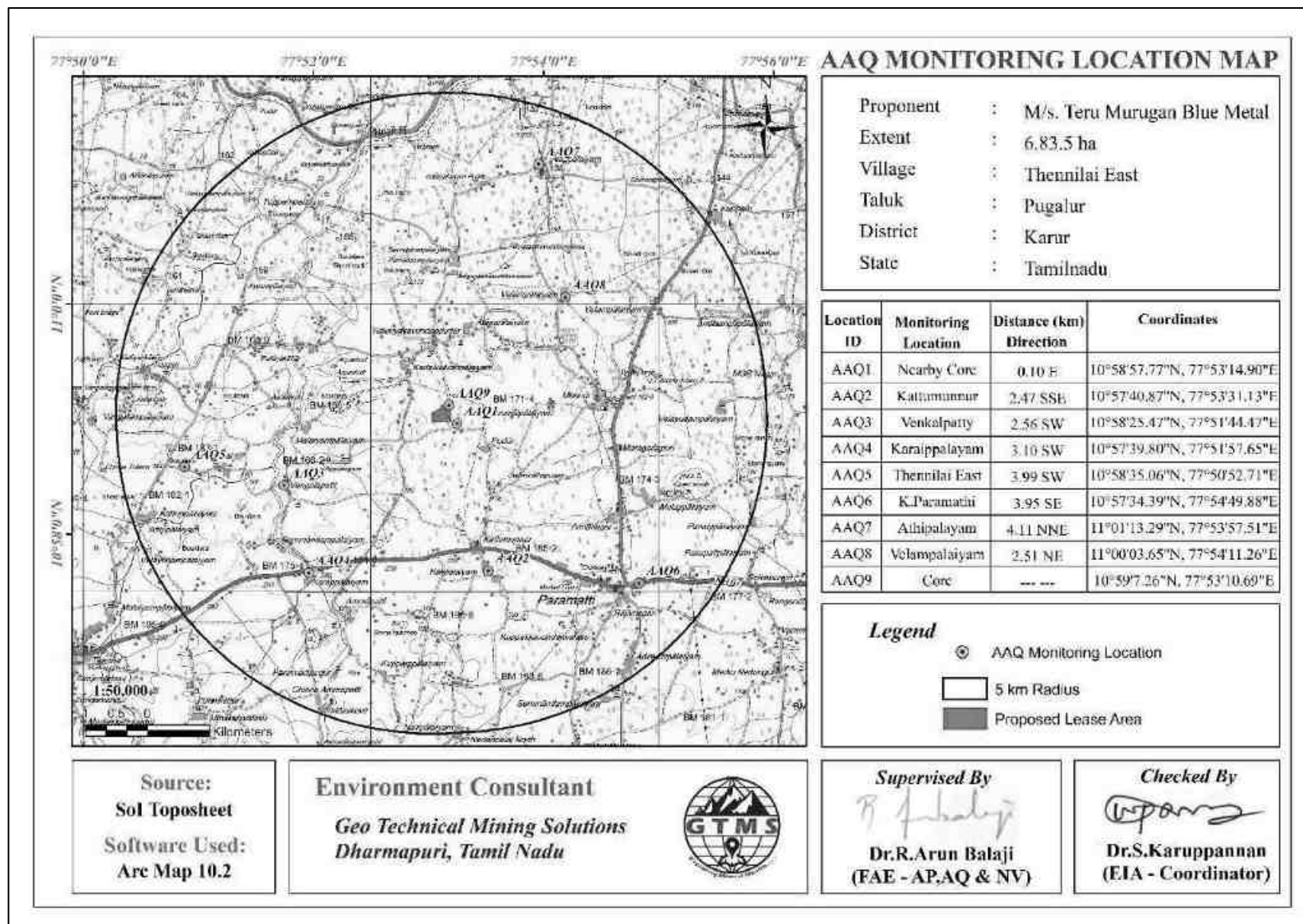


Figure 3.15 Map Showing Ambient Air Quality Monitoring Station Locations Around 5 km Radius from Proposed Project Site

Table 3.16 Summary of AAQ Result

PM _{2.5}					PM ₁₀			
Station ID	Max	Min	Mean	98 th Percentile	Max	Min	Mean	98 th Percentile
AAQ1	20.9	16.3	19.0	20.8	39.7	33.2	37.0	39.6
AAQ2	19.2	15.8	17.3	19.0	37.3	32.6	35.0	36.9
AAQ3	20.6	16.4	18.8	20.0	39.7	34.1	36.8	39.5
AAQ4	19.3	14.9	16.4	18.1	36.6	31.9	34.3	36.2
AAQ5	17.0	15.2	16.1	17.0	32.1	28.3	29.8	31.9
AAQ6	25.8	22.0	23.9	25.8	42.7	39.9	41.2	42.4
AAQ7	18.2	14.4	16.3	18.2	36.1	33.3	34.6	35.9
AAQ8	21.9	14.0	17.9	21.6	38.8	30.2	34.8	38.5
AAQ9	18.2	16.5	17.4	18.2	45.6	41.2	43.4	45.6
SO ₂					NO _x			
AAQ1	11.9	8.8	9.9	11.6	21.4	17.2	19.0	21.4
AAQ2	9.2	6.1	7.6	9.2	19.6	13.7	16.8	19.4
AAQ3	8.8	6.9	8.1	10.0	20.9	9.7	17.9	20.7
AAQ4	8.3	5.2	6.7	8.3	18.8	12.9	16.0	18.6
AAQ5	7.5	5.9	6.6	7.5	18.8	12.3	15.8	18.5
AAQ6	11.7	8.6	10.2	11.7	24.1	21.4	22.6	23.9
AAQ7	9.5	6.4	8.0	9.5	17.8	11.3	14.8	16.8
AAQ8	10.8	5.6	8.3	10.7	20.6	12.8	17.0	20.5
AAQ9	6.4	4.8	5.7	6.4	19.8	14.9	17.6	19.8

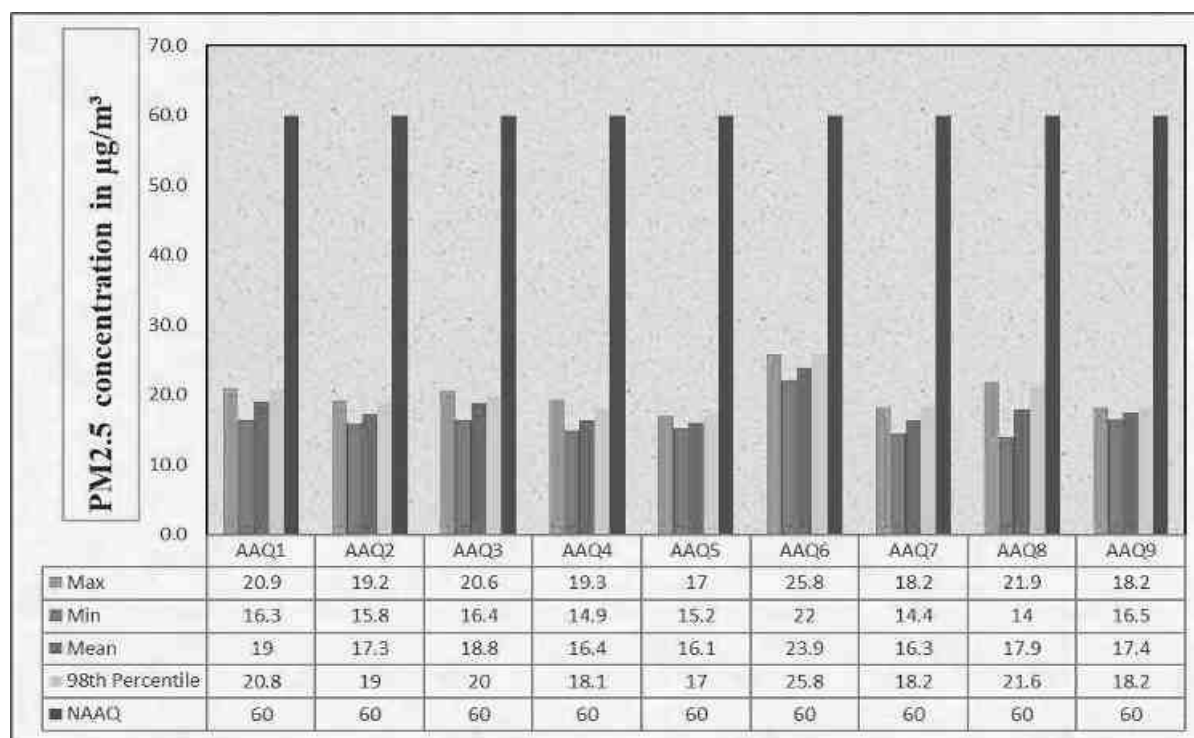


Figure 3.16 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM_{2.5} Measured from 9 Air Quality Monitoring Stations within 5 km Radius

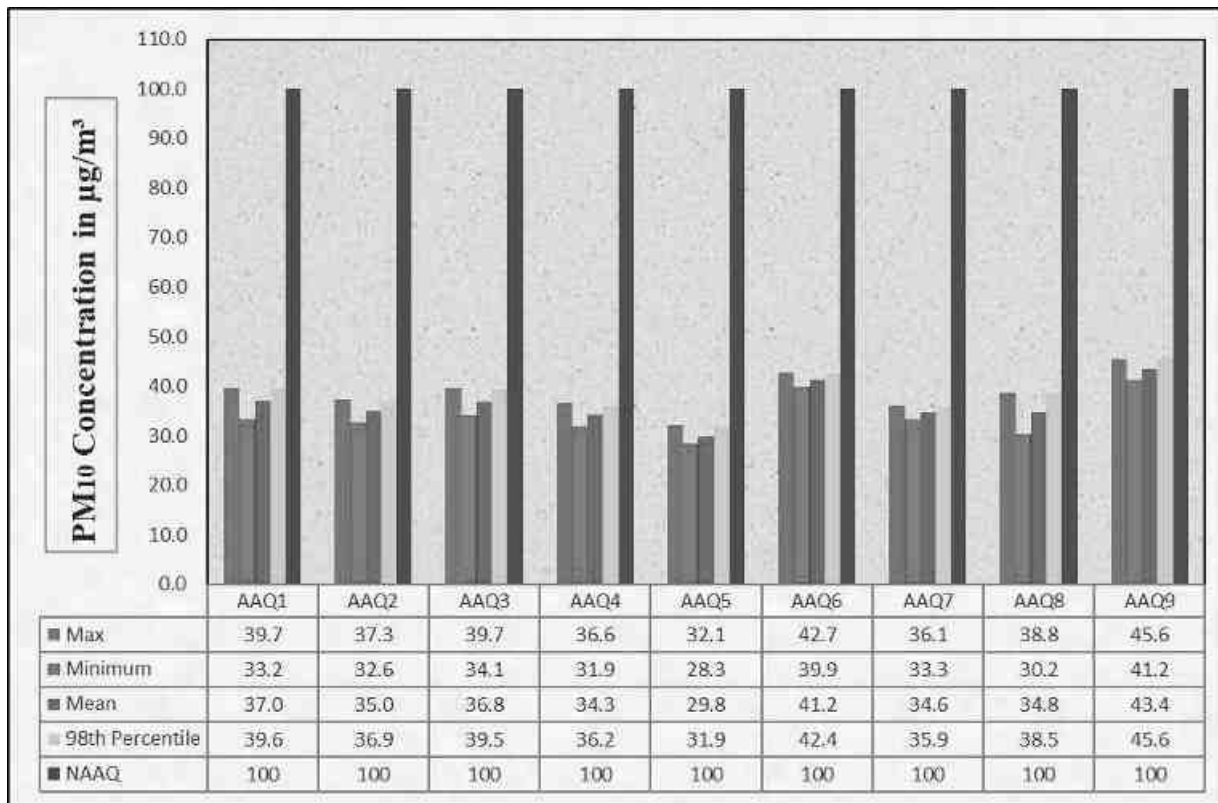


Figure 3.17 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM₁₀ Measured from 9 Air Quality Monitoring Stations within 5 km Radius

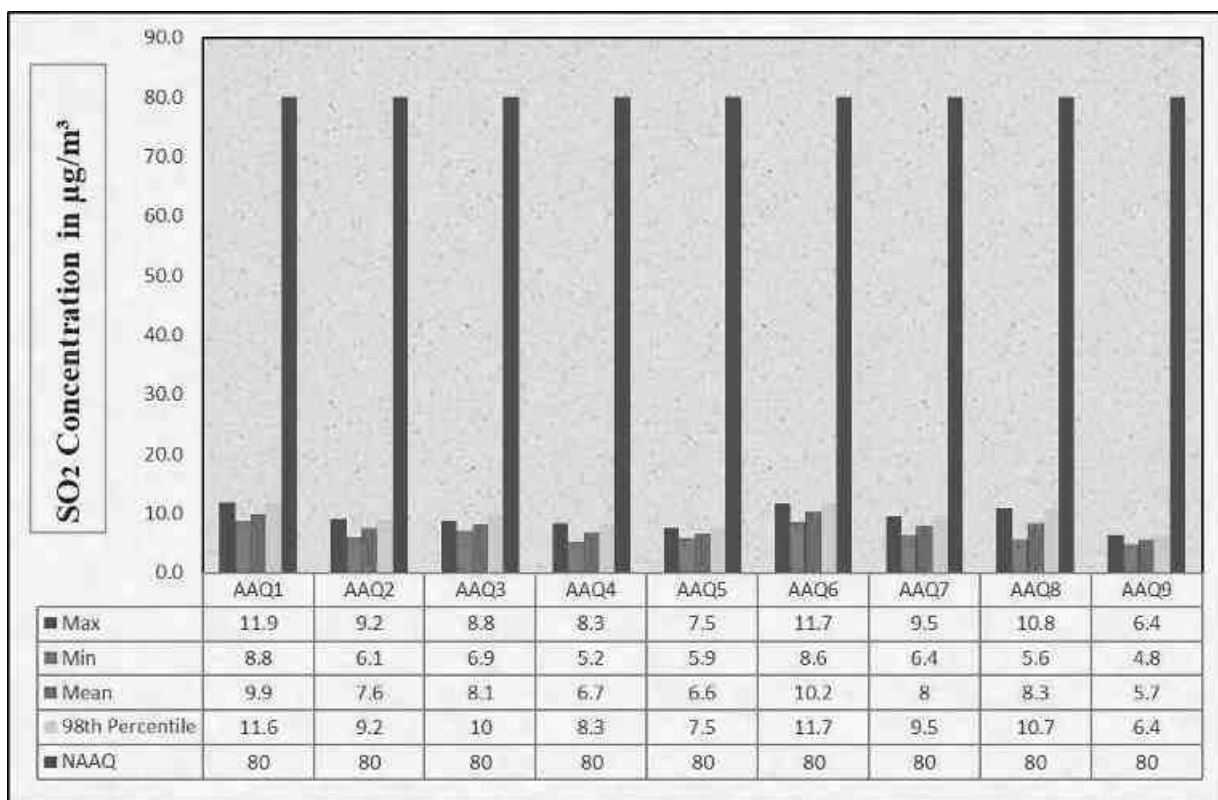


Figure 3.18 Bar Chart Showing Maximum, Minimum, and Average Concentrations of SO₂ Measured from 9 Air Quality Monitoring Stations within 5 km Radius

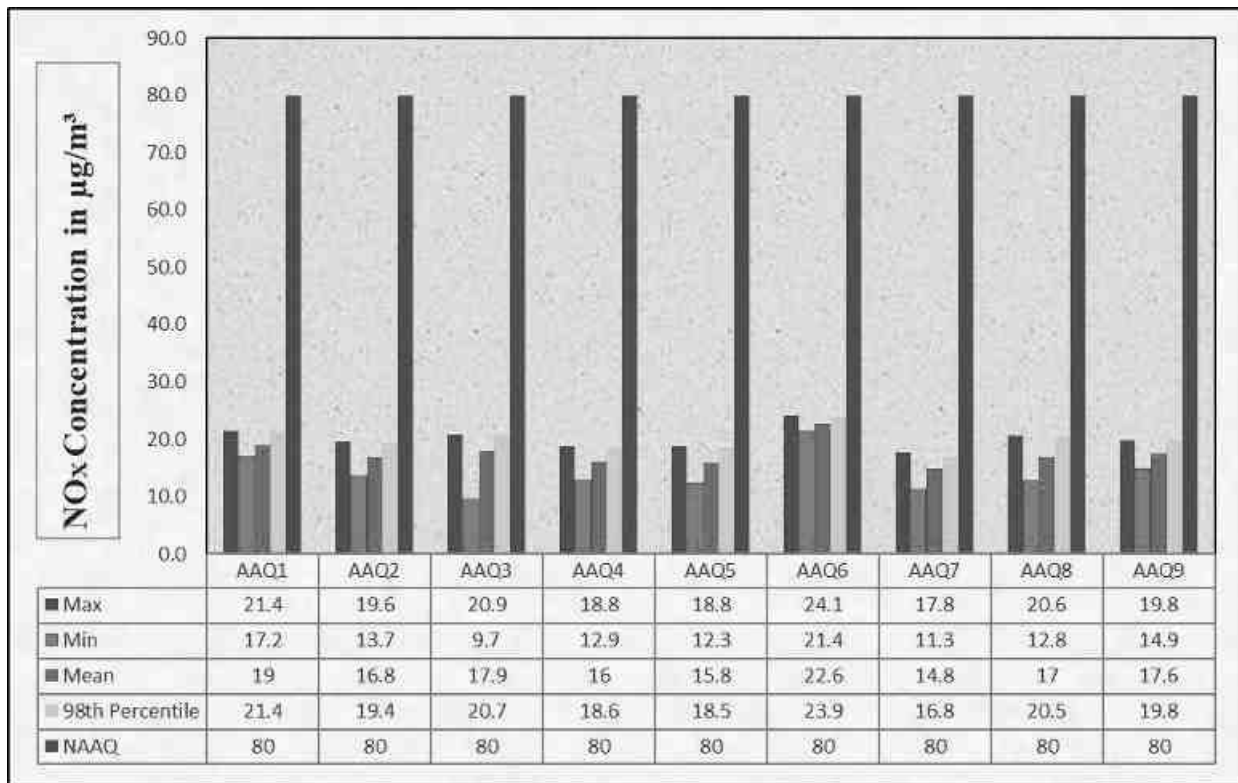


Figure 3.19 Bar Chart Showing Maximum, Minimum, and Average Concentrations of NO_x Measured from 9 Air Quality Monitoring Stations within 5km Radius

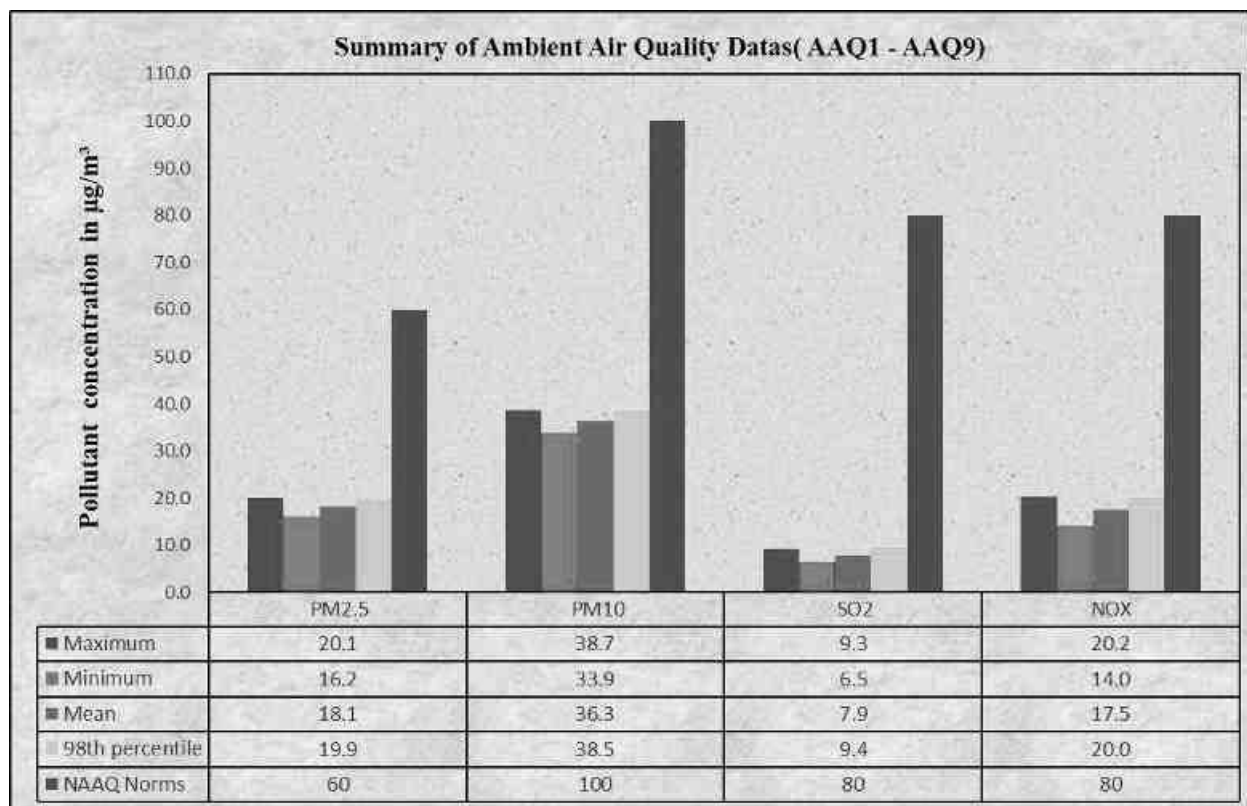


Figure 3.20 Bar Chart Showing Maximum, Minimum, And Average Concentrations of Pollutants in Atmosphere within 5 km Radius

3.4 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in the study area. The main objective of noise monitoring in the study area is to establish the baseline noise level, which will in turn be used to assess the impact of the total noise expected to be generated during the project operations around the project site. In order to assess the ambient noise levels within the study area, noise monitoring was carried out at ten (10) locations covering commercial, residential, rural areas within the radius of 5 km. Details of noise monitoring locations are provided in Table 3.17 and spatial occurrence of the locations are shown in Figure 3.23.

Table 3.17 Noise Monitoring Locations

S. No	Location Code	Monitoring Locations	Distance in km	Direction	Coordinates
1	N1	Nearby Core	0.10	E	10°58'59.99"N, 77°53'13.51"E
2	N2	Kadaikkaranpalaiyam	0.57	NW	10°59'16.69"N, 77°52'50.51"E
3	N3	Kattumunnur	2.12	SSE	10°57'51.81"N, 77°53'28.10"E
4	N4	Venkalpatty	2.57	SW	10°58'23.64"N, 77°51'44.75"E
5	N5	Karaippalayam	3.08	SW	10°57'40.39"N, 77°51'58.02"E
6	N6	Thennilai East	4.00	W	10°58'34.85"N, 77°50'51.95"E
7	N7	K.Paramathi	3.78	SE	10°57'31.64"N, 77°54'39.75"E
8	N8	Athipalayam	4.11	NE	11°01'12.49"N, 77°53'59.34"E
9	N9	Velampalaiyam	2.48	NE	11°00'04.03"N, 77°54'09.66"E
10	N10	Core	--- ---	---	10°59'02.69"N, 77°53'09.75"E

Source: On-site monitoring/sampling Excellence Laboratory Private Ltd and Greenlink Analytical and Research Laboratory (India) Private Ltd, in association with GTMS.

Table 3.18 Ambient Noise Quality Result

Station ID	Location	Environmental setting	Average day noise level (dB(A))	Average night noise level (dB(A))	Day time (6.00 AM – 10.00 PM)	Night time (10.00 PM – 6.00 AM)
					Standard (L _{eq} in dB (A))	
N1	Nearby Core	Industrial Area	42.2	32.6	75	70
N2	Kadaikkaranpalaiyam	Residential Area	39.6	30.4	55	45
N3	Kattumunnur		43.8	36.4		
N4	Venkalpatty		41.6	33.8		
N5	Karaippalayam		43.2	36.2		
N6	Thennilai East		36.4	30.6		
N7	K.Paramathi		44.8	40.2		
N8	Athipalayam		36.4	30.6		
N9	Velampalaiyam		34.8	30.2		
N10	Core	Industrial Area	44.8	38.9	75	70

Source: On-site monitoring/sampling by Excellence Laboratory Private Ltd and Greenlink Analytical and Research Laboratory (India) Private Ltd in association with GTMS

The Table 3.18 shows that noise level in core zone was 44.8dB (A) Leq during day time and 38.9dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 34.8 to 44.8dB (A) Leq and during night time from 30.2 to 40.2dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB. The results are also depicted below in Figures 3.21 and 3.22.

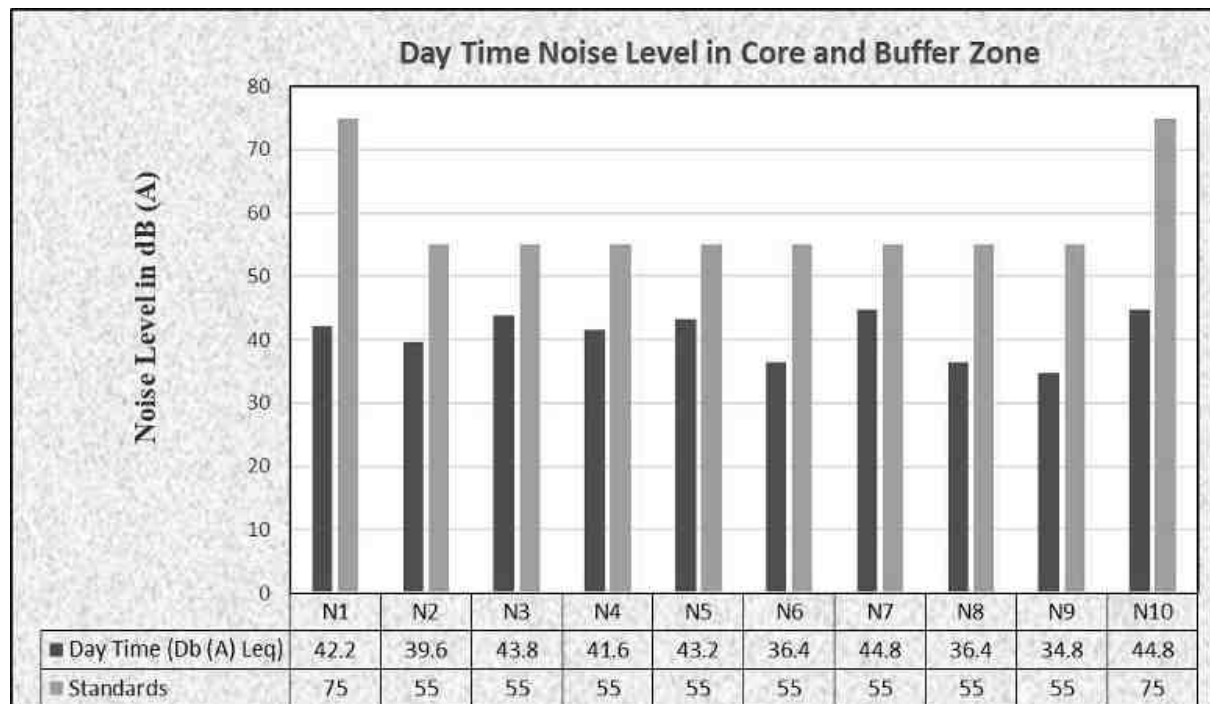


Figure 3.21 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones

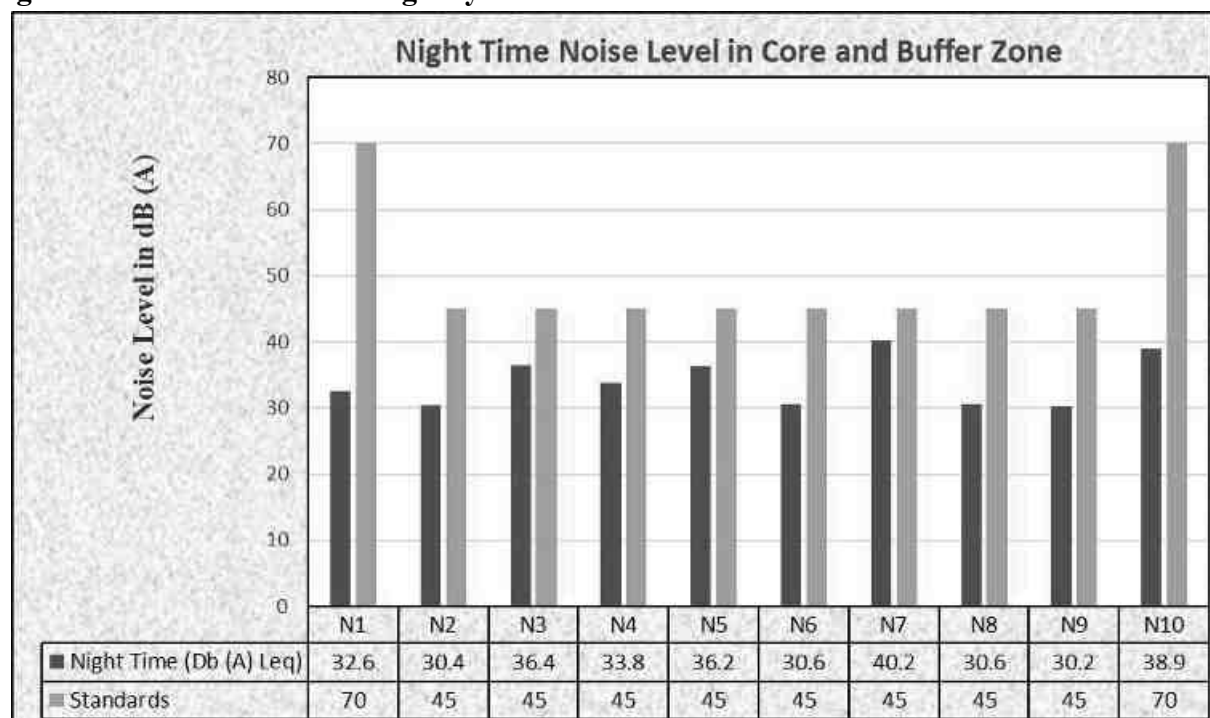


Figure 3.22 Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones

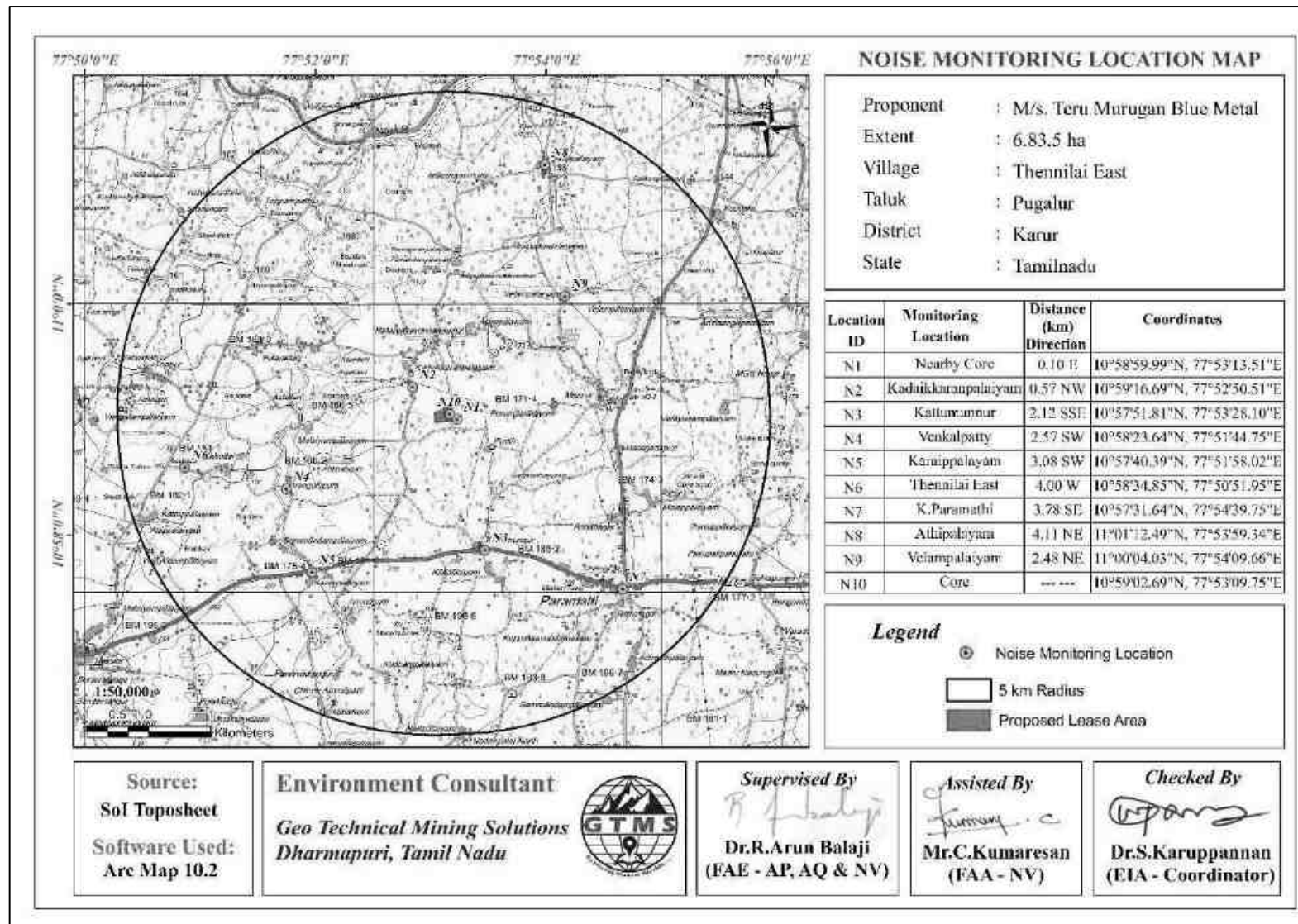


Figure 3.23 Map Showing Noise Level Monitoring Station Locations around 5 km Radius from Proposed Project Site

3.5 BIOLOGICAL ENVIRONMENT

An ecological survey was conducted to collect the baseline data regarding flora and fauna in the study area of 10 km radius. Data were also collected from different sources, i.e., government departments such as District Forest Office, Government of Tamil Nadu. On the basis of onsite observations as well as forest department records the checklist of flora and fauna was prepared.

Methodology

Nested quadrat sampling method was used for the study of community structure of the vegetation. The sampling consisted of randomly placed quadrats of $10\text{m} \times 10\text{m}$ were laid down to assess trees, and sub quadrats of $5\text{m} \times 5\text{m}$ were laid down for shrubs, $1\text{m} \times 1\text{m}$ were laid down for herbs. The size and number of quadrats needed were determined using the species-area curve (Misra, 1968). The data on vegetation were quantitatively analysed for abundance, density, frequency as per Curtis & McIntosh (1950). The Important Value Index (IVI) for trees was determined as the sum of relative density, relative frequency and relative dominance (Curtis, 1959).



Figure 3.24 Quadrates Sampling Methods of Flora

Important Value Index (IVI)

The concept of 'Important Value Index (IVI)' has been developed for expressing the dominance and ecological success of any species, with a single value (Mishra, 1968, Sharma, 2005). This index utilizes three characteristics, they are (i) Relative frequency and (ii) Relative density. The three characteristics computed using frequency, density and abundance for all the

species falling in all the quadrat by using the following formula. The relative frequency, relative density and relative abundance has been calculated to calculate the IVI value

$$IVI = \text{Relative frequency} + \text{Relative abundance} + \text{Relative density} [RF + RA + RD]$$

Relative Value Index (RVI) = Relative Density + Relative Frequency [RD + RF].

Relative Value Index used for Expressing dominance and Ecological success of Shrub and herb Species in a particular area.

Shannon – Wiener Index, Evenness and Richness

Biodiversity index is a quantitative measure that reflects how many different types of species, there are in a dataset, and simultaneously takes into account how evenly the basic entities (such as individuals) are distributed among those types of species. The value of biodiversity index increases both when the number of types increases and when evenness increases. For a given number of type of species, the value of a biodiversity index is maximized when all type of species is equally abundant.

The **Shannon Diversity Index** (sometimes called the Shannon-Wiener Index) is a way to measure the diversity of species in a community.

The species diversity index (H) for floral and faunal diversity is calculated by the use of Shannon Wiener Index (Shannon Wiener, 1963) as:

$$H = - \sum (n_i/n) \times \ln (n_i/n)$$

- ☛ Where, n_i is individual density of a species and n is total density of all the species
- ☛ The Evenness Index (E) is calculated by using Shannon's Evenness formula (Magurran, 2004).
- ☛ The higher the value of H, the higher the diversity of species in a particular community. The lower the value of H, the lower the diversity. A value of $H = 0$ indicates a community that only has one species

$$\text{Evenness Index (E)} = H / \ln(S)$$

Where, H is Shannon Wiener Diversity index; S is number of species

The Shannon evenness Index is a way to measure the evenness of species in a community. The term “evenness” simply refers to how similar the abundances of different species are in the community.

3.5.1 Floral diversity Analysis

Flora study was conducted using the above said methodology to inventory the existing terrestrial plants in both core and buffer zones. Details of plants have been described in the succeeding sections.

Flora in core zone

The mine lease area contains Taxonomically total of 46 species belonging to 23 families were recorded. Among them are Trees (05), Herbs (26), Shrubs (09) and Climbers (06). Majority of the species belongs to the family of Fabaceae, Poaceae, Malvaceae and Asteraceae. A list of the IUCN Red List analysed plant species recorded in the core zone of the proposed project site, along with their binomial names, family, local name, habit, and IUCN category is provided in Table 3.19

Flora in 300m radius

The vegetation habit analysis indicates that flora of study area consists of 48 Herbs, 21 shrubs, 17 tree species and 09 climber species. A total number of 95 species belonging to 35 families and were recorded in the study area, which in turn comprised 82 genera. The species of Fabaceae family are more in number (14 species), followed by Amaranthaceae (7), Poaceae (6 species), Asteraceae (5), Euphorbiaceae (5), Malvaceae (5) and Acanthaceae and Rubiaceae (2 species each) (Figure 3.25,3.26). More than 50 percent of the families are monotypic. The species richness index details mention in Table 3.20-21.

Flora in 10 km radius zone

Similar type of environment occurs in both core and buffer zone but more floral diversity noticed in buffer zone compared with core zone area. Buffer area contains a total species belonging to 107 species have been recorded. The floral varieties among them 35 Trees, 15 Shrubs Herbs and Climbers, Creeper, Grass & Cactus, 57 were identified. Details of flora with the scientific name mentioned in Table 3.22.

Table 3.19 Floral Diversity in mine lease area

S. No	Local Name	Scientific name	Family name	No. of species	UCN Conservation Status
Trees					
1	Vembu	<i>Azadirachta indica</i>	Meliaceae	7	LC
2	Mul-kiluvai	<i>Commiphora berryi</i>	Burseraceae	12	NL
3	Velikathan maram	<i>Prosopis juliflora</i>	Fabaceae	9	NL
4	Velvelam	<i>Vachellia nilotica</i>	Fabaceae	11	NL
5	Wetpalai maram	<i>Wrightia tinctoria</i>	Apocynaceae	5	LC
Total				44	
Shrubs					
1	Thuthi	<i>Abutilon indicum</i>	Meliaceae	7	NL
2	Periya Pulapoo	<i>Aerva javanica</i>	Amaranthaceae	9	NL
3	Sulli poo	<i>Barleria prionitis</i>	Acanthaceae	5	NL
4	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	8	NL
5	Communist pacha	<i>Chromolaena odorata</i>	Asteraceae	6	NL
6	Vella Pulanci	<i>Flueggea leuopyrus</i>	Phyllanthaceae	8	NL

7	Unnichadi	<i>Lantana camara</i>	Verbenaceae	2	NL
8	Avaarai	<i>Senna auriculata</i>	Fabaceae	3	LC
9	Boater Bush	<i>Waltheria indica</i>	Malvaceae	7	NL
Total				55	
Herbs					
1	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae	8	NL
2	Kombumul	<i>Acanthospermum hispidum</i>	Asteraceae	11	NL
3	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	16	NL
4	Pulapoo	<i>Aerva lanata</i>	Amaranthaceae	12	NL
5	Kumattikkirai	<i>Allmania nodiflora</i>	Amaranthaceae	8	NL
6	Alyce clove	<i>Alysicarpus longifolius</i>	Fabaceae	14	NL
7	Mukuratthai	<i>Boerhavia diffusa</i>	Nyctaginaceae	10	NL
8	Buffel Grass	<i>Cenchrus ciliaris</i>	Poaceae	49	LC
9	Annaul Mission Grass	<i>Cenchrus pedicellatus</i>	Poaceae	∞	LC
10	Chevvarakupul	<i>Chloris barbata</i>	Poaceae	20	NL
11	Kanamvazhalai	<i>Commelina benghalensis</i>	Commelinaceae	8	LC
12	Arugampul	<i>Cynodon dactylon</i>	Poaceae	23	NL
13	Kunnakora	<i>Cyperus compressus</i>	Cyperaceae	20	LC
14	Korai	<i>Cyperus rotundus</i>	Cyperaceae	18	LC
15	Tumbai	<i>Leucas aspera</i>	Lamiaceae	26	NL
16	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae	14	NL
17	Kattucayaver	<i>Oldenlandia corymbosa</i>	Rubiaceae	9	NL
18	Parttiniyam	<i>Parthenium hysterophorus</i>	Asteraceae	14	NL
19	Paca poondu	<i>Pavonia gallaensis</i>	Malvaceae	12	NL
20	Peramutti	<i>Pavonia odorata</i>	Malvaceae	10	NL
21	Adai-otti	<i>Pupalia lappacea</i>	Amaranthaceae	11	NL
22	Nattai choori	<i>Spermacoce hispida</i>	Rubiaceae	10	LC
23	Kolunji chadi	<i>Tephrosia purpurea</i>	Fabaceae	50	NL
24	Nerunji mull	<i>Tribulus terrestris</i>	Zygophyllaceae	11	NL
25	Kavil Thumbai	<i>Trichodesma indicum</i>	Boraginaceae	18	NL
26	Veetukaayapoondur	<i>Tridax procumbens</i>	Asteraceae	10	NL
Total				412	
Climbers					
1	Thaneer vittan kilangu	<i>Asparagus racemosus</i>	Asparagaceae	1	NL
2	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	4	NL
3	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	6	NL
4	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae	8	NL
5	Akasha Garudan	<i>Corallocarpus epigaeus</i>	Cucurbitaceae	1	NL
6	Veli Paruthi	<i>Pergularia daemia</i>	Apocynaceae	6	LC
Total				26	

LC- Least Concern - [Species categorized as Least Concern (LC) is a taxon when it has been evaluated against the Red List criteria and does not qualify for Endangered Near Threatened.]. DD – Data Deficient [Species categorized as DD is a taxon when there is no inadequate information to make a direct, indirect assessment of its risk of extinction based on its distribution and/or population status].

Table 3.20 Floral diversity in 300m Radius Buffer zone

S.No	Scientific Name	Common Name	Family Name	Total No Counts	Quadrats with species	Total Quadrats	Density	Frequency	Abundance	Relative Density (RD)	Relative Frequency (RF)	IVI index	IUCN Conservation Status	Pi	LN(Pi)	Pi*LN(Pi)
Shannon Diversity Index																
Trees																
1	<i>Ailanthus excelsa</i>	Simaroubaceae	Tree of heaven	3	3	10	0.3	30	1.0	0.3	0.8	0.3	DD	0.02	-3.77	-0.09
2	<i>Albizia amara</i>	Fabaceae	Unjai maram	29	5	10	2.9	50	5.8	2.7	1.3	2.9	LC	0.22	-1.50	-0.33
3	<i>Azadirachta indica</i>	Meliaceae	Vembu	14	4	10	1.4	40	3.5	1.3	1.1	1.4	LC	0.11	-2.23	-0.24
4	<i>Borassus flabellifer</i>	Arecaceae	Panai maram	3	3	10	0.3	30	1.0	0.3	0.8	0.3	LC	0.02	-3.77	-0.09
5	<i>Cocos nucifera</i>	Arecaceae	Thennai maram	3	1	10	0.3	10	3.0	0.3	0.3	0.3	NL	0.02	-3.77	-0.09
6	<i>Commiphora berryi</i>	Burseraceae	Mul-kiluvai	21	6	10	2.1	60	3.5	2.0	1.6	2.1	LC	0.16	-1.82	-0.29
7	<i>Delonix elata</i>	Fabaceae	Padenarayan	2	2	10	0.2	20	1.0	0.2	0.5	0.2	LC	0.02	-4.17	-0.06
8	<i>Eucalyptus globules</i>	Myrtaceae	Eucalyptus	3	3	10	0.3	30	1.0	0.3	0.8	0.3	NL	0.02	-3.77	-0.09
9	<i>Ficus benghalensis</i>	Moraceae	Alamaram	2	1	10	0.2	10	2.0	0.2	0.3	0.2	NL	0.02	-4.17	-0.06
10	<i>Ficus religiosa</i>	Moraceae	Arasanmaram	1	2	10	0.1	20	0.5	0.1	0.5	0.1	LC	0.01	-4.87	-0.04
11	<i>Pongamia pinnata</i>	Fabaceae	Pongam oiltree	3	1	10	0.3	10	3.0	0.3	0.3	0.3	LC	0.02	-3.77	-0.09
12	<i>Prosopis juliflora</i>	Fabaceae	Velikathan maram	8	2	10	0.8	20	4.0	0.8	0.5	0.8	NL	0.06	-2.79	-0.17
13	<i>Tamarindus indica</i>	Fabaceae	Puliyamaram	2	1	10	0.2	10	2.0	0.2	0.3	0.2	LC	0.02	-4.17	-0.06
14	<i>Tectona grandis</i>	Verbenaceae	Thekku	2	1	10	0.2	10	2.0	0.2	0.3	0.2	NL	0.02	-4.17	-0.06
15	<i>Vachellia nilotica</i>	Fabaceae	Velvelam	12	7	10	1.2	70	1.7	1.1	1.9	1.2	LC	0.09	-2.38	-0.22
16	<i>Wrightia tinctoria</i>	Apocynaceae	Wetpalai maram	17	4	10	1.7	40	4.3	1.6	1.1	1.7	NL	0.13	-2.03	-0.27
17	<i>Ziziphus jujuba</i>	Rhamnaceae	Elanthai	5	5	10	0.5	50	1.0	0.5	1.3	0.5	LC	0.04	-3.26	-0.13
Shrubs																
1	<i>Abutilon indicum</i>	Meliaceae	Thuthi	7	4	10	0.7	40.0	1.8	4.43	5.80	10.23	NL	0.04	-3.12	-0.14
2	<i>Aerva javanica</i>	Amaranthaceae	Periya Pulapoo	15	7	10	1.5	70.0	2.1	9.49	10.14	19.64	NL	0.09	-2.35	-0.22
3	<i>Agave sisalana</i>	Asparagaceae	Kathalai	7	3	10	0.7	30.0	2.3	4.43	4.35	8.78	NL	0.04	-3.12	-0.14
4	<i>Barleria prionitis</i>	Acanthaceae	Sulli poo	5	3	10	0.5	30.0	1.7	3.16	4.35	7.51	NL	0.03	-3.45	-0.11
5	<i>Cadaba fruticosa</i>	Capparidaceae	Vizhuthi	4	2	10	0.4	20.0	2.0	2.53	2.90	5.43	NL	0.03	-3.68	-0.09
6	<i>Calotropis gigantea</i>	Apocynaceae	Erukku	10	5	10	1.0	50.0	2.0	6.33	7.25	13.58	NL	0.06	-2.76	-0.17
7	<i>Calotropis procera</i>	Apocynaceae	Vellerukku	4	1	10	0.4	10.0	4.0	2.53	1.45	3.98	LC	0.03	-3.68	-0.09
8	<i>Cereus pterogonus</i>	Cactaceae	Sippaai kathaalai	10	1	10	1.0	10.0	10.0	6.33	1.45	7.78	NL	0.06	-2.76	-0.17

9	<i>Chromolaena odorata</i>	Asteraceae	Communist pacha	6	3	10	0.6	30.0	2.0	3.80	4.35	8.15	NL	0.04	-3.27	-0.12
10	<i>Datura innoxia</i>	Solanaceae	Oomathai	15	2	10	1.5	20.0	7.5	9.49	2.90	12.39	NL	0.09	-2.35	-0.22
11	<i>Euphorbia antiquorum</i>	Euphorbiaceae	Chaturakalli	24	4	10	2.4	40.0	6.0	15.19	5.80	20.99	LC	0.15	-1.88	-0.29
12	<i>Euphorbia tirucalli</i>	Euphorbiaceae	Kodi kalli	4	3	10	0.4	30.0	1.3	2.53	4.35	6.88	LC	0.03	-3.68	-0.09
13	<i>Flueggea leuopyrus</i>	Phyllanthaceae	Vella Pulanci	8	6	10	0.8	60.0	1.3	5.06	8.70	13.76	NL	0.05	-2.98	-0.15
14	<i>Lantana camara</i>	Verbenaceae	Unnichadi	2	2	10	0.2	20.0	1.0	1.27	2.90	4.16	NL	0.01	-4.37	-0.06
15	<i>Martynia annua</i>	Martyniaceae	Kakka Muku Chedi	3	2	10	0.3	20.0	1.5	1.90	2.90	4.80	NL	0.02	-3.96	-0.08
16	<i>Opuntia dillenii</i>	Cactaceae	Sappathikalli	2	2	10	0.2	20.0	1.0	1.27	2.90	4.16	NL	0.01	-4.37	-0.06
17	<i>Senna auriculata</i>	Fabaceae	Avaarai	13	3	10	1.3	30	4.3	8.23	4.35	12.58	LC	0.08	-2.50	-0.21
18	<i>Senna occidentalis</i>	Fabaceae	Coffee Senna	5	5	10	0.5	50	1.0	3.16	7.25	10.41	LC	0.03	-3.45	-0.11
19	<i>Waltheria indica</i>	Malvaceae	Boater Bush	7	5	10	0.7	50	1.4	4.43	7.25	11.68	NL	0.04	-3.12	-0.14
20	<i>Vitex negundo</i>	Lamiaceae	Karunochi	2	2	10	0.2	20	1.0	1.27	2.90	4.16	LC	0.01	-4.37	-0.06
21	<i>Ziziphus oenoplia</i>	Rhamnaceae	Suraimullu	5	4	10	0.7	40.0	1.8	4.43	5.80	10.23	NL	0.03	-3.45	-0.11
Herbs																
1	<i>Acalypha indica</i>	Euphorbiaceae	Kuppaimeni	8	6	10	0.8	60.0	1.3	1.13	2.70	3.83	NL	0.02	-4.11	-0.07
2	<i>Acanthospermum hispidum</i>	Asteraceae	Kombumul	11	8	10	1.1	80.0	1.4	1.55	3.60	5.15	NL	0.06	-2.77	-0.17
3	<i>Achyranthes aspera</i>	Amaranthaceae	Nayuruvi	16	7	10	1.6	70.0	2.3	2.25	3.15	5.41	NL	0.01	-4.52	-0.05
4	<i>Aerva lanata</i>	Amaranthaceae	Pulapoo	12	5	10	1.2	50.0	2.4	1.69	2.25	3.94	NL	0.05	-2.91	-0.16
5	<i>Allmania nodiflora</i>	Amaranthaceae	Kumattikkirai	8	7	10	0.8	70.0	1.1	1.13	3.15	4.28	NL	0.05	-3.01	-0.15
6	<i>Alternanthera pungens</i>	Amaranthaceae	Mullu Ponnangani	7	4	10	0.7	40.0	1.8	0.99	1.80	2.79	NL	0.02	-4.11	-0.07
7	<i>Alysicarpus longifolius</i>	Fabaceae	Alyce clove	14	7	10	1.4	70.0	2.0	1.97	3.15	5.12	NL	0.02	-3.96	-0.08
8	<i>Boerhavia diffusa</i>	Nyctaginaceae	Mukurathai	10	7	10	1.0	70.0	1.4	1.41	3.15	4.56	NL	0.01	-5.21	-0.03
9	<i>Celome viscosa</i>	Capparidaceae	Nai Kadugu	6	5	10	0.6	50.0	1.2	0.85	2.25	3.10	NL	0.01	-4.30	-0.06
10	<i>Cenchrus ciliaris</i>	Poaceae	Buffel Grass	49	9	10	4.9	90.0	5.4	6.90	4.05	10.96	LC	0.01	-4.81	-0.04
11	<i>Cenchrus pedicellatus</i>	Poaceae	Annaul Mission Grass	165	10	10	16.5	100.0	16.5	23.24	4.50	27.74	LC	0.02	-3.71	-0.09
12	<i>Chloris barbata</i>	Poaceae	Chevvarakupul	20	8	10	2.0	80.0	2.5	2.82	3.60	6.42	NL	0.02	-4.11	-0.07
13	<i>Commelina benghalensis</i>	Commelinaceae	Kanamvazhalai	8	2	10	0.8	20.0	4.0	1.13	0.90	2.03	LC	0.01	-4.52	-0.05
14	<i>Corchorus aestuans</i>	Malvaceae	Punaku Poandu	5	4	10	0.5	40.0	1.3	0.70	1.80	2.51	NL	0.01	-4.52	-0.05
15	<i>Crotalaria angulata</i>	Fabaceae	Rabbit Bells	4	2	10	0.4	20.0	2.0	0.56	0.90	1.46	NL	0.02	-4.11	-0.07
16	<i>Cucumis maderaspatanus</i>	Cucurbitaceae	Musumusukkai	6	3	10	0.6	30.0	2.0	0.85	1.35	2.20	NL	0.07	-2.65	-0.19
17	<i>Cynodon dactylon</i>	Poaceae	Arugampul	23	8	10	2.3	80	2.9	3.24	3.60	6.84	NL	0.01	-4.52	-0.05
18	<i>Cyperus articulatus</i>	Cyperaceae	Koraikkilangu	4	2	10	0.4	20	2.0	0.56	0.90	1.46	NL	0.04	-3.27	-0.12
19	<i>Cyperus compressus</i>	Cyperaceae	Kunnakora	20	3	10	2	30	6.7	2.82	1.35	4.17	LC	0.02	-3.71	-0.09
20	<i>Cyperus rotundus</i>	Cyperaceae	Korai	18	3	10	1.8	30	6.0	2.54	1.35	3.89	LC	0.04	-3.27	-0.12
21	<i>Desmodium triflorum</i>	Fabaceae	Siru puladi	6	4	10	0.6	40	1.5	0.85	1.80	2.65	NL	0.03	-3.42	-0.11
22	<i>Digeria muricata</i>	Amaranthaceae	Thoiya keera	7	1	10	0.7	10	7.0	0.99	0.45	1.44	NL	0.03	-3.60	-0.10
23	<i>Digitaria ciliaris</i>	Poaceae	Southern Crabgrass	2	2	10	0.2	20	1.0	0.28	0.90	1.18	NL	0.02	-4.11	-0.07

24	<i>Drimia indica</i>	Asparagaceae	Kattu Venkayam	5	2	10	0.5	20.0	2.5	0.70	0.90	1.61	NL	0.01	-4.30	-0.06
25	<i>Euphorbia hirta</i>	Euphorbiaceae	Amman Paccharisi	3	2	10	0.3	20.0	1.5	0.42	0.90	1.32	NL	0.03	-3.51	-0.11
26	<i>Euphorbia prostrata</i>	Euphorbiaceae	Sithrapaalavi	9	4	10	0.9	40.0	2.3	1.27	1.80	3.07	NL	0.01	-4.30	-0.06
27	<i>Evolvulus alsinoides</i>	Convolvulaceae	Vishnukrandai	6	6	10	0.6	60.0	1.0	0.85	2.70	3.55	NL	0.07	-2.69	-0.18
28	<i>Hibiscus lobatus</i>	Malvaceae	Magathutthi	4	3	10	0.4	30.0	1.3	0.56	1.35	1.91	NL	0.03	-3.60	-0.10
29	<i>Hyptis suaveolens</i>	Lamiaceae	Wild thulasi	4	2	10	0.4	20.0	2.0	0.56	0.90	1.46	NL	0.14	-1.99	-0.27
30	<i>Indigofera astragalina</i>	Fabaceae	silky indigo	6	2	10	0.6	20.0	3.0	0.85	0.90	1.75	NL	0.03	-3.51	-0.11
31	<i>Leucas aspera</i>	Lamiaceae	Tumbai	26	8	10	2.6	80.0	3.3	3.66	3.60	7.27	NL	0.05	-3.01	-0.15
32	<i>Martynia annua</i>	Martyniaceae	Thaelkodukkukai	4	1	10	0.4	10.0	4.0	0.56	0.45	1.01	NL	0.02	-3.96	-0.08
33	<i>Ocimum tenuiflorum</i>	Lamiaceae	Thulasi	14	8	10	1.4	80.0	1.8	1.97	3.60	5.58	NL	0.02	-3.96	-0.08
34	<i>Oldenlandia corymbosa</i>	Rubiaceae	Kattucayaver	9	5	10	0.9	50.0	1.8	1.27	2.25	3.52	NL	0.02	-4.11	-0.07
35	<i>Parthenium hysterophorus</i>	Asteraceae	Partiniyam	14	3	10	1.4	30.0	4.7	1.97	1.35	3.32	NL	0.06	-2.77	-0.17
36	<i>Pavonia gallaensis</i>	Malvaceae	Paca poondu	12	3	10	1.2	30.0	4.0	1.69	1.35	3.04	NL	0.01	-4.52	-0.05
37	<i>Pavonia odorata</i>	Malvaceae	Peramutti	10	4	10	1.0	40.0	2.5	1.41	1.80	3.21	NL	0.05	-2.91	-0.16
38	<i>Pedaliu murex</i>	Pedaliaceae	Yanai nerunji	6	2	10	0.6	20.0	3.0	0.85	0.90	1.75	NL	0.05	-3.01	-0.15
39	<i>Phyllanthus niruri</i>	Phyllanthaceae	Keelaneeli	5	3	10	0.5	30.0	1.7	0.70	1.35	2.06	NL	0.02	-4.11	-0.07
40	<i>Pupalia lappacea</i>	Amaranthaceae	Adai-otti	11	6	10	1.1	60	1.8	1.55	2.70	4.25	LC	0.02	-3.96	-0.08
41	<i>Rungia crenata</i>	Acanthaceae	Purple Tooth Rungia,	5	3	10	0.5	30	1.7	0.70	1.35	2.06	NL	0.01	-5.21	-0.03
42	<i>Sorghum vulgare</i>	Poaceae	Solam	25	1	10	2.5	10	25.0	3.52	0.45	3.97	NL	0.01	-4.30	-0.06
43	<i>Spermacoce hispida</i>	Rubiaceae	Nattai choori	10	6	10	1	60	1.7	1.41	2.70	4.11	NL	0.01	-4.81	-0.04
44	<i>Tephrosia purpurea</i>	Fabaceae	Kolunji chadi	50	9	10	5	90	5.6	7.04	4.05	11.10	NL	0.02	-3.71	-0.09
45	<i>Tribulus terrestris</i>	Zygophyllaceae	Nerunji mull	11	7	10	1.1	70	1.6	1.55	3.15	4.70	NL	0.02	-4.11	-0.07
46	<i>Trichodesma indicum</i>	Boraginaceae	Kavil Thumbai	18	7	10	1.8	70	2.6	2.54	3.15	5.69	NL	0.01	-4.52	-0.05
47	<i>Tridax procumbens</i>	Asteraceae	Veetukaayapoond	7	4	10	0.7	40	1.8	0.99	1.80	2.79	NL	0.01	-4.52	-0.05
48	<i>Wedelia trilobata</i>	Asteraceae	Mookuthi poond	7	4	10	0.7	40	1.8	0.99	1.80	2.79	NL	0.02	-4.11	-0.07
Climbers																
1	<i>Abrus precatorius</i>	Fabaceae	Kundumani	1	1	10	0.1	10.0	1.0	1.49	3.23	4.72	NL	0.01	-4.20	-0.06
2	<i>Asparagus racemosus</i>	Asparagaceae	Thaneer kilangu	1	1	10	0.1	10.0	1.0	1.49	3.23	4.72	NL	0.01	-4.20	-0.06
3	<i>Cardiospermum helicacabum</i>	Sapindaceae	Mudakkotan	4	2	10	0.4	20.0	2.0	5.97	6.45	12.42	NL	0.06	-2.82	-0.17
4	<i>Cissus quadrangularis</i>	Vitaceae	Perandai	19	6	10	1.9	60.0	3.2	28.36	19.35	47.71	NL	0.28	-1.26	-0.36
5	<i>Coccinia grandis</i>	Cucurbitaceae	Kovai	20	6	10	2.0	60.0	3.3	29.85	19.35	49.21	NL	0.30	-1.21	-0.36
6	<i>Corallorhiza epigaea</i>	Cucurbitaceae	Akasha Garudan	1	1	10	0.1	10.0	1.0	1.49	3.23	4.72	NL	0.01	-4.20	-0.06
7	<i>Cuscuta reflexa</i>	Convolvulaceae	Thuthuma Kothan	5	3	10	0.5	30.0	1.7	7.46	9.68	17.14	LC	0.07	-2.60	-0.19
8	<i>Pergularia daemia</i>	Apocynaceae	Veli Paruthi	7	5	10	0.7	50.0	1.4	10.45	16.13	26.58	LC	0.10	-2.26	-0.24
9	<i>Tinospora cordifolia</i>	Menispermaceae	Seenthil Kodi	9	6	10	0.9	60.0	1.5	13.43	19.35	32.79	NL	0.13	-2.01	-0.27

LC- Least Concern - [Species categorized as Least Concern (LC) is a taxon when it has been evaluated against the Red List criteria and does not qualify for Endangered Near Threatened.]. DD – Data Deficient [Species categorized as DD is a taxon when there is no inadequate information to make a direct, VU- Vulnerable indirect assessment of its risk of extinction based on its distribution and/or population status]. <https://www.iucnredlist.org/>
<https://bsi.gov.in/uploads/documents/research-program/Threatened-plants-of%20India.pdf>

Table 3.21 Species Richness (Index) in 300m Radius

Details	H	H max	Evenness	Species Richness
Tree	2.38	2.83	0.84	2.39
Herbs	3.22	3.87	0.83	7.96
Shrubs	2.83	3.09	0.93	3.95
Climbers	1.77	2.20	0.81	1.90

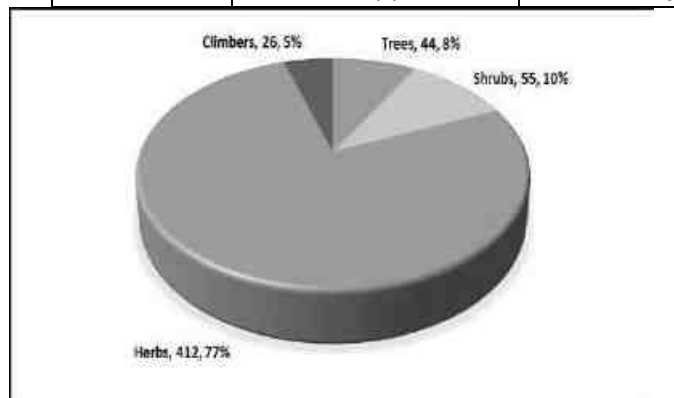


Figure 3.25 Floral diversity pattern in mine lease area

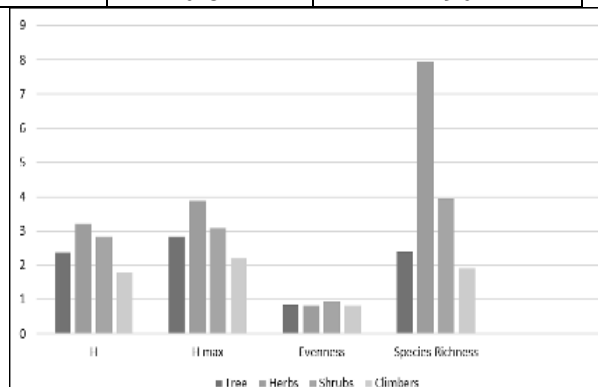


Figure 3.26 Species Richness (Index) in 300m Radius

Table 3.22 floral diversity in 10km radius

S.No	Local Name	Scientific name	Family name
TREES			
1	Vembu	<i>Azadirachta indica</i>	Meliaceae
2	Thekku	<i>Tectona grandis</i>	Verbenaceae
3	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae
4	Thennai maram	<i>Cocos nucifera</i>	Arecaceae
5	Manga	<i>Mangifera indica</i>	Anacardiaceae
6	Puliyamaram	<i>Tamarindus indica</i>	Legumes
7	Vadanarayani	<i>Delonix elata</i>	Fabaceae
8	Thenpazham	<i>Muntingia calabura</i>	Tiliaceae
9	Punnai	<i>Calophyllum inophyllum</i>	Calophyllaceae
10	Ilanthai	<i>Ziziphus jujubha</i>	Rhamnaceae
11	Karuvelam	<i>Acacia nilotica</i>	Mimosaceae
12	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae
13	Arai nelli	<i>Phyllanthus acidus</i>	Euphorbiaceae
14	Panai maram	<i>Borassus flabellifer</i>	Arecaceae
15	Sapota	<i>Manilkara zapota</i>	Sapotaceae
16	Navalmaram	<i>Syzygium cumini</i>	Myrtaceae
17	Alamaram	<i>Ficus benghalensis</i>	Moraceae
18	Vazhaimaram	<i>Musa</i>	Musaceae
19	Karuvelam maram	<i>Vachellia nilotica</i>	Fabaceae
20	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae
21	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae
22	Maramalli	<i>Millingtonia hortensis</i>	Bignoniaceae
23	Kuduka puli	<i>Pithecellobium dulce</i>	Mimosaceae
24	Karungali	<i>Acacia sundra</i>	Legumes
25	Nochi	<i>Vitex negundo</i>	Lamiaceae
26	Karimurungai	<i>Moringa olefera</i>	Moraginaceae
27	Pappali maram	<i>Carica papaya L</i>	Caricaceae
28	Poovarasu	<i>Thespesia populnea</i>	Malvaceae
29	Arasanmaram	<i>Ficus religiosa</i>	Moraceae
30	Vilvam	<i>Aegle marmelos</i>	Rutaceae
31	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae
32	Nettilingam	<i>Polyalthia longifolia</i>	Annonaceae
33	Koyya	<i>Psidium guajava</i>	Myrtaceae

34	Seethapazham	<i>Annona reticulata</i>	Annonaceae
35	Savukku	<i>Casuarina L.</i>	Casuarinaceae
SHRUBS			
1	Avarai	<i>Senna auriculata</i>	Fabaceae
2	Sundaika	<i>Solanum torvum</i>	Solanaceae
3	Puramuttai	<i>Chrozophora rottleri</i>	Euphorbiaceae
4	Arali	<i>Nerium indicum</i>	Apocynaceae
5	Seemaigaththi	<i>Cassia alata</i>	Caesalpinaceae
6	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae
7	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae
8	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae
9	Idlipoo	<i>xoracoc cineae</i>	Rubiaceae
10	Thuthi	<i>Abutilon indicum</i>	Meliaceae
11	Nithyakalyani	<i>Cathranthus roseus</i>	Apocynaceae
12	Uumaththai	<i>Datura metel</i>	Solanaceae
13	Kundumani	<i>Abrus precatorius</i>	Fabaceae
14	Erukku	<i>Calotropis gigantea</i>	Apocynaceae
15	Neermulli	<i>Hydrophila auriculata</i>	Acanthaceae
Herbs, Climber, Creeper & Grasses			
1	Kuppaimeni	<i>Acalypha indica</i>	Amaranthaceae
2	Kombumul	<i>Acanthospermum hispidum</i>	Asteraceae
3	Nayuruvi	<i>Achyranthes aspera</i>	Nyctaginaceae
4	Pulapoo	<i>Aerva lanata</i>	Euphorbiaceae
5	Kumattikkirai	<i>Allmania nodiflora</i>	Asteraceae
6	Mullu Ponnangani	<i>Alternanthera pungens</i>	Amaranthaceae
7	Alyce clove	<i>Alysicarpus longifolius</i>	Amaranthaceae
8	Mukuratthai	<i>Boerhavia diffusa</i>	Amaranthaceae
9	Nai Kadugu	<i>Celome viscosa</i>	Amaranthaceae
10	Buffel Grass	<i>Cenchrus ciliaris</i>	Fabaceae
11	Annal Mission Grass	<i>Cenchrus pedicellatus</i>	Nyctaginaceae
12	Chevvarakupul	<i>Chloris barbata</i>	Capparidaceae
13	Kanamvazhalai	<i>Commelina benghalensis</i>	Poaceae
14	Punaku Poondur	<i>Corchorus aestuans</i>	Poaceae
15	Rabbit Bells	<i>Crotalaria angulata</i>	Poaceae
16	Musumusukkai	<i>Cucumis maderaspatanus</i>	Commelinaceae
17	Arugampul	<i>Cynodon dactylon</i>	Malvaceae
18	Koraikkilangu	<i>Cyperus articulatus</i>	Fabaceae
19	Kunnakora	<i>Cyperus compressus</i>	Cucurbitaceae
20	Korai	<i>Cyperus rotundus</i>	Poaceae
21	Siru puladi	<i>Desmodium triflorum</i>	Cyperaceae
22	Thoiya keerai	<i>Digeria muricata</i>	Cyperaceae
23	Southern Crabgrass	<i>Digitaria ciliaris</i>	Cyperaceae
24	Kattu Venkayam	<i>Drimia indica</i>	Fabaceae
25	Amman Paccharisi	<i>Euphorbia hirta</i>	Amaranthaceae
26	Sithrapaalavi	<i>Euphorbia prostrata</i>	Poaceae
27	Vishnukrandai	<i>Evolvulus alsinoides</i>	Asparagaceae
28	Magathutthi	<i>Hibiscus lobatus</i>	Euphorbiaceae
29	Wild thulasi	<i>Hyptis suaveolens</i>	Euphorbiaceae
30	silky indigo	<i>Indigofera astragalina</i>	Convolvulaceae
31	Tumbai	<i>Leucas aspera</i>	Malvaceae
32	Thaelkodukkukai	<i>Martynia annua</i>	Lamiaceae
33	Thulasi	<i>Ocimum tenuiflorum</i>	Fabaceae
34	Kattucayaver	<i>Oldenlandia corymbosa</i>	Lamiaceae
35	Parttiniyam	<i>Parthenium hysterophorus</i>	Martyniaceae
36	Paca poondur	<i>Pavonia gallaensis</i>	Lamiaceae
37	Peramutti	<i>Pavonia odorata</i>	Rubiaceae
38	Yanai nerunji	<i>Pedaliium murex</i>	Asteraceae

39	Keelaneeli	<i>Phyllanthus niruri</i>	Malvaceae
40	Adai-otti	<i>Pupalia lappacea</i>	Malvaceae
41	Purple Tooth Rungia,	<i>Rungia crenata</i>	Pedaliaceae
42	Solam	<i>Sorghum vulgaris</i>	Phyllanthaceae
43	Nattai choori	<i>Spermacoce hispida</i>	Amaranthaceae
44	Kolunji chadi	<i>Tephrosia purpurea</i>	Acanthaceae
45	Nerunji mull	<i>Tribulus terrestris</i>	Poaceae
46	Kavil Thumbai	<i>Trichodesma indicum</i>	Rubiaceae
47	Veetukaayapoondur	<i>Tridax procumbens</i>	Fabaceae
48	Mookuthi poondur	<i>Wedelia trilobata</i>	Fabaceae
49	Zygophyllaceae	<i>Abrus precatorius</i>	Asparagaceae
50	Kundumani	<i>Asparagus racemosus</i>	Sapindaceae
51	Thaneer kilangu	<i>Cardiospermum helicacabum</i>	Vitaceae
52	Mudakkotan	<i>Cissus quadrangularis</i>	Cucurbitaceae
53	Perandai	<i>Coccinia grandis</i>	Cucurbitaceae
54	Kovai	<i>Corallocarpus epigaeus</i>	Convolvulaceae
55	Akasha Garudan	<i>Cuscuta reflexa</i>	Apocynaceae
56	Thuthuma Kothan	<i>Pergularia daemia</i>	Menispermaceae
57	Veli Paruthi	<i>Tinospora cordifolia</i>	

3.5.2 Funa

The faunal survey was carried out for Mammals, Birds, Reptiles, Amphibians and Butterflies. There are no rare, endangered, threatened (RET) and endemic species present in core area.

Table 3.23 Methodology applied during survey of fauna

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

Fauna Composition in the Core Zone

The 25 varieties of species observed in the core zone. Among them numbers of Insects 8 (32%), Reptiles 3 (12%), Mammals 5 (20%) and Avian 9 (36%). A total of 25 species belonging to 22 families have been recorded from the core mining lease area. Number of species decreases towards the mining area this might be due the lack of vegetation. None of these species are threatened or endemic. There is no Schedule I species and eight species are under schedule IV according to Indian wild life Act 1972. A total 9 species of birds were sighted in the mining lease area. 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. 3.24.

Fauna Composition in the buffer Zone

The faunal species observed in the study area are listed in Table 3.25. A total of 39 species were recorded in buffer zone of the project area. Among the 39 species recorded, the distribution was as follows: 13 birds, 16% insects, 04% reptiles, and 06% mammals. These

species were cross-checked against the IUCN Red List Database version 3.1 to identify any threatened species. Data analysis revealed that 21 species are categorized as Least Concern on the Red List, while 18 species were not listed. The analysis indicates that there are no REET species in the core and buffer zones of the proposed quarry site.

Table 3.24 Fauna in the Core zone

S. No	Common name/English Name	Family Name	Scientific Name	Schedule list wildlife Protection act 1972	IUCN Red List data
INSECTS					
1	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	NL	NL
2	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
3	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
4	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
5	Stick insect	Lonchodidae	<i>carausius morosus</i>	NL	LC
6	Mottled emigrant	Peridae	<i>Catopsilia pyranthe</i>	NL	LC
7	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
8	Acraea violae	Nymphalidae	<i>Acraea violae</i>	NL	LC
REPTILES					
1	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
2	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
3	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
MAMMALS					
1	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	NL
2	Cow	Bovidae	<i>Bos taurus</i>	NL	NL
3	Common dog	Canidae	<i>Canis lupus familiaris</i>	NL	NL
4	Common cat	Felidae	<i>Felis silvestris catus</i>	NL	NL
5	Squirrel	Sciuridae	<i>Funambulus palmarum</i>	NL	NL
AVES					
1	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
2	Koel	Cuculidae	<i>Eudynamys</i>	Schedule IV	LC
3	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
4	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
5	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
6	Koel	Cuculidae	<i>Eudynamys scolopaceus</i>	Schedule IV	LC
7	Crow Pheasant	Cuculidae	<i>Centropus sinensis</i>	Schedule IV	LC
8	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
9	Grey drongo	Dicruridae	<i>Dicrurus leucophaeus</i>	Schedule IV	LC

Table 3.25 Fauna in the buffer zone

S.No	Local Name	Scientific name	Family Name	IUCN Status
Aves				
1	Indian myna	<i>Acridotheres tristis</i>	Sturnidae	LC
2	Rose-ringed Parakeet	<i>Alexandrinus krameri</i>	Psittacidae	LC
3	Rock Pigeon	<i>Columba livia</i>	Columbidae	LC
4	Indian robin	<i>Copsychus fulicatus</i>	Muscicapidae	LC
5	Indian Roller	<i>Coracias benghalensis</i>	Coraciidae	LC
6	House Crow	<i>Corvus splendens</i>	Corvidae	LC
7	Black drongo	<i>Dicrurus macrocercus</i>	Dicruridae	LC
8	Asian koel	<i>Eudynamys scolopaceus</i>	Cuculidae	LC
9	Yellow Wagtail	<i>Motacilla flava</i>	Motacillidae	LC
10	White browed Wagtail	<i>Motacilla maderaspatensis</i>	Motacillidae	LC
11	Gray francolin	<i>Ortygornis pondicerianus</i>	Phasianidae	LC
12	House Sparrow	<i>Passer domesticus</i>	Passeridae	LC
13	Spotted dove	<i>Spilopelia chinensis</i>	Columbidae	LC

Insects				
14	Tawny coster	<i>Acraea terpsicore</i>	Nymphalidae	NL
15	Grasshopper	<i>Acrotylus humbertianus</i>	Acrididae	NL
16	Lemon emigrant	<i>Catopsilia pomona</i>	Pieridae	NL
17	Mottled emigrant	<i>Catopsilia pyranthe</i>	Pieridae	NL
18	Grasshopper	<i>Chrotogonus</i> sp.	Pyrgomorphidae	NL
19	Plaina tiger butterfly	<i>Danaus chrysippus</i>	Nymphalidae	LC
20	Potter wasps	<i>Delta esuriens</i>	Vespidae	NL
21	Chocolate pansy	<i>Junonia iphita</i>	Nymphalidae	NL
22	Lemon pansy	<i>Junonia lemonias</i>	Nymphalidae	NL
23	Black-and-red-bug	<i>Lygaeus equestris</i>	Lygaeidae	NL
24	Antlion	<i>Myrmeleon</i> sp.	Myrmeleontidae	NL
25	Slender skimmer	<i>Orthetrum sabina</i>	Libellulidae	LC
26	Lime swallowtail	<i>Papilio demoleus</i>	Papilionidae	NL
27	Common Mormon`	<i>Papilio polytes</i>	Papilionidae	NL
28	Silvandu	<i>Platypleura kaempferi</i>	Cicadidae	NL
29	Crimson dropwing	<i>Trithemis aurora</i>	Libellulidae	LC
Mammals				
30	Cow	<i>Bos taurus</i>	Bovidae	NL
31	Dog	<i>Canis lupus familiaris</i>	Canidae	NL
32	Goat	<i>Capra hircus</i>	Bovidae	NL
33	Cat	<i>Felis catus</i>	Felidae	NL
34	Indian hare	<i>Lepus nigricollis</i>	Leporidae	LC
35	Sheep	<i>Ovis aries</i>	Bovidae	NL
Reptiles				
36	Oriental garden lizard	<i>Calotes versicolor</i>	Agamidae	LC
37	Indian palm squirrel	<i>Funambulus palmarum</i>	Sciuridae	LC
38	Common skink	<i>Mabuya carinatus</i>	Scincidae	LC
39	Fan-Throated Lizard	<i>Sitana ponticeriana</i>	Agamidae	LC

Aquatic Vegetation

A field survey to assess aquatic vegetation was also carried out during the study period. There are no water bodies within a radius of 1 km from the mining lease area. The list of aquatic vegetation found in water bodies within a radius of 10 km is given in Table 3.26.

Table 3.26 Aquatic Vegetation

S. No.	Scientific Name	Common Name	Vernacular Name (Tamil)	IUCN Red List of Threatened Species
1	<i>Eichornia Crassipe</i>	Water Hyacinth	Agayatamarai	NA
2	<i>Aponogeton natans</i>	Floating Lace Plant	Kottikizhangu	NA
3	<i>Carex Cruciata</i>	Cross Grass	Koraipullu	NA
4	<i>Cynodon Dactylon</i>	Scutch Grass	Arugampullu	LC
5	<i>Cyperus Exaltatus</i>	Tall Flat Sedge	Koraikizhangu	LC

*Lc- Least Concern, Na-Not Yet Assessed

Food chain

A food chain diagram shows the flow of energy and nutrients through various organisms in an environment in a linear fashion. The food chain starts with producers and ends with decomposers. The food chain is distributed among organisms around a quarry as shown in the figure below.

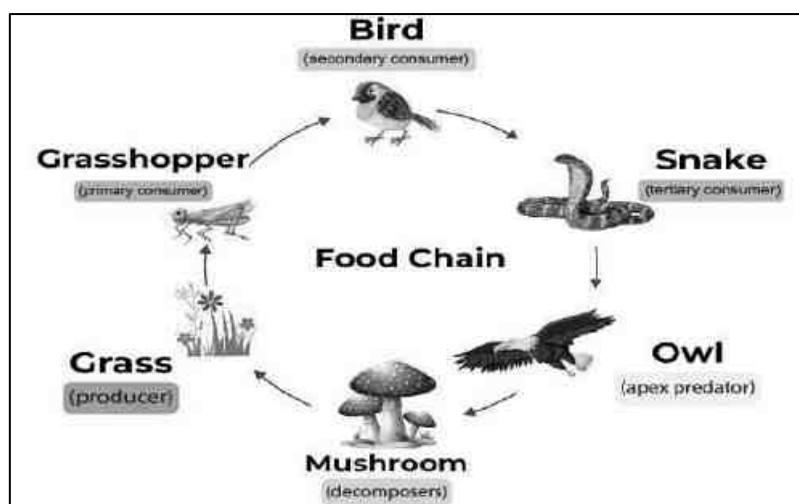


Figure 3.27 A sample diagram showing the food chain around a mining lease area
Endangered and endemic species as per the IUCN Red List

There are no rare, endangered and endemic species found in the study area. There are no biosphere reserves or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), ecologically sensitive zone in 10km radius.

Agriculture & Horticulture Activities in the study area

The principal crops of the district are paddy, millets, pulses, oilseeds, sugarcane and banana. The major paddy area is in Kulithalai and Krishnarayapuram taluks. Pulses are grown in rice fallow areas. In uplands millets like sorghum, pearl millet pulses such as red gram, horse gram oilseeds such as groundnut, gingelly and sunflower are grown both under irrigated and rain fed conditions. In most part of the district, livestock formed major source of income. Allied agricultural activities like animal husbandry are the main source of income to the income to the farmers in rain fed are. Potential exists for production of high value crops such as tropic vegetables, garland flowers, medicinal herbals etc.

(Source: https://agritech.tnau.ac.in/dev_blocks/pdf/karur.pdf)

Major Agricultural Crops

The agriculture activity is scarce in and around the buffer zones of the proposed rough stone and gravel quarry. Most part the buffer zone is rain fed dry land and with limited agriculture crops. Details of agricultural field crops within 1 km radius of the project area are given in Table. 3.27.

Table 3.27 Major Crops in 1km radius

S.No	Major crops	Scientific name	Families
1	Sorghum	<i>Sorghum bicolor</i>	Poaceae
2	Sesame	<i>Sesamum indicum</i>	Pedaliaceae
3	Groundnut	<i>Arachis hypogaea</i>	Legumes
4	Millets	<i>Pennisetum glaucum</i>	Poaceae
5	Coconut	<i>Cocos nucifera</i>	Areaceae

Major Horticulture Crops

Horticulture involves the cultivation of fruits, vegetables, nuts, seeds, herbs, sprouts, mushrooms, algae, flowers, and non-food crops such as grass and ornamental trees and plants. It also includes plant conservation, landscape restoration, landscape and garden design. The farmers in the study region grow in this district are fruit crops like banana, sapota and guava, vegetables like tomato, brinjal, vendai, chillies, onion and tapioca, spices like turmeric. (Table 3.28)

Table 3.28 Major Field Crops & Horticulture cultivation in 1km radius

Sl.No	Common Name	Scientific Name	Family
Major Horticultural Crops			
1	Guava	<i>Psidium guajava</i>	Myrtaceae
2	Sapota	<i>Manilkara zapota</i>	Sapotaceae
3	Papaya	<i>Carica papaya</i>	Caricaceae
Vegetables			
4	Onion	<i>Allium cepa</i>	Amaryllidaceae
5	Brinjal	<i>Solanum melongena</i>	Nightshade
6	Tomato	<i>Solanum lycopersicum</i>	Nightshade
7	Bottle Gourd	<i>Lagenaria siceraria</i>	Cucurbits
8	Vendai kai	<i>Abelmoschus esculentus</i>	Mallows
9	Moringa	<i>Moringa oleifera</i>	Moringaceae

Results

The biodiversity assessment of the proposed project site has identified no ecologically sensitive areas within the core or buffer zones. The flora and fauna observed in the study area are commonly occurring species, with no IUCN-listed rare, endangered, endemic, or threatened (REET) species present, except for some species classified as of least concern. Additionally, the site is not located on any migratory routes for fauna. Operations at the stone and gravel quarry may generate dust particles. Implementing a green belt composed of native trees could help mitigate the dust effect on nearby flora and fauna. Key recommendations from the assessment include adopting green mining strategies to minimize environmental impact and developing a green belt with native trees to reduce dust movement from mining activities. 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

The major developmental activities in mining/Industrial sector are required for economic development as well as creation of employment opportunities (direct and indirect) and to meet the basic/modern needs of the society, which ultimately results in overall improvement of the quality of life through upliftment of social, economic, health, education and nutritional status in the project region, state as well as the country. In this manner all developmental projects have direct as well as indirect relationships with socioeconomic

aspects, which also include public acceptability for new developmental projects. Thus, the study of socioeconomic component incorporating various facets related to prevailing social and cultural conditions and economic status of the rough stone and granite quarry project region is an important part of EIA study. The study of these parameters helps in identification, prediction and evaluation of the likely impacts on the socio economics and parameters of human interest due to the project.

3.6.1 Objectives of the Study

The objectives of the socio-economic impact assessment are as follows:

- a) To study the socio-economic status of the people living in the study area of the project.
- b) To identify the basic needs of the nearby villages within the study area.
- c) To assess the impact on socio-economic environment due to the project.
- d) To provide the employment and improved living standards.
- e) To analysis of impact of socio economic and Environmental Infrastructure facilities and road accessibility.

Baseline Information:

The baseline information is collected in order to define the socio-economic profile of the study area. The process related database thus generated includes:

- Demographic structure
- Infrastructure base in the area
- Economic structure
- Health status
- Cultural attributes
- Public awareness and their concern about the project

3.6.2 Scope of Work

- To study the Socio-economic Environment of area from the secondary sources
- Primary and secondary Data Collection and Analysis
- Identification of impacts due to the mining projects
- Mitigation Measures

3.6.3 Methodology

The methodology adopted for the socio-economic impact assessment is as follows:

- a) Data such as number of houses, population, literacy, employment opportunities etc. will be collected directly from local people and analysed.
- b) The details of the activities and population structure have been obtained from Census 2011 and analysed.
- c) Based on the above data, impacts due to plant operation on the community have been assessed and recommendations for further improvement have been made.

3.6.4 Sources of Information and Data Base

To achieve the above objectives, the information has been collected from both primary and secondary sources. Both primary data and secondary data have been analysed by means of suitable statistical techniques for the purpose of verifying the above selected hypotheses concerned with the surrounding area.

3.6.5 Primary Survey

The primary data collection includes the collection of data through a structured interview schedule by direct observation method. The questionnaire survey includes both open and closed methods. The sample size is limited respondents, who were selected on the basis of simple random sampling from Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu State, in the field survey has been divided into two major segments namely Primary Zone (0 -2 km) and Secondary Zone (2 - 5 km). The questionnaires were designed to suit the subjects considering their rural background enabling to furnish correct information and data as far as possible. Data were collected at village level and household level by questionnaires and focused group discussions.

3.6.6 Collection of Data from Secondary Sources

Data from secondary sources were collected on following aspects:

- Demographic profile of the area
- Economic profile of the area

Table 3.29 Type of Information and Sources

Information	Source
Demography	District Census Handbook, Govt. of India
Economic profile of the area	Census of India, Tamil Nadu State

3.6.7 Karur District

Karur District is one of the 38 districts (a district located centrally along the Kaveri and Amaravathi rivers) in the Indian state of Tamil Nadu. The main town in Karur District is the city of Karur, which is also the district headquarters. Karur district has two Municipalities, 11 Town Panchayats, 158 Village Panchayats and 203 Revenue Villages. It consists of two Lok Sabha constituencies, Karur and Perambalur. The four Tamil Nadu Assembly constituencies in Karur are Aravakkurichi, Karur, Krishnarayapuram, and Kulithalai. According to 2011 census, Karur district has a population of 1,064,493 with a sex-ratio of 1,015 females for every 1,000 males, much above the national average of 929. 40.82% of the population lived in urban areas. A total of 102,731 were under the age of six, constituting 52,969 males and 49,762 females. Scheduled Castes and Scheduled Tribes accounted for 20.80% and 0.05% of the population respectively with the average literacy of 68%, compared to the national average of 72.99%. The district has a total of 287,095 households with 543,298 workers, comprising 83,800

cultivators, 182,639 main agricultural labourers, 10,162 in house hold industries, 231,906 other workers, 34,791 marginal workers, 2,072 marginal cultivators, 18,198 marginal agricultural labourers, 1,178 marginal workers in household industries and 13,343 other marginal workers.<https://Karur.nic.in/about-district/>

3.6.8 Study area-Thennilai East Village, Pugalur Taluk

Thennilai is a large village located in Pugalur Taluka of Karur district, Tamil Nadu with total 1094 families residing. The Thennilai village has population of 3485 of which 1716 are males while 1769 are females as per Population Census 2011. In Thennilai village population of children with age 0-6 is 241 which makes up 6.92 % of total population of village. Average Sex Ratio of Thennilai village is 1031 which is higher than Tamil Nadu state average of 996. Child Sex Ratio for the Thennilai as per census is 1042, higher than Tamil Nadu average of 943. Thennilai village has lower literacy rate compared to Tamil Nadu. In 2011, literacy rate of Thennilai village was 68.16 % compared to 80.09 % of Tamil Nadu. In Thennilai Male literacy stands at 79.66 % while female literacy rate was 56.99 %.

Table. 3.30 Thennilai East Village Population Facts

Particulars	Total	Male	Female
Total No. of Houses	1094	-	-
Population	3485	1716	1769
Child (0-6)	241	118	123
Schedule Caste	839	426	413
Schedule Tribe	9	4	5
Literacy	68.06%	79.66%	56.99%
Total Workers	2347	1269	1078
Main Worker	2225	-	-
Marginal Worker	122	48	74

Source: <https://www.census2011.co.in/data/village/635494-thennilai-tamil-nadu.html>

3.6.9 Working Population- Kurumbapalayam Village, Sathyamangalam Taluk

In Thennilai village out of total population, 2347 were engaged in work activities. 94.80 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 5.20 % were involved in Marginal activity providing livelihood for less than 6 months. Of 2347 workers engaged in Main Work, 1100 were cultivators (owner or co-owner) while 623 were Agricultural labourer.

Benefits:

The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. The number of villages and settlements within a radius of 5 km from the project site along with population, their education level etc. are given in the table 3.31.

Table 3.31 Population and Literacy Data of Study Area

Village Name	No. of Houses	Total Population		Child (0-6)		Schedule Caste		Schedule Tribe		Literacy %		Total Workers	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Athipalayam	730	1014	1048	56	54	378	384	-	-	79.02	51.71	713	659
K.Paramathi	1093	1709	1779	148	151	619	637	-	-	88.40	72.11	1118	664
Karudayampalayam	577	1211	1136	62	70	219	219	-	-	85.03	59.76	646	530
Kuppam	1120	1697	1806	127	137	286	314	-	-	72.80	48.17	1198	1048
Munnur	826	1289	1293	86	88	481	450	-	-	81.46	55.52	882	695
Nadanthai (North)	502	774	829	48	66	273	299	-	-	81.54	59.90	572	400
Nedungur	403	586	604	33	28	149	149	5	1	84.81	57.47	432	321
Thennilai (East)	1094	1716	1769	118	123	426	413	4	5	79.66	56.99	1269	1078
Thennilai (South)	837	1270	1299	84	72	415	389	-	-	84.23	67.97	936	774
Thennilai (West)	763	1385	1196	81	68	204	198	1	1	86.89	61.08	857	734
Thukkachi	568	641	552	42	40	335	321	-	-	77.45	49.18	641	552
Total	8513	13292	13311	885	897	3785	3773	10	7	81.94	58.16	9264	7455

Source: <https://www.census2011.co.in/data/subdistrict/5768-aravakurichi-karur-tamil-nadu.html>

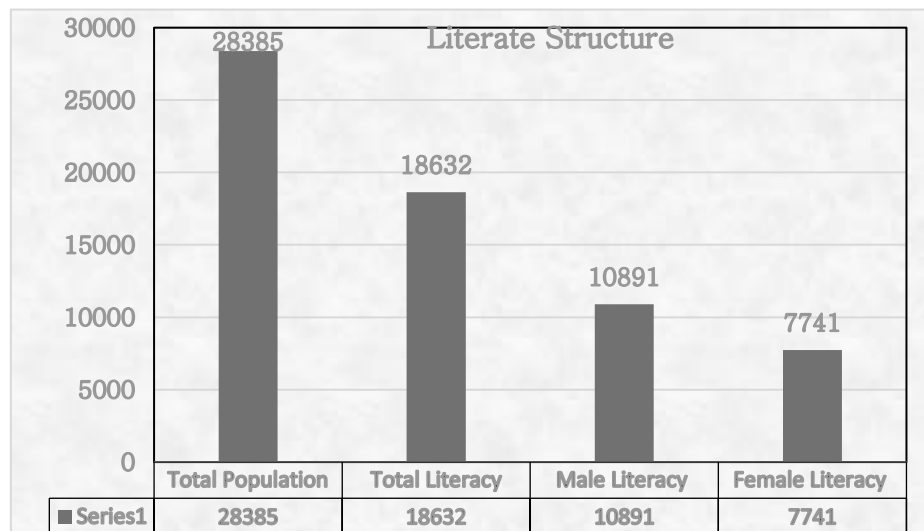
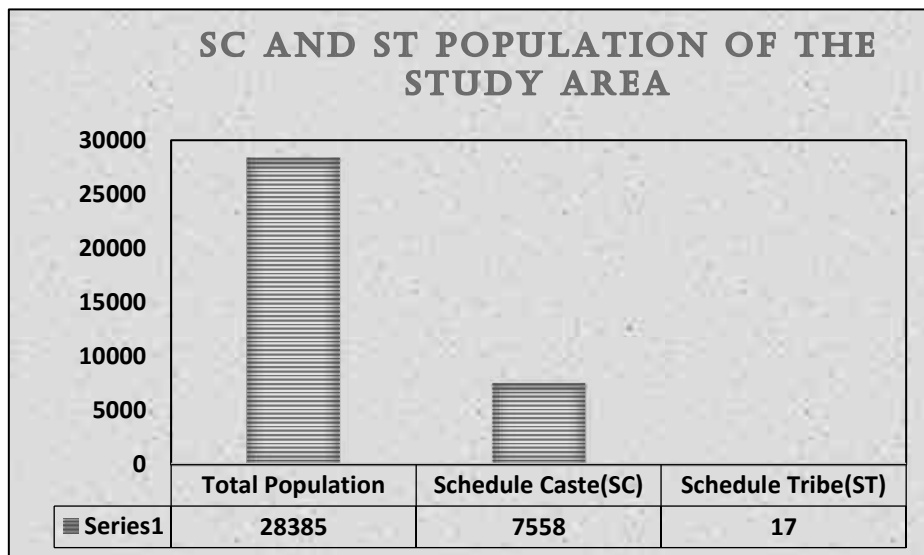
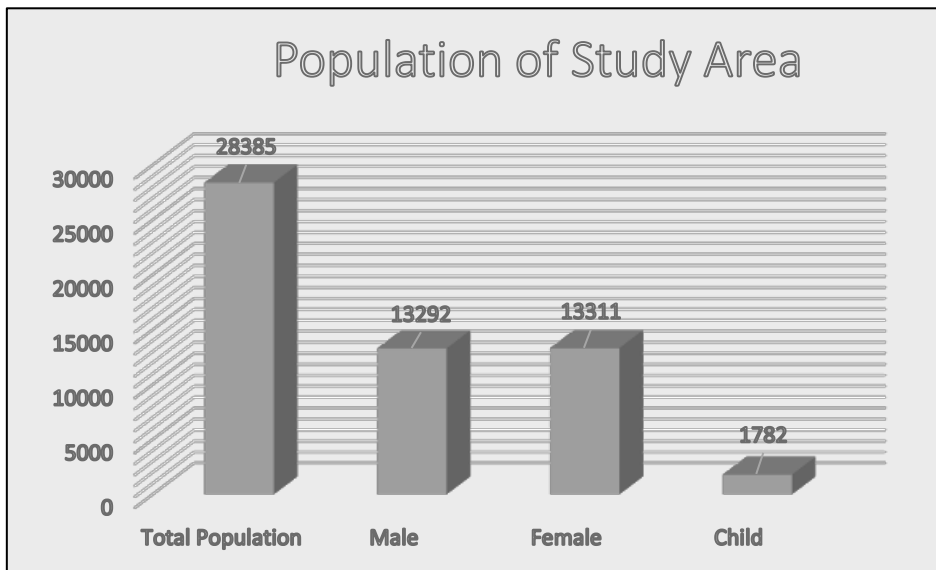


Figure 3.29 Chart Diagram about Population, SC, ST and Literacy in Surrounding Villages

Table 3.32 Workers Profile of Study Area

Village	Total Worker Population Person	Total Worker Population Male	Total Worker Population Female	Main Working Population Person	Main Cultivator Population Person	Main Agricultural Labourers Population Person	Main Other Workers Population Person	Non-Working Population Person
Athipalayam	1372	713	659	1309	442	551	63	580
K.Paramathi	1782	1118	664	1723	315	448	59	1407
Karudayampalayam	1176	646	530	847	301	265	329	1039
Kuppam	2246	1198	1048	1941	822	529	305	993
Munnur	1577	882	695	1434	420	638	143	831
Nadanthai (North)	972	572	400	955	539	272	17	517
Nedungur	753	432	321	734	409	241	19	376
Thennilai (East)	2347	1269	1078	2225	1100	623	122	897
Thennilai (South)	1710	936	774	1588	530	684	122	703
Thennilai (West)	1591	857	734	1482	729	529	109	841
Thukkachi	1193	641	552	1179	347	344	14	423

Source: <https://www.census2011.co.in/data/subdistrict/5768-aravakurichi-karur-tamil-nadu.html>

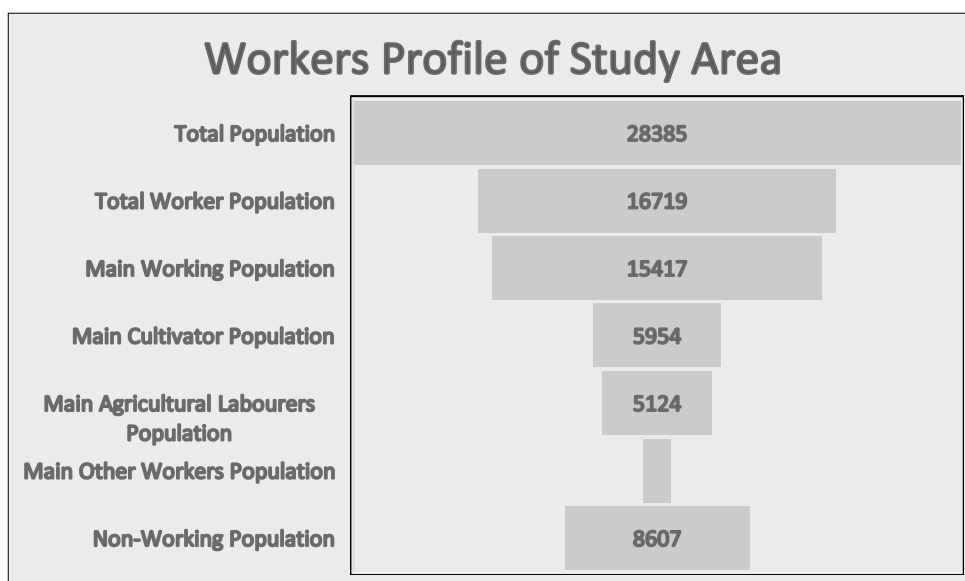


Figure 3.30 Chart Diagram about Workers Profile in Surrounding Villages

As per SEAC recommendation the project proponent should spend minimum of 5 lakh to the nearby school from the proposed project site as part of CER cost. Also, the village panchayat will get direct benefit from the government through District mineral Resource fund (DMF) for infrastructure development activities.

Awareness and opinion of the people about the project for the assessment of awareness about the project activities and opinion about it, following salient observations were recorded, During survey it was observed that only nearby villagers are aware and other villagers are not aware about the proposed project.

People in the region expect job opportunities and improvement in educational, transportation and sanitation facility from project authority.

3.6.10 Recommendation and Suggestions

The village development plans are made in consultation with the community through Gram Sabha; these appear to address the needs of the community. However, it may be noted that at the implementation stage these plans often are fraught with problem of inadequate funds, lack of proper planning, corruption, vested interests and political agendas. Hence while ascertaining the scope for convergence with the government activities, care must be taken to ascertain realistic possibilities for implementation.

- Women empowerment– Home based income generation activities, vocational training programs and common education centre for increasing the literacy rate.
- Education – Free uniform, construction of common rooms and library, computer education and physical education, additional schools for girls, furniture and equipment in schools, up-gradation of existing school infrastructure.

- Agriculture/livestock – Infrastructure such as agricultural practices, electricity connections, assistance with buying improved tools and equipment, capacity building, supply and/or knowledge of better variety of seeds, pasture land development and trainings on animal husbandry & facility of veterinary doctor.
- Health – Improvements in sanitary conditions of villages, assistance with construction of latrines, improvement in drainage system, health camps and awareness campaigns for diseases like common cold, malaria, typhoid, tuberculosis, yellow fever and pneumonia. Repairing of PHCs and Anganwadi centres.
- People with disability – Establishment of centre for special education, sensitization of the community towards disabled and awareness on Government schemes.
- While Developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.
- Connectivity –Transport connectivity to easiness accessibility to the region.

3.6.11 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. To evaluate the impacts of proposed quarry project on the surrounding area, it is vital to assess the baseline status of the environmental quality in the locality of the site. Hence, it can be concluded that the present environment status of the study area will not be affected by the Thennilai East rough stone and gravel cluster Quarries project. Hence, we adopt adequate control measures to protect the surrounding environment and will contribute in development of the study areas. The proposed project will provide preferential of employment to the local people there by the livelihood standards will be improved.

3.7 TRAFFIC DENSITY

The traffic survey conducted based on the transportation route of material, the Rough Stone and gravel is proposed to be transported mainly through Village Road and SH-15 (Mettupalayam – Sathyamangalam) as shown in Table 3.33- 3.36 and in Figure 3.31. Traffic density measurements 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.

Direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

Table 3.33 Traffic Survey Locations

Station Code	Road Name	Distance and Direction
TS1	Village Road	20m -E
TS2	NH-81- Karur to Coimbatore	0.81km S

Source: On-site monitoring by GTMS FAE & TM

Table 3.34 Existing Traffic Volume

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	35	105	142	142	123	61	308
TS2	198	594	180	180	227	113	887

Source: On-site monitoring by GTMS FAE & TM

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

Table 3.35 Rough Stone Transportation Requirement

Transportation of Rough Stone Per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	171	513

Source: Approved Mining Plan

Table 3.36 Summary of Traffic Volume per hour

Route	Existing traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960 guidelines
Village Road	308	64	372	1200
NH-81- Karur to Coimbatore	887	64	951	1500

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

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

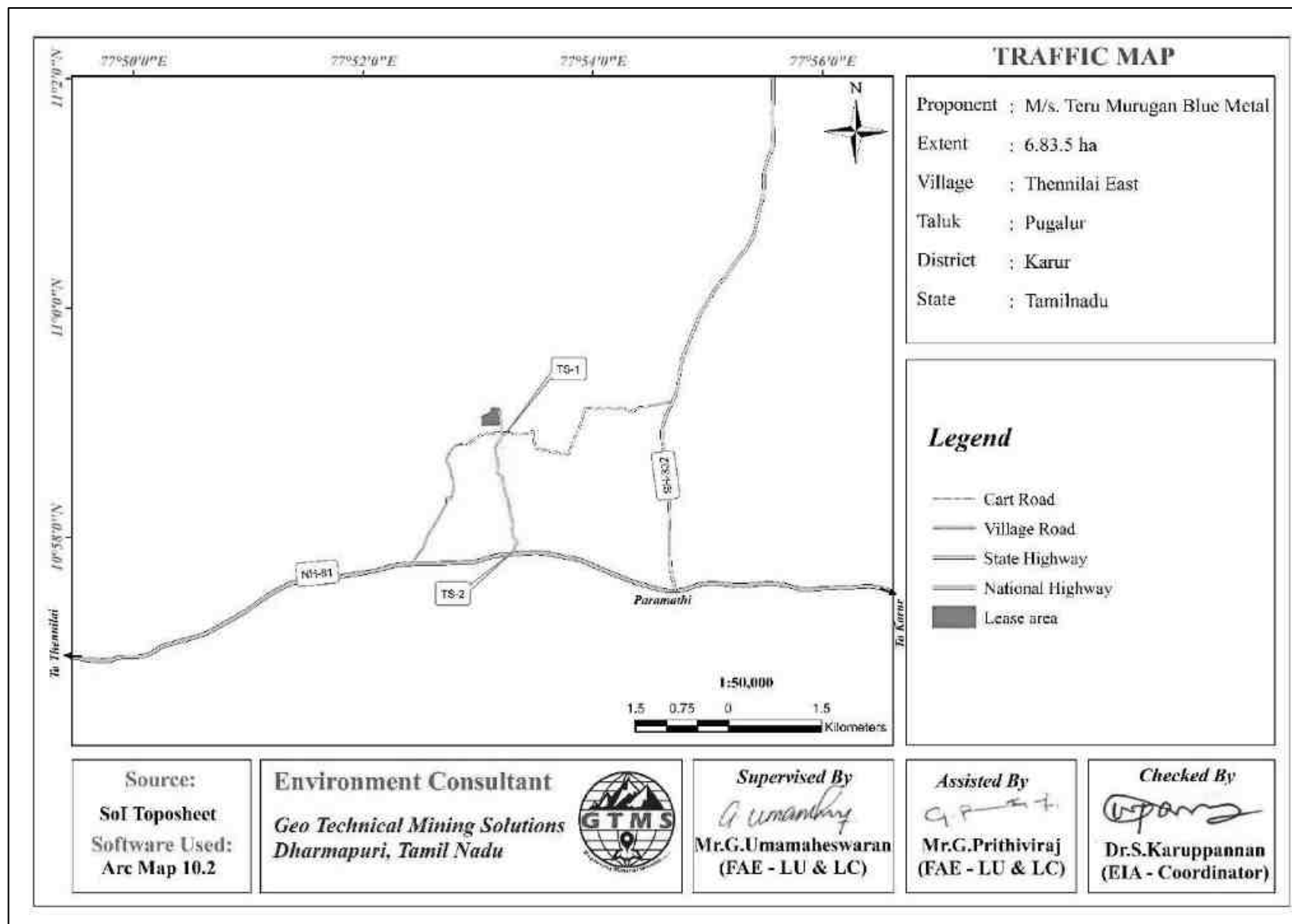


Figure 3.31 Traffic Density Map

3.8 SITE SPECIFIC FEATURES

There are no Wildlife Sanctuaries and National Park within 10 km radius. Therefore, there will be no need of acquisition/diversion of forest land. The details related to the environmentally sensitive areas around the proposed mine lease area i.e., 10 km radius and the nearby water bodies are given in the Table 3.37.

Table 3.37 Details of Environmentally Sensitive Ecological Features in the Study Area

S. No.	Sensitive Ecological Features	Name	Areal Distance in km
1	National Park / Wild life Sanctuaries	None	Nil within 10 km radius
2	Reserve Forest	Thathampalayam R. F	12.50km-SE
3	Lakes/ Reservoirs/ Dams/Streams/Rivers	Noyyal River	4.30km-North
		Noyyal Aathupalayam Dam	8.50km-NW
		Kaveri River	9.92km-North
		Amaravathi River	13.75km-SE
		Kodaganar River	15.60km-SE
		Noyyal Irrigation Canal	1.17km-North
4	Tiger Reserve/Elephant Reserve/ Biosphere Reserve	None	Nil within 10 km radius
5	Densely Polluted Areas	None	Nil within 10 km radius
6	Mangroves	None	Nil within 10 km radius
7	Mountains/Hills	None	Nil within 10 km radius
8	Centrally Protected Archaeological Sites	None	Nil within 10 km radius
9	Industries/ Thermal Power Plants	None	Nil within 10 km radius
10	Defence Installation	None	Nil within 10 km radius

Source: Survey of India Toposheet



Figure 3.32 Field Study Photographs

CHAPTER IV

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction. This chapter discusses the anticipated impacts on soil, land, water, air, noise, biological, and socioeconomic environments.

4.1 LAND ENVIRONMENT

4.1.1 Anticipated Impact

- ❖ Permanent or temporary change on land use and land cover.
- ❖ Change in topography of the mine lease area will change at the end of the life of the mine.
- ❖ Problems to agricultural land and human habitations due to dust, and noise caused by movement of heavy vehicles
- ❖ Degradation of the aesthetic environment of the core zone due to quarrying
- ❖ Soil erosion and sediment deposition in the nearby water bodies due to earthworks during the rainy season
- ❖ Siltation of water course due to wash off from the exposed working area

4.1.2 Mitigation Measures from Proposed Project

- ❖ The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigate 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 and 10m safety barrier and other safety provided) so as to help minimize dust emissions.
- ❖ Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle.

4.2 SOIL ENVIRONMENT

4.2.1 Anticipated Impact on Soil Environment

Following impacts are anticipated due to mining operations:

- ❖ Removal of protective vegetation cover
- ❖ during the mining operation Removal of the topsoil
- ❖ Exposure of subsurface materials which are unsuitable for vegetation establishment

4.2.2 Common Mitigation Measures from proposed project

- ❖ Run-off diversion – Garland drains will be constructed 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.

4.3 WATER ENVIRONMENT

4.3.1 Anticipated Impact

- ❖ Surface and ground water resources may be contaminated due to pit water discharge, domestic sewage, discharge of oil and grease bearing waste water from washing of vehicles and machineries, and washouts from surface exposure or working areas
- ❖ As the proposed project acquires 3.0KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not have impact on depletion of aquifer beneath the lease area.

4.3.2 Common Mitigation Measures for the Proposed Project

- ❖ Rain water from mine pit will be treated in settling tanks before being used for dust suppression and tree plantation purposes
- ❖ Domestic sewage from site office will be discharged in septic tank and then directed to soak pits
- ❖ Water from the tipper wash-down facility and machinery maintenance yard will be passed through interceptor traps/oil separators prior to its reuse

- ❖ The garland drainage will be connected to settling tank and sediments will be trapped in the settling tanks and only clear water will be discharged to the natural drainage
- ❖ Periodic (every 6 month once) analysis of ground water quality of quarry pit water and ground water of nearby villages will be conducted
- ❖ Artificial recharge structures will be established in suitable locations as part of the rainwater harvesting management program.

4.4 AIR ENVIRONMENT

4.4.1 Anticipated Impact from proposed project

- ❖ During mining at various stages of activities such as excavation, drilling and transportation of materials, particular matter (PM₁₀ and PM_{2.5}) 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.

4.4.2 Emission Estimation

Emission resulting from different mining activities is estimated using relevant empirical formulae developed by Chauha et al.,2001. The equations used for SPM emission estimation have been given in Table 4.1.

Table 4.1 Empirical Formula for Emission Rate from Overall Mine

	Pollutant	Source Type	Empirical Equation	Parameters
Overall Mine	SPM	Area	$E = [0.4a^{0.2} \{9.7 + 0.01p + b/(4 + 0.3b)\}]$	u = Wind speed(m/s); p = Mineral production (Mt/yr); b = Overburden handling (Mm ³ /yr); a = Lease area(km ²); E = Emission rate(g/s).

The emission rate thus calculated using the empirical formula is used as one of the inputs in the AERMOD modelling. It is important to note that PM₁₀ emission rate is derived from the SPM estimation in the background that PM₁₀ constitutes 52% of SPM emission. The PM_{2.5} and PM₁₀ emission results have been given in Table 4.2.

Table 4.2 Estimated Emission Rate

Activity	Pollutant	Calculated Value (g/s)	Lease Area in m ²	Calculated Value (g/s/m ²)
Overall Mine	PM _{2.5}	0.672979702	66350	1.01429E-05
Overall Mine	PM ₁₀	1.345959404		2.02857E-05

4.4.2.1 Modelling of Incremental Concentration

Anticipated incremental concentration and net increase in emissions due to quarrying activities within 500 m around the project area is predicted by open pit source modelling using AERMOD Software and the incremental values of the air pollutants were added to the base line data monitored at the proposed site to predict total GLC of the pollutants, as shown in Tables 4.3-4.4.

4.4.2.2 Model Results

The post project resultant concentrations of PM₁₀ and PM_{2.5} (GLC) is given in Tables 4.3-4.4.

Table 4.3 Incremental & Resultant GLC of PM_{2.5}

Station ID	Distance to core area (km)	Direction	PM _{2.5} concentrations(µg/m ³)			Comparison against air quality standard (60 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	0.10	E	19.0	2.96	21.96	Below standard	15.58	Not significant
AAQ2	2.47	SSE	17.3	0.1	17.4		0.58	
AAQ3	2.56	SW	18.8	0.5	19.3		2.66	
AAQ4	3.10	SW	16.4	0.5	16.9		3.05	
AAQ5	3.99	SW	16.1	0.5	16.6		3.11	
AAQ6	3.95	SE	23.9	0	23.9		0.00	
AAQ7	4.11	NNE	16.3	0.1	16.4		0.61	
AAQ8	2.51	NE	17.9	0.5	18.4		2.79	
AAQ9	--	-	17.4	2.96	20.36		17.01	

Table 4.4 Incremental & Resultant GLC of PM₁₀

Station ID	Distance to core area (km)	Direction	PM ₁₀ concentrations(µg/m ³)			Comparison against air quality standard (100 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	0.10	E	37.0	5	42	Below standard	13.51	Not significant
AAQ2	2.47	SSE	35.0	0.5	35.5		1.43	
AAQ3	2.56	SW	36.8	5	41.8		13.59	
AAQ4	3.10	SW	34.3	5	39.3		14.58	
AAQ5	3.99	SW	29.8	1	30.8		3.36	
AAQ6	3.95	SE	41.2	0	41.2		0.00	
AAQ7	4.11	NNE	34.6	0.5	35.1		1.45	
AAQ8	2.51	NE	34.8	1	35.8		2.87	
AAQ9	--	-	43.4	8.31	51.71		19.15	

The values of cumulative concentration i.e., background + incremental concentration of pollutant in all the receptor locations are still within the prescribed NAAQ limits without effective mitigation measures. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be controlled further.

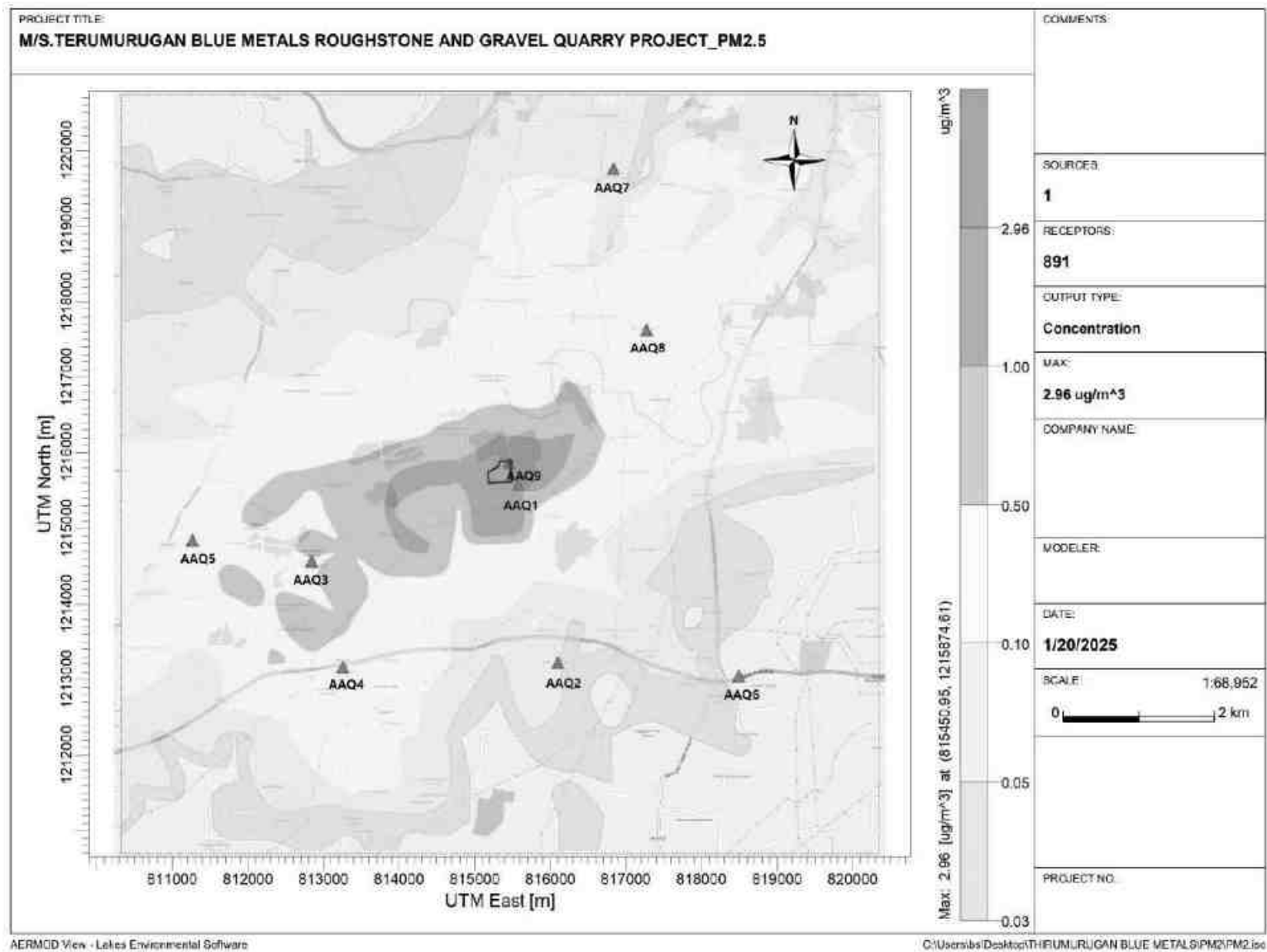


Figure 4.1 Predicted Incremental Concentration of PM_{2.5}

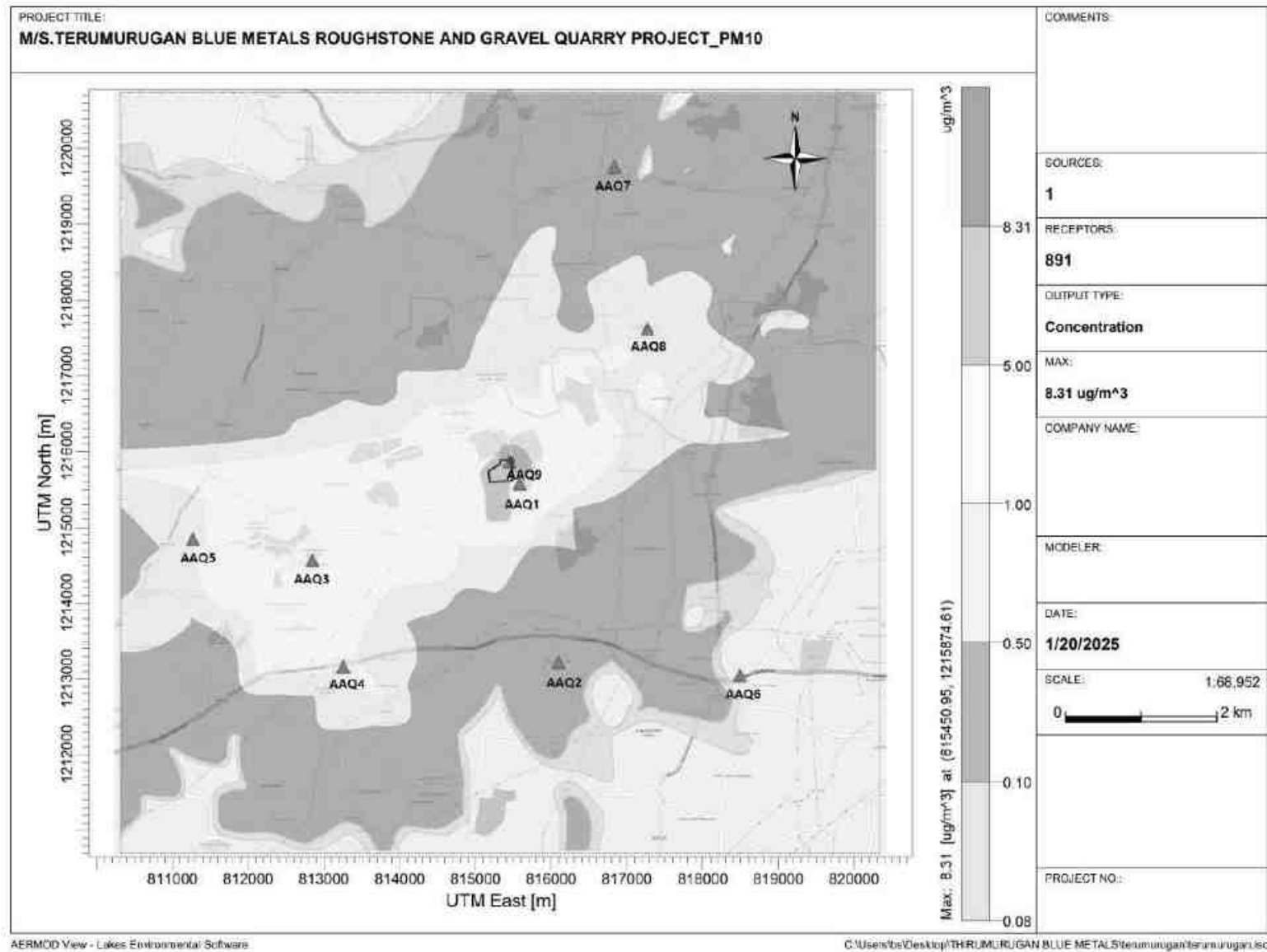


Figure 4.2 Predicted Incremental Concentration of PM₁₀

4.4.3 Mitigation Measures

Drilling

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

Haul Road and 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 to < 20 km/hr to avoid generation of dust
- ❖ Water sprinkling on haul roads and 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 and reduces pollution.
- ❖ The un-metalled haul roads will be compacted weekly before being put into use.
- ❖ Overloading of tippers will be avoided to prevent spillage.
- ❖ It will be ensured that all transportation vehicles carry a valid PUC certificate.
- ❖ Haul roads and service roads will be graded to clear accumulation of loose materials

Green Belt

- ❖ Planting of trees all along mine haul roads outside the lease and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of tractors/tippers.
- ❖ Green belt of adequate width will be developed around the project site.

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 and tipper drivers.

Ambient air quality monitoring will be conducted every six months to assess effectiveness of mitigation measures proposed

4.5 NOISE ENVIRONMENT

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 a mathematical model based on first principle.

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

Where,

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

$A_{e1,2}$ is the excess attenuation due to environmental conditions.

Combined effect of all sources can be determined at various locations by logarithmic addition.

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

4.5.1 Anticipated Impact

The attenuation due to several factors including ground reflection, atmosphere, wind speed, temperature, trees, and buildings as 35.5 dB (A), the barrier effect. 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, and 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 4.5.

Table 4.5 Activity and Noise Level Produced by Machinery

S. 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			95.8

The total noise to be produced by mining activity is calculated to be 95.8 dB (A). Generally, most mining operations produce noise between 95.8 dB (A).

Table 4.6 Predicted Noise Incremental Values

Noise Monitoring Location	Distance From Project Site(m)	Baseline Noise Level (dBA)m During Day Time	Predicted Noise Level (dBA)	Total (dBA)
Nearby Core	100	42.2	44.0	46.2
Kadaikkaranpalaiyam	570	39.6	28.8	40.0

Kattumunnur	2120	43.8	17.4	43.8
Venkalpatty	2570	41.6	15.8	41.6
Karaippalayam	3080	43.2	14.2	43.2
Thennilai East	4000	36.4	11.9	36.4
K.Paramathi	3780	44.8	12.4	44.8
Athipalayam	4110	36.4	11.7	36.4
Velampalaiyam	2480	34.8	16.1	34.8
Core	100	44.8	43.9	47.4
NAAQ Standards	Industrial Day Time - 75 dB (A) & Night Time- 70 dB (A) Residential Day Time -55 dB (A) & Night Time- 45 dB (A)			

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. Therefore, no impact is anticipated on the noise environment due to the project.

4.5.2 Common Mitigation Measures

The following noise mitigation measures are proposed for control of noise:

- ❖ Usage of sharp drill bits while drilling which will help in reducing noise
- ❖ Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders
- ❖ Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained
- ❖ The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system
- ❖ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise
- ❖ Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise
- ❖ Silencers / mufflers will be installed in all machineries
- ❖ Greenbelt/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

4.5.3 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 kutchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

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

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

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

Where,

V = peak particle velocity (mm/s),

K = site and rock factor constant (500)

Q = maximum instantaneous charge (kg),

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

R = distance from charge (m)

Table 4.7 Predicted PPV Values due to Blasting

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s	Fly rock distance in m	Air Blast	
					Pressure (kPa)	Sound Level (dB)
P1	84.60	570	0.67	19	0.33	144

Table 4.8 Predicted PPV Values due to Blasting at 100-500m radius

Location ID	Maximum Charge in kgs	Radial Distance in m	PPV in mm/s	Fly rock distance in m	Air Blast	
					Pressure (kPa)	Sound Level (dB)
P1	84.60	100	10.98	19	2.7	163
		200	3.62		1.18	155
		300	1.89		0.72	151
		400	1.19		0.51	148
		500	0.83		0.39	146

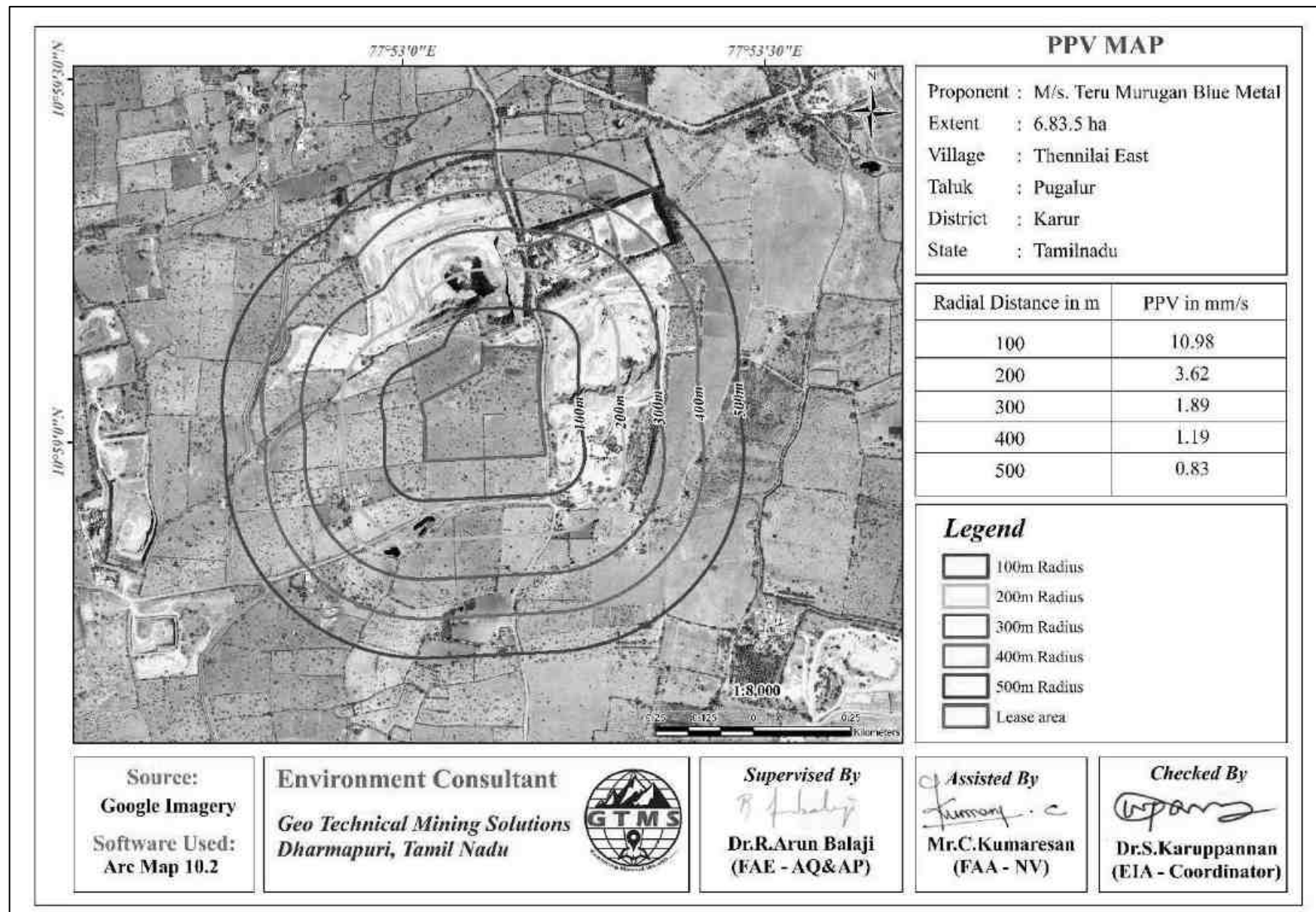


Figure 4.3: Predicted PPV Values due to Blasting at 100-500 m radius

4.5.3.1 Common Mitigation Measures

- ❖ The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators which reduce the ground vibrations
- ❖ Proper quantity of explosives, 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 in such a way that the predicted peak particle velocity shall not exceed 0.251mm/s.
- ❖ Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

4.6 ECOLOGY AND BIODIVERSITY

4.6.1 Impact on Ecology and Biodiversity

- ❖ There is vegetation in the quarry lease area. Details of the vegetation are given in Table 3.19 in Chapter 3. Vegetation is likely to be affected during quarrying operations.

- ❖ There should be minimal air emissions or waste from the project site. During truck loading, dust is likely to be generated. This is a temporary effect and is expected to significantly affect surrounding vegetation.
- ❖ Most of the land in the quarry lease area is undulating terrain with grass patches and small shrubs. Therefore, the vegetation in the area will be affected. There are trees in the mining lease area. Trees will be affected during quarrying operations.
- ❖ The carbon emissions from quarry machinery and tippers are 10800 kg per day, 2916042 kg per year and 14580208 kg over five years, which is likely to lead to increased atmospheric temperatures in the area, as shown in Table 4.9.

Table 4.9 Carbon Released During Five Years of Rough Stone and Gravel Production

	Per day	Per year	Per five years
Fuel consumption of excavator	718	193979	969896
Fuel consumption of compressor	84.8	22896	114480
Fuel consumption of tipper	3227	871200	4356000
Total fuel consumption in liters	4030	1088075	5440376
CO ₂ emission in kg	10800	2916042	14580208

4.6.2 Mitigation Measures on Flora

- ❖ There are trees in the quarry lease area, details of which are given in Table 3.19 in Chapter 3. Quarrying will be carried out in a manner that does not affect these trees and the trees will be uprooted and planted in a 7.5m safety zone. If trees are uprooted and planted, their survival rate is only 30%, so 10 saplings per tree are purchased at a ratio of 1:10 and planted in a 7.5m and 10m safety zone.
- ❖ A 7.5m and 10m safety belt has been established around the quarry lease area, and one-year-old saplings have been purchased at the rate of 500 saplings per hectare, and 3,412 saplings have been purchased and planted per 6.835 hectares. The project proponent has purchased and planted more than 5000 saplings and the green belt developments photos showing in figure 4.4.
- ❖ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.
- ❖ Existing roads will be used; new roads will not be constructed to reduce impact on flora.

Carbon Sequestration

- ❖ To mitigate carbon emission due to mining activities, we recommend planting trees around the quarry to offset the carbon emission during quarrying. A tree can sequester 81938kg of carbon

per year. Therefore, we recommend planting large number of trees around the quarry and near school campuses, government wasteland, roadsides etc.

- ❖ As per the greenbelt development plan as recommended by SEAC (Table 4.11), about 3417 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 409690kg of the total carbon, as provided in Table 4.10.

Table 4.10 CO₂ Sequestration

CO ₂ sequestration in kg	303	81938	409690
Remaining CO ₂ not sequestered in kg	10497	2834104	14170518
Trees required for environmental compensation	118088		
Area required for environmental compensation in hectares	236		

Table 4.11 Recommended Species for Greenbelt Development Plan

S. No	Botanical Name of the Plant	Family Name	Common Name	Category	Dust Capturing Efficiency Features
1	<i>Azadirachta indica</i>	Meliaceae	Neem, Vembu	Tree	Well distinct thick at both the layer Well distinct in Palisade & Spongy parenchyma. Spongy parenchyma is present at lower epidermis Many vascular bundles arranged almost parallel series
2	<i>Tectona grandis</i>	Lamiaceae	Teak	Tree	
3	<i>Polyalthia longifolia</i>	Annonaceae	Nettilling	Tree	
4	<i>Albizia lebbeck</i>	Fabaceae	Vagai	Tree	
5	<i>Delonix regia</i>	Fabaceae	Cemmayir-konrai	Tree	
6	<i>Bauhinia racemose</i>	Fabaceae	Aathi	Tree	
7	<i>Cassia fistula</i>	Fabaceae	Sarakondrai	Tree	
8	<i>Aegle marmelos</i>	Rutaceae	Vilvam	Tree	
9	<i>Pongamia pinnata</i>	Fabaceae	Pungam	Tree	
10	<i>Thespesia populnea</i>	Malvaceae	Puvarasu	Tree	

Table 4.12 Greenbelt Development Plan

	No. of trees proposed for plantation	No. of trees expected to survive @ 80%	Area to be covered(m ²)
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	1367	1093	12303
	Number of plants outside the mine lease area		
	2050	1640	18450
Total	3417	2733	30,753



Figure 4.4 Green Belt Development Photos

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.

4.6.3. Anticipated Impact on Fauna

- ❖ Direct impact is anticipated on fauna of core zone
- ❖ Insignificant impact is anticipated on fauna in the buffer area due to air emissions, noise, vibration, transportation, waste water discharges, and changes in land use. There is no fauna in mine lease area.

4.6.4 Mitigation Measures on Fauna

- ❖ Fencing will be constructed around the proposed mine lease area to restrict the entry of stray animals
- ❖ The workers shall be trained not to harm any wildlife near the project site

4.6.5 Impact on agriculture and horticulture crops in 1km Radius

- ❖ Problems to agricultural and horticulture land due to dust caused by movement of heavy vehicles.
- ❖ Soil erosion and sediment deposition in the nearby water bodies due to earthworks during the rainy season.
- ❖ The fugitive dust released from the mining operations may cause effect on the agricultural and horticulture land who are directly exposed to the fugitive dust.
- ❖ Dust from the quarries is likely to affect reproductive systems in nearby agricultural and horticulture lands.
- ❖ Dust from quarries can affect plant growth and reduce vegetable yields.

4.6.6 Mitigation Measures on agriculture and horticulture crops.

- ❖ The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly inside and outside of the lease area in different phases.
- ❖ Quarry approach roads are sprayed with water 3 times a day to control dust. Thus, the damage to the nearby farmlands is controlled.
- ❖ A green belt will be created in 7.5 safety zone around the quarry to contain the dust from the quarry and prevent the dust from spreading to the adjacent agricultural land.
- ❖ 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 to < 20 km/hr to avoid generation of dust.

Aquatic Biodiversity

Mining activities will not disturb the existing 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. Hence, aquatic biodiversity is not observed in the mine lease area.

4.7 SOCIO ECONOMIC ENVIRONMENT

4.7.1 Anticipated Impact from Proposed and Existing Projects

- ❖ Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area.
- ❖ Approach roads can be damaged by the movement of tippers.

4.7.2 Common 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.
- ❖ Increase in Employment opportunities both direct and indirect thereby increasing economic status of people of the region

4.8 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

4.8.1 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

4.8.2 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.

4.8.3 Physical Hazards

The following measures are proposed for control of physical hazards

- ❖ Specific personnel training on work-site safety management will be taken up;
- ❖ 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.

4.8.4 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.

4.9 MINE WASTE MANAGEMENT

No waste is anticipated from any of the proposed quarries.

4.10 MINE CLOSURE

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

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

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

4.10.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

4.10.1.1 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.,

4.10.1.2 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 discharges 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.

4.10.1.3 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.
- ❖ Where it is desirable to get a quick growth response from the native flora during those times when moisture is not a limiting factor. For example, 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 V

ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 INTRODUCTION

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

5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE

The proposed project is site specific and has the following advantages:

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

5.2 ANALYSIS OF ALTERNATIVE SITE

No alternatives are suggested as the mine site is mineral specific.

5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

Manual open cast mining method with secondary blasting will be applied to extract rough stone and gravel in the area. The proposed mining lease areas have following advantages:

- ❖ As the mineral deposition is homogeneous and batholith formation, opencast method of working is preferred over underground method.
- ❖ The material will be loaded with the help of excavators into tractors/tippers and transported to the need by customers.
- ❖ 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 VI

ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

The monitoring and evaluation of environmental parameters indicates potential changes occurring in the environment, which paves way for implementation of rectifying measures wherever required to maintain the status of the natural environment. Evaluation is also a very effective tool to judge the effectiveness or deficiency of the measures adopted and provides insight for future corrections. The main objective of environmental monitoring is to ensure that the obtained results in respect of environmental attributes and prevailing conditions during operation stage are in conformity with the prediction during the planning stage. In case of substantial deviation from the earlier prediction of results, this forms as base data to identify the cause and suggest remedial measures. Environmental monitoring is mandatory to meet compliance of statutory provisions under the Environment (Protection) Act, 1986, relevant conditions regarding monitoring covered under EC orders issued by the SEIAA-TN as well as the conditions set forth under the order issued by Tamil Nadu Pollution Control Board while granting CTE/CTO.

6.1 METHODOLOGY OF MONITORING MECHANISM

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

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

The sampling and analysis report of the monitored environmental attributes will be submitted to the Tamil Nadu Pollution Control Board (TNPCB) at a frequency of half-yearly and yearly by the proposed project proponent. The half-yearly reports are submitted to Ministry of Environment and Forest, Regional Office and SEIAA-TN 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). The Environmental Monitoring Cell will be formed for the proposed project. The structure of the cell will be as shown in Figure 6.1.

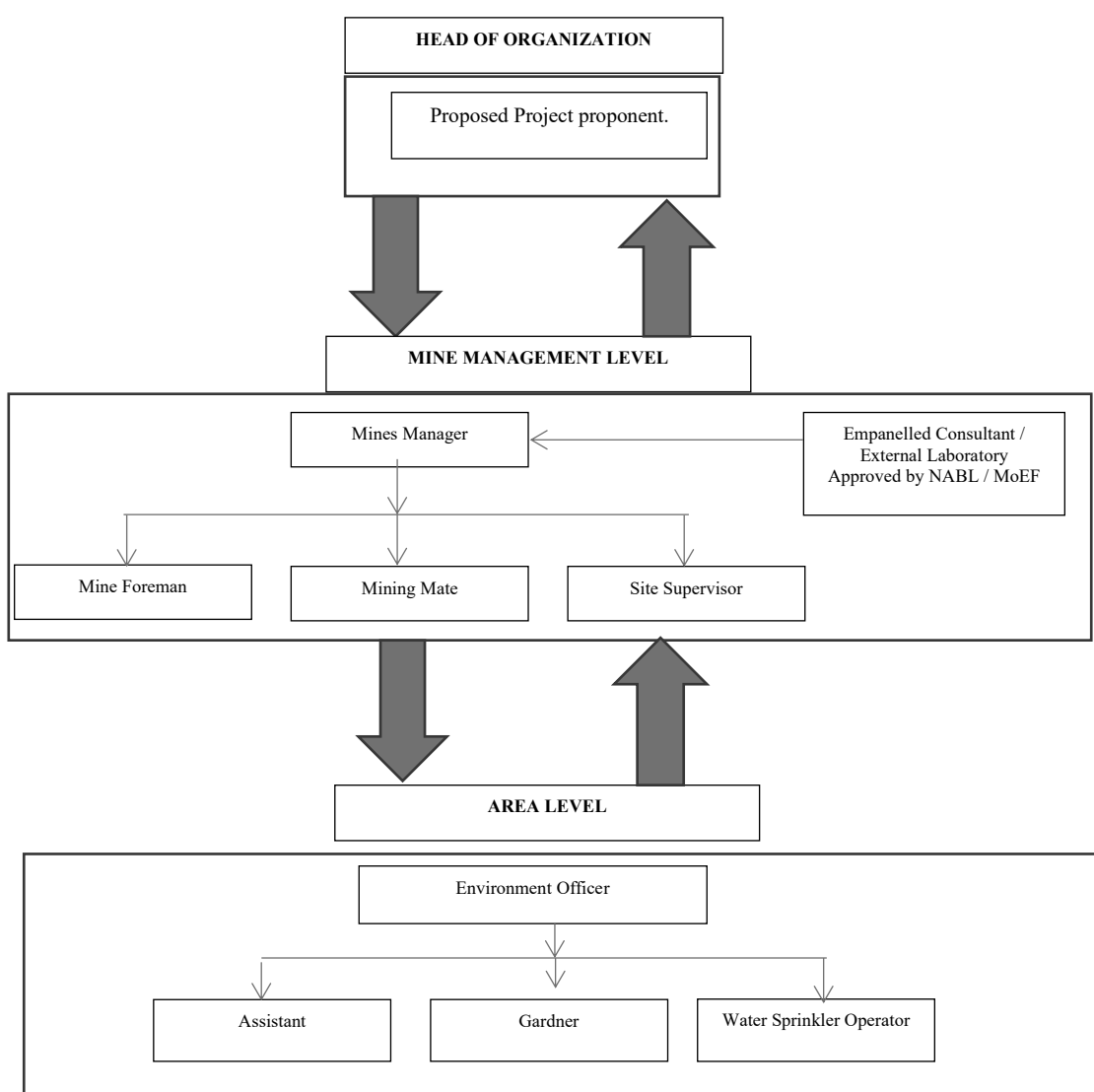


Figure 6.1 Proposed environmental monitoring chart

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

The mitigation measures proposed in chapter IV 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 for Proposed Project

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

6.3 MONITORING SCHEDULE AND FREQUENCY

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

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

- ❖ Air quality
- ❖ Water and wastewater quality
- ❖ Noise levels
- ❖ Soil quality and

❖ Greenbelt development

The details of proposed monitoring schedule have been provided in Table 6.2.

Table 6.2 Proposed Monitoring Schedule Post EC for the Proposed Quarry

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 m BGL
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting operation	Peak particle velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	–	Once in six months	Physical and chemical characteristics
8	Greenbelt	Within the project area	Daily	Monthly	Maintenance

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

6.4 BUDGETARY PROVISION FOR ENVIRONMENT MONITORING PROGRAM

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 recurring cost for Environmental Monitoring Programme is Rs 2,95,000 /- per annum for the proposed project site.

Table 6.3 Environment Monitoring Budget

S. No.	Parameter	Capital Cost	Recurring Cost per annum
1	Air Quality	-	Rs 60,000/-
2	Meteorology	-	Rs 15,000/-
3	Water Quality	-	Rs 20,000/-
4	Water Level Monitoring		Rs 10,000/-
5	Soil Quality	-	Rs 20,000/-
6	Noise Quality	-	Rs 10,000/-
7	Vibration Study	-	Rs 1,50,000/-
8	Greenbelt	-	Rs 10,000/-
Total		-	Rs 2,95,000 /-

Source: Field Data

6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to:

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

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

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

CHAPTER VII

ADDITIONAL STUDIES

7.0 GENERAL

Additional studies deal with:

- ❖ Public Consultation for Proposed Project
- ❖ Risk Assessment
- ❖ Disaster Management Plan
- ❖ Cumulative Impact Study
- ❖ Plastic Waste Management

7.1 PUBLIC CONSULTATION FOR PROPOSED PROJECT

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 was made and the public opinions on the proposed project will be updated in the final EIA/EMP report.

7.2 RISK ASSESSMENT FOR PROPOSED PROJECT

Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening. The methodology for the risk assessment is based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide circular No.13 of 2002, dated 31st December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities. The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for proposed project. Factors of risks involved due to human induced activities in connection with these proposed mining & allied activities with detailed analysis of causes and control measures for the mine is given in Table 7.1.

Table 7.1 Risk Assessment & Control Measures for Proposed Project

S. No.	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy	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.

	mining machineries.		✓ Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited. ✓ Fire-fighting and first-aid provisions in the mine office complex and mining area. ✓ Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use. ✓ Working of quarry, as per approved plans and regularly updating the mine plans. ✓ Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut. ✓ Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager. ✓ Maintenance and testing of all mining equipment as per manufacturer's guidelines.
2	Drilling	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 While reversal & overtaking of vehicle Operator of truck leaving his cabin when it is loaded.	✓ Before commencing work, drivers personally check the truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition. ✓ Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle. ✓ Concave mirrors should be kept at all corners ✓ All vehicles should be fitted with reverse horn with one spotter at every tipping point ✓ Loading according to the vehicle capacity ✓ Periodical maintenance of vehicles as per operator manual
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.

Source: Analysed and proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN FOR PROPOSED PROJECT

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone II. The area is far away from the sea. Hence, the disaster due to heavy floods and tsunamis are not anticipated. The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

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

In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations. Structure of the team has been shown in Figure 7.1.

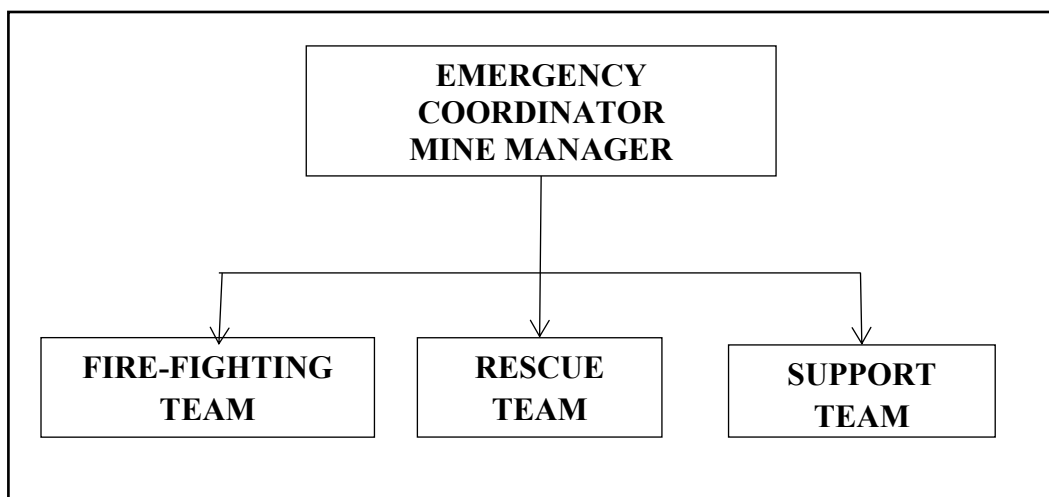


Figure 7.1 Disaster management team layout for proposed project

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

7.3.1 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

7.4 CUMULATIVE IMPACT STUDY

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the projects within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting. For this cumulative study, the proposed project, known as P1 are taken into consideration. The details of P1 have been given in Table 1.3

7.4.1 Air Environment

As the production of rough stone and gravel plays a vital role in affecting the air environment. The data on the cumulative production resulting to the proposed project have been given in tables 7.2 and 7.3.

Table 7.2 Cumulative Production Load of Rough Stone

Quarry	5 Years in m ³	Per Year in m ³	Per Day in m ³	Number of Lorry Load Per Day
P1	1187520	237504	880	147
Grand Total	1187520	237504	880	147

Table 7.3 Cumulative Production Load of Gravel

Quarry	Production for 3 Years (m ³)	Yearly Production (m ³)	Daily Production (m ³)	Number of Lorry Loads Per Day
P1	119280	39760	147	24
Grand Total	119280	39760	147	24

The cumulative study shows that the overall production of rough stone from the proposed quarry is 880m³ per day with a capacity of 147trips of rough stone per day and that production of gravel from the proposed quarry is 147m³ per day accounting for 24 trips/day.

7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact of the proposed project on air environment of the cluster have been provided in Table 7.4. The cumulative values resulting from the proposed project for each pollutant do not exceed the permissible limits set by CPCB.

Table 7.4 Cumulative impact results from the proposed project

Pollutants	Baseline Data (µg/m ³)	Incremental Values (µg/m ³)	Cumulative Value (µg/m ³)
		P1	
PM _{2.5}	17.4	2.96	20.36
PM ₁₀	43.4	8.31	51.71

7.4.2 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 projects within the 500m radius.

Table.7.5 Cumulative impact of noise from the proposed project

Location ID	Distance (m)	Direction	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	570	NW	44.8	43.9	47.4	55
Cumulative Noise (dB (A))					47.4	

Source: Lab Monitoring Data

The cumulative analysis of noise due to the proposed project shows that habitation will receive about 47.4dB (A)respectively. The cumulative results for the village in consideration do not exceed the limit set by CPCB for residential areas for day time.

Ground Vibrations

Cumulative results of ground vibrations due to mining activities in the all the project have been shown in Table 7.6.

Table 7.6 Cumulative effect of ground vibrations resulting from the proposed projects

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1	84.60	570	0.67
Total			0.67

Results from the above tables 7.6 indicate that the cumulative PPV value of each habitation 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.

7.4.3 Socio Economic Environment

Socio Economic benefits of the proposed project were calculated and the results have been shown in Table 7.7 the proposed project together will contribute Rs. 5,00,000/-towards CER fund.

Table 7.7 Socio Economic benefits from the proposed project

Location ID	Project Cost	CER Cost
P1	Rs.1,20,05,700	Rs. 500000
Grand Total	Rs.1,20,05,700	Rs. 500000

Table 7.8 Employment benefits for the proposed project

Location ID	Employment
P1	28
Grand Total	28

A total of 28 people will get employment due to the proposed project in cluster

7.4.4 Ecological Environment

Table 7.9 Greenbelt Development Benefits for the proposed Project

Code	Number of Trees proposed	Area to be covered (m ²)	No. of Trees expected to be grown @ 80% survival rate	Species recommended
P1	3418	30758	2734	<i>Azadirachta indica</i> , <i>Albizia lebbeck</i> , <i>Delonix regia</i> , <i>Tectona grandis</i> , etc.,
Total	3418	30758	2734	

Cumulative studies show that the proposed Project will plant about 3418 native tree species like *Azadirachta indica*, *Albizia lebbeck*, *Delonix regia*, *Tectona grandis*, etc inside and outside the lease area. It is expected that 80 % of trees, i.e., 2734 trees will survive in this green belt development program.

7.5 PLASTIC WASTE MANAGEMENT PLAN FOR PROPOSED PROJECT

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.

7.5.1 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.

A detailed action plan to manage plastic waste has been provided in Table 7.10.

Table 7.10 Action Plan to Manage Plastic Waste

S. 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 FAEs and EC

CHAPTER VIII

PROJECT BENEFITS

8.0 GENERAL

The proposed project at Thennilai East Village aims to produce **1187520m³** of rough stone and **119280m³ of gravel** over a period of 5 years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits:

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

8.1 EMPLOYMENT POTENTIAL

It is proposed to provide employment to about 28 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. In addition, there will be an opportunity for indirect employment to the form of contractual jobs, business opportunities, and service facilities etc. Because of this, the economic status of the local people will improve.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

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

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

The proposed quarry project is located in Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu. The area has already well-established communications roads and other facilities. The following physical infrastructure facilities will further improve due to proposed project.

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

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

8.5 OTHER TANGIBLE BENEFITS

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

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

8.6 CORPORATE SOCIAL RESPONSIBILITY

Individual project proponents 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 5 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
- ❖ CSR Cost Estimation

- ❖ CSR activities mainly contributing to education, health, training of women self-help groups and infrastructure etc., will be taken up in the Thennilai East Village. CSR budget is allocated.

8.7 CORPORATE ENVIRONMENT RESPONSIBILITY

Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III dated 01.05.2018. As per para 6 (II) of the office memorandum, being a green field project & capital investment is ≤ 100 crores, the proposed project shall contribute 2% of capital investment towards CER as per directions of EAC/SEAC. However, the SEAC has suggested to allocate CER fund on the basis of the extent of the project. Therefore, Rs. 5,00,000 is allocated for CER. The proposed utilization of the budget of CER activities is given in Table 8.1.

Table 8.1 CER Action Plan

S. No.	Activity	Budget (Rs.in Lakh)
1	The applicant Indents to involve in corporate environment responsibilities (CER) activities such as renovation of existing toilet, plantation within the school premises, donating environment related books to the nearby school library, etc.	Rs.5,00,000
	Total	Rs.5,00,000

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

8.8 SUMMARY OF PROJECT BENEFITS

The project would pay about **Rs.13,62,67,776** to the state government through various ways, as provided in Table 8.2.

Table 8.2 Project Benefits to the State Government

Particulars	Budget for Rough Stone (Rs.)	Budget for Gravel (Rs.)
CER	5,00,000	
Seigniorage @ Rs.90/m ³ of rough stone Rs.56/m ³ of gravel	10,68,76,800	66,79,680
District Mineral Foundation Tax @ 10% of Seigniorage	1,06,87,680	6,67,968
Green Tax @ 10% of Seigniorage	1,06,87,680	6,67,968
Total	12,82,52,160	80,15,616

CHAPTER IX
ENVIRONMENTAL COST BENEFIT ANALYSIS

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

CHAPTER X

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 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. Teru Murugan Blue Metal will:

- ❖ 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 programs 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.

10.1.1 Description of the Administration and Technical Setup

The environment monitoring cell discussed under Chapter VI 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 program.
- ❖ 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 Budgetary Provision for Environmental Management

Adequate budgetary provision has been made by the company for execution of Environmental Management Plan. The Table 10.1 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

Table 10.1 EMP Budget for Proposed Project

Attribute	Mitigation measures	Provision for Implementation	Capital Cost	Recurring Cost/annum
			(Rs.)	(Rs.)
Air Environment	Compaction, gradation and drainage on both sides	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare and yearly maintenance @ Rs. 10,000/- per hectare	68350	68350
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed sprinkler installation and new water tanker cost for capital; and water sprinkling (thrice a day) cost for recurring	800000	50000
	Air quality will be regularly monitored as per norms within ML area & ambient area	Yearly compliance as per CPCB norms	0	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000

	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance	125000	12500
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin to avoid escape of fines to the atmosphere	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per tipper/dumper deployed	55000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes	0	13750
	Regular sweeping and maintenance of roads for at least about 200 m from quarry entrance	Provision for 2 labours @ Rs.10,000/labour (Contractual) / hectare	0	136700
	Installing wheel wash system near exit gate of quarry	Installation + Maintenance + Supervision	50000	20000
Total Air Environment			1098350	371300
Noise Environment	Source of noise will be transportation vehicles, and 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 implementations that are required will be kept adequately near blasting	Provision made in OHS part	0	0

	site at the time of charging.			
	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 tons of blasted material	0	3325056
Total Noise Environment			50000	3327056
Water Environment	Water Management	Provision for garland drain @ Rs. 10,000/- per hectare with maintenance of Rs. 5,000/- per annum (6.83.5 X 10000)	68350	34175
Total Water Environment			68350	34175
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency (capital cost, recurring cost for collection /disposal).	25000	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
Total Waste Management			30000	22000
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	10000	1000
Total Implementation of EC, Mining Plan			10000	1000
Occupational Health	Workers will be provided with Personal Protective Equipment	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear	112000	28000

and Safety		and tear (say, @ Rs. 1000/- per employee)		
	Health checkup for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	28000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	27340
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	1367000	68350
	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	341750	68350
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR, 1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
Total Occupational Health and Safety			1860750	1007040
Developm ent of Green Belt	Green belt development - 500 trees per hectare (200 Inside Lease Area & 300 Outside Lease Area)	Site clearance, preparation of land, digging of pits /trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring))"	273400	41010

		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	615150	61515
Total Development of Green Belt			888550	102525
Mine Closure	Closure includes 10% of the amount allotted for Greenbelt development, wire fencing, and garland drainage (Rule 27 in MCDR 2017 for Cat B mines will pay 2 lakhs per hectare or minimum amount of financial assurance of 5 lakhs)		232390	0
	G.O.(Ms)No.23, Dated: 28.09.2021	11355648	11355648	0
TOTAL			15594038	4865096

Table 10.2 Estimation of Overall EMP Budget after Adjusting 5% Annual Inflation

Ist Year	IInd Year	IIIrd Year	IVth Year	Vth Year	VIth Year
1553288	1630952	1712500	1798125	1888031	1982433
VIIth Year	VIIIth Year	IXth Year	Xth Year	Total Recurring Cost	Total EMP Cost
2081554	2185632	2294914	2460660	19588090	22724605

In order to implement the environmental protection measures, an amount of **Rs.11594038** as capital cost and recurring cost as **Rs.4865096** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10 years will be **Rs.22724605** as shown in Table 10.2.

10.3 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 XI

SUMMARY AND CONCLUSION

11.1 INTRODUCTION

As the proposed rough stone and gravel mining project (B1) falls within the quarry cluster of 500 m radius with the total extent of 17.75.5ha, it requires submission of EIA report for grant of Environmental Clearance (EC) after conducting public hearing. The proposed project falling in S.F.No. 134 and 135/1 over the extent of 6.83.50ha is situated in the cluster falling in Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu. The projects involved in the calculation of cluster extent are of one proposed quarry and three existing quarries.

11.2 PROJECT DESCRIPTION

The proposed project area is located between Latitudes from 10°58'58.42"N to 10°59'7.87"N Longitudes from 77°53'1.51"E to 77°53'11.81"E in Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu. According to the approved mining plan, about 1914240m³ of rough stone and 119280m³ of gravel will be mined up to the depth of 50 m BGL in the ten years. The quarrying operation is proposed to be carried out by open cast semi-mechanized mining method involving drilling and blasting formation of benches to the prescribed dimensions.

11.3 DESCRIPTION OF THE ENVIRONMENT

The environmental consultant for both the clusters are the same. The monitoring of ambient air quality, noise levels, water quality and soil analysis for the nearby cluster were done in post monsoon season from October to December 2022 through the third party NABL accredited laboratory. The baseline monitoring done for 5km radius (TERMS OF REFERENCE [TOR] FOR EIA REPORT FOR ACTIVITIES / PROJECTS REQUIRING ENVIRONMENTAL CLEARANCE Prepared by Administrative Staff College of India, Bellavista, Khairatabad, AUGUST 2009, Page No.86) not varied as much. Therefore, we utilize the baseline data for this cluster which is collected for the adjacent cluster in the year 2022 between October to December as per the Office Memorandum F. No. IA3-22/10/2022- IA.III [E 177258] issued by Government of India Ministry of Environment, Forest and Climate Change (IA Division) dated 8th June 2022. We also collected the baseline data in one location i.e, in the core for the present cluster in the post monsoon season October to December 2024 for cross verification. Field monitoring studies to evaluate the base line status of the project site were carried out covering **October through December 2024** with CPCB guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified **Greenlink Analytical**

and Research Laboratory (India) Private Ltd for the environmental attributes including soil, water, air, and noise and by FAEs for ecology and biodiversity, traffic, and socio-economy.

11.3.1 Land Environment

Land use pattern of the area of 5 km radius was studied using Sentinel II imagery. LULC types and their extent are given in Table 11.1.

Table.11.1 LULC Statistics of the Study Area

S. No.	Classification	Area (ha)	Area (%)
1	Crop lands	6605.61	75.35
2	Built area	1286.2	14.67
3	Water bodies	23.96	0.27
4	Mining Industrial area	121.6	1.39
5	Plantation	10.6	0.12
6	Bare ground	43.08	0.49
7	Rangeland	675.04	7.70
Total		8766.09	100.0

11.3.2 Soil Environment

The soil samples in the study area show loamy textures varying between Silt Loam and sandy loam. pH of the soil varies from 6.5 to 8.2 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 127 to 342 μ S/cm

11.3.3 Water Environment

Surface and Ground Water Quality Resources and Result

Noyyal river and Topur Canal are two prominent surface water resources present in the study area. This river and lake were ephemeral in nature, which convey water only after rainfall events. Two surface water sample, known as SW1 were collected from the Noyyal river (4.32 km N) and SW2 were collected from the Topur Canal (4.24 km NW) to assess the baseline water quality.

Groundwater in the study area occurs in the crystalline rocks of Archaean age and recent alluvium. The movement of the groundwater is controlled by the intensity of weathering and fracturing of crystalline rocks. Dug wells and bore wells are the most common ground water abstraction structures in the area. However, in dry season, people in the study area heavily rely on bore wells for their domestic and agriculture purpose. Seven groundwater samples, known as OW01, OW1(Nearby core), BW01, BW02, BW03, BW04 and BW05 were collected from bore wells and open well were analysed for physico-chemical conditions and bacteriological contents in order to assess baseline quality of ground water.

11.3.4 Air Environment

As per the monitoring data, PM_{2.5} ranges from 16.2 μ g/m³ to 20.1 μ g/m³; PM₁₀ from 33.9 μ g/m³ to 38.7 μ g/m³; SO₂ from 6.5 μ g/m³ to 9.3 μ g/m³; NO_x from 14.0 μ g/m³ to 20.2g/m³.

The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

Air quality Index

The AQI shows that the air quality of the study area falls within good category 36 causing minimal impact to human health.

11.3.5 Noise Environment

Noise level in core zone was 44.8dB (A) Leq during day time and 38.9dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 34.8 to 44.8dB (A) Leq and during night time from 30.2 to 40.2dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

11.3.6 Biological Environment

The study found that there is no endemic, endangered migratory fauna found in the area. This area is not also a migratory path of any faunal species. Hence, this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

Flora in core zone

The mine lease area contains Taxonomically total of 46 species belonging to 23 families were recorded. Among them are Trees (05), Herbs (26), Shrubs (09) and Climbers (06). Majority of the species belongs to the family of Fabaceae, Poaceae, Malvaceae and Asteraceae

Flora in 300 m radius zone

The vegetation habit analysis indicates that flora of study area consists of 48 Herbs, 21 shrubs, 17 tree species and 09 climber species. A total number of 95 species belonging to 35 families and were recorded in the study area, which in turn comprised 82 genera. The species of Fabaceae family are more in number (14 species), followed by Amaranthaceae (7), Poaceae (6 species), Asteraceae (5), Euphorbiaceae (5), Malvaceae (5) and Acanthaceae and Rubiaceae (2 species each) (Figure 5). More than 50 percent of the families are monotypic

Flora in 10 km radius buffer zone

Similar type of environment occurs in both core and buffer zone but more floral diversity noticed in buffer zone compared with core zone area. Buffer area contains a total species belonging to 107 species have been recorded. The floral varieties among them 35 Trees, 15 Shrubs Herbs and Climbers, Creeper, Grass & Cactus, 57 were identified

Fauna in Core Zone

The 25 varieties of species observed in the core zone. Among them numbers of Insects 8 (32%), Reptiles 3 (12%), Mammals 5 (20%) and Avian 9 (36%). A total of 25 species

belonging to 22 families have been recorded from the core mining lease area. Number of species decreases towards the mining area this might be due the lack of vegetation. None of these species are threatened or endemic. There is no Schedule I species and eight species are under schedule IV according to Indian wild life Act 1972. A total 9 species of birds were sighted in the mining lease area.

Fauna in Buffer Zone

The faunal species observed in the study area are listed in Table 9. A total of 39 species were recorded in buffer zone of the project area. Among the 39 species recorded, the distribution was as follows: 13 birds, 16% insects, 04% reptiles, and 06% mammals. These species were cross-checked against the IUCN Red List Database version 3.1 to identify any threatened species. Data analysis revealed that 21 species are categorized as Least Concern on the Red List, while 18 species were not listed

11.3.7 Socio Economic Environment

The proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area, thus leading to the improvement of people's standard of living.

11.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

11.4.1 Land Environment

Anticipated Impact

- ✚ Permanent or temporary change on land use and land cover.
- ✚ Change in topography of the mine lease area will change at the end of the life of the mine.
- ✚ Problems to agricultural land and human habitations due to dust, and noise caused by movement of heavy vehicles
- ✚ Degradation of the aesthetic environment of the core zone due to quarrying
- ✚ Soil erosion and sediment deposition in the nearby water bodies due to earthworks during the rainy season
- ✚ Siltation of water course due to wash off from the exposed working area

Mitigation Measures

- ✚ The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigate 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, 10m safety barrier and other safety provided) so as to help minimize 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.

11.4.2 Soil Environment

Anticipated Impact

- ✚ Removal of protective vegetation cover
- ✚ Exposure of subsurface materials which are unsuitable for vegetation establishment

Mitigation Measures

- ✚ Run-off diversion – Garland drains will be constructed 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.

11.4.3 Water Environment

Anticipated Impact

- ✚ Surface and ground water resources may be contaminated due to pit water discharge, domestic sewage, discharge of oil and grease bearing waste water from washing of vehicles and machineries, and washouts from surface exposure or working areas

- ✚ As the proposed project acquires 3.0 KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not have impact on depletion of aquifer beneath the lease area.

Mitigation Measures

- ✚ Rain water from mine pit will be treated in settling tanks before being used for dust suppression and tree plantation purposes
- ✚ Domestic sewage from site office will be discharged in septic tank and then directed to soak pits
- ✚ Water from the tipper wash-down facility and machinery maintenance yard will be passed through interceptor traps/oil separators prior to its reuse
- ✚ The garland drainage will be connected to settling tank and sediments will be trapped in the settling tanks and only clear water will be discharged to the natural drainage
- ✚ Periodic (every 6 month once) analysis of ground water quality of quarry pit water and ground water of nearby villages will be conducted
- ✚ Artificial recharge structures will be established in suitable locations as part of the rainwater harvesting management program.

11.4.4 AIR ENVIRONMENT

Anticipated Impact

Anticipated increase of the air pollutants due to quarrying activities have been predicted using AERMOD software. The values of cumulative concentration i.e., background + incremental concentration of pollutant in all the receptor locations are still within the prescribed NAAQ limits without effective mitigation measures. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be controlled further

Mitigation Measures

- ✚ 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
- ✚ Controlled blasting will be carried out using suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone
- ✚ Blasting will be restricted to a particular time of the day i.e., at the time of lunch hours
- ✚ 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
- ✚ 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 to < 20 km/hr to avoid generation of dust
- ✚ The un-metalled haul roads will be compacted weekly before being put into use
- ✚ It will be ensured that all transportation vehicles carry a valid PUC certificate
- ✚ Haul roads and service roads will be graded to clear accumulation of loose materials
- ✚ Planting of trees all along main mine haul roads and around the project site will be practiced to prevent the generation of dust
- ✚ Dust mask will be provided to the workers and their use will be strictly monitored

11.4.5 Noise Environment

Anticipated Impact

Total noise level in all the sampling areas is well below the CPCB standards for industrial and residential areas. The peak particle velocity produced by the charge of 84.64kg is well below that of 0.3 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

Mitigation Measures

- ✚ The blasting operations in the cluster quarries will use shallow holes and delay detonators to reduce the ground vibrations
- ✚ Proper quantity of explosives, suitable stemming materials and appropriate delay system will be used during 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
- ✚ 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
- ✚ Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

11.4.6 Biological Environment

Anticipated Impact

- ✚ There is vegetation in the quarry lease area. Details of the vegetation. Vegetation is likely to be affected during quarrying operations.
- ✚ There should be minimal air emissions or waste from the project site. During truck loading, dust is likely to be generated. This is a temporary effect and is expected to significantly affect surrounding vegetation.
- ✚ Most of the land in the quarry lease area is undulating terrain with grass patches and small shrubs. Therefore, the vegetation in the area will be affected. There are trees in the mining lease area. Trees will be affected during quarrying operations.
- ✚ The carbon emissions from quarry machinery and tippers are 10800 kg per day, 2916042 kg per year and 14580208 kg over five years, which is likely to lead to increased atmospheric temperatures in the area.

Mitigation Measures

- ✚ There are trees in the quarry lease area, details of which are given in Table 3.25 in Chapter 3. Quarrying will be carried out in a manner that does not affect these trees and the trees will be uprooted and planted in a 7.5m safety zone. If trees are uprooted and planted, their survival rate is only 30%, so 10 saplings per tree are purchased at a ratio of 1:10 and planted in a 7.5m safety zone.
- ✚ A 7.5-meter and 10-meter safety belt has been established around the quarry lease area, and one-year-old saplings have been purchased at the rate of 500 saplings per hectare, and 3,412 saplings have been purchased and planted per 6.8.35 hectares. The project proponent has purchased and planted more than 5000 saplings.
- ✚ During conceptual stage, the top bench will be re-vegetated by planting local /native species and lower benches will be converted into rainwater harvesting structure following completion of mining activities, which will replace habitat resources for fauna species in this locality over a longer time.

- ✚ Existing roads will be used; new roads will not be constructed to reduce impact on flora.

11.4.7 Socio Economic Environment

Anticipated Impact

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

Mitigation Measures

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

11.4.8 Occupational Health

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

11.5 Environment Monitoring Program

Table 11.2 Environment Monitoring Program

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 m 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

11.6 ADDITIONAL STUDIES

11.6.1 Risk Assessment

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. The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for proposed project.

11.6.2 Disaster Management Plan

The objective of the disaster management plan is to make use of the combined resources of the mine and the outside services to:

- ✚ Rescue and treat 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.

11.6.3 Cumulative Impact Study

- ✚ The results on the cumulative impact of the two proposed projects on air environment of the cluster do not exceed the permissible limits set by CPCB for air pollutants.
- ✚ The cumulative results of noise for the habitation in consideration do not exceed the limit set by CPCB for residential areas for day time
- ✚ PPV resulting from the proposed project is well below the permissible limit of Peak Particle Velocity of 5 mm/s
- ✚ The proposed project will allocate Rs. 5,00,000/- towards CER as recommended by SEAC
- ✚ The proposed project will directly provide jobs to 28 local people, in addition to indirect jobs
- ✚ The proposed project will plant 3418 about trees in and around the lease area.
- ✚ The proposed project will add 513PCU per day to the nearby roads.

11.7 Project Benefits

Various benefits are envisaged due to the three proposed mine and benefits anticipated from the proposed project to the locality, neighbourhood, region and nation as a whole are:

- ✚ Direct employment to 28 local people
- ✚ Creation of community assets (infrastructure) like school buildings, village roads/ linked roads, dispensary & health Centre, community Centre, market place etc.,
- ✚ Strengthening of existing community facilities through the Community Development Program
- ✚ Skill development & capacity building like vocational training.
- ✚ Rs. 5,00,000 will be allocated for CER

11.8 ENVIRONMENT MANAGEMENT PLAN

In order to implement the environmental protection measures, an amount of **Rs.11594038** as capital cost and recurring cost as **Rs.4865096** as recurring cost/annum is proposed considering present market price considering present market scenario for the proposed project. After the adjustment of 5% inflation per year, the overall EMP cost for 10 years will be **Rs.22724605**.

CHAPTER XII

DISCLOSURES OF CONSULTANT

The Project Proponent, **M/s. Teru Murugan Blue Metal** has engaged **Geo Technical Mining Solutions**, a NABET accredited consultancy for carrying out the EIA study as per the ToR Issued.

Address of the consultancy:

No: 1/213B Natesan Complex,
Oddapatti, Dharmapuri – 636705,
Tamil Nadu, India.
Email: info.gtmsdpi@gmail.com
Web: www.gtmsind.com
Phone: 04342 232777.

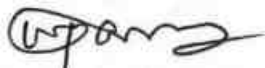
The accredited experts and associated members who were engaged in this EIA study are given below:

S.No.	Name of the expert	In house/ Empanelled	Sector	Functional Area	Category
Approved Functional Area Experts & EC					
1.	Dr. S. Karuppannan	EIA Coordinator (EC) In-house	1(a)(i)	Mining	A
2.	Dr. J. Rajarajeswari	In-house, FAE	1(a)(i)	EB, SC	B
3.	Dr. G. Prabakaran	In-house, FAE	1(a)(i)	SE	B
4.	Dr. R. Arunbalaji	In-house, FAE	1(a)(i)	AP, AQ, NV	B
5.	J.N. Manikandan	Empanelled FAE	1(a)(i)	RH, SHW, AP	B
6.	Dr. S. Malar	In-house, FAE	1(a)(i)	WP	B
7.	G. Umamaheswaran	In-house, FAE	1(a)(i)	HG, LU, GEO	B
8.	P. Venkatesh	In-house, FAE	1(a)(i)	AP	B
9.	Dr. D.Kalaimurugan	In-house, FAE	1(a)(i)	SC	B
Approved Functional Area Associates					
10.	G. Prithiviraj	FAA	1(a)(i)	LU, HG	B
11.	C. Kumaresan	FAA	1(a)(i)	NV	B
12.	P. Vellaiyan	FAA	1(a)(i)	HG, GEO	B
13.	P. Dhatchayini	FAA	1(a)(i)	AQ	B
14.	V. Malavika	FAA	1(a)(i)	NV, SHW	B

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

ECLARATION BY EXPERTS CONTRIBUTING TO THE EIA & EMP

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the EIA & EMP report.

Signature : 

Date :

Name : **Dr. S. Karuppannan**

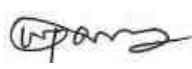
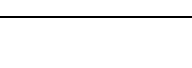
Designation : EIA Coordinator

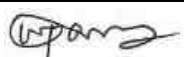
Name of the EIA Consultant Organization : Geo Technical Mining Solutions

Period of Involvement : Till date

We, the FAEs and FAAs hereby declare that information furnished in this EIA/EMP report for **M/s.Teru Murugan Blue Metal** rough stone and gravel quarry project with the extent of 6.8350ha situated in the cluster with the extent of **17.75.50ha** Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu is true and correct to the best of our knowledge.

List of Functional Area Experts Engaged in this Project

S. No.	Functional Area	Involvement	Name of the Experts	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	J. N. Manikandan	
			P. Venkatesh	
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. S. Malar	
3	HG	- Interpretation of ground water table and predict impact and propose mitigation measures. - Analysis and description of aquifer Characteristics	G. Uma Maheswaran	
			Dr. S. Karuppannan	
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.	G. Uma Maheswaran	
			Dr. S. Karuppannan	
5	SE	- Revision in secondary data as per Census of India, 2011. - Impact Assessment & Preventive Management Plan - Corporate Environment Responsibility.	Dr. G. Prabhakaran	
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	Dr. J. Rajarajeshwari	

		development.		
7	RH	○ Identification of hazards and hazardous substances ○ Risks and consequences analysis ○ Vulnerability assessment ○ Preparation of Emergency Preparedness Plan ○ Management plan for safety.	J.N. Manikandan	
8	LU	○ Construction of Land use Map ○ Impact of project on surrounding land use ○ Suggesting post closure sustainable land use and mitigative measures.	Dr. S. Karuppannan	
			G. Uma Maheswaran	
9	NV	○ Identify impacts due to noise and vibrations ○ Suggesting appropriate mitigation measures for EMP.	Dr. R. Arun Balaji	
10	AQ	○ Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. ○ Recommending mitigations measures for EMP	Dr. R. Arun Balaji	
11	SC	○ Assessing the impact on soil environment and proposed mitigation measures for soil conservation	Dr. D.Kalaimurugan	
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.	J.N. Manikandan	

List of Functional Area Associate Engaged in this Project

S.No.	Name	Functional Area	Involvement	Signature
1	G. Prithiviraj	LU, HG	○ Site visit with FAE ○ Provide inputs & Assisting FAE for LU and HG	

2	C. Kumaresan	NV	○ Assistance to FAE in both primary and secondary data collection ○ Assistance in noise prediction modelling	
3	P. Vellaiyan	HG & GEO	○ Field visits along with FAE ○ Assistance to FAE in both primary and secondary data collection	
4	P. Dhatchayini	AQ	○ Site visit with FAE ○ Assistance to FAE in collection of both primary and secondary data	
5	V. Malavika	NV, SHW	○ Site visit along with FAE ○ Assistance in report preparation	

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, **Dr. S. KARUPPANNAN**, Managing Partner, **Geo Technical Mining Solutions**, hereby, confirm that the above-mentioned functional area experts and team members prepared the EIA/EMP report for **M/s.Teru Murugan Blue Metal** rough stone and gravel quarry project with the extent of 6.83.50ha located within the cluster of **17.75.50ha** in Thennilai East Village, Pugalur Taluk, Karur District is true and correct to the best of my knowledge.

Signature : 

Date :

Name : **Dr. S. Karuppannan**

Designation : Managing Partner

Name of the EIA Consultant Organization : **Geo Technical Mining Solutions**

NABET Certificate No & Issue Date : **NABET/EIA/23-26/RA 0319**

Validity : **Valid till 31.12.2026**



File No: 11213
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), TAMIL NADU)



Dated 29/11/2024



To,

THIRU.P Subramani
TERU MURUGAN BLUE METAL
M/s. Teru Murugan Blue Metal, Survey No.506, Kattu Munnur, Aravakurichi Taluk, Karur District-
639111., Aravakurichi, KARUR, TAMIL NADU, 639111
terumuruganbluemetals302@gmail.com

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

Sir/Madam,

SEIAA, Tamil Nadu – Terms of Reference along with Public Hearing (ToR) for the Proposed Rough Stone and Gravel quarry over an extent of 6.83.5 Ha at S.F.Nos. 134 and 135/1 of Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu by M/s. Teru Murugan Blue Metal - For Terms of Reference- under project category – “B1” and Schedule S.No. 1(a) – ToR issued along with Public Hearing- preparation of EIA report – Regarding.

REF:

1. Online proposal No. (SIA/TN/MIN/494514/2024, Dated: 29.08.2024)
2. Your application submitted for Terms of Reference dated: 30.08.2024.
3. Minutes of the 497th Meeting of SEAC held on 13.09.2024.
4. Minutes of the 760th Meeting of Authority held on 01.10.2024.
5. Minutes of the 773rd Meeting of Authority held on 25.11.2024.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5261399N
(ii) File No.	11213
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals,1(a) Mining of minerals
(vii) Name of Project	Thennilai East Village Rough Stone and Gravel Mining Lease
(viii) Name of Company/Organization	TERU MURUGAN BLUE METAL
(ix) Location of Project (District, State)	KARUR, TAMIL NADU

(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no
(xiii) Applicability of Specific Conditions	no

1. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.
2. The above-mentioned proposal has been considered by SEIAA in the meeting held on 25/11/2024. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.
3. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations on all technical aspects recommended the proposal for grant of Terms of Reference with public hearing under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).
4. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to issue the following Terms of Reference with public hearing for instant proposal of M/s. Teru Murugan Blue Metal under the provisions of EIA Notification, 2006 and as amended thereof.
5. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.
6. The Terms of Reference with public hearing to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
7. This issues with the approval of the Competent Authority.
8. The TORs with public hearing prescribed shall be **valid for a period of three** years from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

Copy To

1. The Principal Secretary to Government, Environment & Forests Department, Govt. of Tamil Nadu, Fort St. George, Chennai - 9
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
5. The District Collector, Karur District.
6. Stock File.

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seiaa Specific Conditions :

S. No	Terms of Reference
1.1	Earlier, the proposal was placed in the 760th Authority meeting held on 01.10.2024. The authority noted that this proposal was placed for appraisal in 497th meeting of SEAC held on 13.09.2024. SEAC has furnished its recommendations for granting Terms of Reference subject to the conditions stated therein. After detailed discussions, the authority decided to obtain additional details from the PP for taking further course of action on the proposal. Following this, the PP submitted a response vide letter dated 21.11.2024. The subject was then placed before 773rd authority meeting held on 25.11.2024 & 26.11.2024. The Authority accepts the reply furnished by the PP and takes the recommendation of SEAC. The authority decided to grant Terms of Reference (ToR) along with with Public Hearing for the quantity of the production should not exceed the production should not exceed 19,14,240m³ of rough stone & 1,19,280m³ of Gravel with an ultimate depth of mining is 50m BGL. The annual peak production is 4,22,112 m³ of rough stone and 47,472 m³ of Gravel. As per the approved mining plan, under cluster of undertaking the combined Environmental Impact Assessment Study and Preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions & the conditions mentioned in 'Annexure B' of this minutes

2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	1. The project proponent shall furnish the videos and photographs of the previous mine. 2. The PP shall provide the controlled blasting methodology design keeping the cluster of operating mines in mind which includes the procurement, transportation and storage of explosives and safe blasting procedures. 3. The project proponent shall furnish the previous CER details.

3. Seac Standard Conditions

S. No	Terms of Reference
3.1	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 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.

S. No	Terms of Reference
	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, 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.

S. No	Terms of Reference
	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 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

S. No	Terms of Reference
	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.

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	An EIA-EMP Report shall be prepared for peak capacity (.....MTPA)operation in an ML/project area of.....ha based on the generic structure specified in Appendix III of the EIA Notification, 2006.
1.2	An EIA-EMP Report would be prepared for peak capacity operation to cover the impacts and environment management plan for the project specific activities on the environment of the region, and the environmental quality encompassing air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for..... MTPA of mineral production based on approved project/Mining Plan for.....MTPA. Baseline data collection can be for any season (three months) except monsoon.
1.3	Propoer KML file with pin drop and coordinate of mine at 500-1000 m interval be provided

S. No	Terms of Reference
1.4	A Study area map of the core zone (project area) and 10 km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage pattern including rivers/streams/nullahs/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries, mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km study area should be given. The above details to be furnished in tabular form also
1.5	Map showing the core zone delineating the agricultural land (irrigated and un-irrigated, uncultivable land as defined in the revenue records, forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
1.6	A contour map showing the area drainage of the core zone and 25 km of the study area (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated in the separate map.
1.7	Catchment area with its drainage map of 25 km area within and outside the mine shall be provided with names, details of rivers/ riverlet system and its respective order. The map should clearly indicate drainage pattern of the catchment area with basin of major rivers. Diversion of drains/ river need elaboration in form of length, quantity and quality of water to be diverted
1.8	(Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until the end of mine life should be provided on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The Progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures. Details of mine plan and mine closure plan approval of Competent Authority should be furnished for green field and expansion projects.
1.9	Details of mining methods, technology, equipment to be used, etc., rationale for selection of specified technology and equipment proposed to be used vis-à-vis the potential impacts should be provided.
1.10	Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.
1.11	A detailed Site plan of the mine showing the proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, Stockyard, township/colony (within and adjacent to the ML), undisturbed area -if any, and landscape features such as existing roads, drains/natural water bodies to be left undisturbed along with any natural drainage adjoining the lease /project areas, and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc should be indicated.
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

S. No	Terms of Reference																																																
	mining rights should be specified. Area under Surface Rights <table><tr><th>S.N</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>Agricultural 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.N.</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>	S.N	ML/Project Land use	Area under Surface Rights(ha)	Area Under Mining Rights(ha)	Area under Both (ha)	1	Agricultural land				2	Forest Land				3	Grazing Land				4	Settlements				5	Others (specify)				S.N.	Details	Area (ha)	1	Buildings		2	Infrastructure		3	Roads		4	Others (specify)			Total	
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1.13	Study on the existing flora and fauna in the study area (10km) should be carried out by an institution of relevant discipline. The list of flora and fauna duly authenticated separately for the core and study area and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna should be given. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I species, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a Comprehensive Conservation Plan along with the appropriate budgetary provision should be prepared and submitted with EIA-EMP Report; and comments/observation from the CWLW of the State Govt. should also be obtained and furnished.																																																
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 of the consultant to be provided.																																																
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 as per ISI standards and CPCB classification wherever applicable. Observed values should be provided along with the specified standards.																																																
1.16	For proper baseline air quality assessment, Wind rose pattern in the area should be reviewed and accordingly location of AAMSQ shall be planned by the collection of air quality data by adequate monitoring stations in the downwind areas. Monitoring location for collecting baseline data should cover overall the 10 km buffer zone i.e. dispersed in 10 km buffer area. In case of expansion, the displayed data of CAAQMS and its comparison with the monitoring data to be provided																																																

S. No	Terms of Reference
1.17	A detailed traffic study along with presence of habitation in 100 mts distance from both side of road, the impact on the air quality with its proper measures and plan of action with timeline for widening of road. The project will increase the no. of vehicle along the road which will indirectly contribute to carbon emission so what will be the compensatory action plan should be clearly spell out in EIA/ EMP report.
1.18	The socio-economic study to conducted with actual survey report and a comparative assessment to be provided from the census data should be provided in EIA/ EMP report also occupational status & economic status of the study area and what economically project will contribute should be clearly mention. The study should also include the status of infrastructural facilities and amenities present in the study area and a comparative assessment with census data to be provided and to link it with the initialization and quantification of need based survey for CSR activities to be followed.
1.19	The Ecology and biodiversity study should also indicate the likely impact of change in forest area for surface infrastructural development or mining activity in relation to the climate change of that area and what will be the compensatory measure to be adopted by PP to minimize the impact of forest diversion.
1.20	Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be submitted.
1.21	Impact of proposed project/activity on hydrological regime of the area shall be assessed and report be submitted. Hydrological studies as per GEC 2015 guidelines to be prepared and submitted
1.22	Impact of mining and water abstraction from the mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long-term monitoring measures should be provided. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
1.23	Study on land subsidence including modeling for prediction, mitigation/prevention of subsidence, continuous monitoring measures, and safety issues should be carried out.
1.24	Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the Competent Authority in the State Govt. and impacts vis-à-vis the competing users should be provided.
1.25	PP shall submit design details of all Air Pollution control equipment (APCEs) to be implemented as part of Environment Management Plan vis-à-vis reduction in concentration of emission for each APCEs
1.26	PP shall propose to use LNG/CNG based mining machineries and trucks for mining operation and transportation of mineral. The measures adopted to conserve energy or use of renewable sources shall be explored
1.27	PP to evaluate the green house emission gases from the mine operation and corresponding carbon absorption plan.
1.28	Site specific Impact assessment with its mitigation measures, Risk Assessment and Disaster

S. No	Terms of Reference
	Preparedness and Management Plan should be provided.
1.29	Impact of choice of mining method, technology, selected use of machinery and impact on air quality, mineral transportation, handling & storage/stockyard, etc, Impact of blasting, noise and vibrations should be provided.
1.30	Impacts of mineral transportation within the mining area and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions should be provided. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop etc, management plan for maintenance of HEMM and other machinery/equipment should be given. Details of various facilities such as rest areas and canteen for workers and effluents/pollution load emanating from these activities should also be provided.
1.31	Details of various facilities to be provided to the workers in terms of parking, rest areas and canteen, and effluents/pollution load resulting from these activities should also be given.
1.32	The number and efficiency of mobile/static water jet, Fog cannon sprinkling system along the main mineral transportation road inside the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality should be provided.
1.33	Conceptual Final Mine Closure Plan and post mining land use and restoration of land/habitat to the pre- mining status should be provided. A Plan for the ecological restoration of the mined out area and post mining land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of re-handling (wherever applicable) and backfilling and progressive mine closure and reclamation should be furnished.
1.34	Adequate greenbelt nearby areas, mineral stock yard and transportation area of mineral shall be provided with details of species selected and survival rate Greenbelt development should be undertaken particularly around the transport route.
1.35	Cost of EMP (capital and recurring) should be included in the project cost and for progressive and final mine closure plan.
1.36	Details of R&R. Detailed project specific R&R Plan with data on the existing socio- economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan should be given.
1.37	CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project should be given.
1.38	Corporate Environment Responsibility:
1.39	a) The Company must have a well laid down Environment Policy approved by the Board of Directors.
1.40	b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.

S. No	Terms of Reference
1.41	c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.
1.42	d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.
1.43	e) Environment Managament Cell and its responsibilities to be clearly spleel out in EIA/ EMP report
1.44	f) In built mechanism of self-monitoring of compliance of environmental regulations should be indicated.
1.45	Status of any litigations/ court cases filed/pending on the project should be provided.
1.46	PP shall submit clarification from DFO that mine does not falls under corridors of any National Park and Wildlife Sanctuary with certified map showing distance of nearest sanctuary.
1.47	Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval, mine closer plan approval. NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.
1.48	Details on the Forest Clearance should be given as per the format given: Total ML Total Project AreaForest (ha) land (ha) Date Extent of of FC Forest Land Balance area for whichStatus of appl For FC is yet to be diversion of forest obtained land If more than one provide details of each FC
1.49	In case of expansion of the proposal, the status of the work done as per mining plan and approved mine closure plan shall be detailed in EIA/ EMP report
1.50	Details on Public Hearing should cover the information relating to notices issued in the newspaper, proceedings/minutes of Public Hearing, the points raised by the general public and commitments made by the proponent and the time bound action proposed with budgets in suitable time frame. These details should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
1.51	PP shall carry out survey through drone highlighting the ground reality for atleast 10 minutes
1.52	Detailed Chronology of the project starting from the first lease deed allotted/Block allotment/ Land acquired to its No. of renewals, CTO /CTE with details of no. renewals, previous EC(s) granted details and its compliance details, NOC details from various Govt bodies like Forest NOC(s), CGWA permissions, Power permissions, etc as per the requisites respectively to be furnished in tabular form.
1.53	The first page of the EIA/ EMP report must mention the peak capacity production, area, detail of PP, Consultant (NABET accreditation) and Laboratory (NABL / MoEF & CC certification)

S. No	Terms of Reference
1.54	The compliances of ToR must be properly cited with respective chapter section and page no in tabular form and also mention sequence of the respective ToR complied within the EIA-EMP report in all the chapter,s section.



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.
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.

Agriculture & Agro-Biodiversity

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.

Forests

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

Water Environment

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

26. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
27. The EIA shall include the impact of mining activity on the following:
- a) Hydrothermal/Geothermal effect due to destruction in the Environment.
 - b) Bio-geochemical processes and its foot prints including environmental stress.
 - c) Sediment geochemistry in the surface streams.

Energy

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

Climate Change

29. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
30. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock, soil health and physical, chemical & biological soil features.
31. Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.

Mine Closure Plan

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

EMP

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

Risk Assessment

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

Disaster Management Plan

36. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.

Others

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

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 OMNo.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: 29/11/2024 ☐

From
Thiru.S.Poornavel, M.Sc.,
Assistant Director,
Geology and Mining,
Karur.

To
M/s.Teru Murugan Blue Metal,
Survey No.506,
Kattu Munnur,
Aravakurichi Taluk,
Karur District - 639 111

Rc.No.138/Mines/2024, Dated:27.08.2024

Sir,

Sub: Mines and Minerals – Minor Mineral – Karur District –
Pugalur Taluk - Thennilai East Village - Patta lands in
S.F.Nos.134(3.53.50 hectares) and 135/1(3.30.00
hectares) Over an extant of 6.83.50 hectares - Quarry
lease application for Rough Stone and Gravel – Preferred
by M/s.Teru Murugan Blue Metal – Mining Plan
approved - requested for the details of Existing/
Proposed/Expired and Abandoned quarries situated
within 500 mts radial distance - furnished – Regarding.

- Ref: 1. Quarry lease application for Rough stone and Gravel
preferred by M/s.Teru Murugan Blue Metal, Survey
No.506, Kattu Munnur, Aravakurichi Taluk, Karur
District dated: 03.05.2024
2. Precise Area Communication Memorandum
Rc.No. 138/Mines/2024, Dated: 11.07.2024.
3. Mining Plan submitted by M/s.Teru Murugan Blue
Metal letter Dated: 25.07.2024
4. The Assistant Director, Geology and Mining, Karur
Mining Plan approved letter Rc.No.
138/Mines/2024, Dated:20.08.2024.
5. M/s.Teru Murugan Blue Metal letter dated:
27.08.2024.

In the reference 1st cited, M/s.Teru Murugan Blue Metal has applied quarry
lease for quarrying Rough stone and Gravel in S.F.Nos.134(3.53.50 hectares) and
135/1(3.30.00 hectares) Over an extant of 6.83.50 hectares of patta lands in
Thennilai East Village, Pugalur Taluk, Karur District. The Assistant Director of
Geology and Mining, Karur had issued precise area memorandum to the proposed
lease area vide reference 2nd cited.

Accordingly, the applicant has submitted the 3 copies of draft Mining Plan and the same was approved by the Assistant Director, Geology and Mining, Karur vide reference 4th cited.

In the reference 5th cited, the applicant has requested to the Assistant Director of Geology and Mining, Karur to provide the details of existing, proposed and abandoned quarries situated within 500 meter radial distance from the subject area and the same has been furnished as follows:-

I. Existing Quarries: -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1	Tvl. TeruMurugan Blue Metal, S.F.No.506, Kattumunnur, Pugalur Taluk, Karur 639 111	Rough stone	Pugalur Taluk Thennilai (East)	126/2(P) 127/1(P) 133/1(P) 133/2(P)	4.55.0	19.12.2022 to 18.12.2027
2	Thiru.P.K.Subramani, S/o.Kaliyappan, Mettukkada, VTC, Pavithram P.O., Pugalur Taluk, Karur District.	Rough stone	Pugalur Taluk Munnur Village	509/1(P)	4.84.0	31.08.2023 to 30.08.2028
3	Thiru.K.Ramasamy, S/o.Karuppangounder 101-Vaiyapuri Nagar, 1 st crosse, Senkunthapuram, Karur Taluk & District.	Rough stone and Gravel	Pugalur Taluk Thennilai (East)	853/1(P art)	1.53.0	26.11.2023 to 25.11.2028

II. Proposed Quarries: -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1	M/s.Teru Murugan Blue Metal, Survey No.506, Kattu Munnur, Aravakurichi Taluk, Karur District	Rough Stone & Gravel	Pugalur Taluk, Thennilai East Village,	134 and 135/1	6.83.50	Proposed Area

III. Lease Expired Quarries : -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1	--- Nil---					

IV. Abandoned Quarries : -

Sl No.	Name of the lessee/firm it holder	Name of the Mineral	Taluk & Village	S.F.No.	Extent (hect)	Lease Period
1	--- Nil---					

20.12.2018/24
Assistant Director,
Geology and Mining,
Karur

27/12/18

From
Thiru.S.Poornavel, M.Sc.,
Assistant Director,
Geology and Mining,
Karur.

To
M/s.Teru Murugan Blue
Metal,
Survey No.506,
Kattu Munnur,
Aravakurichi Taluk,
Karur District - 639 111

Rc.No.138/Mines/2024 Dated:20.08.2024

Sir,

Sub: Mines and Minerals – Minor Mineral – Karur District –
Pugalur Taluk - Thennilai East Village - Patta lands in
S.F.Nos.134(3.53.50 hectares) and 135/1(3.30.00
hectares) Over an extent of 6.83.50 hectares - Quarry
lease application for Rough Stone and Gravel – Preferred
by M/s.Teru Murugan Blue Metal - Precise area
communicated - mining plan submitted for approval –
Mining Plan Approved – Regarding.

- Ref:
1. Quarry lease application for Rough stone and Gravel preferred by M/s.Teru Murugan Blue Metal, Survey No.506, Kattu Munnur, Aravakurichi Taluk, Karur District dated: 03.05.2024
 2. Order of the Hon'ble Supreme Court of India in I.A.Nos.12-13/2011 in SLP (C) No.19628-19629/2009, dt: 27.02.2012.
 3. Government of India, Ministry of Environment and Forest Office Memorandum, Dated:18.05.2012.
 4. The Chairman, State Level Environment Impact Assessment Authority, Tamil Nadu D.O.Lr.No.SEIAA-TN/Minor Minerals/2012, Dated: 17.09.2012.
 5. The Commissioner of Geology and Mining, Chennai letter Rc.No.3868/LC/2012, dt: 19.11.2012.
 6. Assistant Director, Geology and Mining, Karur Notice Rc.No.138/Mines/2024, Dated: 11.07.2024.
 7. Mining Plan submitted by M/s.Teru Murugan Blue Metal letter Dated:

In the reference 1st cited, M/s.Teru Murugan Blue Metal, Survey No.506, Kattu Munnur, Aravakurichi Taluk, Karur District has preferred for the grant of Ten years lease to quarry Rough Stone and Gravel over an extent of 6.83.50

hectares of patta land in S.F.Nos.134(3.53.50 hectares) and 135/1(3.30.00 hectares) of Thennilai East Village Village, Pugalur Taluk, Karur District under Rule 19(1) of Tamil Nadu Minor Mineral Concession Rule 1959.

The Precise area has been communicated by Assistant Director, Geology and Mining, Karur to the applicant for the ten years based on the recommendation of the Revenue Divisional Officer, Karur and Assistant Geologist, Geology and Mining, Karur in the reference 6th cited. In perusal to that the draft mining plan submitted by the applicant as per the Rule 41 in the reference 7th cited and also instructed to the applicant to submit the Environmental Clearance as per Rule 42 of Tamil Nadu Minor Mineral Concession Rules.

The above submitted mining plan for the grant of Rough stone and Gravel quarry lease patta lands in S.F.Nos.134(3.53.50 hectares) and 135/1(3.30.00 hectares) over an extent of 6.83.50 hectares of Thennilai East Village Village, Pugalur Taluk, Karur District has been examined in detail.

Scrutiny remarks on the draft Mining Plan are furnished below.

- a. The Rough Stone & Gravel quarry has been planned to be operated for a period of Ten years.
- b. The Geological reserve in the subject area is assessed as 3279744 cubic meter of Rough Stone and 136656 cubic meter of Gravel upto a depth of 50m below ground level only.
- c. The Mineable reserve is estimated as 1914240 cubic meter of Rough Stone for ten years and 119280 cubic meter of Gravel for first 3 years upto a depth of 50m below ground level only.
- d. It has been proposed to quarry 1187520 cubic meter of Rough Stone for first five years and 119280 cubic meter of Gravel for first 3 years upto a depth of 26 m below ground level.
- e. Machineries like tractor mounted compressor attached with jack hammers, excavators with rock breaker attachment are proposed for quarrying operation.
- f. Water table level in the area applied is in between 70 m to 75m during a year.

- g. As per the Rule 111 of Metalliferrous Mining Regulations 1961, the boundary barrier zone of 7.5 meters is ear-marked as neutral zone.
- h. The draft Mining plan is submitted within the prescribed time limit of 90 days from the date of receipt of the precise area communication and stipulations made in the rule 36 of the TNMMCR, 1959 are adhered.
- i. The plates including Toposketch of quarry lease applied area for 10Km Radius (1:1,00,000), Quarry lease & Surface plan (1:1,000), Conceptual plan and sections (1:1,000), Topography, Geological & Year wise development & Production plan & Sections (1: 1,000) and Environmental plan (1:5,000) were verified with reference to the field evidences.

As per the guidelines/ instructions issued by the Commissioner of Geology and Mining, Chennai vide letter Rc.No.3868/LC/2012, date: 19.11.2012., the mining plan submitted by the applicant is hereby approved, subject to the following conditions:

- (I) 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 or 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, Explosives Act, 1884 (Central Act IV of 1884) Minor Mineral Concession and Development Rules, 2010 and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (III) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (IV) The approval is valid up to five years from the date of execution of lease deed and the applicant should submit scheme of mining at lease 180 days before the expiry of the mining plan period.

(V) As per the Assistant Director, Geology and Mining, Karur notice in Rc.No.138/Mines/2024, Dated.11.07.2024 the following conditions are incorporated in the Mining Plan plates.

1. விண்ணப்ப புலத்திற்கு வடக்கு மற்றும் மேற்கில் உள்ள பூமிதான நிலத்தில் 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
2. விண்ணப்ப புலத்திற்கு கிழக்கில் உள்ள வண்டிப்பாதைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
3. விண்ணப்ப புலத்திற்கு அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் மற்றும் புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
4. குத்தகைக்காலத்தில் கைத்துளைப்பான் கருவி கொண்டு பாறைகளை துளையிடும், மிதமான வெடிபொருள் பயன்படுத்தியும், பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமுமின்றி விதிமுறைகளின்படி குவாரிப்பணி செய்ய வேண்டும்.
5. குவாரித் தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய Mettalliferous Mines, விதிகளின்படி அகலமானதும், பாதுகாப்பானதுமான Benches அமைத்து பாதுகாப்பான முறையில் குவாரிக்குள் வாகனங்கள் சென்றுவரவும் மற்றும் குவாரி தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்தும் குவாரிப்பணி செய்ய வேண்டும்.
6. குவாரி குத்தகை வழங்க ஏதுவாக உதவி இயக்குநர் (சுரங்கம்) அவர்களால் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினையும், மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (SEIAA) அனுமதி பெற்று மாவட்ட நிர்வாகத்திற்கு விண்ணப்பதாரரால் சமர்ப்பிக்கப்பட வேண்டும்.

(VI) Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

(VII) If anything is found to be concealed as required by the Mines Act in the contents of the Mining Plan and the proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.

Encl: Two copies of Approved Mining Plan.


Assistant Director,
Geology and Mining,
Karur


20/8/24

MINING PLAN

FOR

THENNILAI EAST VILLAGE ROUGH STONE AND GRAVEL MINING LEASE WITH
PROGRESSIVE QUARRY CLOSURE PLAN

Patta land /Open Cast-Semi-Mechanized mining/Non- Forest/Non-Captive Use

Lease period 10 Years from the date of lease execution

(Prepared under rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959)

LOCATION OF THE LEASE AREA

STATE : TAMILNADU
DISTRICT : KARUR
TALUK : PUGALUR
VILLAGE : THENNILAI EAST
S.F. No : 134 & 135/1
EXTENT : 6.83.5 Hectares

ADDRESS OF THE APPLICANT

M/s. Teru Murugan Blue Metal,

Survey No.506,

Kattu Munnur,

Aravakurichi Taluk,

Karur District - 639111

This Mining Plan is approved subject
to the conditions/stipulations
indicated in the Mining Plan approval
Letter No: 138/mine/2024
Dated: 20.08.2024.

PREPARED BY

Dr.S.KARUPPANNAN.M.Sc., Ph.D.,

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

No: 1/213 -B, Ground Floor, Natesan Complex,

Oddapatti, Collectorate Post office,

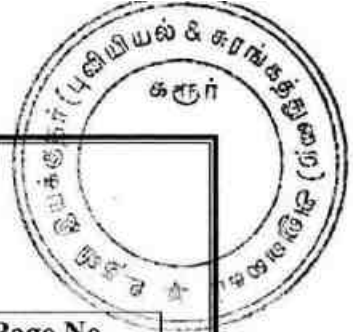
Dharmapuri -636705, Tamil Nadu.

Mob. : +91 9443937841, +917010076633.

E-mail: info.gtmsdpi@gmail.com.

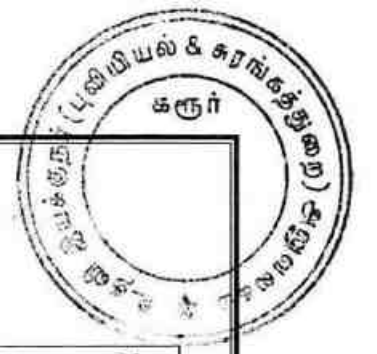
Website: www.gtmsind.com





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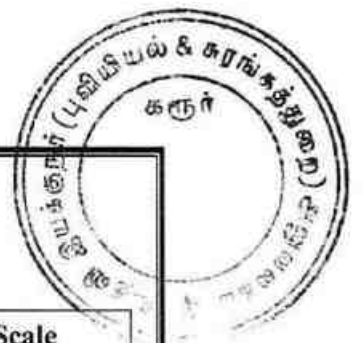
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ANNEXURES

Sl. No.	Description	Annexure No.
1.	Copy of precise area communication letter	I
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3.	Copy of combine map	III
4.	Copy of "A" register, Adangal & Land Documents	IV
5.	Copy of GST Certificate	V
6.	Photo copy of the applied lease area	VI
7.	Copy of ID Proof of the authorized signatory	VII
8.	Copy of Recognized Qualified Person Certificate	VIII

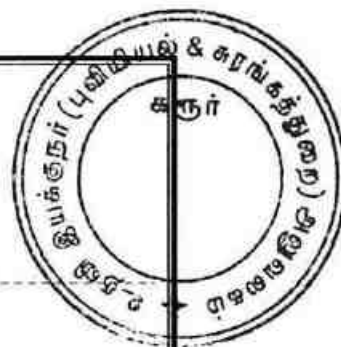




LIST OF PLATES

Sl. No.	Description	Plate No.	Scale
1	Key Map	I	Not to scale
2	Location Plan	I-A	Not to scale
3	Toposheet Map	I-B	1:1,00,000
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11	Mine Layout Plan and Land Use Pattern	V	Plan 1:2000
12	Year wise Development, Production Plan and Sections	VI	Plan 1:2000
13	Year wise Development & Production Sections	VIA	Sections Hor 1:1000 Ver 1:500

M/s. Teru Murugan Blue Metal,
Survey No.506,
Kattu Munnur,
Aravakurichi Taluk,
Karur District.



CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of rough stone and gravel quarry lease in patta land at S.F.No: 134 and 135/1, over an extent of 6.83.5 hectares of Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu State has been prepared by

Dr. S. KARUPPANNAN. M.Sc., Ph.D. (Regn. No. RQP/MAS/263/2014/A)

I request "The Assistant Director", Department of Geology and Mining, Karur District to make further correspondence regarding modifications of the Mining Plan with the said Recognized Qualified Person on this following address,

Dr. S. KARUPPANNAN. M.Sc., Ph.D.

(Regn. No. RQP/MAS/263/2014/A)

GEO TECHNICAL MINING SOLUTIONS

(A NABET accredited & ISO certified Company)

No: 1/213-B, Natesan Complex,

Oddapatti, Collectorate Post office, Dharmapuri-636705

Ph: +91 9443937841, +91 7010076633

E-mail: info.gtmsdpi@gmail.com,

Website: www.gtmsind.com

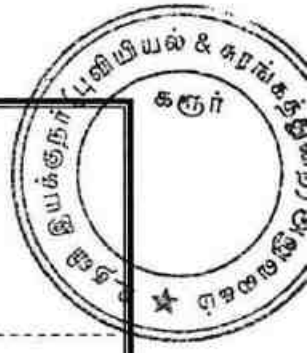
I hereby undertake that all modifications so made in the Mining Plan by the Recognized Qualified Person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Place: Karur, TN.

Date:

Signature of the applicant
(M/s. Teru Murugan Blue Metal)

M/s. Teru Murugan Blue Metal,
Survey No.506,
Kattu Munnur,
Aravakurichi Taluk,
Karur District.



DECLARATION

The Mining Plan in respect of rough stone quarry lease in Patta land at S.F.No: 134 and 135/1, over an extent of 6.83.5 hectares of Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu State have been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.

Place: Karur, TN.

Date:

Signature of the applicant
(M/s. Teru Murugan Blue Metal)

Dr. S. KARUPPANNAN. M.Sc., Ph.D.

(Regn. No. RQP/MAS/263/2014/A)

GEO TECHNICAL MINING SOLUTIONS

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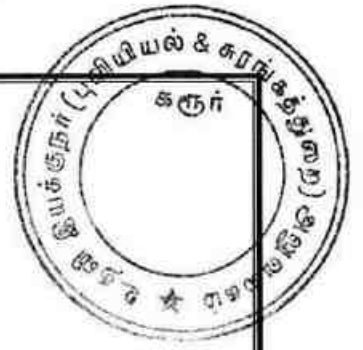
No: 1/213-B, Natesan Complex,

Oddapatti, Collectorate Post office, Dharmapuri-636705

Ph: +91 9443937841, +91 7010076633

E-mail: info.gtmsdpi@gmail.com,

Website: www.gtmsind.com



CERTIFICATE

This is to certify that, the provisions of 19(1), 20 & 22 Tamil Nadu Minor Minerals Concession Rules, 1959 have been observed in the Mining Plan for the grant of rough stone and gravel quarry lease in S.F.No: 134 and 135/1, over an extent of 6.83.5 hectares of Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu State granted to **M/s. Teru Murugan Blue Metal**, Karur District.

Wherever specific permission / exemptions / relaxations or approvals are required, the applicant will approach the concerned authorities of State and Central governments for granting such permissions etc.

Place: Dharmapuri, TN

Date: 18/7/24

Signature of the Recognized Qualified Person

Dr.S.KARUPPANNAN, M.Sc, Ph.D.,

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

A NABET Accredited and ISO Certified Company

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Collectorate Post Office, Oddapatti,

Dharmapuri-636705, TamilNadu, India

Dr. S. KARUPPANNAN. M.Sc., Ph.D.

(Regn. No. RQP/MAS/263/2014/A)

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E-mail: info.gtmsdpi@gmail.com,

Website: www.gtmsind.com



CERTIFICATE

I certify that, in preparation of Mining Plan for rough stone and gravel quarry lease in S.F.No: 134 and 135/1 over an extent of 6.83.5 hectares of Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu State prepared to **M/s. Teru Murugan Blue Metal**, Karur District, covers all the provisions of Mines Act, Rules, and Regulations etc., made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Place: Dharmapuri, TN

Date: 18/7/24

Signature of the Recognized Qualified Person

Dr.S.KARUPPANNAN,M.Sc,Ph.D.,
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
A NABET Accredited and ISO Certified Company
1/213-B, Ground Floor, Natesan Complex,
Collectorate Post Office, Oddapatti,
Dharmapuri-636705, TamilNadu, India

MINING PLAN

FOR THENNILAI EAST VILLAGE ROUGH STONE AND GRAVEL MINING LEASE
WITH PROGRESSIVE QUARRY CLOSURE PLAN

Patta land / Open cast-Semi-Mechanized mining/Non-forest/Non-Captive Use

Lease period 10 Years from the date of lease execution

(Prepared under rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959)

INTRODUCTORY NOTES:

- a) **Introduction:** The Mining plan with progressive quarry closure plan is prepared for M/s. Teru Murugan Blue Metal, office at Survey No.506, Kattu Munnur, Aravakurichi Taluk, Karur District – 639111, Tamilnadu State and filed with application for new proposals has submitted to the Assistant Director, Department of Geology and Mining (ADG & M), Karur dated 03.05.2024 had requested to grant the quarry lease for rough stone and gravel in S.F.No. 134 and 135/1, over an extent of 6.83.5 hectares of Thennilai East Village, Pugalur Taluk, Karur District, Tamil Nadu State.
- b) **The Precise area communication letter:** The Assistant Director, Department of Geology and mining, Karur has directed to the applicant M/s. Teru Murugan Blue Metal, through his precise area communication letter vide Roc.No.138/Mines/2024 Dated 11.07.2024, for quarrying lease rough stone and gravel at Tamil Nadu State, Karur District, Pugalur Taluk, Thennilai East Village in S.F.No: 134 and 135/1 over an extent of 6.83.5 hectares has recommended as following conditions for a period of Ten (10) years under Rule 19(1), 20 & 22 Tamil Nadu Minor Mineral concession rules, 1959.
- Excavation should be carried out properly without any damage leaving a safety distance of 10 meters on Bhoodan land to the north and west of the applied lease area.
 - Excavation should be carried out properly without any damage leaving a 10 meters safety distance for cart road on east side of the applied lease area.
 - Excavation should be carried out properly without any damage leaving a safety distance of 7.5 meters to the nearby patta land and government lands.
 - Quarrying should be carried out in accordance with norms during the lease period by drilling rocks with hand drill using moderate explosives and without causing any damage to the public or public property.

This Mining Plan is approved subject to the conditions/stipulations indicated in the Mining Plan approval Letter No: 138/Mines/2024 Dated: 20.08.2024.

- v. To ensure the safety of the quarry workers, Mettalliferous mines shall set up wide and safe benches as per rules for safe movement of vehicles inside the quarry and ensure the safety of the quarry workers.
- vi. Mining Plan approved by the Assistant Director (Mines) and approved by the State Environmental Impact Assessment Authority (SEIAA) should be submitted by the applicant to the District Administration for grant of quarry lease.
- c) **Preparation and Submission of Mining Plan:** The Mining Plan with progressive quarry closure plan has been prepared under rule 41 and submitted under rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 for mining lease as per conditions mentioned in the precise area communication letter **Roc.No.138/Mines/2024 Dated 11.07.2024.**
- d) **Geological resources and Mineable reserves:** Geological resource of estimated as **3416400m³** including the resources of safety zone, gravel etc. Of which, rough stone resources of about **3279744m³** and gravel is **136656m³**. The total mineable reserve is estimated to be **2033520m³** by deducting the reserve safety zone, block in benches from the total Geological resources. of which, rough stone is about **1914240m³** and gravel is **119280m³** up to a depth of 50m below ground level (Refer Plate No. III & IV).
- e) **Proposed Production Schedule:** Total proposed production of rough stone is **1914240m³** and gravel is **119280m³** up to a depth of 50m below ground level for ten years plan period. (Refer Plate No. VI & VIA).
- f) **Environmental Sensitivity of the proposed lease area: -**
- i). **Interstate boundary:** There is no interstate boundary around 10Km radius periphery of proposed lease area.
- ii). **Wildlife Sanctuaries any:** There are no notified wildlife sanctuaries within the radius of 10km from the project site under the wildlife (Protection) Act, 1972.
- iii). **Forest (conservation) Act, 1980:** No forest land granted for quarrying and there is no reserve forest around 60m radius.
- iv). **CRZ Notification, 2019:** There is no Sea coastal zone found within radius of 10km and this project site doesn't attract CRZ Notification, 2019.
- h) **Environmental measures to be adopted during the ongoing activity period,**
- a. Usage of sharp drill bits while drilling which will help in reducing noise.



- b. Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders.
- c. Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained.
- d. Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise.
- e. Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation.
- f. Transportation of material will be carried out during day time and material will be covered with tarpaulin.
- g. The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- h. And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.

1.0 GENERAL:

a.	Name of the Applicant	:	M/s. Teru Murugan Blue Metal
	Applicant address	:	Survey No.506, Kattu Munnur, Aravakurichi Taluk,
	District	:	Karur.
	State	:	Tamilnadu
	Pin code	:	639111
	Phone	:	Nil
	Fax	:	Nil
	Gram	:	Nil
	Telex	:	Nil
	E-mail	:	.....
b.	Status of the Applicant		
	Private individual	:	---
	Cooperative Association	:	---
	Private company	:	Private company
	Public Company	:	--
	Public Sector Undertaking	:	---
	Joint Sector Undertaking	:	---
	Other (pl. specify)	:	---
c.	Mineral(s) Which are occurring in the area and which the applicant intends to mine	:	Rough Stone and Gravel Quarry Lease
d.	Period for which the mining lease granted	:	The precise area has been communicated to

	/renewed/ proposed to be applied		the applicant for quarrying period of Ten (10) years.
	Name of the RQP preparing the Mining Plan	:	Dr. S.KARUPPANNAN.M.Sc.,Ph.D.
	Address	:	Geo Technical Mining Solutions (A NABET Accredited & ISO certified Company) No: 1/213-B, Natesan Complex, Oddapatti, Collectorate Post office, Dharmapuri-636705 Web site: www.gtmsind.com
	Phone	:	+91 9443937841, 7010076633
	Fax	:	Nil
	e-mail	:	info.gtmsdpi@gmail.com
	Telex	:	Nil
	Registration number	:	RQP/MAS/263/2014/A
	Date of grant/renewal	:	16.12.2014
	Valid upto	:	15.12.2024
f.	Name of the prospecting agency	:	Geo Technical Mining Solutions GSR 286(E) No:272, Ministry of Mines Notification 7th April 2022.
	Address	:	No: 1/213-B, Natesan Complex, Oddapatti, Collectorate Post office, Dharmapuri-636705 Web site: www.gtmsind.com
	Phone	:	+91 9443937841, 7010076633
g.	Reference No. and date of consent letter from the state government	:	The precise area communication letter issued by the Assistant Director, Department Geology and Mining, Karur vide Roc.No.138/Mines/2024 Dated 11.07.2024

2.0 LOCATION AND ACCESSIBILITY:

a.	Details of the Area:	:	Refer plate no: IA & IB
	District & State	:	Karur, Tamil Nadu
	Taluk	:	Pugalur
	Village	:	Thennilai East

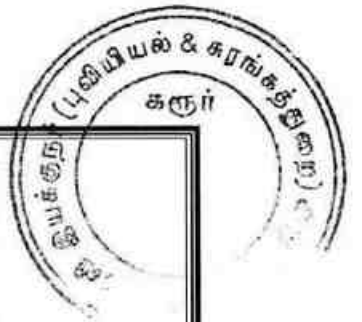
Khasra No./ Plot No./ Block Range/ Felling Series etc.:

Survey No	Sub Division	Total Extent in Hect	Patta No.	Village and Name of the Land Owner	Mine lease Applied S.F.No.	Mine lease Applied area out of total area in hect.
134	-	3.53.5	2523	Mr.Subramani (Managing Partner) of M/s. Teru Murugan Blue Metal	134	3.53.5
135	1	3.30.0	3054	Mr.Subramani (Managing Partner) of M/s. Teru Murugan Blue Metal	135/1	3.30.0
Total Extent		6.83.5	Applied lease area extent			6.83.5

Lease area (hectares)	:	6.83.5 Hectares
Whether the area is recorded to be in forest (please specify whether protected, reserved, etc)	:	The proposed lease area is recorded as patta land. Copy of land documents are enclosed. (Ref.Anne.No's: IV)
Ownership / Occupancy	:	This is a patta land S.F.No.134 & 135/1 is registered on the name of Mr.Subramani (Managing Partner) of M/s. Teru Murugan Blue Metal as patta no.2523 & 3054.
Existence of Public Road / Railway line if any nearby and approximate distance	:	✓ Exploited quarry materials will be transported through the cart road is situated on the eastern side. ✓ There is an NH-81 is situated on the southern side about 0.81km which is connecting Karappalayam-Kattur Road. ✓ There is no railway line is situated around 5km radius from the lease area.
Toposheet No. with latitude and longitude	:	Toposheet No. 58 F/13 Latitude: From 10°58'58.42"N to 10°59'7.87"N Longitude: From 77°53'1.51"E to 77°53'11.81"E

Geo-Coordinates of the lease boundary:

PILLAR ID	LATITUDE	LONGITUDE
1	10°59'7.64"N	77°53'11.32"E
2	10°59'5.01"N	77°53'11.26"E
3	10°59'2.41"N	77°53'11.39"E
4	10°58'59.07"N	77°53'11.81"E
5	10°58'58.93"N	77°53'11.80"E
6	10°58'58.42"N	77°53'1.80"E



	7	10°58'58.57"N	77°53'1.80"E
	8	10°59'2.09"N	77°53'1.81"E
	9	10°59'3.25"N	77°53'1.51"E
	10	10°59'5.12"N	77°53'5.11"E
	11	10°59'5.87"N	77°53'6.53"E
	12	10°59'7.11"N	77°53'6.61"E
	13	10°59'7.79"N	77°53'6.95"E
	14	10°59'7.87"N	77°53'8.91"E
Land use pattern (Forest, Agricultural, Grazing, Barren etc.)		: It is an barren and Ryotwari land.	
b.	<i>Attach a general location and vicinity map showing area boundaries and existing and proposed access routs. It is preferred that the area to be marked on a survey of India topographical map or a cadastral map or forest map as the case may be. However if none of these are available, the area should be shown on an accurate sketch map on scale of 1 : 5000.</i>		: Refer plate no-IA & IB

i) INFRASTRUCTURE AND COMMUNICATION:

S.No	Description	Place	Distance	Direction
a.	Nearest post office	K.Paramathi	3.45Km	Southeast
b.	Nearest police station	K.Paramathi	3.57km	Southeast
c.	Nearest fire station	Karaipalayam	15.2km	Northeast
d.	Nearest medical facility	K.Paramathi	2.6km	Southeast
e.	Nearest school	K.Paramathi	3.4km	Southeast
f.	Nearest railway station	Noyal	9.65km	Northeast
g.	Nearest port facility	Thoothukudi	248km	South
h.	Nearest airport	Coimbatore	92.5km	West
i.	Nearest DSP office	Karur	18.5km	East
j.	Nearest villages	Kadaikkaranpalaiyam	1.5km	Northwest
		Alampalaiyam	1.6km	North
		Munnur	1.8km	East
		Kattumunnur	1.6km	South

PART – A

3.0 GEOLOGY AND MINERAL RESERVES:

(a) Briefly describe the topography and general geology and local/mine geology of the mineral deposit including drainage pattern:

(i)	Topography	:	The proposed lease area is flat topography. The maximum elevation (199m) was observed north of the site. The slope is towards southern side and falls in Toposheet no. 58 F/13

(ii) General Geology of the District:

The Karur district forms part of the Archean complex of peninsular gneiss. The general rock types of this area are Biotite gneiss. Karur District is blessed with good reserves of crystalline limestone known as "Palayam belt" in Varavanai, Thennilai, Gudalur etc., villages in Kulithalai Taluk and the occurrences of good quality of pegmatite veins constituting with glassy quartz and potash feldspar in lensoid patches in Nagampalli and Pungambadi areas in Aravakurichi Taluk. The major mineral such as limestone, quartz and feldspar are exploited in Karur district and utilized in the mineral-based industries.

The Granite gneiss rocks are found to occur in K.Paramathi, Athur, Thennilai, Punnam, Godanthur South, Munnur, Punnam, Anjur villages in Karur and Aravakurichi Taluk are exploited to produce building materials and road metal (Jelly) and over burden soil appear as gray to reddish in colour called as gravel. The commercially known "Coloumbo Zubrana" the unique type in the Multi coloured granite / Granite gneiss category is occurring in Thogamalai, Naganur and Kazhugur Villages in Kulithalai Taluk. These rock type belong to minor mineral category. The arrangement of alternate layers of felsic and mafic minerals in linear pattern and exhibits wavy pattern in the rock and giving very good structure for the rock type. The well-developed gneissic pattern with linear arrangement, the rock type have attracted the granite market and found to be suitable for the exploitation of granite blocks. But in this area the banded gneissic rock has many fractures and foliation in it. So, this is not viable for dimensional stone. **Order of superposition of the proposed lease area,**

Age	Group	Rock Formation
Recent to Sub recent	----	Top Soil (1-2m Thick)

	Proterozoic	Acid Intrusive	Pink medium grained granite/ Granite gneiss.									
	Archean	Charnockite Group	Pyroxene Granulite, Charnockite (acid to intermediate)/ Crystalline limestone / Quartzite									
(iii)	Local / Mine Geology of The Mineral Deposit: Topography of the proposed lease area: The applied lease area exhibits an flat topography and the maximum elevation 199m was observed north of the site. The rocks exhibits layered, medium to coarse grained hornblende biotite, orthopyroxene charnockite gneiss. The Gravel is obtained the average of 0-2.0m and a rough stone starts from 2.0m to 50m (R.L.199-149m) from the surface level. The Surface plan showing elevation, contour, accessibility road and Geological map was prepared the proposed lease area. Mode of origin: The Charnockite series originally was assumed to have developed by the fractional crystallization of silicate magma. Subsequent studies have shown, however, that many, if not all, of the rocks are metamorphic, formed by recrystallization at high pressures and moderately high temperatures. Physiography of the rocks: General characteristics of the rocks of this series has recorded that the rocks are in general bluish gray or darkish in colour and extremely fresh in appearance with an even grained granular structure. Chemical composition of rocks: The compositional characteristics of coexisting orthopyroxene, garnet and biotite have established several petrographic varieties within the Charnockites-Enderbites such as the granulite's and gneisses. Plagioclase feldspars, alkali feldspars and quartz are the salic minerals present in this series of rocks. Order of superposition of the proposed lease area, <table><tr><th>Age</th><th>Group</th><th>Rock Formation</th></tr><tr><td>Recent to Sub recent</td><td>----</td><td>Gravel</td></tr><tr><td>Archaean</td><td>Charnockite Group</td><td>Charnockites.</td></tr></table>			Age	Group	Rock Formation	Recent to Sub recent	----	Gravel	Archaean	Charnockite Group	Charnockites.
Age	Group	Rock Formation										
Recent to Sub recent	----	Gravel										
Archaean	Charnockite Group	Charnockites.										
(iv)	Drainage Pattern	:	There is no major river found within 50m radius.									

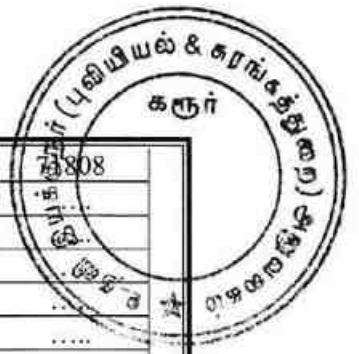
		The drainage in the area is sub-dendritic in nature.
(b)	<i>The topographic plan of the lease area prepared on a scale of 1 :1000 or 1 : 2000 with contour interval of 3 to 10m depending upon the topography of the area should be taken as the base plan for preparation of geological plan. The details of exploration already carried out including evidences of mineral existence should be shown on the geological plan:</i>	
	a. Present status:	: The RQP examined the surface features during survey. It is a fresh quarry lease.
	b. Surface Plan	: Surface plan showing elevation contour and accessibility road was prepared at the scale of 1: 2000, as shown in Plate No. III.
(c)	Geological sections should be prepared at suitable intervals on a scale of 1: 1000 / 1: 2000:	: Longitudinal and transverse geological cross sections were prepared at the horizontal scale of 1: 1000 and at the vertical scale of 1:500, as shown in Plate No. IIIA
(d)	<i>Broadly indicate the Yearwise future programme of exploration, taking into consideration the future production programme planned in next five years as in table below:-</i> No future programmed proposed in this area. Its massive homogeneous parent rock. Hence exploration proposal is not required to this mining project.	
<i>(e) Indicate geological and recoverable reserves and grade, duly supported by standard method of estimation and calculations along with required sections (giving split up of various categories i.e. proved, probable, possible). Indicate cut-off grade. Availability of resources should also be indicated for the entire leasehold.</i>		
The geological resources were computed by cross section method with respect to the boundaries of the lease area. In this method, the lease area was divided into one longitudinal and two transverse section to calculate the volume of material up to the depth of 50m below ground level for ten years plan period. (Refer Plate No. III & IIIA). The one longitudinal and two transverse cross section were assigned XY-AB & XY-CD as respectively. Using the cross-sectional method, total reserve is estimated to be 3416400m³ including the resources of safety zone, and gravel, etc. Of which, rough stone resources of about 3279744m³ and gravel is 136656m³.		

GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Rough Stone in M ³	Gravel in M ³
XY-AB	I	146	189	2	55188	.....	55188
	II	146	189	6	165564	165564	.....
	III	146	189	6	165564	165564	.....
	IV	146	189	6	165564	165564	.....
	V	146	189	6	165564	165564	.....
	VI	146	189	6	165564	165564	.....
	VII	146	189	6	165564	165564	.....
	VIII	146	189	6	165564	165564	.....
	IX	146	189	6	165564	165564	.....
TOTAL					1379700	1324512	55188
XY-CD	I	146	279	2	81468	.....	81468
	II	146	279	6	244404	244404	.....
	III	146	279	6	244404	244404	.....
	IV	146	279	6	244404	244404	.....
	V	146	279	6	244404	244404	.....
	VI	146	279	6	244404	244404	.....
	VII	146	279	6	244404	244404	.....
	VIII	146	279	6	244404	244404	.....
	IX	146	279	6	244404	244404	.....
TOTAL					2036700	1955232	81468
GRAND TOTAL					3416400	3279744	136656

(f) Indicate mineable reserves by slice plan / level plan method, as applicable, as per the proposed mining parameters: -

The total mineable reserve is estimated to be 2033520m³ by deducting the reserve safety zone, block in benches from the total Geological resources up to a depth of 50m below ground level. Of which, rough stone is about 1914240m³ and gravel is 119280m³. The commercially viable rough stone has been prepared on 1: 2000 scale and sections are prepared in a scale of 1:1000 in horizontal axis and 1:500 as vertical axis (Refer plate no's. IV & IVA).

MINEABLE RESERVES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Rough Stone in M ³	Gravel in M ³
XY-AB	I	138	172	2	47472	.....	47472
	II	136	168	6	137088	137088	.....
	III	130	156	6	121680	121680	.....
	IV	124	144	6	107136	107136	.....
	V	118	132	6	93456	93456	.....
	VI	112	120	6	80640	80640	.....
	VII	106	108	6	68688	68688	.....
	VIII	100	96	6	57600	57600	.....
	IX	94	84	6	47376	47376	.....
TOTAL					761136	713664	47472



XY-CD	I	136	264	2	71808	.....	71808
	II	134	260	6	209040	209040	.....
	III	128	248	6	190464	190464	.....
	IV	122	236	6	172752	172752	.....
	V	116	224	6	155904	155904	.....
	VI	110	212	6	139920	139920	.....
	VII	104	200	6	124800	124800	.....
	VIII	98	188	6	110544	110544	.....
	IX	92	176	6	97152	97152	.....
TOTAL					1272384	1200576	71808
GRAND TOTAL					2033520	1914240	119280

4.0 MINING:

a)	Briefly describe the existing / proposed method for developing / working the deposit with all design parameters. (Note: In case of pocket deposits, sequence of development/working may be indicated on the same plan)	:	The mining operation is open-cast, semi-mechanized method are adopted and on single shift basis only. Under the regulation 106 of the Metalliferous Mines Regulations, 1961 in all open cast workings in hard rock, the benches and sides should be properly benched and sloped. The bench height should not exceed 6m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.

b) *Indicate quantum of development and tonnage and grade of production expected pit wise as in table below.*

Total proposed production for first five years of rough stone is about 1187520m^3 and gravel is 119280m^3 up to a depth of 26m below ground level and next five years for rough stone is about 726720m^3 up to a depth of 24m below ground level.(Refer Plate No's. VI & VIA).

Year	Pit No.(s)	Topsoil/Overburden (m^3)	ROM (m^3)	Saleable rough stone (m^3) @ 100%	Rough stone rejects(m^3)	Sub grade/Weathered rock (m^3)	Saleable Gravel (m^3)	Rough stone to waste ratio
I	I	...	231000	192456	...	...	38544	...
II	I	...	240312	207048	...	...	33264	...
III	I	...	240720	193248	...	...	47472	...
IV	I	...	172656	172656	...	...	...	...
V	I	...	422112	422112	...	...	...	...
Total	—	...	1306800	1187520	...	...	119280	...



Next Five Years Period								
VI	I	...	64800	64800	...	...	...	...
VII	I	...	117600	117600	...	...	...	...
VIII	I	...	162960	162960	...	...	...	...
IX	I	...	169152	169152	...	...	...	...
X	I	...	212208	212208	...	...	...	...
Total	—	...	726720	726720	...	...	...	...

c) *Composite plans and Year wise sections (In case of 'A' class mines):* : Not applicable. It is a "B" class quarry lease

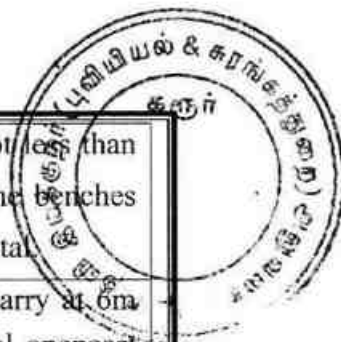
YEARWISE PRODUCTION FOR FIRST FIVE YEARS RESERVES								
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Rough Stone in M ³	Gravel in M ³
I-YEAR	XY-CD	I	73	264	2	38544	.....	38544
		II	69	260	6	107640	107640	.....
		III	57	248	6	84816	84816	.....
TOTAL						231000	192456	38544
II-YEAR	XY-CD	I	63	264	2	33264	.....	33264
		II	65	260	6	101400	101400	.....
		III	71	248	6	105648	105648	.....
TOTAL						240312	207048	33264
III-YEAR	XY-AB	I	138	172	2	47472	.....	47472
		II	136	168	6	137088	137088	.....
		III	60	156	6	56160	56160	.....
TOTAL						240720	193248	47472
IV-YEAR	XY-AB	III	70	156	6	65520	65520	.....
		IV	124	144	6	107136	107136	.....
TOTAL						172656	172656	0
V-YEAR	XY-CD	IV	122	236	6	172752	172752	.....
		V	116	224	6	155904	155904	.....
	XY-AB	V	118	132	6	93456	93456	.....
TOTAL						422112	422112	0
GRAND TOTAL					26	1306800	1187520	119280
YEARWISE PRODUCTION FOR NEXT FIVE YEARS RESERVES								
VI-YEAR	XY-AB	VI	90	120	6	64800	64800	.....
TOTAL						64800	64800	0
VII-YEAR	XY-AB	VI	22	120	6	15840	15840	.....
	XY-CD	VI	80	212	6	101760	101760	.....
TOTAL						117600	117600	0
VIII-YEAR	XY-CD	VI	30	212	6	38160	38160	.....
		VII	104	200	6	124800	124800	.....
TOTAL						162960	162960	0
IX-YEAR	XY-AB	VII	106	108	6	68688	68688	.....
		VIII	100	96	6	57600	57600	.....
	XY-CD	VIII	38	188	6	42864	42864	.....
TOTAL						169152	169152	0
X-YEAR	XY-CD	VIII	60	188	6	67680	67680	.....
		IX	92	176	6	97152	97152	.....
	XY-AB	IX	94	84	6	47376	47376	.....
TOTAL						212208	212208	0
GRAND TOTAL					24	726720	726720	0



d)	Attach supporting composite plan and section showing pit layouts, dumps, stacks of sub-grade mineral, if any, etc.	: Composite plan not prepared in this proposed lease area																																																									
e)	Indicate proposed rate of production when the mine is fully developed and the expected life of the mine and the year from which effected: At this rate of production, the expected life of quarry is calculated as given below: <u>Rough stone:</u> <table> <tr> <td>Mineable reserves of rough stone (10 Years)</td> <td>=</td> <td>1914240m³</td> </tr> <tr> <td>Annual Peak production</td> <td>=</td> <td>422112m³</td> </tr> <tr> <td>First Five (5) Years Production</td> <td>=</td> <td>1187520m³</td> </tr> <tr> <td>Next Five Years Production</td> <td>=</td> <td>726720m³</td> </tr> </table>		Mineable reserves of rough stone (10 Years)	=	1914240m ³	Annual Peak production	=	422112m ³	First Five (5) Years Production	=	1187520m ³	Next Five Years Production	=	726720m ³																																													
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f)	Attach a note furnishing a conceptual mining plan for the entire lease period (for "B" category mines) and upto the life of the mine (for "A" category mines) based on the geological, mining and environments considerations:																																																										
i)	Time frame of completion of mineral exploration program in leasehold area: Give broad description identified potential areas to be covered in the given time frame:	: Considering the indefinite depth persistence of the rough stone deposit is proved beyond the workable limits about up to a depth of 50m below ground level (R.L.199m to 149m) from the petrogenetic character of the charnockite rock as well as from the actual mining practice in the area and with the current trend of rough stone production the quarry may sustain for 10 years.																																																									
ii)	Whether ultimate pit limit has been determined and demarcated on surface and geological plan :- The ultimate pit limit has been determined and demarcated in the conceptual plan <table border="1"> <thead> <tr> <th colspan="6">SECTION XY-AB</th> </tr> <tr> <th>Bench</th> <th>Period</th> <th>Overburden/ Mineral</th> <th>L (m)</th> <th>W (m)</th> <th>D (m)</th> </tr> </thead> <tbody> <tr> <td>I</td> <td rowspan="5">First Five years Period</td> <td>Gravel</td> <td>138</td> <td>172</td> <td>2</td> </tr> <tr> <td>II</td> <td rowspan="9">Rough stone</td> <td>136</td> <td>168</td> <td>6</td> </tr> <tr> <td>III</td> <td>130</td> <td>156</td> <td>6</td> </tr> <tr> <td>IV</td> <td>124</td> <td>144</td> <td>6</td> </tr> <tr> <td>V</td> <td>118</td> <td>132</td> <td>6</td> </tr> <tr> <td>VI</td> <td>112</td> <td>120</td> <td>6</td> </tr> <tr> <td>VII</td> <td>106</td> <td>108</td> <td>6</td> </tr> <tr> <td>VIII</td> <td>100</td> <td>96</td> <td>6</td> </tr> <tr> <td>IX</td> <td>94</td> <td>84</td> <td>6</td> </tr> <tr> <td colspan="5">Total Depth</td> <td>50</td> </tr> </tbody> </table>		SECTION XY-AB						Bench	Period	Overburden/ Mineral	L (m)	W (m)	D (m)	I	First Five years Period	Gravel	138	172	2	II	Rough stone	136	168	6	III	130	156	6	IV	124	144	6	V	118	132	6	VI	112	120	6	VII	106	108	6	VIII	100	96	6	IX	94	84	6	Total Depth					50
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SECTION XY-CD						
Bench	Period	Overburden/ Mineral	L (m)	W (m)	D (m)	
I	First Five years Period	Gravel	136	264	2	
II		Rough stone	134	260	6	
III			128	248	6	
IV			122	236	6	
V			116	224	6	
VI	110		212	6		
VII	104		200	6		
VIII	98		188	6		
IX	92		176	6		
Total Depth					50	
iii)	Whether the site for disposal of waste rock or an un-saleable material have/ has been examined for adequacy of land and suitability of long term use in the event of continuation of mining activity: -		: The recovery of rough stone in this quarry is 100%. There is no waste rock will be proposed in this lease area.			
iv)	Whether back filling of pits after recovery of mineral up to techno -economically feasible depth envisaged. If so, describe the broad features of the proposal: -		: As the depth of persistence of the deposit may likely to continue for further depth, it is proposed not to backfilled the quarry pit.			
v)	Whether post mining land use envisaged: -		: At the end of mining activities over the quarry pit may be utilized for storage of rain water and may be converted in to dumping yards for solid waste by adopting suitable technologies.			
g)	Open cast mining					
i)	Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, manual)		: It is a fresh quarry lease. The mining operation is opencast, semi-mechanized methods are adopted and on single shift basis only. Under the regulation 106 of the Metalliferous Mines Regulations, 1961 in all opencast workings in hard rock, the benches and sides should be properly benched and sloped. The bench height should not exceed			



		6m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.																					
ii)	Describe briefly the layout of mine workings, the layout of faces and sites for disposal of overburden/waste. A reference to the plans enclosed under 4(b) and 4(d) will suffice	The rough stone is proposed to quarry at 6m bench height & width conventional opencast semi mechanized quarrying operation using shot hole drilling with the help of tractor mounted compressor attached with jack hammers, smooth blasting and waste and are removal using Hydraulic excavator and loaded directly to the tippers and transported to the needy customer. Bench height = 6mts. Bench width = 6mts.																					
	a. Details of Topsoil/ Overburden	There is no topsoil will be removed.																					
	b. Rough Stone waste and side burden waste:-	The recovery of rough stone in this quarry is 100%. There is no rough stone waste or side burden will be removed.																					
H	Underground Mining	Not applicable																					
i)	Extent of mechanization: Describe briefly including the calculation for adequacy and type of machinery and equipment proposed to be used in different mining operations.																						
	(1) Drilling Machines: Drilling of shot holes will be carried out using tractor mounted compressor and jack hammer. Details of drilling equipment's are given below.																						
	<table><tr><th>Type</th><th>Nos</th><th>Dia of hole (mm)</th><th>Size / Capacity</th><th>Make</th><th>Motive power</th><th>H.P.</th></tr><tr><td>Jack Hammer</td><td>5</td><td>32 mm</td><td>Hand held</td><td>--</td><td>Diesel</td><td>--</td></tr><tr><td>Compressor</td><td>3</td><td>---</td><td>Air</td><td>--</td><td>Diesel</td><td>--</td></tr></table>	Type	Nos	Dia of hole (mm)	Size / Capacity	Make	Motive power	H.P.	Jack Hammer	5	32 mm	Hand held	--	Diesel	--	Compressor	3	---	Air	--	Diesel	--	
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	(2) Loading Equipment:																						
	<table><tr><th>Type</th><th>Nos</th><th>Size / Capacity</th><th>Make</th><th>Motive power</th><th>H.P.</th></tr><tr><td>Hydraulic Excavator</td><td>2</td><td>2.9-4.5m³</td><td>--</td><td>Diesel</td><td>--</td></tr></table>	Type	Nos	Size / Capacity	Make	Motive power	H.P.	Hydraulic Excavator	2	2.9-4.5m ³	--	Diesel	--										
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	(3) Haulage and Transport Equipment (a) Haulage within the mining leasehold:																						
	<table><tr><th>Type</th><th>Nos</th><th>Size / Capacity</th><th>Make</th><th>Motive power</th><th>H.P.</th></tr><tr><td>Tipper</td><td>11</td><td>--</td><td>--</td><td>Diesel</td><td>--</td></tr></table>	Type	Nos	Size / Capacity	Make	Motive power	H.P.	Tipper	11	--	--	Diesel	--										
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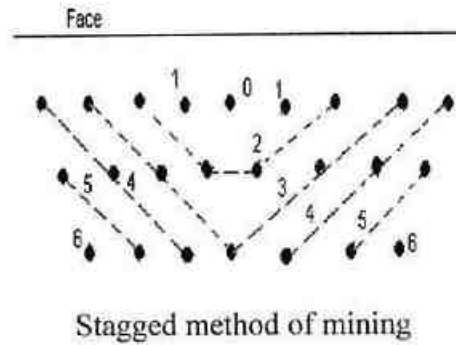


	Whether the dumpers are fitted with exhaust conditioner should be indicated: The dumpers not used in this quarry area, hence it's a small B category mine.					
b)	Transport from mine head to the destination			Tipper will be used for transport rough stone from the mine head to needy customer.		
c)	Describe briefly the transport system (please specify)			Hydraulic excavator and tippers utilized for internal transport sizeable rough stone lumps and deliver to the customer's area.		
	i) Ore transported by: own trucks / hired trucks			Hired trucks for initially production purposes		
	ii) Main destination to which ore is transported (giving to and from distance)			The excavated stone materials road metal will be supplied to the consumers like road laying, earth filling, building construction, etc		
a)	Details of hauling / transport equipment:					
	Type	Nos	Size / Capacity	Make	Motive power	H.P.
	--	--	--	--	--	--
4)	(4). Miscellaneous: Describe briefly any allied operations and machineries related to the mining of the deposit not covered earlier.					
	(A) Operations			The mining operation is open-cast, semi-mechanized methods are adopted and on single shift basis only.		
	(B) Machineries deployed			Machineries like Tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic Excavators and tipper combination are adapted.		
5.	BLASTING: a) Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum number of holes blasted in a round, manner and sequence of firing, etc. Blasting pattern: The quarrying operation is proposed to carried by open cast mining in conjunction with conventional method using jack hammer drilling and blasting for shattering effect and loosen the rough stone.					

Rough stone production for 10 years = **191424m³**

BLAST DESIGN	
Blasthole Diameter (D) in mm	32
Burden (B) in m	1.2
Spacing (S) in m	1.38
Subdrill in m	0.5
Charge length (C) in m	0.70
Stemming	0.5
Hole Length (L) in m	1.2
Bench Height (BH) in m	2.5
Mass of explosive/hole in g	437.5
Stemming material size in mm	3.2
Burden stiffness ratio	2.08
Blast volume/hole in m ³	4.14
Production of rough stone/day in m ³	684
Number of blast holes/day	165
Number of blast round/day	6
Blasthole pattern	Staggered
Mass of explosive /day in kg	72.25
Powder factor in kg/m ³	0.11
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL

Note: If >2kg of explosives per day use for blasting if proponent get the permission from the DGMS



b) Type of explosives used / to be used:

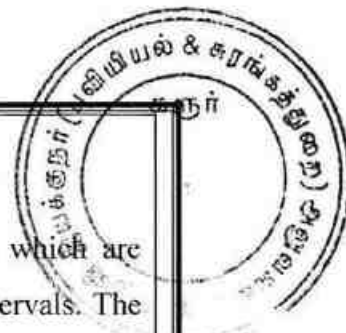
Following explosives are recommended for efficient blasting with safe practice.

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 primary blasting is proposed.

c) Measures proposed to minimize ground vibration due to blasting:

The control blasting measures is being adopted for minimizing ground vibration and fly rock.

Shallow depths jack hammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give hearing effect in rough



stone for easy excavation and to control fly rock.

Delay detonators:

Delay blasting permits to divide the shot to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals. The major advantages of delay blasting are:

- ❖ Reduction of ground vibration
- ❖ Reduction in air blast
- ❖ Reduction in over break
- ❖ Improved fragmentation
- ❖ Better control of fly rock

Blasting program for the production per day

No of holes	: 165holes
Yield	: 684m ³
Total explosive required	: 72.25kg-Slurry explosives
Charge per hole	: 0.5kg
Blasting at day time only	: 12.0p.m-1.0p.m

c)	Powder factor in ore and overburden / waste / development heading / stope	: Powder factor is proposed as 0.11kg per hole of explosives
d)	Whether secondary blasting is needed, if so describe it briefly	: There is no secondary blasting involved.
e)	Storage of explosives (like capacity and type of explosive magazine)	: 1. The applicant is advised to engage an authorized explosive agency to carry out blasting. 2. First Aid Box will be keeping ready at all the time. 3. Necessary precautionary announcement will be carried out before the blasting operation.

6. **MINE DRAINAGE:**

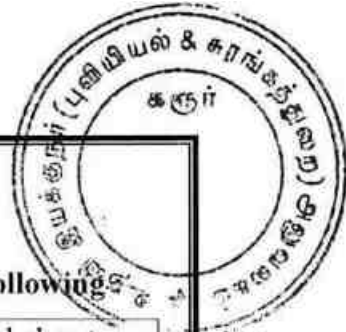
a)	Likely depth of water table based on observations from nearby wells and water bodies	: The ground water table is reported as of 75m in summer and 70m in rainy season from the general ground level observed in the adjacent bore well.
b)	Workings expected to be	: Proposed mining depth is 50m below ground

	_____ m. above / reach below water table by the year _____.	level. Now, the present Mining lease shall not proposed above the water table and hence, quarrying may not affect the ground water.
c)	Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged	: The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300 L pm and it shall be pumped out periodically by a stand by diesel powered Centrifugal pump motivated with 7.5 H.P. Motor. The quality of water is potable and it is not contaminated with any hazardous things.
7.	STACKING OF MINERAL REJECTS AND DISPOSAL OF WASTE:	
a).	Indicate briefly the nature and quantity of top soil, overburden / waste and mineral rejects likely to be generated during the years: No other wastes are removed during years.	
b).	Land chosen for disposal of waste with proposed justification	: There is no topsoil will be removed.
c).	Attach a note indicating the manner of disposal and configuration, sequence of buildup of dumps along with the proposals for the stacking of sub-grade ore, to be indicated Year wise.	: The recovery of rough stone in this quarry is 100%. If rough stone may be unsold will be keep within the lease boundary.
8.	USE OF MINERAL:	
a).	Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use)	: The excavated stone materials will be supplied to the consumers like stone pillar, sized stone, etc. For instance, aggregates are mostly used for building, roads and footpaths., etc
b).	Indicate physical and chemical	: Basically, the materials produced at this



	specifications stipulated by buyers	quarry are rough stone (charnockite) and gravel the same are used for building materials and road metal. So, there is no chemical specifications are specified. Only physical specifications are involved.																								
c).	Give details in case blending of different grades of ores is being practiced or is to be practiced at the mine to meet specifications stipulated by buyers.	: Not blending process is involved, after blasting the rough stone and gravel will be directly loaded to the needy customer.																								
9.	OTHERS																									
	Describe briefly the following a) Site services	: Infrastructure required for such mines like office, stores, canteen, first aid station, shelter latrine and bath rooms have been provided as per the Metalliferous Mines Regulations, 1961 as a welfare amenity for our quarry laborers.																								
	b) Employment potential: As per Mines safety under the provisions of Metalliferous Mines Rules, 1961 under the Mines Act, 1952, whenever the workers are employed more than 10, it is preferred to have a qualified Mining Mate to keep all the production workers directly under his control and supervision. The following man power is proposed for quarrying stone material during the ten years period the same manpower will be utilize for this mining plan period to achieve the proposed production and to comply the provisions of as per the MMR, 1961 norms. <table border="1"> <tr> <td>1.</td> <td>Highly Skilled</td> <td>Mines Manager</td> <td>1No.</td> </tr> <tr> <td></td> <td></td> <td>Mine Engineer</td> <td>1No.</td> </tr> <tr> <td></td> <td></td> <td>Mine Geologist</td> <td>1No</td> </tr> <tr> <td></td> <td></td> <td>Blaster</td> <td>1No</td> </tr> <tr> <td>2.</td> <td>Unskilled</td> <td>Musdoor / Labours</td> <td>24 No's</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total =</td> <td>28 No's</td> </tr> </table>		1.	Highly Skilled	Mines Manager	1No.			Mine Engineer	1No.			Mine Geologist	1No			Blaster	1No	2.	Unskilled	Musdoor / Labours	24 No's	Total =			28 No's
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10	MINERAL PROCESSING/BENEFICIATIONS:																									
(a)	If processing / beneficiations of the ore or minerals mined is planned to be conducted on site or adjacent to the extraction area, briefly describe the nature	: Excavated rough stone minerals directly will be used by the applicant for required size ½, ¾ and 1½ inches Jelly which are mainly used																								

	of the processing /beneficiation. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.		in road and building construction purpose. The recovery of rough stones in this quarry is 100%.
(b)	Explain the disposal method for tailings or waste from the processing plant (quantity and quality of tailings proposed to be discharged, size and capacity of tailing pond, toxic effect of such tailings, if any, with process adopted to neutralize any such effect before their disposal and dealing of excess water from the tailing dam).	:	No water shall be used for quarrying or any other processing except drinking water to be drawn from public sources. Some stagnation of rain water in the pit shall be used for drilling and spraying haul roads. Therefore, need for tailing dam doesn't arise. But tailing control of rain water flow during rainy season has to be done by decanting the SPM in a pit before passing the water in to natural system.
(c)	A flow sheet or schematic diagram of the processing procedure should be attached.	:	Not applicable.
(d)	Specify quantity and type of chemicals to be used in the processing plant.	:	Not applicable
(e)	Specify quantity and type of chemicals to be stored on site / plant.	:	Not applicable
(f)	Indicate quantity (cu.m. per day) of water required for mining and processing and sources of supply of water. Disposal of water and of recycling.	:	Drinking is 0.2KLD, utilized water is 0.8KLD, Dust suppression is 1.0KLD and Green Belt is 1.0KLD. Minimum quantity of water 3.0KLD per day. It is proposed to make an authorized water vendors for drinking water, dust suppression. The workers utilized water will be used for green belt development. The sewage water to a tune of 0.9KLD generated from the mine office toilet and mine labour toilet will be diverted to the septic tank followed by soak pit.

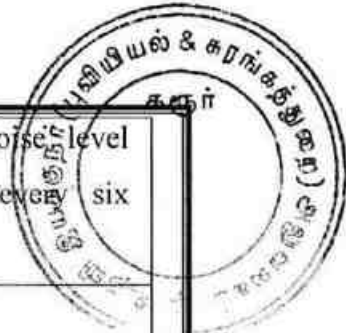


PART – B

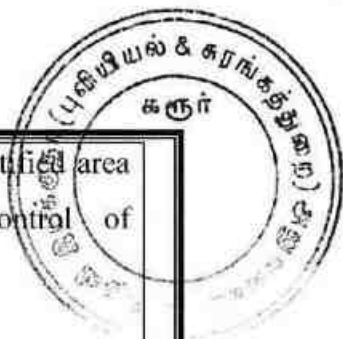
11.0 ENVIRONMENTAL MANAGEMENT PLAN:

a) Attach a note on the status of Baseline information with regard to the Following

11.1	Fresh lease land use pattern indicating the area already degraded due to quarrying /pitting, dumping, roads, processing plant, workshop, township etc in a tabular form. The present land use pattern is given as below.																										
	<table><tr><th>Sl. No.</th><th>Land Use</th><th>Present area (Hect.)</th></tr><tr><td>1.</td><td>Area under Mining</td><td>Nil</td></tr><tr><td>2</td><td>Infrastructure</td><td>Nil</td></tr><tr><td>3</td><td>Roads</td><td>Nil</td></tr><tr><td>4</td><td>Unutilized</td><td>6.83.5</td></tr><tr><td>5</td><td>Green belt</td><td>Nil</td></tr><tr><td>6</td><td>Settling Tank & Drainage</td><td>Nil</td></tr><tr><td colspan="2">Grand Total</td><td>6.83.5</td></tr></table>	Sl. No.	Land Use	Present area (Hect.)	1.	Area under Mining	Nil	2	Infrastructure	Nil	3	Roads	Nil	4	Unutilized	6.83.5	5	Green belt	Nil	6	Settling Tank & Drainage	Nil	Grand Total		6.83.5		
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11.2	Water Regime	:	Water table in this area is noticed at a depth of 75m in summer and 70m in rainy season from the general ground level and presently the quarrying of rough stone is ultimate up to a depth of 50m below ground level. Hence, it will not affect the ground water depletion of this area. It is proposed to make an authorized water vendors for drinking water, dust suppression. The workers utilized water will be used for green belt development.																								
11.3	Flora and Fauna	:	There is no major flora observed in this area and except bushes, shrubs, no other valuable trees are noticed in the lease area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.																								
11.4	Quality of air, ambient noise level and water	:	Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying. Quarrying of rough stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very																								



			minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.																											
11.5	Climatic conditions: The district receives the rain under the influence of both southwest and northeast monsoons. The Northeast monsoon chiefly contributes to the rainfall in the district. Most of the precipitation occurs in the form of cyclonic storms caused due to the depressions in Bay of Bengal. The Southwest monsoon rainfall is highly erratic and summer rains are negligible. The average annual rainfall over the district varies from about 620mm to 745mm. Rainfall: The annual rainfall normal (1970-2000) of Karur district is 742mm. 4 Projections of rainfall over Karur for the periods 2010-2040 (2020s), 2040-2070 (2050s) and 2070-2100 (2080s) with reference to the baseline (1970-2000) indicate a general decrease of 4.0%, 3.0% and 11.0% respectively.																													
11.6	Human Settlement: The nearest villages are found in the buffer zone with population as per 2011 census. <table><tr><th>S.No</th><th>Village</th><th>Direction</th><th>Distance in Kms</th><th>Population</th></tr><tr><td>1</td><td>Kadaikkaranpalaiyam</td><td>Northwest</td><td>1.5km</td><td>382</td></tr><tr><td>2</td><td>Alampalaiyam</td><td>North</td><td>1.6km</td><td>734</td></tr><tr><td>3</td><td>Munnur</td><td>East</td><td>1.8km</td><td>2582</td></tr><tr><td>4</td><td>Kattumunnur</td><td>South</td><td>1.6km</td><td>602</td></tr></table>					S.No	Village	Direction	Distance in Kms	Population	1	Kadaikkaranpalaiyam	Northwest	1.5km	382	2	Alampalaiyam	North	1.6km	734	3	Munnur	East	1.8km	2582	4	Kattumunnur	South	1.6km	602
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11.7	Public buildings, places of worship and monuments	:	No infrastructure like residential building, are found within radius of 300m. The places of special interest like archeological monuments, Sanctuaries, etc., are found around 10km radius.																											
11.8	Attach plans showing the locations of sampling stations	:	The proposed Ambient air quality, Water quality Ambient noise level and vibration are periodically tested for every season (6 months once) around 5km radius as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.																											



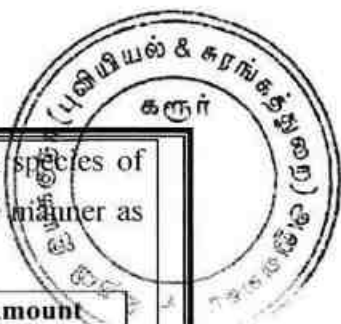
11.9	Does area (partly or fully) fall under notified area under Water (Prevention & Control of Pollution), Act, 1974	: The proposed area not fall under notified area under Water (Prevention & Control of Pollution), Act, 1974																								
b) <i>Attach an Environmental Impact Assessment Statement describing the impact of Mining and beneficiation on environment on the following over the next five years (and upto conceptual plan period for 'A' category mines)</i>																										
i)	Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshop, processing plant, township etc: Due to quarrying and exploitation of the rough stone, there will impact in the form i.e. change in the ground profile, pits, and dumps. The details of the land use pattern, during the ensuing plan period and till lease period is shown in the tabular form: <table border="1"> <thead> <tr> <th>Sl. No.</th><th>Land Use</th><th>Area in use during the quarrying period (Hect.)</th></tr> </thead> <tbody> <tr> <td>1</td><td>Area under Mining</td><td>5.89.00</td></tr> <tr> <td>2</td><td>Infrastructure</td><td>0.02.0</td></tr> <tr> <td>3</td><td>Roads</td><td>0.05.0</td></tr> <tr> <td>4</td><td>Green Belt</td><td>0.76.76</td></tr> <tr> <td>5</td><td>Un-Utilized Area</td><td>Nil</td></tr> <tr> <td>6</td><td>Drainage & Settling Tank</td><td>0.10.71</td></tr> <tr> <td colspan="2">Grand Total</td><td>6.83.5</td></tr> </tbody> </table>		Sl. No.	Land Use	Area in use during the quarrying period (Hect.)	1	Area under Mining	5.89.00	2	Infrastructure	0.02.0	3	Roads	0.05.0	4	Green Belt	0.76.76	5	Un-Utilized Area	Nil	6	Drainage & Settling Tank	0.10.71	Grand Total		6.83.5
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ii).	Air Quality	Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying.																								
iii).	Water quality	A water sample from the open/bore wells was tested to NABL approved lab to assess hardness, Salinity, colour, Specific gravity, etc.																								
iv).	Noise levels	Quarrying of rough stone and gravel will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.																								
v).	Vibration levels (due to blasting)	No deep hole blasting envisaged. Small dia shot holes are used for breaking boulders. The																								



		maximum peak particles velocity shall be recorded using mini seismograph devices as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
vi).	Water regime	No major river or any odai track are found around 500m radius.
vii).	Socio-economics	1. To provide Employment opportunities of the nearby villagers. 2. For the cultural development of the nearby villagers.
viii).	Historical monuments etc.	There are no historical monuments, etc found around 300m radius.

c) Attach an Environmental Management Plan (supported by appropriate plans and sections) defining the time bound action proposed to be taken with sequence & timing in the following areas (or diagrams should be used):

i).	temporary storage and utilization of topsoil	:	No separate of topsoil will be removed.
ii).	Yearwise proposal for reclamation of land affected by abandoned quarries and other mining activities during ten years (and upto conceptual plan period for 'A' category mines) clarifying the extent of back filling and re-contouring and / or alternative use of unfilled / partially filled excavations / road sides / slopes and mine. In case abandoned quarries/ pits are proposed to be used as reservoir, their size, water holding capacity and proposal for utilization of such water be given.	:	The present mining is proposed to an average depth of 26m below ground level from the below ground level has been envisaged as workable depth for safe & economic mining during the lease period. The mined-out area will be fenced on top of working bench with S1 fencing. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
iii).	Programme of afforestation, Yearwise for the initial ten years (and upto conceptual plan period for 'A' category mines) indicating the number of plants with name of species to be afforested under different areas in hectares. Green Belt Development: Safety barrier, nearby school area and Nearest Panchayat approach Roads		



has been identified to be utilized for Greenbelt appropriate native species of Neem, Pungan and other regional trees will be planted in a phased manner as described below

Year	Place	Area in Sq.m	No.of Plants	Rate of survival	Rate	Amount in Rs
First	Lease Boundary	7679	800	80%	@100 Rs Per sapling	80,000/-
Second	Approach road and Nearby Village Road	--	300	80%		30,000/-
Third	Schools	--	300	80%		30,000/-
Total						1,40,000/-

iv).	Stabilization and vegetation of dumps along with waste dump management Year wise for the ten years (and upto conceptual plan period for 'A' category mines).	:	No waste or rejects shall be proposed.
v).	Measures to control erosion / sedimentation of water courses.	:	Not applicable. There is no major dumps are stabilize in this quarry area.
vi).	Treatment and disposal of water from mine.	:	It will not be harmful and it does not require any treatment before discharging into the natural courses.
vii).	Measures for minimizing adverse effects on water regime.	:	There is no water to be pumped out will be very pure and portable and therefore, it will not affect any water regime surrounding the quarry.
viii).	Protective measures for ground vibrations / air blast caused by blasting,	:	It is a small "B" category open cast, semi mechanized mining and no heavy machinery shall be used. The only smooth blasting is proposed, therefore no change for ground vibration or noise from the quarry.
ix).	Measures for protecting historical monuments and for rehabilitation of human settlements likely to be disturbed due to mining activity.	:	No historical monuments and for rehabilitation of human settlements doesn't to be disturbed during mining activity.
x).	Socioeconomic benefits arising out of mining.	:	The nearest villages are will get employment benefits.



d). *Monitoring schedules for different environmental components after the commencement of mining and other related activities. (for 'A' category mines only)*

Not applicable. It is B category quarry

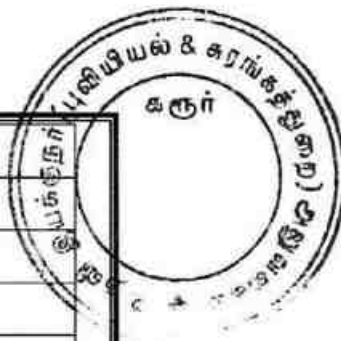
12.0 PROGRESSIVE QUARRY CLOSURE PLAN:

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	:	Present mining is proposed to depth of 26m below ground level. The mined-out area will be fenced on top of working bench with S1 fencing to arrest the entry of cattle's and public in to the quarry site.
12.2	Measures to be under taken on mine closure as per Act & Rules	:	Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by Barbed wire fencing. Green belt development at the rate of 800 trees will be proposed in the quarry area. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
12.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	:	The quarry lease is a fresh mining lease, no mitigation measures observed.
12.4	Mine closure activity	:	The mining plan is proposed to depth of 50m below ground level has been envisaged as workable depth for safe & economic mining during the lease period. The mined-out area will be fenced on top of open cast working with S1 fencing. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
12.5	Safety and security	:	Safety measures implement to the prevent access to surface opening excavations will be taken as Metalliferous mine regulations, 1961, it is a small open cast mining method adopted. Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a mechanized operation.

12.6	Disaster management and Risk Assessment	:	Open cast mining method is adopted in this quarry. If the benches are made with proposed height and with no risk will be there. Even then if any minor or major accident happens the quarry staffs having First aid facilities with first aid box with all necessary medicine and stretches etc., to give first aid treatment at the site and will arrange immediately the vehicle to reach nearest hospital, if any disaster happens the lessee is capable to meet such eventualities. At the time of any accident during mining activity, proposal of first aid facility at quarry and one vehicle always ready at quarry site.
12.7	Care and maintenance during temporary discontinuance	:	A board of discontinuance will be changed on the main entrance of the working place. One watch man will be kept on the quarry area for security purposes also look after the survival of the plants.
12.8	Economic repercussions of closure of quarry and man power entrenchments	:	During the ten years mining period the employment potential will be generated, general financial status and socio-economic conditions of approx. 28 labors will be improved.

12.9 Proposed Financial Estimate / Budget for (EMP) Environment Management:

A	Fixed Asset Cost:	
	1. Land Cost	: Rs. 45,30,000
	2. Labour Shed	: Rs. 1,00,000/-
	3. Sanitary Facility	: Rs. 1,00,000/-
	4. Fencing	: Rs. 4,37,000/-
	5. Other expenses (Security guard, dust bin, etc)	: Rs. 4,00,000/-
	Total	: Rs. 55,67,000/-
B	B. Machinery cost	: Rs. 30,00,000/- (Hire Basis)
C	Total Expenditure of EMP cost (for ten years)	
	1. Drinking Water Facility	: Rs. 1,50,000/-



	2. Sanitary facility & Maintenance	: Rs. 2,00,000/-
	3. Permanent water sprinkler	: Rs. 2,50,000/-
	4. Afforestation and its maintenance	: Rs. 1,40,000/-
	5. Safety Kits	: Rs. 1,00,000/-
	6. Provision of tyre washing facility	: Rs. 1,50,000/-
	7. Blasting materials with blast mat cost	: Rs. 20,00,000/-
	8. Environment monitoring	: Rs. 5,00,000/-
	Total	: Rs. 34,90,000/-
D	Total Project Cost (A+B+C)	: Rs. 1,20,05,700/-

13.0 FINANCIAL ASSURANCE:

Not applicable, it is a small "B" rough stone and gravel quarry.

14.0 CERTIFICATES:

All required certificates are enclosed.

15.0 PLAN AND SECTIONS, ETC:

Plan and Sections are submitted along with mining plan.

16.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

- (i) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (ii) The applicant will endeavor every attempt to quarry the rough stone economically without any wastage and to improve the environment and ecology.
- (iii) The Mining Plan is prepared by incorporating the conditions stipulated in the precise area communication issued by the Assistant Director, Department of Geology and Mining, Karur vide letter Roc.No.138/Mines/2024 Dated 11.07.2024.
- (iv) Total proposed production rough stone is 1914240m³ and gravel is 119280m³ up to a depth of 50m below ground level for ten years plan period.

17.0 CSR Expenditure:

CSR (Corporate Social responsibility) shall provide by the applicant @ 2.0% of average net profit of the company for the last three financial years to the nearby village on the Ministry has notified the amendments in section 135 of the Act as well in the CSR Rules on 22nd January 2021 as circular no. CSR-05/01/2021-CSR-MCA dated 25th August 2021.

Place: Dharmapuri, TN

Date: 18/7/24



Signature of the Recognized Qualified Person

Dr.S.KARUPPANNAN,M.Sc,Ph.D.,

RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
A NABET Accredited and ISO Certified Company
1/213-B, Ground Floor, Natesan Complex,
Collectorate Post Office, Oddapatti,
Dharmapuri-636705, TamilNadu, India

This Mining Plan is approved based on incorporation of the particulars specified in clause 7 (iv) of the Commissioner of Geology and Mining Chennai Lr No 3662 / LC / 2012 dt 19-11-2012 and Draft Minor Mineral Conservation & Development Rules 2010


Assistant Director of Geology and Mining
Karur District.

(This Mining Plan is approved subject to the conditions/stipulations indicated in the Mining Plan approval Letter No: 138/Mine/2024 Dated: 20.08.2024.

200824



ந.க.எண். 138/கலிமம்/2024

மாவட்ட ஆட்சியர் அலுவலகம்,
முல்லைமலை மற்றும் கரகாசத்தூர்,
கரகாசம்
நாள்: 11.07.2024.

குறிப்பாணை

பொருள்: கலிமங்கலம் குவாரிகளும் - கருநாடகம் - புகளூர் வட்டம் - தென்னிலை கிழக்கு கிராமம் - வட்டா புல எண்கள்: 134 (3.53.50 ஹெக்டேர்) மற்றும் 135/1 (3.30.00 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 6.83.50 ஹெக்டேர் பரப்பில் - சாதாரணக் மற்றும் கிராமக் குவாரி குத்தகை உரிமை வேண்டி M/s.Teru Murugan Blue Metal என்னுமி நிறுவனத்தினர் விண்ணப்பம் செய்தது - உரிமை வழங்க பரிந்துரை செய்யப்பட்டது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட கரங்க திட்டம் மற்றும் மாநில கற்றுக்குழுத் தரக்க மதிப்பீடு ஆணைய இலாகாவின் பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

- பார்வை:**
1. M/s.Teru Murugan Blue Metal, சண்மணி.506, காட்டு முன்னூர், அரவக்குறிச்சி வட்டம், கருநாடகம் என்பவர் குவாரி குத்தகை உரிமை வழங்கக் கோரும் விண்ணப்பம் நாள்: 03.05.2024
 2. வருவாய் கோட்டாட்சியர், கருநாடகம் தென்னிலை கிழக்கு ந.க.எண். அ1/2293/2024, நாள்: 14.06.2024
 3. உதவி புவியியலாளர், புவியியல் மற்றும் கரங்கத்துறை கருநாடகம் என்பவரது புலத்தணிக்கை அறிக்கை நாள்: 03.07.2024
 4. அரசாணை (பல்வகை) எண். 169, தொழில் (எம்எம்.பி-1) துறை நாள்: 04.08.2020 இலிருந்து வரப்பெற்றுள்ளது. (தமிழ்நாடு அரசிதழ் சிபிடி வெளியீடு எண். 315 நாள்: 04.08.2020).

கருநாடகம், புகளூர் வட்டம், தென்னிலை கிழக்கு கிராமம், வட்டா புல எண்கள்: 134 (3.53.50 ஹெக்டேர்) மற்றும் 135/1 (3.30.00 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 6.83.50 ஹெக்டேர் பரப்பு நிலத்திலிருந்து வரத்து ஆண்டுக்கு சாதாரண குத்தகை மற்றும் கிராமக் குவாரி குத்தகை சாவை எண்.506, காட்டு முன்னூர், அரவக்குறிச்சி வட்டம், கருநாடகம் என்பவர்



முகவரியில் வலித்துவரும் M/s.Teru Murugan Blue Metal என்ற நிறுவனத்தினர் பார்வை 1-இல் கண்டுள்ளவாறு விண்ணப்பம் செய்துள்ளனர்.

மேற்படி விண்ணப்பம் தொடர்பாக, வருவாய் கோட்டாட்சியர், கரூர் மற்றும் உதவிப் புவியியலாளர், புவியியல் மற்றும் கரங்கத்துறை, கரூர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கரூர் மாவட்டம், புகளூர் வட்டம், தென்னிலை கிழக்கு கிராமம், பட்டா புல எண்கள்.134 (3.53.50 ஹெக்டேர்) மற்றும் 135/1(3.30.00 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 6.83.50 ஹெக்டேர் பரப்பில் மட்டும் தமிழ்நாடு சிறு கனிமச்சலுகை விதிகளில் விதி எண்கள்.19-(1), 20 மற்றும் 22-இன் கீழ் M/s.Teru Murugan Blue Metal என்ற நிறுவனத்தினர் சாதாரண கற்கள் மற்றும் கிராவல் குவாரி உரிமம் வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

1. விண்ணப்ப புலத்திற்கு வடக்கு மற்றும் மேற்கில் உள்ள பூமிதான நிலத்தில் 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
2. விண்ணப்ப புலத்திற்கு கிழக்கில் உள்ள வண்டிப்பாதைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
3. விண்ணப்ப புலத்திற்கு அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் மற்றும் புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
4. குத்தகைக்காலத்தில் கைத்துளைப்பான் கருவி கொண்டு பாறைகளை துளையிட்டும், மிதமான வெடிபொருள் பயன்படுத்தியும், பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமுமின்றி விதிமுறைகளின்படி குவாரிப்பணி செய்ய வேண்டும்.
5. குவாரித் தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய Mettalliferrous Mines, விதிகளின்படி அகலமானதும், பாதுகாப்பானதுமான Benches அமைத்து பாதுகாப்பான முறையில் குவாரிக்குள் வாகனங்கள் சென்றுவரவும் மற்றும் குவாரி தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்தும் குவாரிப்பணி செய்ய வேண்டும்.
6. குவாரி குத்தகை வழங்க ஏதுவாக உதவி இயக்குநர் (சுரங்கம்) அவர்களால் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தினையும், மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (SEIAA) அனுமதி பெற்று மாவட்ட நிர்வாகத்திற்கு விண்ணப்பதாரரால் சமர்ப்பிக்கப்பட வேண்டும்.



எனவே, வருவாய் கோட்டாட்சியர், கருர் மற்றும் உதவிப் புவியியலாளர், புவியியல் மற்றும் சுரங்கத்துறை, கருர் ஆகியோரின் பரிந்துரைகள் மற்றும் நிபந்தனைகளின் அடிப்படையில் கருர் மாவட்டம், புகளூர் வட்டம், தென்னிலை கிழக்கு கிராமம், பட்டா புல எண்கள்.134 (3.53.50 ஹெக்டேர்) மற்றும் 135/1(3.30.00 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 6.83.50 ஹெக்டேர் பரப்பில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண். 19(1), 20 மற்றும் 22-இன்படியும் மேலும் மேற்கண்ட நிபந்தனைகளுக்கு உட்பட்டு 10 (பத்து) வருட காலத்திற்கு M/s.Teru Murugan Blue Metal என்ற நிறுவனத்திற்கு சாதாரண கற்கள் மற்றும் கிராவல் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

அதற்கிணங்க, தமிழ்நாடு சிறு கனிம சலுகை விதிகள்-1959 விதி எண்.41-இன்படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 தினங்களுக்குள் சமர்ப்பிக்குமாறு M/s.Teru Murugan Blue Metal என்ற நிறுவனத்தினர் கேட்டுக்கொள்ளப்படுகிறார். மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959-ஆம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-இன்படி சுற்றுச்சூழல் தாக்க - மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என்ற விவரம் இதன் மூலம் தெரிவிக்கப்படுகிறது.

பெறுநர்
உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
கருர்.

பெறுநர்

M/s.Teru Murugan Blue Metal,
சர்வே எண்.506,
காட்டு முன்னூர்,
அரவக்குறிச்சி வட்டம்,
கருர் மாவட்டம்.

நகல்:-

1. மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.
2. ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, கிண்டி, சென்னை.



வட்டம், மீட்டர்
புல எண். 134

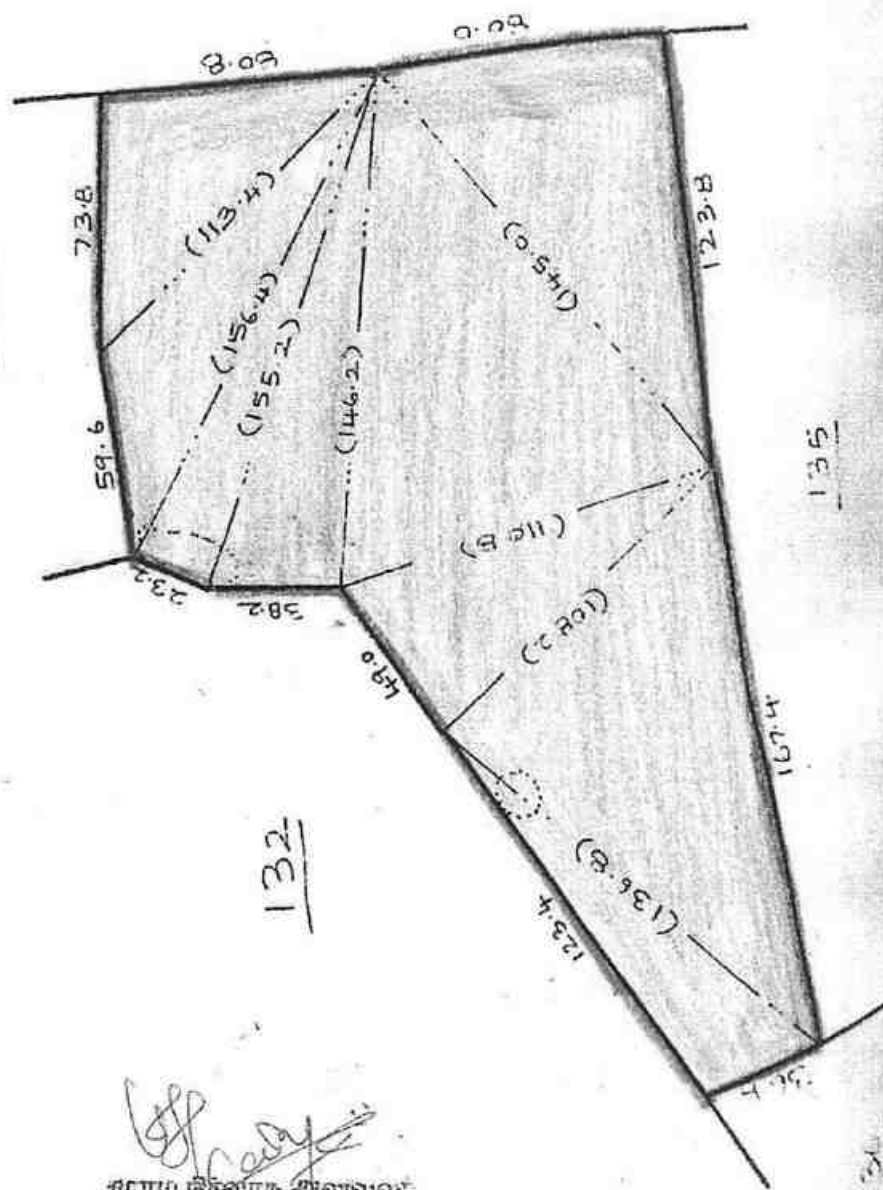
பரப்பு: ஹெக்டேர் 3

தமிழ்நாடு சட்டம்

133

132

135



[Signature]
சுமாய் நிதிநாடு அலுவலர்
ச. தென்னாற்காடு மாவட்டம்
பருவூர் வட்டம், கருநாடகம்

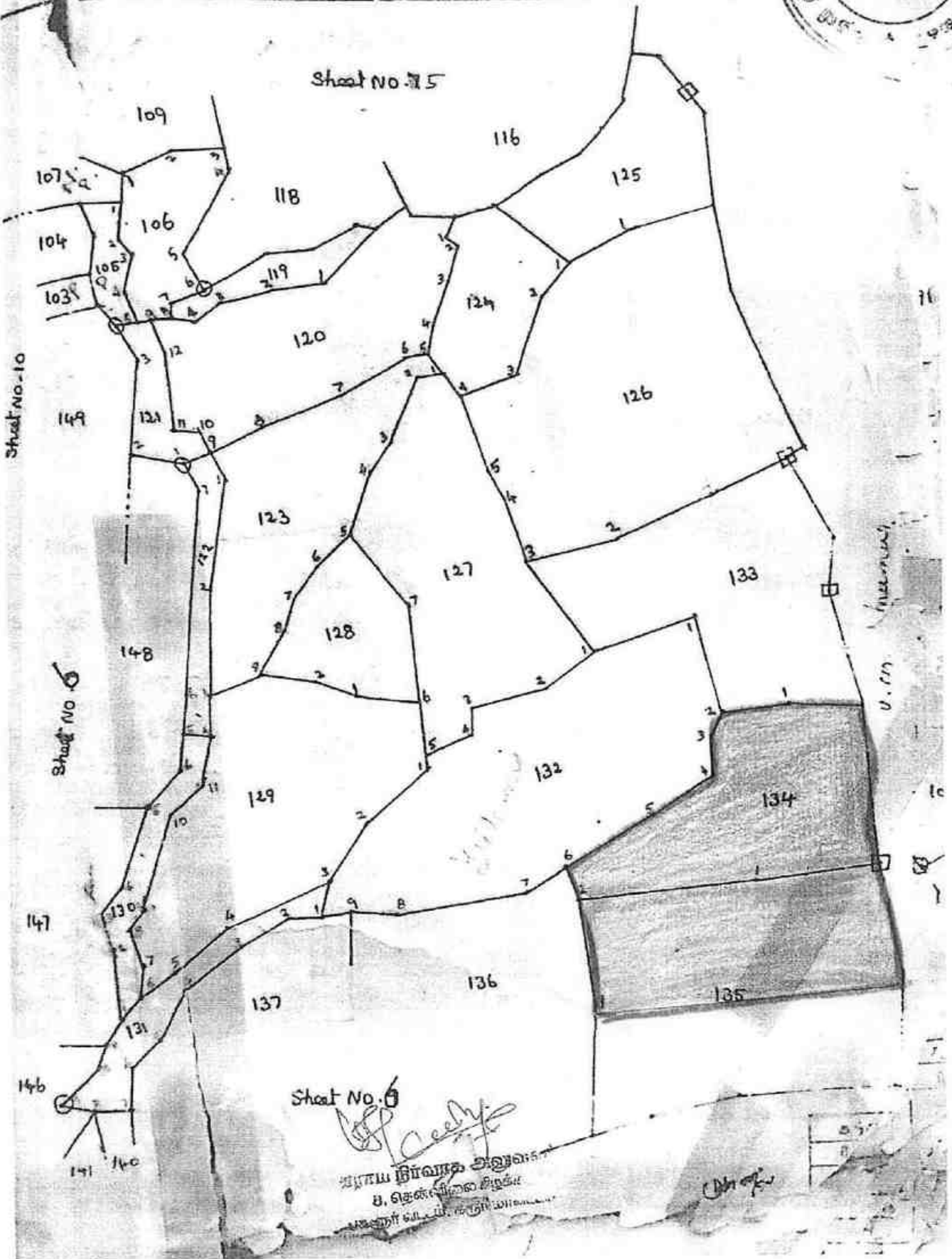
LEASE APPLIED AREA ☐

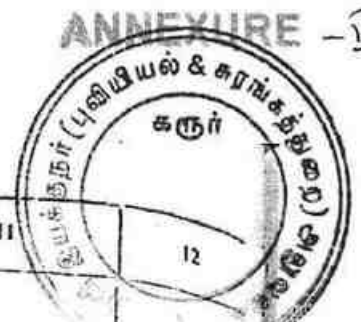
சுமாய் நிதிநாடு அலுவலர்
சுமாய் நிதிநாடு அலுவலர்
27/6/84

அளவு. 1 ஹெக்டேர்



பக்கம் எண் : 9





1	2	3	4	5	6	7	8	9	10	11	12
							கு. பை.	கொ. ஏர்ஸ்.	கு. பை.		
129	2	129-பா	ர	பு	...	8-4	6	1 38	1 20.0	1 66	77 பி. காவியப்ப கவுண்டர்.
	3	-பா	ர	பு	...	8-4	6	1 38	2 58.5	3 58	293 தா. தாச்சப்ப கவுண்டர்.
									5 12.5	7 09	
130	...	130	அ	பு	...	...	...	...	0 37.0	...	...
131	...	131	அ	பு	...	...	...	...	0 73.0	...	...
132	...	132	ர	பு	...	8-4	6	1 38	5 78.5	8 01	410 பூதான பேர்டு கமிஷனர், மதுரை.
133	...	133	ர	பு	...	8-4	6	1 38	4 14.0	5 73	1093 க. சென்னிவைப் கவுண்டர் மற்றும் முள்ளு பேர் கரும.
134	...	134	ர	பு	...	8-4	6	1 38	3 53.5	4 89	25 செ. கருப்பாமி ஆம்மாள்.
135	...	135	ர	பு	...	8-4	6	1 38	6 49.0	8 98	712 வி. தாச்சுமுத்து கவுண்டர் (1). வி. குத்துசாமித், கவுண்டர் (2).
136	...	136	ர	பு	...	8-4	6	1 38	6 29.5	8 71	713 செ. பழனிப்ப கவுண்டர் (1). செ. மலைப்ப கவுண்டர் (2).
137	...	137	ர	பு	...	8-4	6	1 38	3 55.5	4 92	18 செ. சென்னிவைப் கவுண்டர்.
138	...	138	ர	பு	...	8-4	6	1 38	1 18.5	1 64	18 செ. சென்னிவைப் கவுண்டர்.
139	...	139	ர	பு	...	8-4	6	1 38	4 55.5	6 30	18 செ. சென்னிவைப் கவுண்டர்.
140	...	140	அ	பு	...	...	...	...	0 29.5	...	...
141	...	141	ர	பு	...	8-4	6	1 38	4 08.0	5 64	78 கி. காவியப்ப கவுண்டர்.
142	1	142-பா	ர	பு	...	8-2	4	2 77	0 36.5	1 01	156 ப. சிவசுந்தரி கவுண்டர்.
	2	-பா	ர	பு	...	8-2	4	2 77	1 49.0	4 13	413 கி. பெரியசாமித் கவுண்டர்.
	3	-பா	ர	பு	...	8-2	4	2 77	2 06.0	5 71	142 வா. காவியப்ப கவுண்டர்.
	4	-பா	ர	பு	...	8-2	4	2 77	1 06.0	2 94	492 மு. முத்துசாமித் கவுண்டர்.

வள்ளப்பாடி.

கல்லாக் குத்தி.

வள்ளப்பாடி.

விவரப்படி புகாரைப் பரக்கவும்.
சுமாய் நிர்வாக அலுவலர்
க. சென்னிவை கீழ்ப்படி.
புகாரைப் பெறும். சுமாய் நிர்வாகம்.



தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : புகளூர்

வருவாய் கிராமம் : தெண்ணிலை கி

பட்டா எண் : 2523

உரிமையாளர்கள் பெயர்

1. திருமுருகன் புருமெட்டல்
நிறுவனத்திற்காக

திருமுருகன் புருமெட்டல் நிறுவனத்தின் மேனேஜிங் பார்ட்னர்
சுப்பிரமணி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை	
134	-	3 - 53.50	4.89	--	--	--	--	2019/0103/14/101103- ----- 02-09-2019
		3 - 53.50	4.89					

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/006/02523/20802 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 29-04-2024 அன்று 11:17:11 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 : கரூர்

வட்டம் : புகழூர்

வருவாய் கிராமம் : தெண்ணிலை கி

பட்டா எண் : 3054

உரிமையாளர்கள் பெயர்

1. திருமுருகன் புனாமெட்டஸ் நிர்வாக பங்குதாரர்

... சுப்பிரமணி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
135	1	3 - 30.00	4.55	--	--	--	--	2024/0103/14/296082- -2019/14/07/000003SD ----- 08-02-2024
		3 - 30.00	4.55					

குறிப்பு :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/008/03054/30812 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 29-04-2024 அன்று 11:16:42 AM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



1433- ஆம் பசனியில்

507

மாவட்டம்

புகழன்

கிராமக் கணக்கு
வட்டம் பெருந்திணை !

நில வரித் திட்டத்தின்படி புலன்களின் விபரம்.					சாகுபடி யாளரின் பெயர்.		முதல் போகம்.					
(1) நில அளவை எண்.	(2) உட்பிரிவு எண்.	(3) பரப்பு.	(4) தீர்வை.	(5) ஒரு போகம் அல்லது இரு போகம்.	(6) கைப்பற்று தாரருடைய பெயரும் எண்ணும் அல்லது அனுபோக தாரருடைய பெயர்.	(7) நிலத்தின் எந்த பகுதி யாவது சாகுபடியாளரால் பயிரிடப்பட்டுள்ளதா.	(8) எந்த மாதத்தில் பயிர் செய்யப்பட்டது எந்த மாதத்தில் அறுவடை செய்யப்பட்டது.	(9) பயிரின் பெயர்.	(10) பயிரான அறுவடை யான பரப்பு.	(11) உண்மையான பாய்ச்சல் ஆதாரம்.	(12) விளைச்சல் அளவு விழுக்காடு.	
134	-	335	489	2523	சிறீமதி கைப்பற்று	080						
					சிறீமதி கைப்பற்று சிறீமதி கைப்பற்று சிறீமதி கைப்பற்று சிறீமதி கைப்பற்று							
135	1	330	455	2509	சிறீமதி கைப்பற்று	080						
					சிறீமதி கைப்பற்று சிறீமதி கைப்பற்று சிறீமதி கைப்பற்று சிறீமதி கைப்பற்று							

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தமிழ்நாடு தமிழ்நாடு TAMILNADU

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22 JAN 2024

சுரு முருகன் பட்டு
சுரு முருகன் பட்டு

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S.RAMAMURTHY, S.Y
L.No:05/1992
KARUR

பரிவர்த்தனைப் பத்திரம்

2024-ம் வருடம் ஜனவரி மாதம் 22-ம் தேதிக்கு, தமிழ் சோபகிருது
வருடம் தை மாதம் 08-ம் தேதி

கருர் மாவட்டம், புகளூர் வட்டம், முன்னூர் கிராமம், காட்டு
முன்னூர் (அஞ்சல்), சர்வே எண். 506- காட்டுமுன்னூர் என்ற
முகவரியில் இயங்கி வரும் M/s.திருமுருகன் புளூ மெட்டல்
(M/s.TERUMURUGAN BLUE METAL) (PAN No.AAEFT7640M)-
என்ற நிறுவனத்திற்காக மேற்படி நிறுவனத்தின் நிர்வாக பங்குதாரரும்,
கருர் மாவட்டம், மண்மங்கலம் வட்டம், ஆண்டாங்கோவில் கீழ்பாகம்
1-ம் தரப்பினர்

For TERU MURUGAN BLUE METAL,

MANAGING PARTNER

2-ம் தரப்பினர்

R.குமார்

R.செல்வம்

புத்தகம்...2522...ம் வருடத்திய
...ம் ஆவணம்...தாள்களை
கொண்டது...வது தான்



கிராமம், வெங்கமேடு அஞ்சல், எண்.1/128/3-ராம்நகர் வடக்கு என்ற முகவரியில் வசித்து வரும் பெருமாள் கவுண்டர் அவர்கள் குமாரர் P.கப்பிரமணி (ஆதார் அட்டை எண்.2305 6616 7151), (செல்.97888-54365)-1-ம் தரப்பினராகவும்,

கருநா மாவட்டம், அரவக்குறிச்சி வட்டம், தென்னிலை கீழ்பாகம் கிராமம், அத்திப்பாளையம் அஞ்சல்-638206, பூமாண்டம்பாளையம், கதவு எண்.9/128-என்ற முகவரியில் வசிக்கும் திரு.V.நாச்சிமுத்து கவுண்டர் அவர்கள் குமாரர் திரு.N.குமாரசாமி (ஆதார் அடையாள அட்டை எண்.6067 7800 1285) (PAN No.CKYPN0078D) (செல்.94886-13674)-1,

கருநா மாவட்டம், அரவக்குறிச்சி வட்டம், தென்னிலை கீழ்பாகம் கிராமம், அத்திப்பாளையம் அஞ்சல்-638206, பூமாண்டம்பாளையம், கதவு எண்.9/28-என்ற முகவரியில் வசிக்கும் திரு.N.குமாரசாமி அவர்கள் குமாரர் திரு.K.பிரேம்குமார்(ஆதார் அடையாள அட்டை எண்.8059 2477 2355)-(PAN No.ILQPK9004P)-2-ஆகியோர் சேர்ந்து 2-ம் தரப்பினராகவும் ஆக நாம் இரு தரப்பினர்களும் சேர்ந்து சம்மதித்து எழுதிக் கொண்ட பரிவர்த்தனைப் பத்திரம் என்னவென்றால்,

இதன் கீழ்க்கண்ட A ஷெட்யூல் சொத்தும் அதன் கூடுதல் விஸ்தீர்ணமும் நம்மில் 1-தரப்பினர் நிறுவனத்திற்கு கடந்த 04.09.2021-ம் தேதி S.முத்துசாமி வகையறாவால் எழுதிக் கொடுக்கப்பட்ட கிரையப் பத்திரப்படி (பத்திர எண்.1783/2021, சின்னதாராபுரம் சார்பதிவகம்) 1-ம் தரப்பினர் நிறுவனத்திற்கு பாத்தியப்பட்டு 1-ம் தரப்பினர் நிறுவனம் சர்வ சுதந்திர பாத்தியங்களுடன் ஆண்டனுபவித்து வருகின்ற சொத்து ஆகும்.

1-ம் தரப்பினர்

For TERU MURUGAN BLUE METAL,

MANAGING PARTNER

.....பத்திரம்.....வருடத்தி
.....114.....ஆவணம்.....தான்
கொண்டது வது தான்
பதிவு அலுவலர்

2-ம் தரப்பினர்

N.குமாரசாமி



இதன் கீழ்க்கண்ட B ஷெட்யூல் சொத்தானது நம்மில் 2-ம் தரப்பினரில் 1-நபரான N.குமாரசாமி மற்றும் ஷையாரின் தகப்பனார் V.நாச்சிமுத்து கவுண்டர் அவர்களும் அவரது வகையறாக்களும் சேர்ந்து கடந்த 12.11.2018-ம் தேதி செய்து கொண்ட பாகப்பிரிவினைப் பத்திரப்படி (பத்திர எண்.1-புத்தகம், 1635/2018, சின்னதாராபுரம் சார்பதிவகம்) N.குமாரசாமி மற்றும் அவரது தகப்பனார் V.நாச்சிமுத்து கவுண்டர் அவர்களுக்கும் சேர்ந்து கூட்டாக B-ஷெட்யூலாக ஒதுக்கப்பட்டதன்படி பாத்தியப்பட்டும், கடந்த 20.11.2018-ம் தேதி ஷை N.குமாரசாமி அவர்களுக்கு ஷையாரின் தகப்பனார் V.நாச்சிமுத்து கவுண்டர் அவர்களும், ஷை N.குமாரசாமி அவர்களின் சகோதரி செல்லம்மாள் அவர்களும் எழுதிக் கொடுத்த பாகபாத்திய விடுதலைப் பத்திரப்படி (பத்திர எண்.1-புத்தகம், 1690/2018, சின்னதாராபுரம் சார்பதிவகம்) ஷை N.குமாரசாமி அவர்களுக்கு பாத்தியப்பட்டும் ஷையாரின் வாரிசு என்ற அடிப்படையில் 2-ம் தரப்பினரில் 2-நபருக்கும் பாத்தியப்பட்டும் ஆக மேற்படி 2-ம் தரப்பினருக்கு மட்டும் பாத்தியப்பட்டு நம்மில் 2-ம் தரப்பினர் சர்வ சுதந்திர பாத்தியங்களுடன் ஆண்டனுபவித்து வருகின்ற சொத்து ஆகும்.

நம்மில் 2-ம் தரப்பினருக்கு பாத்தியப்பட்ட கீழ்க்கண்ட B ஷெட்யூல் சொத்தானது நம்மில் 1-ம் தரப்பினருக்கு பாத்தியப்பட்ட சர்வே எண்.134-ல் கட்டுப்பட்டதும் மற்றும் இதர 1-ம் தரப்பினருக்கு பாத்தியப்பட்ட சொத்துக்களையும் ஒட்டி அமைந்துள்ளது.

1-ம் தரப்பினர்

For TERU MURUGAN BLUE METAL,

MANAGING PARTNER,

2-ம் தரப்பினர்

N.குமாரசாமி

சு.சு.சு.

1-புத்தகம்...	2024-ம் வருடத்தி
1-ம் ஆவணம்...	21-தாள்களை
கொண்டது...	3-வது தாள்
பதிவு அலுவலர்	



நம்மில் 1-ம் தரப்பினர் நிறுவனத்திற்கு பாத்தியப்பட்ட கீழ்க்கண்ட A-ஷெடியூல் சொத்தானது நம்மில் 2-ம் தரப்பினருக்கு பாத்தியப்பட்ட சர்வே எண்.92 மற்றும் 93-ல் கட்டுப்பட்ட சொத்துக்களை ஒட்டி அமைந்துள்ளது.

ஆக மேற்கண்டபடி நம்மில் 1-ம் தரப்பினருக்கு பாத்தியப்பட்ட சொத்துக்களை ஒட்டி 2-ம் தரப்பினருக்கும், 2-ம் தரப்பினருக்கு பாத்தியப்பட்ட சொத்துக்களை ஒட்டி 1-ம் தரப்பினருக்கும் சொத்துக்கள் அமைந்துள்ளதால் நம் இரு தரப்பினரின் அனுபோக சௌகரியத்தை அனுசரித்து பரிவர்த்தனை செய்து கொண்டால் இரு தரப்பினருக்கும் அவரவர்களுக்கு பாத்தியப்பட்ட சொத்துக்களுடன் சேர்த்து அனுபவிக்க சௌகரியமாக இருக்கும் என்பதால் நம் இரு தரப்பினருக்கும் வேண்டப்பட்ட ஊர் பெரியவர்கள் அறிவுரைப்படி நாம் இரு தரப்பினரும் நமது சௌகரியத்தையும், நலனையும் கருத்தில் கொண்டு கீழ்க்கண்ட நம்மில் 1-ம் தரப்பினருக்கு பாத்தியப்பட்ட கீழ்க்கண்ட A ஷெடியூல் சொத்தை நம்மில் 2-ம் தரப்பினருக்கு இந்த பரிவர்த்தனை மூலம் கொடுத்தும், அதேபோல் நம்மில் 2-ம் தரப்பினருக்கு பாத்தியப்பட்ட B ஷெடியூல் சொத்தை நம்மில் 1-ம் தரப்பினருக்கு இந்த பரிவர்த்தனை மூலம் கொடுத்தும் இதன் மூலம் கீழ்க்கண்டவாறு பரிவர்த்தனை செய்து கொண்டுள்ளோம்.

அதன்படி நாளது தேதி வரை நம்மில் 1-ம் தரப்பினர் நிறுவனத்திற்கு பாத்தியப்பட்டு 1-ம் தரப்பினர் நிறுவனம் சர்வ சுதந்திர பாத்தியங்களுடன் ஆண்டு அனுபவித்து வருகின்ற இதனடியில் கண்ட A ஷெடியூல் சொத்தை நாளது தேதியில் இந்த பரிவர்த்தனைப் பத்திரம் மூலம் நம்மில் 1-ம் தரப்பினர் நிறுவனத்தின் சார்பாக நம்மில் 2-ம் தரப்பினருக்கு இதன் மூலம் சர்வ

1-ம் தரப்பினர்

2-ம் தரப்பினர்

N. குமாரசுமி

For T. R. MURUGAN BLUE METAL,

8/11/14
MANAGING DIRECTOR

பத்திரம்	2014	ம் வருடத்தின்
11/14	ம் ஆவணம்	54
கொண்டது	14	விது தான்
பதிவு அலுவலர்		



சுதந்திரமாக பரிவர்த்தனை செய்து கொடுத்து பாத்தியப்படுத்தி சுவாதீனம் ஒப்படைத்து நம்மில் 2-ம் தரப்பினரும் சுவாதீனம் அடைந்து கொண்டு விட்டார்கள்.

அதேபோல் நாளது தேதி வரை நம்மில் 2-ம் தரப்பினருக்கு பாத்தியப்பட்டு 2-ம் தரப்பினர் சர்வ சுதந்திர பாத்தியங்களுடன் ஆண்டு அனுபவித்து வருகின்ற இதனடியில் கண்ட B ஷெட்யூல் சொத்தை நாளது தேதியில் இந்த பரிவர்த்தனைப் பத்திரம் மூலம் நம்மில் 2-ம் தரப்பினர் நம்மில் 1-ம் தரப்பினர் நிறுவனத்திற்கு இதன் மூலம் சர்வ சுதந்திரமாக பரிவர்த்தனை செய்து கொடுத்து பாத்தியப்படுத்தி சுவாதீனம் ஒப்படைத்து நம்மில் 1-ம் தரப்பினர் நிறுவனம் சுவாதீனம் அடைந்து கொண்டு விட்டது.

அதன்படி கீழ்க்கண்ட B ஷெட்யூல் சொத்தை நாளது தேதி முதல் 1-ம் தரப்பினர் நிறுவனம் தானாதி வினிமய விற்கிரையங்களுக்கு யோக்கியமாய் பட்டா முதலியன பெயர் மாற்றம் செய்து கொண்டு வரி, வகையறா செலுத்திக் கொண்டு சர்வ சுதந்திர பாத்தியங்களுடன் ஆண்டு அனுபவித்துக் கொண்டு சுகத்திலிருந்து வரவேண்டியது.

அதேபோல் கீழ்க்கண்ட A ஷெட்யூல் சொத்தை நாளது தேதி முதல் 2-ம் தரப்பினர் தானாதி வினிமய விற்கிரையங்களுக்கு யோக்கியமாய் பட்டா முதலியன தங்களது பெயருக்கு பெயர் மாற்றம் செய்து கொண்டு வரி, வகையறா செலுத்திக் கொண்டு சர்வ சுதந்திர பாத்தியங்களுடன் ஆண்டு அனுபவித்துக் கொண்டு சுகத்திலிருந்து வரவேண்டியது.

1-ம் தரப்பினர்

2-ம் தரப்பினர்

N. குமாரசாமி

For TERU MURUGAN BLUE METAL,

MANAGING PARTNER.

1. புத்தகம்... 2022...ம் வருடத்திய
10...ம் ஆவணம்... 5... தாள்களைக்
கொண்டது... 5...வது தாள்
பதிவு அலுவலர்





மேலும் இந்த பரிவர்த்தனை மூலம் ஒரு பாகத்திற்கு கொடுக்கப்பட்டுள்ள சொத்தைவிட மற்றொரு பாகத்திற்கு கொடுக்கப்பட்டுள்ள சொத்து மதிப்பு கூடுதலாகவும், குறைவாகவும் இருந்தாலும் கூட நாம் இருதரப்பினரும் நமது சௌகரியத்தை அனுசரித்து நிலங்களின் ஏற்றத்தாழ்வுகளை கருத்தில் கொண்டு இருதரப்பினரும் முழு மன சம்மதத்துடன் சொத்துக்களை பரிவர்த்தனை செய்து கொண்டுள்ளதால் இனிமேற்கொண்டு ஒருவர் சொத்தில் மற்றொருவர் கூடுதல், குறைவு என்று எந்தவிதமான பாத்தியமும், உரிமையும் எந்தக்காலத்திலும் கோரப்போவதில்லை என்றும் இந்த பரிவர்த்தனைக்கு நாம் எந்தவித கைமாறும் ஒருவருக்கொருவர் பெற்றுக்கொள்ளவில்லை என்றும் இதன் மூலம் உறுதியளிக்கின்றோம்.

எனவே இதன் கீழ் குறிப்பிட்டுள்ள A ஷெட்யூலில் கண்ட சொத்தைப் பொருத்து நம்மில் 1-ம் தரப்பினர் நிறுவனத்திற்கும் இனி எந்தவிதமான பாத்தியமும், சம்மந்தமும், பின்தொடர்ச்சியும் கிடையாது.

அதேபோல் இதன் கீழ் குறிப்பிட்டுள்ள B ஷெட்யூலில் கண்ட சொத்தைப் பொருத்து நம்மில் 2-ம் தரப்பினருக்கு இனி எந்தவிதமான பாத்தியமும், சம்மந்தமும், பின்தொடர்ச்சியும் கிடையாது.

கீழ்க்கண்ட A ஷெட்யூல் சொத்தைப் பொருத்து எந்தவித வில்லங்க விவகாரமும் இல்லையென்று நம்மில் 1-ம் தரப்பினர் நிறுவனத்தின் சார்பாக அதன் பங்குதாரரும், மேலும் கீழ்க்கண்ட B ஷெட்யூல் சொத்தைப் பொருத்து எந்தவித வில்லங்க விவகாரமும் இல்லையென்று நம்மில் 2-ம் தரப்பினரும் ஒருவருக்கொருவர் இதன் மூலம் உறுதியளிக்கின்றோம். அவ்வாறு

1-ம் தரப்பினர்

2-ம் தரப்பினர்

N. குமாரசாமி

JRUGAN BLUE METAL

MANAGING PARTNER

புத்தகம் 2024	வருடத்திய
14	54
கொண்டது 6	வது உள்
பரிசு	





கீழ்க்கண்ட A ஷெடியூல் சொத்தைப் பொருத்து ஏதாவது வில்லங்க விவகாரங்கள் இருந்து பின்னிட்டு வெளியாகி அதனால் நம்மில் 2-ம் தரப்பினருக்கு ஏதாவது நஷ்டம் ஏற்பட்டால் அவ்வகை நஷ்டத்தை நம்மில் 1-ம் தரப்பினர் நிறுவனம் தனக்கு பாத்தியப்பட்ட இதர ஸ்தாவர ஐங்கம சொத்துக்களைப் பொருத்து கட்டுப்பட்டு முன்னின்று தீர்த்துக் கொடுக்க வேண்டியது. அதேபோல் கீழ்க்கண்ட B ஷெடியூல் சொத்தைப் பொருத்து ஏதாவது வில்லங்க விவகாரங்கள் இருந்து பின்னிட்டு வெளியாகி அதனால் நம்மில் 1-ம் தரப்பினர் நிறுவனத்திற்கு ஏதாவது நஷ்டம் ஏற்பட்டால் அவ்வகை நஷ்டத்தை நம்மில் 2-ம் தரப்பினர் தங்களுக்கு பாத்தியப்பட்ட இதர ஸ்தாவர ஐங்கம சொத்துக்களைப் பொருத்து கட்டுப்பட்டு முன்னின்று தீர்த்துக் கொடுக்க வேண்டியது.

ஆக மேற்கண்டவாறு நாம் இரு தரப்பினர்களும் சம்மதித்து எழுதிக் கொண்ட பரிவர்த்தனைப் பத்திரம் இதுவாகும்.

இதில் அசல் ஒன்றும் பிரதி ஒன்றும் தயார் செய்யப்பட்டு இரண்டும் பதிவு செய்யப்பட்டு அசல் ஆவணத்தை நம்மில் 1-ம் தரப்பினர் நிறுவனமும், பிரதியை நம்மில் 2-ம் தரப்பினரும் வைத்துக் கொண்டுள்ளோம். மேற்படி அசலுக்கும் பிரதிக்கும் எந்த வித்தியாசமும் இல்லை. அவரவர் வைத்துக் கொண்டுள்ள பத்திரம் அவரவர்களுக்கு அசல் ஆவணம் ஆகும்.

இந்தப்படிக்கு மேலே கண்ட சங்கதிகளை படித்துப் பார்த்து யாருடைய வற்புறுத்தல் இல்லாமல் நாம் இரு தரப்பினர்களும் நம் சுயநினைவில் நாளது தேதியில் எழுதிக் கொண்ட பரிவர்த்தனைப் பத்திரம் இதுவாகும்.

1-ம் தரப்பினர்

2-ம் தரப்பினர்

For TERU MURUGAN BLUE METAL,

MANAGING PARTNER.

புத்தகம்...	2022	ம் வருடம்
...	11	ம் ஆவணம்
...	54	தாள்களைக் கொண்டது
...	7	வது தாள்
பதிவு செய்தவர்		





சொத்து விபரம்

நம்மில் 1-ம் தரப்பினர் நிறுவனம் நாளது தேதி வரை அனுபவித்து வந்தும் இந்த பரிவர்த்தனை பத்திரம் மூலம் நாளது தேதி முதல் 2-ம் தரப்பினர் அடைந்து கொண்டுள்ள A ஷெட்யூல் சொத்து விபரம்

கரூர் மாவட்டம், சின்னதாராபுரம் சார்பதிவகம், புகரூர் வட்டம், தென்னிலை கீழ்பாகம் கிராமம்,

சர்வே எண்.91/1C நெ.நெற்க.6.97.0-க்கு பு.ஏக்.17.22-இதில் கிழமேல் பொளியாக வடபுறமாக நம்மில் 1-ம் தரப்பினர் தனது வசம் வைத்துக் கொண்டுள்ள ஏக்.4.48-செண்ட் அளவுள்ள பூமி போக தென்புரம் ஏக்.12.74-செண்ட் இதில் தெற்குகோடாக கிழமேலாக பாதைக்காக விடப்பட்டுள்ள ஏக்.0.24-செண்ட் போக மீதமுள்ள ஏக்.12.50-செண்ட் இந்தளவுள்ள பூமிக்கு நான்கெல்லை விபரம்

நம்மில் 2-ம் தரப்பினருக்கு பாத்தியப்பட்ட சர்வே எண்.92-ல் கட்டுப்பட்ட பூமிக்கும், சர்வே எண்.93-பூமிக்கும்	கிழக்கு
ஷை சர்வே எண்.91/1C-ல் கிழமேல் பொளியாக நம்மில் 1-ம் தரப்பினர் வைத்துக் கொண்டுள்ள ஏக்.4.48-அளவுள்ள பூமிக்கும்	தெற்கு
ஷை சர்வே எண்.91/1C-ல் தெற்குகோடாக கிழமேலாக பாதைக்காக விடப்பட்டுள்ள ஏக்.0.24-செண்ட் அளவுள்ள பூமிக்கும்	வடக்கு
தென்வடல் ரோட்டுக்கும்	மேற்கு

1-ம் தரப்பினர்

2-ம் தரப்பினர்

For TERU MURUGAN BLUE METAL,

MANAGING PARTNER,

1.புத்தகம் 2022...ம் வருடத்திய
...ம் ஆவணம் 24...தாள்களை
கொண்டது 2...வது தாள்
பதிவு அலுவலர்



இதன் மத்தியில் உள்ள ஏக்.12.50-க்கு ஹெக்.5.06-இலிருந்து விஸ்தீர்ணமுள்ள நிலம் பூராவும் மற்றும் இதிலுள்ள கிணர் 1-பூராவும் மற்றும் இதற்குண்டான தொட்டி துலை வாரி வாய்க்கால் சகிதமும், மேற்படி கிணற்றில் உள்ள SC எண்.59-உள்ள 5HP மின் மோட்டார் 1-பூராவும் அதன் பம்பு செட் மற்றும் பாதை பாத்தியமும். இதற்குண்டான மாடூல் பாதை பாத்தியம் மற்றும் சகல ஈஸ்மெண்ட் பாத்தியங்களும் சகிதம். மேற்படி சர்வே எண்.91/1C-ல் தெற்குகோடாக கிழமேலாக விடப்பட்டுள்ள ஏக்.0.24-செண்ட் அளவுள்ள பாதை நிலத்தின் வழியாக இந்த ஷெடியூல்தாரரும் மேற்படி பாதைக்கு மேல்புறம் உள்ள சர்வே எண்.92, 93, 113, 112-நெ.பூமிகளின் உரிமையாளர்களும் ஆட்கள், ஜனங்கள், கால்நடைகள் போக வர உள்ள பாதை பாத்தியமும் சகிதம்.

மேற்படி A ஷெடியூல் சொத்து மதிப்பு

மேற்படி A ஷெடியூல் சொத்து மதிப்பு	-	ரூ.	25,14,820.00
கிணர் 1-ன் மதிப்பு	-	ரூ.	50,000.00
5H.P.மின் மோட்டார் மதிப்பு	-	ரூ.	50,000.00
தடப்பாத்திய மதிப்பு	-	ரூ.	180.00
ஆக மொத்த மதிப்பு	-	ரூ.	26,15,000.00

1-ம் தரப்பினர்

For TERU MURUGAN BLUE METAL,

[Signature]

2-ம் தரப்பினர்

ல. குமாரசாமி

[Signature]

புத்தகம் 2522...ம் வருடத்திய
...ம் ஆவணம் 54...தாள்களைக்
கொண்டது 9...வது தாள்
பதிவு அலுவலர்





நம்மில் 2-ம் தரப்பினர் நாளது தேதி வரை அனுபவித்து வந்தும் இந்த பரிவர்த்தனை பத்திரம் மூலம் நாளது தேதி முதல் 1-ம் தரப்பினர் நிறுவனம் அடைந்து கொண்டுள்ள B ஷெட்யூல் சொத்து விபரம்

கருநா ரிடி, சின்னதாராபுரம் சப்ரிடி, புகளூர் வட்டம், தென்னிலை கீழ்பாகம் கிராமம்,

சர்வே எண்.135 நெ.ஹெக்.6.49.00-க்கு ஏக்.16.03-செண்ட் உள்ள புஞ்சை நிலம் இதில் வடபுரம் ஏக்.8.15-இது தற்கால சட்டிவிசன்படி சர்வே எண்.135/1 ஹெக்.3.30.00-இந்தளவுள்ள பூமி பூராவும். இதற்கு நான்கெல்லை விபரம்

சர்வே எண்.136-நெம்பரில் பழனிச்சாமி நிலத்திற்கும்	கிழக்கு
சர்வே எண்.134-நெம்பரில் கருப்பாமி மகன் பழனிச்சாமி வகையறா நிலமாக இருந்து தற்சமயம் நம்மில் 1-நபர் நிறுவனத்திற்கு பாத்தியப்பட்ட சொத்திற்கு	தெற்கு
தென்வடல் ரோட்டுக்கும்	மேற்கு
M.வீரக்குமார் அவர்களுக்கு பாத்தியப்பட்டதும் தற்காலம் சர்வே எண்.135/2-நிலத்திற்கும்	வடக்கு

இதன் மத்தியில் ஏக்.8.15-க்கு ஹெக்.3.30.00-இந்தளவுள்ள புஞ்சை பூமி பூராவும், இதற்குண்டான மாமூல் பாதை பாத்தியம் மற்றும் சகலவிதமான ஈஸ்ட்மெண்ட் பாத்தியங்கள் சகிதம்.

1-ம் தரப்பினர்

For TERU MURUGAN BLUE METAL,

MANAGING PARTNER.

2-ம் தரப்பினர்

புத்தகம் 2022-ம் வருடத்திய
114-ம் ஆவணம் 114-தாள்களைக்
கொண்டது 10-வது தாள்
பதிவு அலுவலர்



Original

R/சின்னதாராபுரம்/புத்தகம்-1/114/2024



1899ம் ஆண்டு இந்திய முத்திரைச் சட்டம் 42வது பிரிவின் கீழான சான்று

2024ம் ஆண்டு வரிசை எண் 57

எண்.1/128/3-ராம் நகர் வடக்கு, வெங்கமேடு, கருர், கருர், கருர், கருர், தமிழ்நாடு, இந்தியா, 639006-ல் வசிக்கும் திரு சுப்பிரமணி என்பவரிடமிருந்து ₹ 4,43,630/- (ரூபாய் நான்கு இலட்சத்து நூற்பத்து மூன்றாயிரத்து அறுநூற்று முப்பது மட்டும்) இந்த ஆவணத்திற்காக இந்திய முத்திரைச் சட்டம் 41வது பிரிவின் படி குறைவாயிருந்த முத்திரைக் கட்டணம் வசூலிக்கப்பட்டது என நான் இதன் மூலம் சான்றளிக்கிறேன்.

சார்பதிவாளர் : சின்னதாராபுரம்
நாள்: 22/01/2024



சார்பதிவாளர் மற்றும் இந்திய முத்திரைச் சட்டம் பிரிவு
41ன் படி ஆட்சியர்

2024 ஆம் ஆண்டு ஜனவரி மாதம் 22ம் தேதி பி.ப. 03:18 மணியளவில் சின்னதாராபுரம் சார்பதிவாளர் அலுவலகத்தில் தாக்கல் செய்து கட்டணம் ₹ 1,32,557/- செலுத்தியவர்.

இடது பெருவிரல்



For TERU MURUGAN BLUE METAL,

[Signature]

MANAGING PARTNER.

கூடுதல் விவரங்கள் ஆவண வாசகத்தில்
உள்ளபடி

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



For TERU MURUGAN BLUE METAL,

[Signature]

MANAGING PARTNER.

"சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற
வழி இந்த நபரின் அடையாளம் விரல் ரேகை
மூலம் ஆதார் ஆணையத்துடன்
சரிபார்க்கப்பட்டது ஒப்பீட்டு எண் :

UKC:862174ba8d6e59cbb04eda9a65f49bd9a85b19

(Details from UIDAI : P Subramani S/O Perumal Gounder,
23-08-1960, xxxxxxxx7151)



எழுதி வாங்கியதாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



[Signature]

"சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற
வழி இந்த நபரின் அடையாளம் விரல் ரேகை
மூலம் ஆதார் ஆணையத்துடன்
சரிபார்க்கப்பட்டது ஒப்பீட்டு எண் :

UKC:181581bc04e436bb0e4c4108301ae80e72557b

(Details from UIDAI : Kumarasamy N S/O: Nachimuthu,





மேற்படி B ஷெட்யூல் சொத்து மதிப்பு

மேற்படி B ஷெட்யூல் சொத்து மதிப்பு	- ரூ.	21,86,250.00
தடப்பாத்திய மதிப்பு	- ரூ.	750.00
ஆக மொத்த மதிப்பு	- ரூ.	21,87,000.00

1-ம் தரப்பினர்

For TERU MURUGAN BLUE METAL,

[Signature]

2-ம் தரப்பினர்

N. குமாரசாமி

[Signature]

சாட்சிகள்

1. *[Signature]*

(சுதாகர், த/பெ.பரமசிவம், எண்.72, காயத்ரி நகர், முதல் கிராஸ், சின்னகுளத்துப்பாளையம், கருர்-639006).

2. *[Signature]*

(மாரிமுத்து, த/பெ.மகாலிங்கம், சின்ன ஆண்டாங்கோவில் ரோடு, மண்மங்கலம் வட்டம், கருர்).

ஆவண அமைப்பு:-



N. Selvakumar

"FAIR LAW FIRM"

N.SELVAKUMAR, B.A., B.L.,

ADVOCATE, (ENRL. NO.: MS.470/2008),

NO.993/1, NAVAMANI COMPLEX,

COVAI ROAD, KARUR-2. MOB:-9750780501.

புத்தகம் 2022-ம் வருடத்திய
11-ம் ஆவணம் 21-ம் தாள்களைக்
கொண்டது 11-வது தாள்
பதிவு அலுவலர்



Original

R/சின்னதாராபுரம்/புத்தகம்-1/114/2024



1993, xxxxxxxx1285)	
எழுதி வாங்கியதாக ஒப்புக் கொண்டவர் இடது பெருவிரல்	 
சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற வழி இந்த நபரின் அடையாளம் விரல் ரேகை மூலம் ஆதார் ஆணையத்துடன் சரிபார்க்கப்பட்டது. ஒப்பீட்டு எண் : PKC:173933009400c3c5554be18ffe014693da55c (Details from UIDAI : Premkumar K S/O: Kumarasamy, 1998, xxxxxxxx2355)	
	

2024 ஆம் ஆண்டு ஜனவரி மாதம் 22ம் நாள்

தமிழ்சென்னை வைத்தீஸ்வரன்
சார்பதிவாளர்
சின்னதாராபுரம்

இந்த அசல் ஆவணத்துடன் 1 பிரதி பதிவு செய்யப்பட்டுள்ளன.

சார்பதிவாளர் : சின்னதாராபுரம்

R/சின்னதாராபுரம்/புத்தகம்-1/114/2024 எண்ணாகப் பதிவு செய்யப்பட்டது.

நாள்: 22/01/2024
சின்னதாராபுரம்

தமிழ்சென்னை வைத்தீஸ்வரன்
சார்பதிவாளர்



புத்தகம் 2024ம் வருடத்தியு
114ம் ஆவணம் 51 தாள்களைக்
கொண்டது 13 வது தாள்
பதிவு அலுவலர்





தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : புகளூர்

வருவாய் கிராமம் : தென்னிலை கி

பட்டா எண் : 2720

உரிமையாளர்கள் பெயர்

1. திருமுருகன் புளுமெட்டல் நிறுவனத்திற்காக ... திருமுருகன் புளுமெட்டல் நிறுவனத்தின் மேனேஜிங் பார்ட்னர் சுப்பிரமணி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	
91	1C	6 - 97.00	13.94	--	--	--	--	2021/0103 /14/181495--- -- 19-10-2021
		6 - 97.00	13.94					

குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்களும் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/2023 /02720/20871 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 21-01-2024 அன்று 01:47:18 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

1. பத்தகம் 20.25 ம் வருடத்திய
114 ம் ஆவணம் 54 தாள்களைக்
கொண்டது 187 வது தாள்
பதிவு அலுவலர்





தமிழ்நாடு அரசு

வருவாய்த் துறை

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

மாவட்டம் : கரூர்

வட்டம் : புகழூர்

வருவாய் கிராமம் : தென்னிணை கி

பட்டா எண் : 2529

உரிமையாளர்கள் பெயர்

1. நாச்சிமுத்து கவுண்டர்

மகன்

குமாரசாமி

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	
135	1	3 - 30.00	4.55	--	--	--	--	2018/0105 /14/016829--2019 /14/07/000003SD -- 29-09-2019
92	1C	0 - 18.50	0.51	--	--	--	--	2019/0105 /14/029487--2019 /14/07/000014SD -- 14-11-2019
92	3B	0 - 72.00	1.99	--	--	--	--	2019/0105 /14/029490--2019 /14/07/000015SD -- 24-11-2019
93	3C1C	0 - 44.00	1.22	--	--	--	--	2019/0105 /14/029483--2019 /14/07/000013SD -- 30-10-2019
93	3C3	0 - 13.50	0.37	--	--	--	--	2018/0105 /14/016297--2019 /14/07/000009SD -- 18-10-2019
		4 - 78.00	8.64					

குறிப்பு 2 :



- மேற்கண்ட தகவல் / சான்றிதழ் தகவல் விலாசங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/008 /02529/20868 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
- இத் தகவல்கள் 21-01-2024 துள்ளு 01:48:13 PM நேரத்தில் அச்சடிக்கப்பட்டது.
- கைப்பேசி கேமராவின் 2D barcode ஸ்கேன் மூலம் படித்து 3G/GPRS வழி இணைய தளத்தில் சரிபார்க்கவும்

பதிவு அலுவலர்



தமிழ்நாடு தமிழ்நாடு TAMILNADU ரூ. 25000

13 AUG 2019

"திருமுருகன் புருஷோத்தம"
என்ற நிறுவனத்திற்காக
P. சம்பந்தரன் - காட்டுமுன்னார்

D 887613

S.RAMAMURTHY,
KARUR-639001.
L.No:05/1992

கிரைய சாசனம்

2019-ம் ஆண்டு ஆகஸ்ட் மாதம் 14-ம் தேதி, கரூர் மாவட்டம், அரவக்குறிச்சி வட்டமாக இருந்து தற்சமயம் புகளூர் வட்டம், முன்னூர் கிராமம், S.F.No.506, காட்டுமுன்னூரில் நிறுவப்பட்டிருக்கும் "திருமுருகன் புருஷோத்தம" என்ற நிறுவனத்திற்காக (PAN:AAEFT7640M) மேற்படி நிறுவனத்தின் எழுதி வாங்குபவர்:-

For Teru Murugan Blue Metal,

Managing Partner.

எழுதிக் கொடுப்பவர்கள்:-

S. பஞ்சவர்ணம்

தனக்கும், P. S. S. Chandrasekhar
மைனர்களுக்கும்:-

S. சிவசுந்தரன்

தனக்கும், C. S. S.
மைனர்களுக்கும்:-

தனக்கும், P. S. S.
மைனர்களுக்கும்:-

தனக்காகவும், பொது
அதிகார முகவராகவும்:- S. சிவசுந்தரன்

Peru S.

புத்தகம் 2019-ம் வருடத்திய
1012-ம் ஆவணம் 31 தாள்களைக்
கொண்டது 1 வது தாள்



தமிழ்நாடு தமிலநாடு TAMILNADU-25000

13 AUG 2019

திருமதி ச. சிவசுந்தரி
எனது நிர்வாகத்திற்காக
P. சிவசுந்தரி - நாட்டுமன்றம்

S. RAMAMURTHY,
KARUR-639001
LNo:03/1392

2.

மேனேஜிங் பார்ட்னரும், கருர் மாவட்டம், மண்மங்கலம் வட்டம், கருர்-6, ஆண்டாங்கோவில் கீழ்பாகம் கிராமம், சேலம் பை-பாஸ் ரோடு, ராம்நகர் வடக்கு, கதவு எண்.1/128-3-ல் வசிக்கும் பெருமாள்கவுண்டர் அவர்கள் குமாரருமான P.சுப்பிரமணி (ஓட்டுநர் உரிமை எண்.TN47/1986/0001471, CELL NO.9443154365) ஆகிய தங்களுக்கு,

எழுதி வாங்குபவர்:-

For Teru Murugan Blue Metal,

Managing Partner.

எழுதிக் கொடுப்பவர்கள்:-

ச. பழைச்சாமி

தனக்கும், P. Rameshchandra
மைனர்களுக்கும்.

ச. சிவசுந்தரி

தனக்கும்,
மைனர்களுக்கும்.

தனக்கும்,
மைனர்களுக்கும்.

தனக்காகவும், பொது

அதிகார முகவராகவும் S. சிவசுந்தரி

Ramesh

1. புத்தகம் 2. 2019...ம் வருடத்திய
1. 12.2ம் ஆவணம் 37 தாள்களைக்
கொண்டது 2...வது தாள்
11.11.19 அனுப்பினார்



தமிழ்நாடு தமிழ்நாடு TAMILNADU ரூ.25000

D 887616

13 AUG 2019

"திருமலை" சிவசுந்தரம்

S.RAMAMURTHY,

KARUR-639001

L.No:05/1992

பெரிய கிராமத்திற்காக

P. சிவசுந்தரம்

காட்கு இன்ஸர்

4..

குமாரத்திகள் R.S.அபிநய சாகித்தியா, R.S.அன்பில் தமிழினி ஆகியோர்களுக்கு கார்டியனாகவும் சேர்ந்து (வாக்காளர் அடையாள அட்டை எண்.UHV0007039, CELL NO.9787866181) - 2, ஈரோடு மாவட்டம், ஈரோடு வட்டம், ஈரோடு - 638002, காசிபாளையம், கொல்லம்பாளையம், கதவு எண்.A8-ல் வசிக்கும் லேட்.செல்லப்பகவுண்டர் அவர்கள் குமாரர் S.சின்னசாமி (வாக்காளர் எழுதி வாங்குபவர்)-

தனக்கும்,

மைனருக்கும்-

C. சிவசுந்தரம்

For Yeru Murugan Blue Metal,

P. சிவசுந்தரம்

Monoling Partner.

தனக்கும்,

மைனருக்கும்-

P. சிவசுந்தரம்

எழுதிக் கொடுப்பவர்கள்:-

தனக்காகவும், பொது

அதிகார முகவராகவும்-S.சிவசுந்தரம்

Perms

ச. சிவசுந்தரம்

தனக்கும், P. சிவசுந்தரம்

மைனர்களுக்கும்-

S. சிவசுந்தரம்

புத்தகம்.....	2019	ம் வருடத்திய
1012	ம் ஆவணம்	31
கொண்டது	14	வது தாள்
பக்கம் 243		



தமிழ்நாடு தமிழ்நாடு TAMILNADU ரூ.20000

13 AUG 2019

"திருவிழைந்திருந்தேன்"

எனது நினைவுத்திற்ப்பாடு

P. சிவசுந்தரன் - கரூர்-639 001

A 512499
R. SHANTHI,
KARUR-639 001
L.No: 25/201



.5.

அடையாள அட்டை எண்.FSW8055659, CELL NO.9443413528) - 3, மேற்படி 3
லக்கமிட்டவரின் குமாரர்கள் C.சங்கரகணேஷ் தனக்காகவும், தன்னுடைய
மைனர் மகள் S.தியா-வுக்கு கார்டியனாகவும் சேர்ந்து (வாக்காளர் அடையாள
அட்டை எண்.FSW8057283, CELL NO.9443413528) - 4 C.ரமேஷ் தனக்காகவும்
எழுதி வாங்குபவர்:-

தனக்கும்,
மைனர்க்கும்:- C. S.

For Teru Murugan Blue Metal,
Managing Partner.

தனக்கும்,
மைனர்க்கும்:- R.

எழுதிக் கொடுப்பவர்கள்:-

தனக்காகவும், பொது
அதிகார முகவராகவும்:- S. சிவசுந்தரன்

S. சிவசுந்தரன்
தனக்கும், P. Raveendran.
மைனர்களுக்கும்
S. சிவசுந்தரன்

P.

பத்தகம்... 2019...ம் வருடத்திய
10/2... ஆவணம்... 31...கள்களைக்
கொண்டது... 5...வது தாள்
பதிவு அலுவலர்



தமிழ்நாடு தமிழ்நாடு TAMILNADU ரூ.20000

A 512527

13 AUG 2019 "திருமருகன் பிழைப்பு"
 ராஜா நிர்வாகத்தின் கீழ்
 P. சிவசுந்தரன்
 கார்ட்டுகளின்

R. Shanthi, S
 KARUR-639 00
 L.No: 25 / 200

6.

தன்னுடைய மைனர் மகன் R.நிதின்-க்கு கார்டியனாகவும் சேர்ந்து (வாக்காளர் அடையாள அட்டை எண்.FSW8888455, CELL NO.9443413528) - 5, கரூர் மாவட்டம், அரவக்குறிச்சி வட்டமாக இருந்து தற்சமயம் புகளூர் வட்டம், புன்னம் சத்திரம் அஞ்சல், ரங்கசாமிபுரம், கதவு எண்.4-1-47-ல் வசிக்கும் லேட்.செல்லப்பகவுண்டர் எழுதி வாங்கிப்பவர்:-

தனக்கும்,
 மைனருக்கும்- C. S.

For Teru Murugan Bhojale,

தனக்கும்,
 மைனருக்கும்- R. S.

Managing Partner.

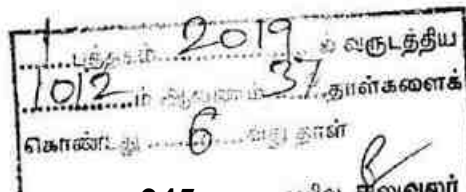
எழுதிக் கொடுப்பவர்கள்:-

தனக்காகவும், பொது
 அதிகார முகவராகவும்- S. சிவசுந்தரன்

S. சிவசுந்தரன்
 தனக்கும், P. Rameshchandra,
 மைனர்களுக்கும்:-

S. சிவசுந்தரன்

Ramesh





தமிழ்நாடு தமிழ்நாடு TAMILNADU

ரூ. 20000

A 512541

13 AUG 2019

"திருமணம் சிவமயம்"
சிவம் நினைவத்திற்காக
P. சிவபிரகாசம் - நாட்டுமேளம்

R. Shanthi, S
KARUR-639001
L.No: 25 / 2008

அவர்கள் குமாரர் S.சுப்பிரமணியம் (ஓட்டுநர் உரிமம் எண்.TN4719750000107, CELL NO.9626375635) - 6, மேற்படி 6 லக்கமிட்டவரின் குமாரர் S.செந்தில்குமார் (வாக்காளர் அடையாள அட்டை எண்.UHV0848853, PAN:FZIPS5064J) - 7 மேற்படி 6 லக்கமிட்டவரின் குமாரத்தியும், சென்னை-600049, வில்லிவாக்கம் வடக்கு, ஹைகோர்ட்டு காலனி, கதவு எண்.23A-40A-ல் வசிக்கும் இளங்கோ அவர்கள் எழுதி வாங்குபவர்:-

For Teru Murugan Blue Metal,

Managing Partner.

எழுதிக் கொடுப்பவர்கள்:-

S. பத சிவசுந்தரி
தனக்கும், P. Rameshchandra
மனைர்களுக்கும்:-

S. சிவசுந்தரி

தனக்கும்,
மைனருக்கும்:-

தனக்கும்,
மைனருக்கும்:-

தனக்காகவும், பொது
அதிகார முகவராகவும்:-

Rum.S

பத்திரம் 2019-ம் வருடத்திய
1012-57-தாள்களைக்
கொண்டது 7-ம் தாள்



தமிழ்நாடு தமிழ்நாடு TAMILNADU

AU 987646

13 AUG 2019

திரு. அருண் சிவசுப்பிரமணியன்
தனது நிறுவனத்திற்காக

R. Shanthi, S.V.
KARUR-639 001.
L.No: 25/2008

P. சிவசுப்பிரமணியன்
தனது நிறுவனத்திற்காக

.8.

மனைவியுமுள்ள E.பிரேமா (வாக்காளர் அடையாள அட்டை எண் ABQ1509488, CELL NO.9786375662) - 8. ஆகியோர்களில் மேற்படி 7 லக்கமிட்ட S.செந்தில்குமார் மேற்படி 6 லக்கமிட்டவருக்கு சென்ற 26.07.2019-ம் தேதியில் எழுதிக் கொடுத்துள்ள பொது அதிகாரப் பத்திரப்படி (1-946/2019, சின்னதாராபுரம் எழுதி வாங்குபவர்:-

தனக்கும்,

மைனருக்கும்.

C. S.

For Teru Murugan Blue Metal,

P. S.

Managing Partner.

தனக்கும்,

மைனருக்கும்.

...

எழுதிக் கொடுப்பவர்கள்:-

தனக்காகவும், பொது

அதிகார முகவராகவும் S. S. S. S.

...

S. S. S. S.

தனக்கும், P. S. S. S.

மைனருக்கும்.

S. S. S. S.

2019
10/12
37
8
பதிவு அலுவலர்



தமிழ்நாடு தமிழ்நாடு TAMILNADU

AU 987647

13 AUG 2019,

திருமருகுன் 4-ஆம் பட்டம்
பிள்ளை நிர்வாகத்திற்கு
P. சிபிபிரமணி
தாட்கொண்டி

R. SHANTHI, S.
KARUR-639 001
L.No: 25 / 2008

..9..

சார்பதிவகம்) மேற்படி 7 லக்கமிட்டவரின் பொது அதிகார முகவர்
ஹோதாவிலும், தனக்காகவும் சேர்ந்து மேற்படி 6 லக்கமிட்ட S.சுப்பிரமணியம்
ஆகிய நாங்கள் எழுதிக் கொடுத்த சுத்தக் கிரைய சாசனம் என்னவென்றால்,
எங்களில் 1, 3, 6 லக்கமிட்டவர்களின் தாயாரும், எங்களில் 2, 4, 5, 8
லக்கமிட்டவர்களுக்கு மேற்படி 7 லக்கமிட்ட பிரின்ஸ்பாலுக்கும் தகப்பனைப்
எழுதி வாங்குபவர்:-

For Teru Murugan Blue Mastoi,
Monding Partner.

தனக்கும்,

மைனருக்கும்:-

தனக்கும்,

மைனருக்கும்:-

தனக்காகவும், பொது

அதிகார முகவராகவும்:- S-சுப்பிரமணி

மேன்

3-பத சந்தி
தனக்கும், P.சிபிபிரமணி
மைனருக்கும்:-

ச. சிபிபிரமணி

புத்தகம்	2019	வருடத்திய
10.12	9	37
கொண்டி	9	37
தாள்களைக்		
கொண்டி		
ச. சிபிபிரமணி		



தமிழ்நாடு தமிழ்நாடு TAMILNADU ரூ. 1000

13 AUG 2019

AU 987648

R. Shanthi, S.V.
KARUR-639001.
L.No: 25/2008

"நிதிமுனைவர் சிவசுப்பிரமணியன்"
எனது நிதிமுனைவர் சிவசுப்பிரமணியன்
P. சிவசுப்பிரமணியன்
கருர்

..10..

பெற்ற பாட்டியும், லேட்செல்லப்பகவுண்டர் மனைவியுமான கருப்பாயி அம்மாள் அவர்களுக்கு சுயார்ஜிதமாக சென்ற 23.04.1977-ம் தேதியில் கருர் மாவட்டம், அரவக்குறிச்சி வட்டமாக இருந்து தற்சமயம் புகளூர் வட்டம், முன்னூர் கிராமம், ராயகவுண்டன்புதூரில் வசிக்கும் பசுபதிகவுண்டர் அவர்கள் எழுதி வாங்குபவர்:-

தனக்கும்,
மைனருக்கும். C. S.

For Teru Murugan Blue Marai,
Managing Partner.

தனக்கும்,
மைனருக்கும். R. S.

எழுதிக் கொடுப்பவர்கள்:-

தனக்காகவும், பொது
அதிகார முகவராகவும். S. சிவசுப்பிரமணியன்

ச. பதனாச்சி
தனக்கும், P. Ramchandran
மைனர்களுக்கும்.

Perma

S. சிவசுப்பிரமணியன்

புத்தகம் 2019-ம் வருடத்திய
1012 37 தாள்களைக்
கொண்ட 10



தமிழ்நாடு தமிழ்நாடு TAMILNADU ரூ. 1000

AU 987649

13 AUG 2019

திருமருகன் டிரைவர்கள்

R. SHANTHI, S.V
KARUR-639 001.
L.No: 25 / 2008

பி. சிவசுப்பிரமணியன்

..11..

குமாரர் P.நடராஜன் என்பவரிடமிருந்து ஏற்பட்ட கிரையப் பத்திரப்படி (1-51-471-475-351/1977, சின்னதாராபுரம் சார்பதிவகம்) பாத்தியப்பட்டு மேற்படியார் சர்வ சுதந்திர பாத்தியப்பட்டு மேற்படியார் சர்வ சுதந்திர பாத்தியங்களுடன் ஆண்டனுபவித்து வந்து பின்னிட்டு மேற்படி கருப்பாயி அம்மாள் அவர்கள் எழுதி வாங்குபவர்:-

தனக்கும்,

மைனருக்கும்:-

C. S.

For Teru Murugan & Sons, Madurai,

Managing Partner.

தனக்கும்,

மைனருக்கும்:-

Raj.

எழுதிக் கொடுப்பவர்கள்:-

தனக்காகவும், பொது

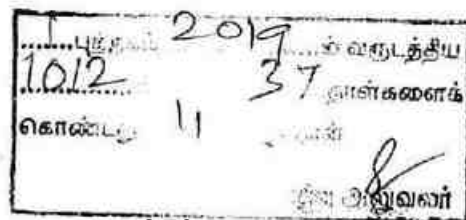
அதிகார முகவராகவும்:- S. சிவசுப்பிரமணியன்

5-12-2019

தனக்கும், P. R. Chandrasekhar

S. சிவசுப்பிரமணியன்

Raj.





தமிழ்நாடு தமில்நாடு TAMILNADU ரூ. 100

13 AUG 2019

"திருமொகன் பிசுமட்டன்"
ரெண்டி ரெண்டித்திரை
P. சிவசுந்தரன்
காட்டுவனன்

999383

R. Shanthi, S.V.
KARUR-639001.
L.No: 25/2008

..12..

சென்ற 28.05.2004-ம் தேதியில் காலமானபிறகு (இறப்புச் சான்றிதழ் பதிவு எண்.21 பதிவு செய்த தேதி 30.05.2004) வாரிசு கிரமப்படி (வாரிசு சான்று எண்.TN-7201907101224, நாள்.26.07.2019, வட்டாசியர் அலுவலகர் புகளூர்) எங்களில்

எழுதி வாங்குபவர்:-

தனக்கும்,
மைனருக்கும்:-

C. S.

For Teru Murugan Blue Metal,

Managing Partner.

எழுதிக் கொடுப்பவர்கள்:-

தனக்கும்,
மைனருக்கும்:-

...

தனக்காகவும், பொது

அதிகார முகவராகவும்:-

...

5-புது...
தனக்கும், P. Ramesh...
மைனருக்கும்:-

...

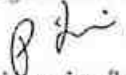
புத்தகம் 2019...	வருடத்திய
1012	37
கொண்ட...	...
12	...
...	...



..13..

1, 3, 6 லக்கமிட்டவர்களுக்கும், எங்களில் 1, 3, 6 லக்கமிட்டவர்களின் தகப்பனாரான செல்லப்பகவுண்டர் அவர்களுக்கும் பொதுவாகப் பாத்தியப்பட்டதில் மேற்படி செல்லப்பகவுண்டர் அவர்கள் சென்ற 12.04.2008-ம் தேதியில் காலமானபிறகு (இறப்புச் சான்றிதழ் பதிவு எண்.ப.மு.அ1/597/2014, நாள்.21.02.2008) வாரிசு கிரமப்படி (வாரிசுரிமைச் சான்றிதழ் எண்.ப.மு.அ1/597/2014, நாள்.21.02.2014) எங்களில் 1, 3, 6 லக்கமிட்டவருக்கும் எங்களில் 1, 3, 6 லக்கமிட்டவர்களின் வாரிசுதாரர்கள் என்கிறவகையில் எங்களில் 2, 4, 5, 8 லக்கமிட்டவர்களுக்கும், மேற்படி 7 லக்கமிட்ட பிரின்ஸ்பாலுக்கும் பொதுவாகப் பாத்தியப்பட்டு சர்வ சுதந்திரமாக அனுபவித்து வருகிற கீழ்கண்ட சொத்தை மேற்படி 7 லக்கமிட்ட பிரின்ஸ்பாலுக்காகவும், தனக்காகவும் சேர்ந்து எங்களில் 6 லக்கமிட்டவரும், எங்களில் 1, 2, 3, 4, 5, 8 லக்கமிட்டவர்கள் தங்களுக்காகவும் நாளது தேதியில் எழுதி வாங்குபவர்:-

For Teru Murugan Blue Metal,


Managing Partner.

எழுதிக் கொடுப்பவர்கள்:-

ச. ப. சந்திரன்
தனக்கும், P. Raveendran
மைனர்களுக்கும்.

ச. சிவசாமி

தனக்கும்,

மைனர்களுக்கும்:-

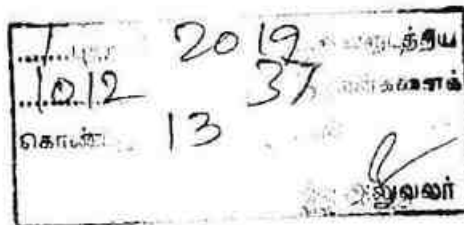
தனக்கும்,

மைனர்களுக்கும்:-

தனக்காகவும், பொது

அதிகார முகவராகவும் S. & P. Raveendran

Remus





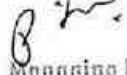
..14..

மேற்படி நிறுவனத்திற்காக தங்களுக்கு சுத்தக் கிரையமும் சுவாதினமும் செய்து கொடுத்துப் பெற்றுக் கொண்டது ரூ.23,43,000/- இந்த ரூபாய் இருபத்தி மூன்று இலட்சத்து நூற்றத்தி மூன்றாயிரமும் நாங்கள் தங்களிடம் பெற்றுக் கொண்டதற்கு விபரம்:-

எங்களில் 1 லக்கமிட்டவர் 2 லக்கமிட்டவரின் சம்மதத்தின்பேரில் எங்களில் 1 லக்கமிட்டவரின் பெயருக்கு மேற்படி நிறுவனத்தின் லட்சுமி விலாஸ் வங்கி, கரூர் மேற்கு கிளையின் காசோலை எண்.983271, நாள்:14.08.2019-ன்படி பெற்றுக்கொண்டவகையில் தங்களால் எங்களில் 1, 2 லக்கமிட்டவர்களுக்குச் செல்லானது ரூ.7,81,000/- (ரூபாய் ஏழு இலட்சத்து எண்பத்தி ஓராயிரம் மட்டும்)

எங்களில் 3 லக்கமிட்டவர் 4, 5 லக்கமிட்டவர்களின் சம்மதத்தின்பேரில் எங்களில் 3 லக்கமிட்டவரின் பெயருக்கு மேற்படி நிறுவனத்தின் லட்சுமி எழுதி வாங்குபவர்:-

For Teru Murugan Blue Merai,


Managing Partner.

எழுதிக் கொடுப்பவர்கள்:-

தனக்கும்,

மைனருக்கும்:-

தனக்கும்,

மைனருக்கும்:-

தனக்காகவும், பொது

அதிகார முகவராகவும்:-

S. பழைசாமி
தனக்கும், P. Raveendran
மைனர்களுக்கும்:-

S. சிவசாமி

Perna S

புத்த	2019	வருடத்திய
10/12	37	தாள்களைக்
கொண்ட	14	புத்த
பதிவு அலுவலர்		



விலாஸ் வங்கி, கருர் மேற்கு கிளையின் காசோலை எண்.983272, நாள்:14.08.2019-ன்படி பெற்றுக்கொண்டவகையில் தங்களால் எங்களில் 3, 4, 5 லக்கமிட்டவர்களுக்குச் செல்லானது ரூ.7,81,000/- (ரூபாய் ஏழு இலட்சத்து எண்பத்தி ஓராயிரம் மட்டும்)

எங்களில் 6 லக்கமிட்டவர் மேற்படி 7 லக்கமிட்ட பிரின்ஸ்பாலுக்காகவும் எங்களில் 8 லக்கமிட்டவரின் சம்மத்தின்பேரிலும் எங்களில் 6 லக்கமிட்டவரின் பெயருக்கு மேற்படி நிறுவனத்தின் லட்சுமி விலாஸ் வங்கி, கருர் மேற்கு கிளையின் காசோலை எண்.983273, நாள்:14.08.2019-ன்படி பெற்றுக்கொண்டவகையில் தங்களால் எங்களில் 6, 8 லக்கமிட்டவர்களுக்கும், 7 லக்கமிட்ட பிரின்ஸ்பாலுக்கும் செல்லானது ரூ.7,81,000/- (ரூபாய் ஏழு இலட்சத்து எண்பத்தி ஓராயிரம் மட்டும்)

எழுதி வாங்குபவர்:-

தனக்கும்,

மைனருக்கும்:-

For Teru Murugan Blue Metal,

Managing Partner.

எழுதிக் கொடுப்பவர்கள்:-

தனக்கும்,

மைனருக்கும்:-

தனக்காகவும், பொது

அதிகார முகவராகவும்:-

ச. பஞ்சவர்ணம்

தனக்கும், P. Rajeshwari,
மைனருக்கும்:-

ச. சின்னம்

Remis

பெண்	2019	மார்ச்சு
1012	37	தாள்களாக
பொருள்	15	பெண்
பதிவு அலுவலர்		



-16-

ஆக மேற்படி வகைகளின்படி மேற்படி கிரையத் தொகை ரூ.23,43,000/- இந்த ரூபாய் இருபத்தி மூன்று இலட்சத்து நாற்பத்தி மூன்றாயிரமும் தங்களால் எங்களுடைய குடும்பச் செலவுகளுக்காகவும், மேற்படி பிரின்ஸ்பாலின் குடும்பச் செலவுகளுக்காகவும், மேற்படி மைனர்களின் படிப்பு, வளர்ப்பு, சமரட்சணை செலவுகளுக்காகவும் செல்லாகிவிட்டபடியால் இனி நாளது தேதி முதல் கீழ்க்கண்ட சொத்தை மேற்படி நிறுவனத்திற்காக தாங்களே சர்வ சுதந்திரப் பாத்தியாங்களுடன் ஆண்டனுபவித்துக் கொண்டு நலமாக வாழ்ந்து வரவும்.

கீழ்க்கண்ட சொத்தைப் பொருத்து எந்தவிதமான வில்லங்கமும், விவகாரமும் இல்லை என உறுதி கூறுகிறோம். அப்படி ஏதேனும் வில்லங்கம், விவகாரம் இருந்து பின்னிட்டு வெளியாகி அதனால் தங்களுக்கு எழுதி வாங்குபவர்:-

For Tera Murugan Blue Metal,

P. R. S.
Managing Partner.

எழுதிக் கொடுப்பவர்கள்:-

5. ப. ப. சந்திரன்

தனக்கும், P. R. S. Chandrasekar
மைனர்களுக்கும்.

S. R. S. Chandrasekar

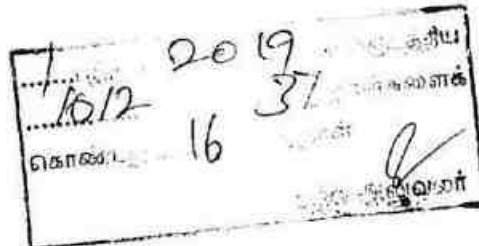
தனக்கும்,
மைனர்களுக்கும்.

தனக்கும்,
மைனர்களுக்கும்.

தனக்காகவும், பொது

அதிகார முகவராகவும். S. R. S. Chandrasekar

P. R. S.





(மேற்படி நிறுவனத்திற்கு) ஏதாவது நஷ்டம் உண்டானால் அவ்வகை நஷ்டத்தை நாங்கள் எங்களது இதர சொத்தைக் கொண்டு கட்டுப்பட்டு முன்னின்று தீர்த்துக் கொடுப்போமாகவும்.

கீழ்க்கண்ட சொத்தைப் பொருத்து இனி நாளது தேதி முதல் எங்களுக்கோ, எங்களுடைய வாரிசுகளுக்கோ, மேற்படி பிரின்ஸ்பாலுக்கோ, மேற்படி பிரின்ஸ்பாலின் வாரிசுகளுக்கோ எந்தவிதமான பாத்தியமும், சம்மந்தமும், பின்தொடர்ச்சியும் கிடையாது என உறுதி கூறுகிறோம்.

கீழ்க்கண்ட சொத்தை நாங்கள் நாளது தேதியில் தங்களின் (மேற்படி நிறுவனத்தின்) சுவாதீனத்தில் விட்டுவிட்டோம்.

பொது அதிகாரப் பத்திரம் எழுதிக் கொடுத்தவர் உயிருடன் இருக்கிறார் என்றும், பொது அதிகாரப் பத்திரம் அமுலில் இருந்து வருகிறது என்றும் நன்கு தெரிந்து கொண்டு எங்களில் 6 லக்கமிட்டவர் ஒப்புக் கொண்டுள்ளார்.

எழுதி வாங்குபவர்:-

For Teru Murugan Blue Metal,

[Signature]

Managing Partner.

எழுதிக் கொடுப்பவர்கள்:-

S. பழனிசாமி

தனக்கும், P. Ravichandran
மைனருக்கும்.

ச. பழனிசாமி

தனக்கும்,

மைனருக்கும்.

தனக்கும்,

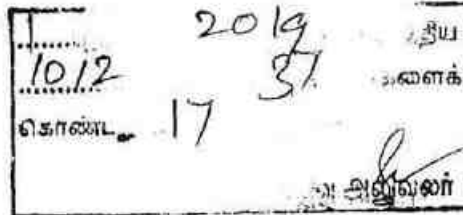
மைனருக்கும்.

தனக்காகவும், பொது

அதிகார முகவராகவும்.

S. சந்திரசேகரன்

[Signature]



சொத்து விபரம்



கருர் பதிவு மாவட்டம், சின்னதாராபுரம் சார்பதிவகம், அரவக்குறிச்சி வட்டமாக இருந்து தற்சமயம் புகளூர் வட்டம், தென்னிலை கீழ்பாகம் கிராமம் (பட்டா எண்.2160)

அ.பு.ச.134 நெ. ஹெக்.3.53.50-க்கு ஏக்.8.74 உள்ள புஞ்சை பூமி பூராவும் சகிதம்.

மேற்படி பூமிக்கு நான்கெல்லை விபரம்:-

சர்வே 136, 132 நெ. பூமிகளுக்கும் கிழக்கு, சர்வே 132, 133 நெ. பூமிகளுக்கும் தெற்கு, சர்வே 135 நெ. பூமிக்கும் வடக்கு, தென்வடல் பஞ்சாயத்து ரோட்டுக்கும் மேற்கு, இதன்மத்தியில் ஏக்.8.74-க்கு ஹெக்.3.53.50 உள்ள புஞ்சை பூமி பூராவும் சகிதம். மேற்படி பூமிக்குண்டான மண்ணேரி எழுதி வாங்குபவர்:-

For Teru Murugan Blue Metal,

[Signature]
Managing Partner.

எழுதிக்கொடுப்பவர்கள்:-

[Signature]
தனக்கும், *P. Raveendran*
மைனருக்கும்.

[Signature]

தனக்கும்,

மைனருக்கும் *[Signature]*

தனக்கும்,

மைனருக்கும் *[Signature]*

தனக்காகவும், பொது

அதிகார முகவராகவும்: *S. Arunachalam*

[Signature]

பத்தகம்	2019	வருடத்திய
10/2	10/2	தாள்களைக்
கொண்டது	18	வது தாள்
பதிவு அலுவலர்		



திட்டுதிடல் மாமூல் வழிநடை பாத்தியமும் மற்றும் சகல பாத்தியமும் சகிதம்.

மேற்படி சொத்து மதிப்பு விபரம்

நில மதிப்பு	ரூ. 23,41,938-00
தடப்பாத்திய மதிப்பு	ரூ. 1,062-00
ஆக மொத்தம்	ரூ. 23,43,000-00

எழுதி வாங்குபவர்:-

தனக்கும்,
மைனருக்கும்.

For Teru Murugan Blue Metal,

[Signature]
Managing Partner.

தனக்கும்,
மைனருக்கும்.

எழுதிக் கொடுப்பவர்கள்:-

தனக்காகவும், பொது
அதிகார முகவராகவும். S. அப்துல் கரீம்

[Signature]

தனக்கும், P. Rameshchandra,
மைனருக்கும்.

[Signature]

S. அப்துல் கரீம்

சாட்சிகள்:-

V. சந்திரன் & சோழசாமி, கிடைத்திரன் பாளையம், தென்னிணை
கீழ்ப்பாங்கு கிராமம், புதளம்மட்டம்.

R. அப்துல் ரஹ்மான் & ரமேஷ் பாய், A. ரோடு கோடு சத்திரம் பாய்
தென்னிணை கிராமம், மண்மேல்சாலை

ஆவண அமைப்பு:-

[Signature]
(V. Sanjeevi), Arikkarampalayam, L.No.B.1349/84.

20/12	2019	சுத்திய
10/12	31	கமளம்
கொண்	19	

R/சின்னதாராபுரம்/புத்தகம்-1/1012/2019



2019 ஆம் ஆண்டு ஆகஸ்ட் மாதம் 14ம் தேதி பி.ப. 05:05 மணியளவில் சின்னதாராபுரம் சார்பதிவாளர் அலுவலகத்தில் ஞாக்கல் செய்து கட்டணம் ₹ 94,300/- செலுத்தியவர்.

இடது பெருவிரல்



For Teru Murugan Blue Meelai,

Managing Partner.

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி.

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



சு. பக்த ஸ்ரீ

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி.

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



P. Ramchandrasekar

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி.

எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர்
இடது பெருவிரல்



P. Ramchandrasekar

கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி.

புத்தகம் 2019-ல் வசூலித்த
612 ரூபாயை 37 நாள் காலாக
கொண்டது 20 நாள்
பதிவு ஆவணம்



எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	<i>C. சின்னம்மா</i> சுருதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி
எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	<i>C. Sru</i> சுருதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி
எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	<i>C. Sru</i> சுருதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி
எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	<i>Rayman</i> சுருதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி
எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	<i>Rayman</i> சுருதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி

2019 10/12 37
கொண்டது 21



எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	S. அர்ச்சுனாசாமி கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி.
எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	S. அர்ச்சுனாசாமி கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி.
எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	R. S. S. கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி.
எழுதி வாங்கியதாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	For Teru Murugan (Sua Manai), Managing Partner. கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி.
திண்ணாபெருந்துறை நிருபித்தவர்கள் 1. V. சண்முகம் 2. R. S. S. திரு கார்த்திகேயன் தபெ வேலுச்சாமி நெ.69ஏ, காந்திநகர், தென்னிலை அஞ்சல், அரவக்குறிச்சி, கருர், தமிழ்நாடு, இந்தியா, 639205 திரு அரவிந்த் தபெ ரமேஷ்பாபு நெ.4/228, அருள் நகர், ஆத்தூர் பிரிவு, ஈரோடு மெயின் ரோடு, ஆண்டாங்கோவில் மேற்கு, மண்மங்கலம், கருர், தமிழ்நாடு, இந்தியா, 639002	

3/4 2019 31
10/12
கொண்டி, 22
சுயேட்சை
சுயேட்சை

R/சின்னதாராபுரம்/புத்தகம்-1/1012/2019



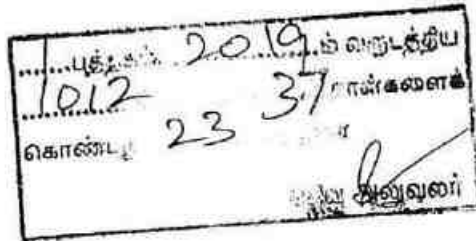
2019 ஆம் ஆண்டு ஆகஸ்ட் மாதம் 14ம் நாள்

தமிழ்செல்வி வைத்தீஸ்வரன்
சார்பதிவாளர்
சின்னதாராபுரம்

R/சின்னதாராபுரம்/புத்தகம்-1/1012/2019 எண்ணாகப் பதிவு செய்யப்பட்டது

நாள் 14/08/2019
சின்னதாராபுரம்

தமிழ்செல்வி வைத்தீஸ்வரன்
சார்பதிவாளர்



LIFE CERTIFICATE FOR THE PURPOSE OF REGISTRATION OF
DOCUMENTS BASED ON POWER OF ATTORNEY



S. Senthil Kumar SIGNATURE OF THE INDIVIDUAL

Certified that the individual named Shri / Smt. / Ms.

S. SENTHIL KUMAR - S/o S. Subramanyam
Rengasamyapuram, 4-1-47, Punnambetturam

Who has signed in my presence and whose photo has been attested by me, is alive, as on this date.

Name MADHIVADHANI K

Designation of Registered Medical Practitioner with Registered No. / 'A' group officer ASST. SURGEON / 82564

Dr. K. MADHIVADHANI, M.B.B.S., D.L.O.,
ASSISTANT SURGEON,
ENT SURGEON,
REGD. No. 82564
GOVT. DISTRICT HEAD QUARTERS HOSPITAL,
Seal/No. of Regd. Medical Practitioner / 'A' Group officer

Place: K. PARAMATHI

Date: 13/08/19, Thirteen days, August month, Two thousand and nineteen years.

ID No. for Group 'A' officers should be their
No. / PAN Card No. / Aadhar No. / Voter ID

The Medical practitioner / 'A' group officer should attest the
Photo of the individual and half of the signature should be on
the photo and other half on this paper.

2019
37
24
செவ்வாறு

Certificate No. / கடினத்தொடர்பு எண் : ப/சின்னதொடர்பு/163/2019
 Application No. / விண்ணப்ப எண் : ப/சின்னதொடர்பு/246/2019
 Serial No. / வரிசை எண் : ப/சின்னதொடர்பு/1/2019



Government of TamilNadu

தமிழ்நாடு அரசு

-படிவம் எண் 6

Department of Registration

DEATH CERTIFICATE - இறப்பு சான்றிதழ்

(Issued Under Section 12/17 of the Registration of Births and Deaths Act 1969 and Rule 8 of Tamil Nadu Registration of Births and Deaths Rules 2000)

This is to certify that the following information has been taken from the original record of Death which is the register for (local area) MUNNUR of Taluk ARAVAKKURICHI of District KARUR of State TamilNadu

கீழ்க்கண்ட தகவல்கள் தமிழ்நாடு யாநிலம் கருர் (மாவட்டம்) அரவக்குறிச்சி (வட்டம்) முன்னூர் ஊரைச் சேர்ந்த அடல் இறப்பு பதிவேட்டிலிருந்து எடுக்கப்பட்டவை என சான்றிதழ் வழங்கப்படுகிறது.

Name / பெயர் : கருப்பாயி அம்மாள்

Name of Mother / தாயின் பெயர் : -

Name of Father/Husband/ தந்தை / கணவரின் பெயர் : செல்லப்பகவுண்டன்

Age / வயது : 75

Sex / பாலினம் : பெண்

Date of Death / இறந்த தேதி : 28-May-2004 (இருபத்தி எட்டு ஐந்து இரண்டாயிரத்திநான்கு)

Place of Death / இறந்த இடம் : ஆலாம்பாளையம்

Permanent Residential Address of the Deceased / இறந்தவரின் நிலையான வீட்டு முகவரி : ஆலாம்பாளையம்

Address at the time of Death / இறப்பின் போது முகவரி : ஆலாம்பாளையம்

Registration No. / பதிவு எண் : 21

Date of Registration / பதிவு செய்த தேதி : 30-May-2004

Prepared By/ தயாரித்தவர் : /a

Examined By/ ஆய்வு செய்தவர் : /a

Total Corrections/ மொத்த திருத்தங்கள் : கிள்வன்

Date of Issue/ தேதி : 08-Jul-2019

Signature of Issuing Authority

சான்றிதழ் அளிப்பவரின் கையொப்பம்

சமர்ப்பிப்பவரின் அலுவலகம்
 சின்னதொடர்பு

சமர்ப்பிப்பவரின்
 சின்னதொடர்பு

2019
 1012 25 37
 கொல்கட்டை
 சிவசுந்தரம்



தமிழ்நாடு அரசு
Government of Tamil Nadu

Form No.6 படிவம் எண் - 6
(See Rule 8 - விதி 8 ஐப் பார்க்க)



DEATH CERTIFICATE - இறப்பு சான்றிதழ்

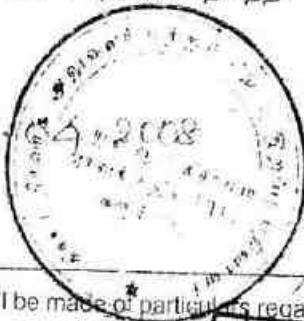
(Issued Under Section 12 / 17 - பிரிவு 12/17ன் கீழ் வழங்கப்பட்டது)

This is to certify that the following information has been taken from the original record of Death which is the register for (local area).....
..... of Taluk of
District of State

கீழ்க்கண்ட தகவல்கள் மாநிலம்
..... மாவட்டம்
..... வட்டம் ஊரைச் சேர்ந்த
அசல் இறப்புப் பதிவேட்டிலிருந்து எடுக்கப்பட்டவை என சான்றிதழ் வழங்கப்படுகின்றது.

Name / பெயர் : அசல்பிபி கவுண்டி
Name of Father / Husband : மதிசு சாமு கவுண்டி
தந்தை / கணவரின் பெயர் :
Permanent Residential Address : அலமர்ப் பாலையம், அரங்குலத்தூர்
நிலையான வீட்டு முகவரி :
Age / வயது : 90
Sex / பாலினம் : ஆண்
Date of Death / இறந்த தேதி : 12.04.2008
Place of Death / இறந்த இடம் : அலமர்ப் பாலையம்
Registration No. / பதிவு எண் : 10/2008
Date of Registration / பதிவு செய்த தேதி : 19.04.2008

Date / தேதி 19.04.2008



Signature of issuing authority

சான்றிதழ் பதிவு செய்த கையொப்பம்

Seal / முத்திரை

No disclosure shall be made of particulars regarding the cause of death as entered in the Register.

இறப்பு பதிவேட்டில் எழுதப்பட்ட இறப்பு காரணம் குறித்து எவ்வித வெளியீட்டும் இடப்படாது.

(See Proviso to section 17)

எக்ஸ்டா 2/... துள்

பதிவு அலுவலர்

வருவாய்த் துறை



வட்டாட்சியர் அலுவலகம்,
அரவக்குறிச்சி

ப. மு. அ1/597/2014 நாள் 21.02.2014



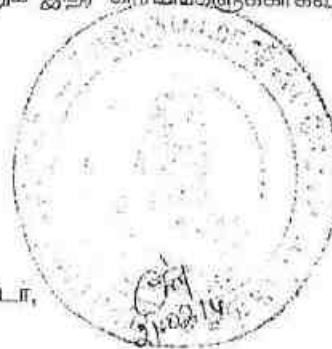
வாரிசுரிமைச் சான்றிதழ் (LEGAL HEIRSHIP CERTIFICATE)

கருர் மாவட்டம், அரவக்குறிச்சி வட்டம், முன்னூர் கிராமம் மஜ்ரா ஆலாம்பாளையம் என்ற முகவரியில் வசித்து, 12.04.2008 அன்று அரவக்குறிச்சி வட்டம், முன்னூர் கிராமம் மஜ்ரா ஆலாம்பாளையம் என்ற இடத்தில் காலமான செல்லப்ப கவுண்டர், (சு/பெ.முத்துசாமி கவுண்டர்) என்பவருக்கு கீழ்க்கண்ட மூன்று (3) நபர்கள் மட்டுமே வாரிசுதாரர்கள் எனச் சான்று வழங்கப்படுகிறது.

வ. எண்	வாரிசுதாரர்களின் பெயர்கள்	பாலினம்	வயது	இறந்தவருக்கு உறவு முறை
1	திரு. பழனிச்சாமி	ஆண்	61	மகன்
2	திரு. சின்னச்சாமி	ஆண்	59	மகன்
3	திரு. சுப்பிரமணியம்	ஆண்	56	மகன்

← கீழ்க்கண்ட 3 (மூன்று) நபர்கள் மட்டும்)

இந்த வாரிசு சான்றிதழ் பட்டா மாறுதல் செய்யவும், மின் இணைப்பு பெயர் மாற்றம் செய்யவும் மற்றும் இதர காரியங்களுக்காகவும் வழங்கப்படுகிறது.



வட்டாட்சியர்,
அரவக்குறிச்சி.

பெற்றநர்
திரு. சுப்பிரமணியம்,
சு/பெ. (லேட்) செல்லப்ப கவுண்டர்,
முன்னூர் கிராமம்,
அரவக்குறிச்சி வட்டம்,
கருர் மாவட்டம்.

1. திகதி 2019
10.12.2019 ஆம் ஆண்டு 37 நாள் கடைசி
கொண்டது 28 வது நாள்
பதிவு அலுவலர்



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : கருநா

வட்டம் : புகளூர்

வருவாய் கிராமம் : தென்னிலை கிழக்கு
2160

பட்டா எண் :

உரிமையாளர்கள் பெயர்

1.	செல்லப்ப கவுண்டர்	மகன்	பழனிச்சாமி	-
2.	செல்லப்ப கவுண்டர்	மகன்	சின்னச்சாமி	-
3.	செல்லப்ப கவுண்டர்	மகன்	சுப்பிரமணியம்	-

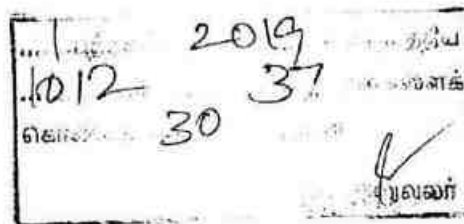
நன்செய்		புன்செய்		மற்றவை	
பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை
புல எண்	உட்பிரிவு	ஹெக்ட - ஏர்	ரூ - பை	ஹெக்ட - ஏர்	ரூ - பை
134	-	--	--	3 - 53.50	4.89
				3 - 53.50	4.89

குறிப்பு2 :



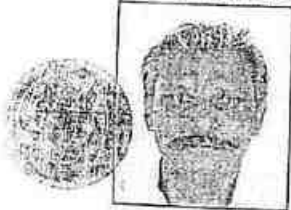
1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 14/07/008/02160/20879 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 02-07-2019 அன்று 12:17:33 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

பதிவு செய்த நாள் 2019
10.12.2019
37
தொண்டது 29
பதிவு செய்தவர்



**ELECTION COMMISSION OF INDIA
IDENTITY CARD**

இந்தியத் தேர்தல் ஆணையம்
வாக்காளர் அடையாள அட்டை
FGJ1030519



Elector's Name Pazhanisamy
வாக்காளர் பெயர் பழனிசாமி
Father's Name Chellappagounder
தந்தை பெயர் செல்வப்பகவுண்டர்
Sex / பாலினம் Male ஆண்
Age as on 1.1.1999
11.1993 அன்ற வயது 44



Address : 22B

Alampalayam
Munoor (P)
Munoor (P)
KARUR - 639001

முகவரி : 22B

ஆலம்பாளையம், அத்தியப்பகவுண்டர் வகை

முகனூர் (P)

முனூர் (P)

கருர் - 639001

Facsimile Signature of Electoral Registration Officer
வாக்காளர் பதிவு அதிகாரியின் கையெழுத்து முத்திரை

For 151 - Aravakurichy
Assembly Constituency

151 - அரவக்குறிச்சி
சட்டமன்ற தொகுதி

Place : Karur
இடம் : கருர்

Date / திகதி : 29-10-2000

This card may be used as an Identity Card
under different Government Schemes.

இந்த அடையாள அட்டை பல்வேறு சட்ட அமைச்சு
திட்ட அமைச்சு கீழ் அரசு திட்டங்களில் பயன்படுத்தலாம். 23/10/01

S. P. S. S.

இந்தியத் தேர்தல் ஆணையம்
Election Commission of India
வாக்காளர் அடையாள அட்டை
UHV0007039

வாக்காளர் பெயர் ரவிச்சந்திரன்
Ravichandran
பழனிசாமி
Palanisamy

இடம் : 22B, ஆலம்பாளையம்
முகனூர் (P), முனூர் (P), கருர் - 639001
Address: 22B, ALAMPALAYAM KUDU
STREET, MUNNUR, ARAVAKURICHY-639001

வாக்காளர் பதிவு அட்டை
Date: 29/10/2000 Electoral Registration Officer
தொகுதி : 151 - அரவக்குறிச்சி
சட்டமன்ற தொகுதி
இடம் : கருர்
முகனூர் (P), முனூர் (P), கருர் - 639001
AC NO & Name : 151, Aravakurichy
Munoor (P), Munoor (P), Karur - 639001

வாக்காளர் பதிவு அட்டை
இந்த அட்டை பல்வேறு சட்ட அமைச்சு திட்டங்களில் பயன்படுத்தலாம்.
23/10/01

P. Ravichandran

10.12.2019
37
31
தேர்தல்
வாக்காளர்
பதிவு அட்டை



ELECTION COMMISSION OF INDIA
IDENTITY CARD

இந்திய தேர்தல் ஆணையம்
வாக்காளர் அடையாள அட்டை

FSW8055659



Elector's Name **Chinnasami**
வாக்காளர் பெயர் சின்னசாமி
Father's Name **Cheilappagounder**
தாய்வளர் பெயர் செல்லப்பகவுண்டர்
Sex / பாலினம் **Male** / ஆண்
Age as on 1.1.2006 **55**
1.2006 அன்று வயது

ச. சின்னசாமி

Address : D165
Kollampalayam Housing Unit D Type
Kasipalayam (M) Ward-13
Erode - 638002

முகவரி : D165
கொல்லம்பாளையம் ஹவுசிங் யூனிட் D டைப்
காசிபாளையம் (த) வார்டு-13
எரோடு - 638002

Facsimile Signature of Electoral Registration Officer

வாக்காளர் பதிவு அதிகாரியின் கையொப்ப முத்திரை

For 120 - Erode
Assembly Constituency

120 எரோடு
சட்டமன்ற தொகுதி

Place **Erode**
இடம் எரோடு

Date / நாள் : 14/04/2006

This card may be used as an Identity Card
under different Government Schemes.

இந்த அட்டை எல்லை அரசின் பல்வேறு திட்டங்களின் கீழ்
அடையாள அட்டையாக பயன்படுத்தலாம்.

257 / 1241

புகுதகம் 2019 வருடத்திய
10/2 37 வாக்காளக்
கொண்டது 32 நாள்
அ. சிவசுவாமி





ELECTION COMMISSION OF INDIA
IDENTITY CARD

இந்திய தேர்தல் ஆணையம்
வாக்காளர் அடையாள அட்டை
FSW8057283



Elector's Name Shankarganesh
வாக்காளர் பெயர் சங்கர்கணேசன்
Father's Name Chinnasami
வாக்காளர் பெயர் சின்னசாமி
Sex / பாலினம் Male / ஆண்
Age as on 1.1.2006 28
1.1.2006 அன்று வயது

FSW8057283

Address : D165
Kollampalayam Housing Unit D Type
Kasipalayam (M) Ward-13
Erode - 638002

முகவரி D165
கொல்லம்பாளையம் விலாசிங் யூனிட் D டைப்
காசிபாளையம் (ந) வார்டு-13
ஈரோடு 638002

(Signature)

Facsimile Signature of Electoral Registration Officer
வாக்காளர் பதிவு அதிகாரியின் கையொப்ப முத்திரை
For 120 - Erode
Assembly Constituency

120 - ஈரோடு
சட்டமன்ற தொகுதி

Place Erode
இடம் ஈரோடு

Date / நாள் 15/04/2006

This card may be used as an Identity Card under different Government Schemes.

இந்த அட்டையை அரசின் பல்வேறு திட்டங்களின் கீழ் அடையாள அட்டையாக பயன்படுத்தலாம்.

267 71238

(Handwritten mark)

2019 மீதிய
1012 37 கணைக்
கொண்டது 33
அலுவலர்





TN28 2018 0005702

07-08-1960

KARTHIKEYAN K.V

VELUSAMY P

2018 0005702

30-08-2018

TN28 /PDL/0005702/0018

STO. NAWAROLUR

.V. சைகிதன்

புத்தகம் 2019-ம் வருடத்திய

10.12.37 நாள் களைக்

36

சுமலா





78-74 2012 001001

12-05-2017

ARAVINDH S

RAMESHBABU

IN-47X 2017 0001001

10-12-2017

10-12-2017

R.Rith

புத்தகம் 2019

10.12 37

கொண்ட 37

அஞ்சலகம்





Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number : 33AAEFT7640M1ZV

1.	Legal Name	TERU MURUGAN BLUE METAL		
2.	Trade Name, if any	TERU MURUGAN BLUE METAL		
3.	Constitution of Business	Partnership		
4.	Address of Principal Place of Business	, SF.506, KATTUMUNNUR, ARAVAKURUCHI TALUK, Tamil Nadu, 639111		
5.	Date of Liability	01/07/2017		
6.	Period of Validity	From	01/07/2017	To NA
7.	Type of Registration	Regular 		
8.	Particulars of Approving Authority			
Signature		Signature valid Digitally signed by S. S. GOODS AND SERVICES TAX NETWORK 1 Date: 2018.08.02 14:38:41 IST		
Name				
Designation				
Jurisdictional Office				
9.	Date of issue of Certificate	02/08/2018		
Note: The registration certificate is required to be prominently displayed at all places of business in the State.				

This is a system generated digitally signed Registration Certificate issued based on the deemed approval of application on 01/07/2017.



GSTIN: 33AAEFT7640M1ZV
Legal Name: TERU MURUGAN BLUE METAL
Trade Name: If any TERU MURUGAN BLUE METAL

Details of Additional Places of Business

Total Number of Additional Places of Business in the State: 0



GSTIN

33AAEFT7640M1ZV

Legal Name

TERU MURUGAN BLUE METAL

Trade Name, if any

TERU MURUGAN BLUE METAL

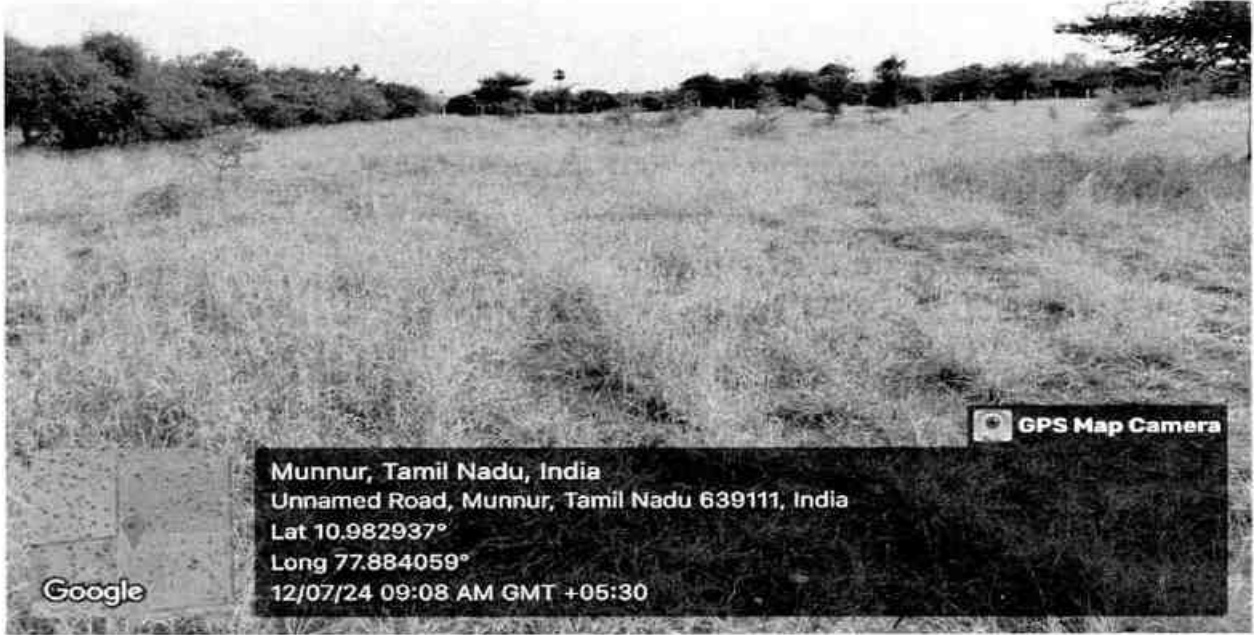


Details of Managing / Authorized Partners

1		Name	PERUMAL SHANMUGAM
		Designation/Status	PTNR
		Resident of State	Tamil Nadu
2		Name	PARAMATHI KARUPPANNAN PALANISAMY
		Designation/Status	PTNR
		Resident of State	Tamil Nadu
3		Name	PERUMAL SUBRAMANI
		Designation/Status	PTNR
		Resident of State	Tamil Nadu
4		Name	PAZHANISAMI MURUGESAN
		Designation/Status	PTNR
		Resident of State	Tamil Nadu

PHOTOCOPY OF THE LEASE AREA

Site photos in respect of rough stone and gravel quarry lease in S.F.No's: 134 & 135/1
 Patta -Land - over an extent of 6.83.50 hectares – Thennilai East village – Pugalur
 Taluk – Karur District, Tamil Nadu State in belongs to **M/s. Teru Murugan Blue Metal,**





In case this card is lost / found, kindly inform / return to :-
 Income Tax PAN Services Unit, ITIIS,
 Plot No. 3, Sector II, CBD Belapur,
 Navi Mumbai - 400 614.
 வீடுவாசி அலுவலகம் / மாவட்ட அலுவலகம் அல்லது :-
 காவலாட்சி அலுவலகம், ITIIS,
 பிளட் நம். 3, சக்தர் II, சபுபுரம்,
 நவீன மும்பை - 400 614.

भारत सरकार / GOVERNMENT OF INDIA
खान मंत्रालय / MINISTRY OF MINES
भारतीय खान ब्यूरो / INDIAN BUREAU OF MINES



Signature

अर्हता प्राप्त व्यक्ति के रूप में मान्यता प्रमाण पत्र
(खनिज रियायत नियमावली, 1960 के नियम 22सी के तहत)
CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON
(Under Rule 22C of Mineral Concession Rules, 1960)

श्री एस. करुपन्नन, मॉगनीकाडू, मुत्तमपट्टी पोस्ट, बोम्मीडी वर्यो, ओमलूर तालुक, सेलम डीस्ट्रिक्ट, तमिलनाडू - 635 301, जिनका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिनहोने अपनी अर्हता और अनुभव का संतोष जनक साध्य दिया है, को खनन योजना तैयार करने हेतु खनिज रियायत नियमावली 1960 के नियम 22सी के तहत अर्हता प्राप्त व्यक्ति के रूप में मान्यता प्रदान की जाती है।

Shri S. Karuppannan, Manganikadu, Muthampatty (Post), Bommidi (Via), Omalur Taluk, Salem District, Tamilnadu - 635 301, whose **Photograph and signature** is affixed herein above, having given satisfactory evidence of his qualifications & experience hereby **RECOGNISED** under Rule 22C of the Mineral Concession Rule, 1960 as a Qualified Person to prepare Mining Plans.

उनकीपंजीयन संख्या है
His registration number is

RQP /MAS/263/2014/A

यह मान्यता 10 वर्षों की अवधि के लिए मान्यता है जो दिनांक 15.12.2024 को समाप्त होगी।
This recognition is valid for a period of 10 years ending on 15.12.2024.

उनके द्वारा प्रस्तुत खनन योजना में गलत जानकारी / दस्तावेज पाए जाने की स्थिति में यह प्रमाण पत्र वापस लिया जाएगा / निरस्त किया जाएगा।

This certificate will liable to be withdrawn / cancelled in the event of furnishing the wrong information / documents in the Mining Plan submitted by him.

स्थान/ Place : Chennai
दिनांक/ Date : 16.12.2014.

Signature
क्षेत्रीय खाननियंत्रक / Regional Controller of Mines
भारतीय खानब्यूरो/ Indian Bureau of Mines
चेन्नई क्षेत्र / Chennai Region

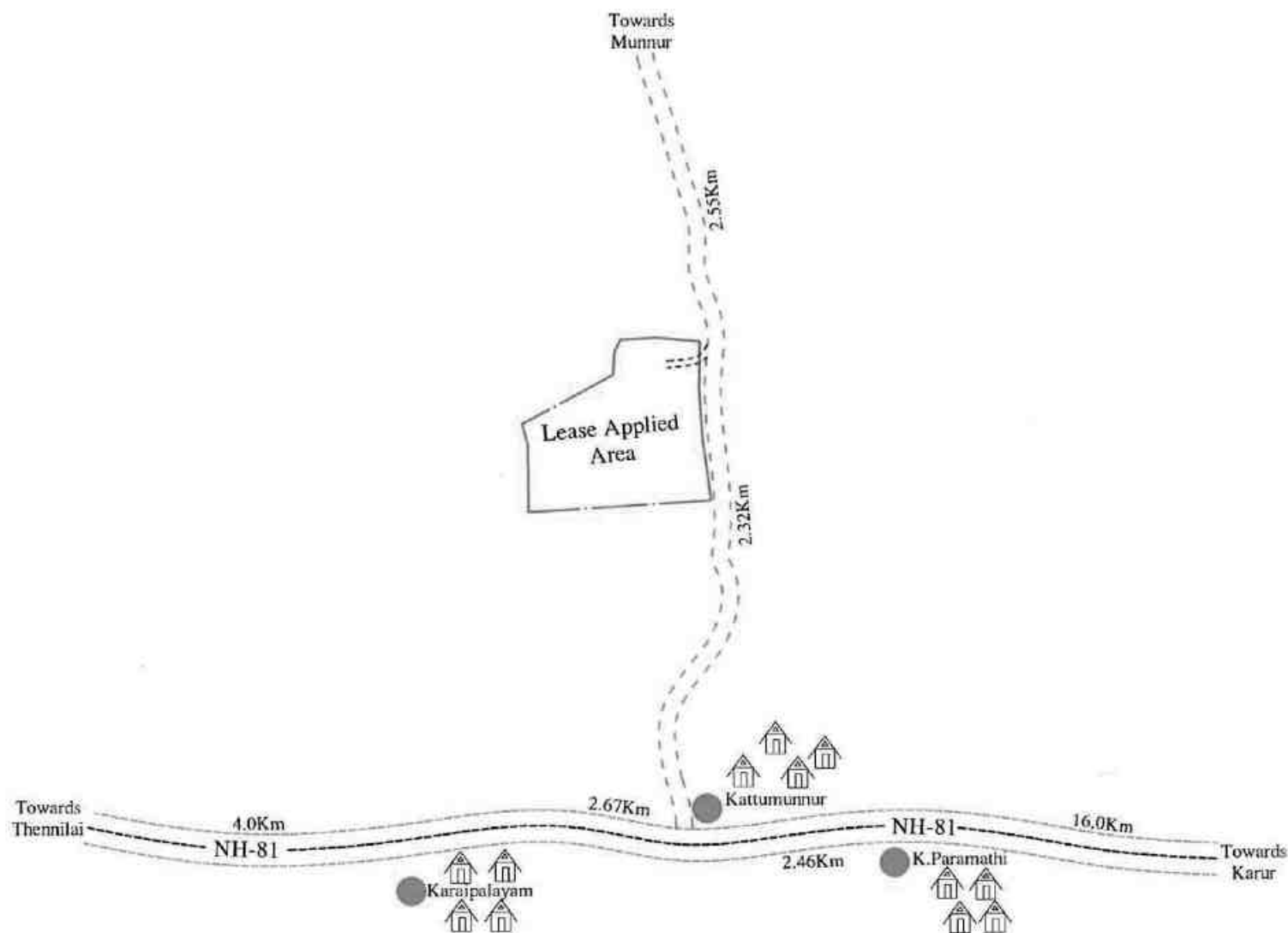


PLATE No-I

APPLICANT:

M/s. TERU MURUGAN BLUE METAL,
SURVEY No.506,
KATTU MUNNUR,
ARAVAKURICHI TALUK,
KARUR DISTRICT - 639111.

LEASE APPLIED AREA:

S.F.No : 134 & 135/1
EXTENT : 6.83.5Hect
VILLAGE : THENNILAI EAST
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

MINE LEASE AREA	
APPROACH ROAD	
CART ROAD	
VILLAGE ROAD	
NH - 4 ROAD	
HABITATION	

KEY MAP

Not to Scale கருவியற்றா

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
 BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

10°59'7.87"N

77°53'1.51"E

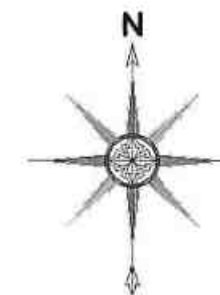
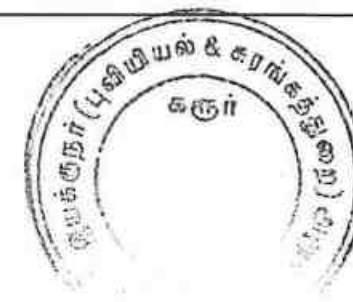


PLATE No-IA

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
SURVEY No.506,
KATTU MUNNUR,
ARAVAKURICHI TALUK,
KARUR DISTRICT - 639111.

LEASE APPLIED AREA:
S.F.No : 134 & 135/1
EXTENT : 6.83.5Hect
VILLAGE : THENNILAI EAST
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

MINE LEASE AREA : ●
TOPO SHEET No : 58-F/13
LATITUDE : 10°58'58.42"N to 10°59'7.87"N
LONGITUDE : 77°53'1.51"E to 77°53'11.81"E

LOCATION PLAN NOT TO SCALE

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

[Signature]

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
SURVEY No.506,
KATTU MUNNUR,
ARAVAKURICHI TALUK,
KARUR DISTRICT - 639111.

LEASE APPLIED AREA:
S.F.No : 134 & 135/1
EXTENT : 6.83.5Hect
VILLAGE : THENNILAI EAST
TALUK : PUGALUR
DISTRICT : KARUR

LATITUDE : 10°58'58.42"N to 10°59'7.87"N

LONGITUDE : 77°53'1.51"E to 77°53'11.81"E

5

[illegible]

SCALE- 1:1,00,000

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

TO THE BEST OF MY KNOWLEDGE

Anthony

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

Towards
Munnur

10°59'7.87"N

Towards
Munnur

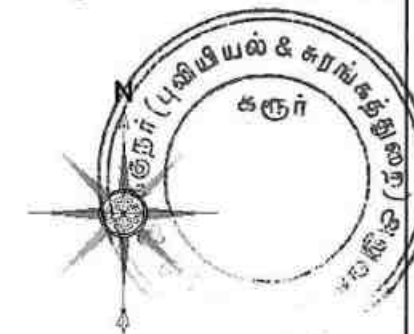


PLATE No-IC

APPLICANT:

M/s. TERU MURUGAN BLUE METAL,
SURVEY No.506,
KATTU MUNNUR,
ARAVAKURICHI TALUK,
KARUR DISTRICT - 639111.

LEASE APPLIED AREA:

S.F.No : 134 & 135/1
EXTENT : 6.83.5Hect
VILLAGE : THENNILAI EAST
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

MINE LEASE AREA	
APPROACH ROAD	
CART ROAD	
VILLAGE ROAD	
100m RADIUS	
200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
EXISTING PIT	

TOPO SHEET No : 58-F/13

LATITUDE : 10°58'58.42"N to 10°59'7.87"N

LONGITUDE : 77°53'1.51"E to 77°53'11.81"E

SATELITE IMAGERY MAP

SCALE - 1:5000

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

77°53'1.51"E

Towards
Karaipalayam

Towards
Kattumunnur

Towards
Saminathapuram

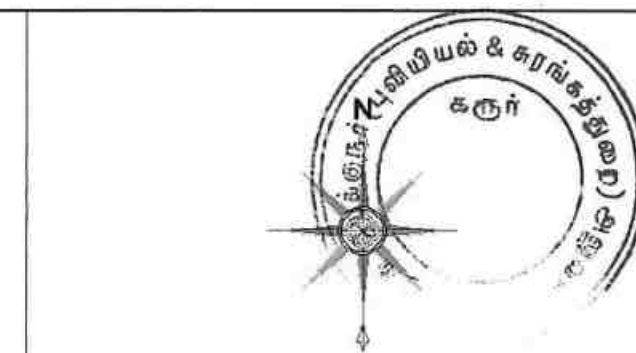


PLATE No-ID

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
 SURVEY No.506,
 KATTU MUNNUR,
 ARAVAKURICHI TALUK,
 KARUR DISTRICT - 639111.

LEASE APPLIED AREA:
 S.F.No : 134 & 135/1
 EXTENT : 6.83.5Hect
 VILLAGE : THENNILAI EAST
 TALUK : PUGALUR
 DISTRICT : KARUR

INDEX

MINE LEASE AREA	
APPROACH ROAD	
CART ROAD	
VILLAGE ROAD	
100m RADIUS	
200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
EXISTING PIT	
SHRUBS & TREES	

TOPO SHEET No : 58-F/13

LATITUDE : 10°58'58.42"N to 10°59'7.87"N

LONGITUDE : 77°53'1.51"E to 77°53'11.81"E

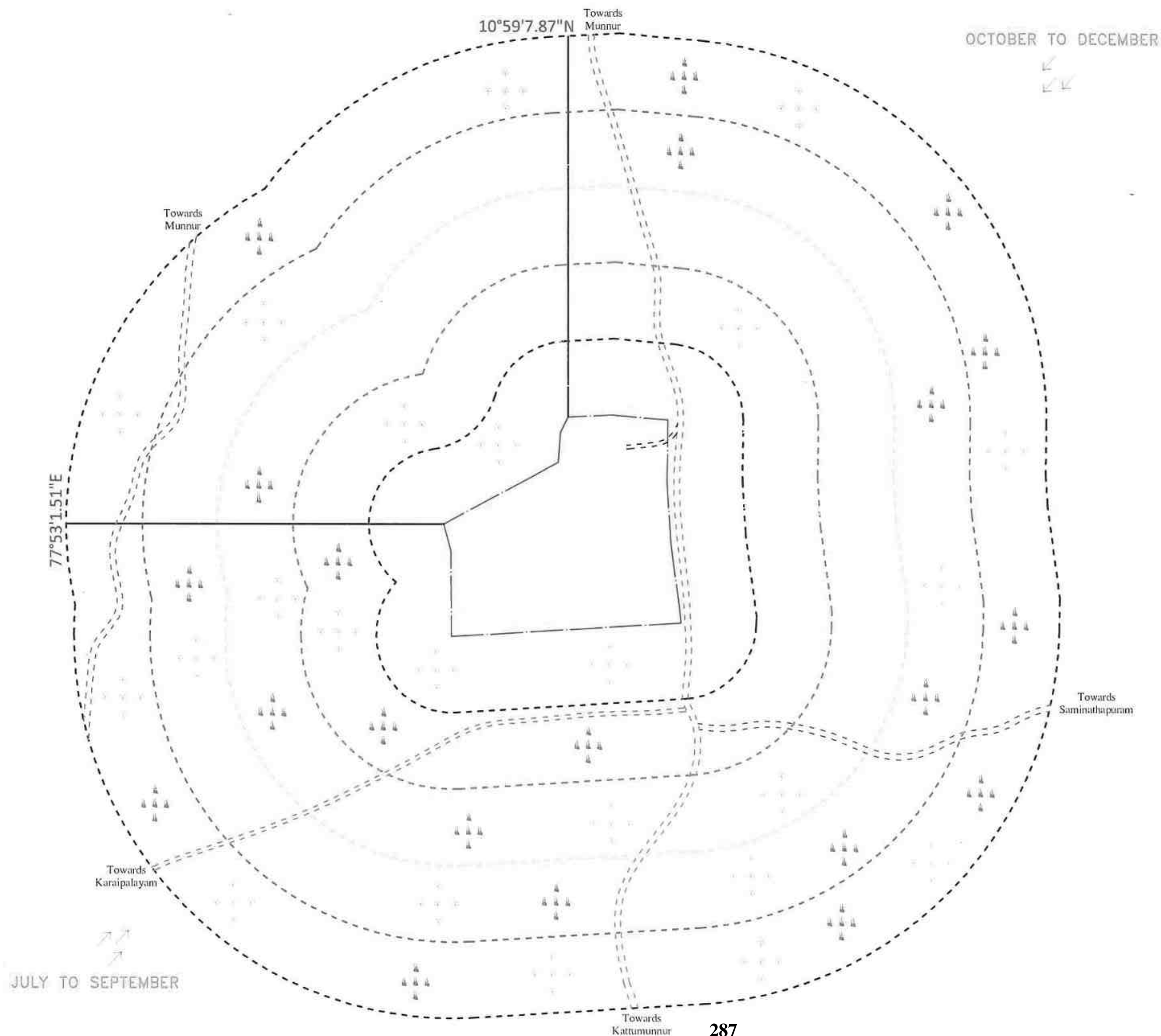
ENVIRONMENTAL PLAN
 SCALE- 1:5000

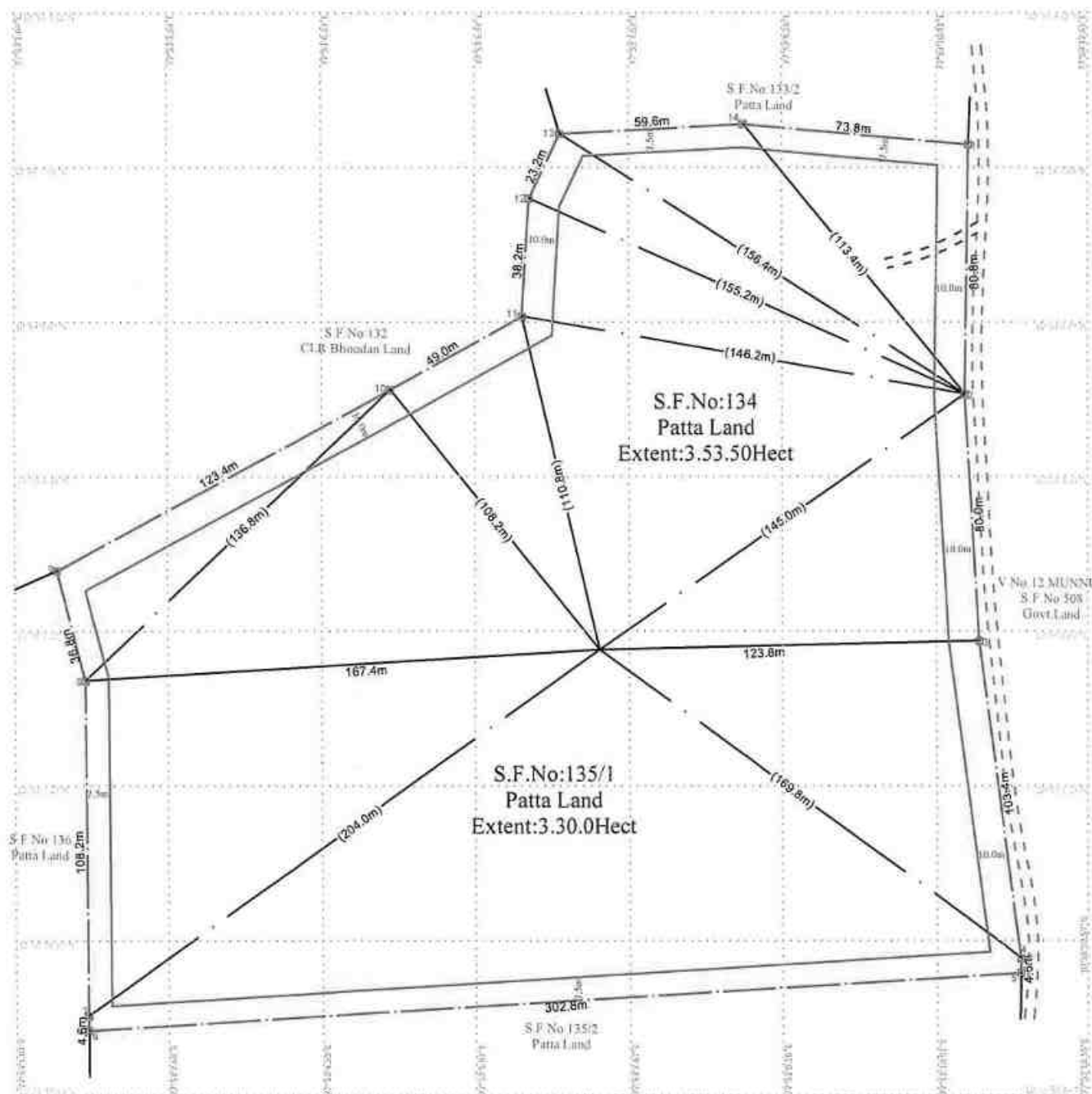
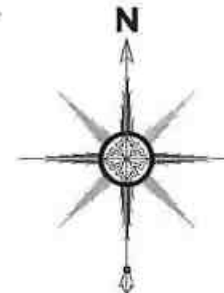
Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
 BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

(Signature)

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A





PILLAR ID	LATITUDE	LONGITUDE
1	10°59'7.64"N	77°53'11.32"E
2	10°59'5.01"N	77°53'11.26"E
3	10°59'2.41"N	77°53'11.39"E
4	10°58'59.07"N	77°53'11.81"E
5	10°58'58.93"N	77°53'11.80"E
6	10°58'58.42"N	77°53'1.80"E
7	10°58'58.57"N	77°53'1.80"E
8	10°59'2.09"N	77°53'1.81"E
9	10°59'3.25"N	77°53'1.51"E
10	10°59'5.12"N	77°53'5.11"E
11	10°59'5.87"N	77°53'6.53"E
12	10°59'7.11"N	77°53'6.61"E
13	10°59'7.79"N	77°53'6.95"E
14	10°59'7.87"N	77°53'8.91"E

PLATE No- II

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
 SURVEY No.506,
 KATTU MUNNUR,
 ARAVAKURICHI TALUK,
 KARUR DISTRICT - 639111.

LEASE APPLIED AREA:
 S.F.No : 134 & 135/1
 EXTENT : 6.83.5Hect
 VILLAGE : THENNILAI EAST
 TALUK : PUGALUR
 DISTRICT : KARUR

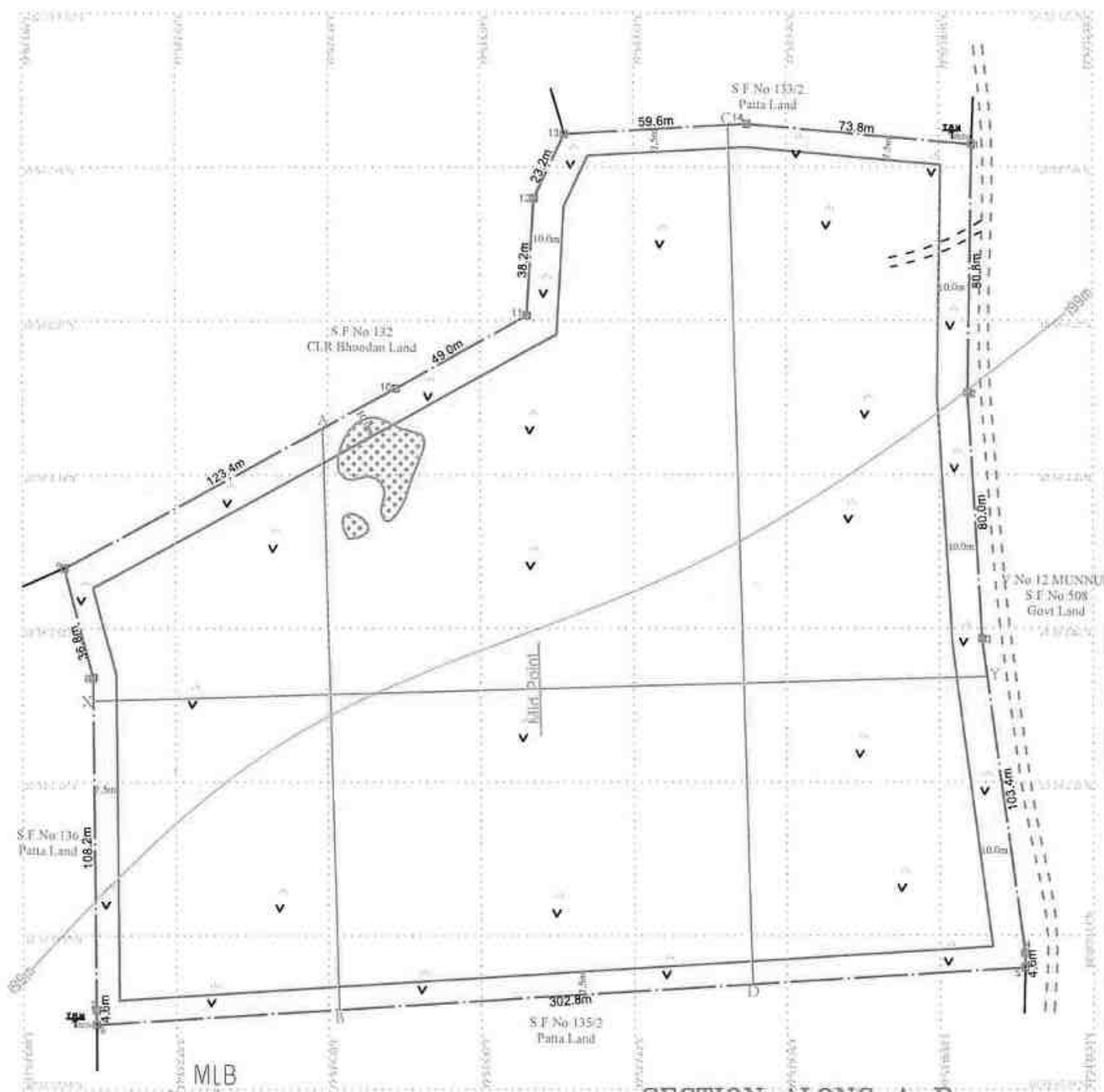
INDEX

- MINE LEASE BOUNDARY ☐
- SAFETY DISTANCE ☐
- APPROACH ROAD ☐
- CART ROAD ☐
- BOUNDARY PILLAR STONES ☐ 1 ☐ 2

MINE LEASE PLAN
 SCALE 1 : 2000

Prepared By:
 I DO HEREBY CERTIFY THAT THE PLATE HAS
 BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A



GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Rough Stone in M ³	Gravel in M ³
XY-AB	I	146	189	2	55188	.....	55188
	II	146	189	6	165564	165564	.....
	III	146	189	6	165564	165564	.....
	IV	146	189	6	165564	165564	.....
	V	146	189	6	165564	165564	.....
	VI	146	189	6	165564	165564	.....
	VII	146	189	6	165564	165564	.....
	VIII	146	189	6	165564	165564	.....
	IX	146	189	6	165564	165564	.....
TOTAL					1379700	1324512	55188
XY-CD	I	146	279	2	81468	.....	81468
	II	146	279	6	244404	244404	.....
	III	146	279	6	244404	244404	.....
	IV	146	279	6	244404	244404	.....
	V	146	279	6	244404	244404	.....
	VI	146	279	6	244404	244404	.....
	VII	146	279	6	244404	244404	.....
	VIII	146	279	6	244404	244404	.....
	IX	146	279	6	244404	244404	.....
TOTAL					2036700	1955232	81468
GRAND TOTAL					3416400	3279744	136656

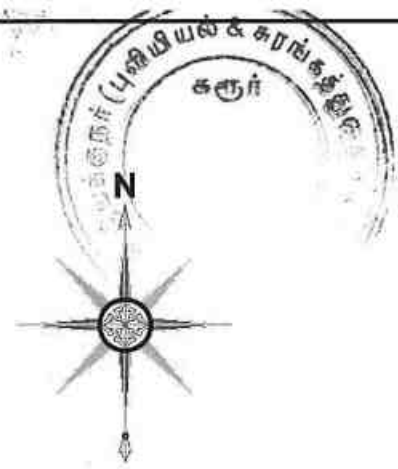
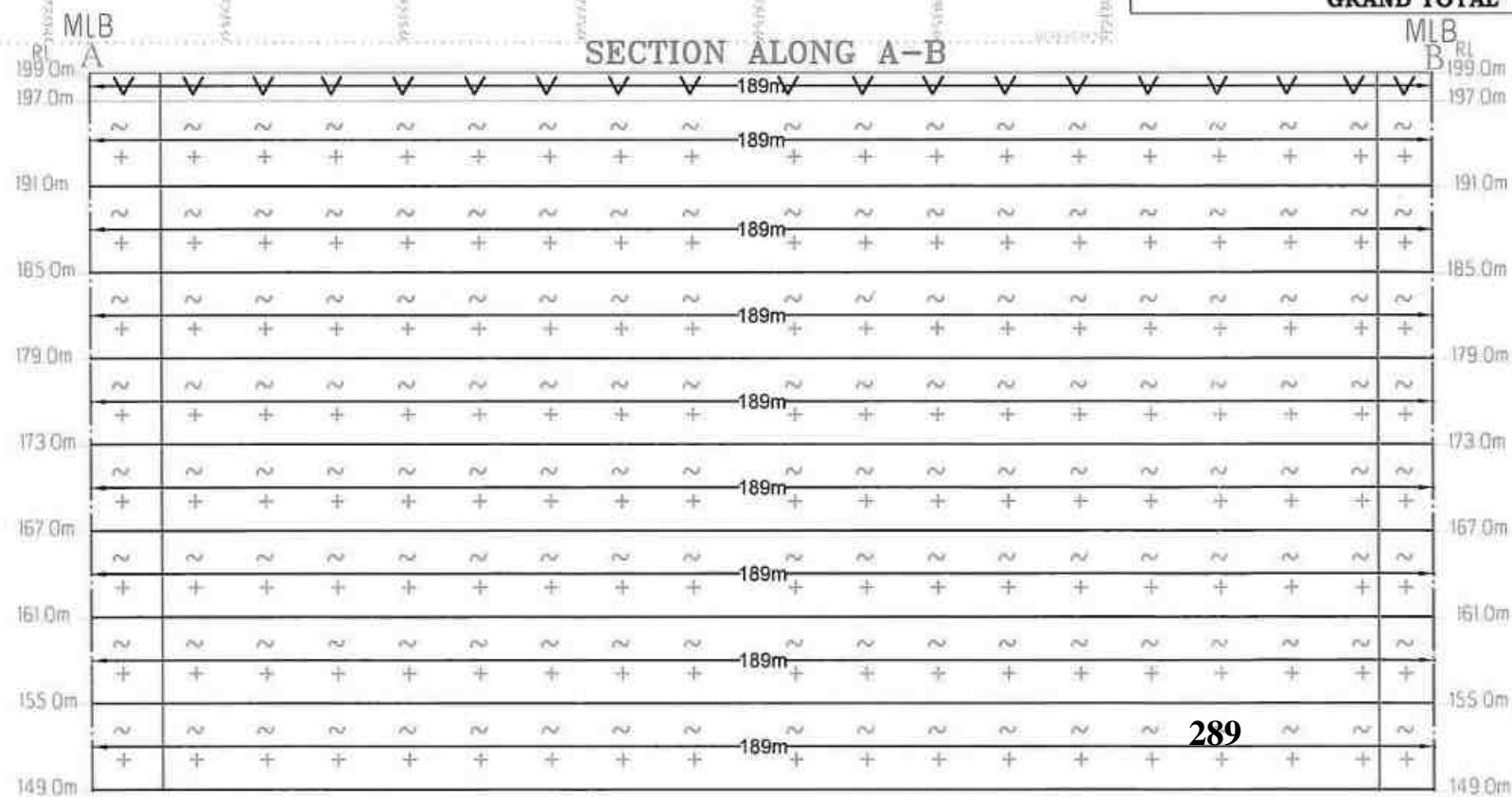


PLATE No- III

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
SURVEY No.506,
KATTU MUNNUR,
ARAVAKURICHI TALUK,
KARUR DISTRICT - 639111.

LEASE APPLIED AREA:
S.F.No : 134 & 135/1
EXTENT : 6.83.5Hect
VILLAGE : THENNILAI EAST
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

MINE LEASE BOUNDARY	=====
SAFETY DISTANCE	=====
APPROACH ROAD	-----
CART ROAD	-----
BOUNDARY PILLAR STONES	□1 □2
GRAVEL	V V V
SHRUBS	~ ~ ~
CONTOUR LINES	199m
TEMPORARY BENCH MARK	T.B.M.
OUT CROP	.....

SURFACE, GEOLOGICAL PLAN & SECTION

SCALE 1: 2000

SCALE - HOR 1 : 1000 & VER 1: 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

[Signature]

Dr.S.KARUPPANNAN, M.Sc., Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

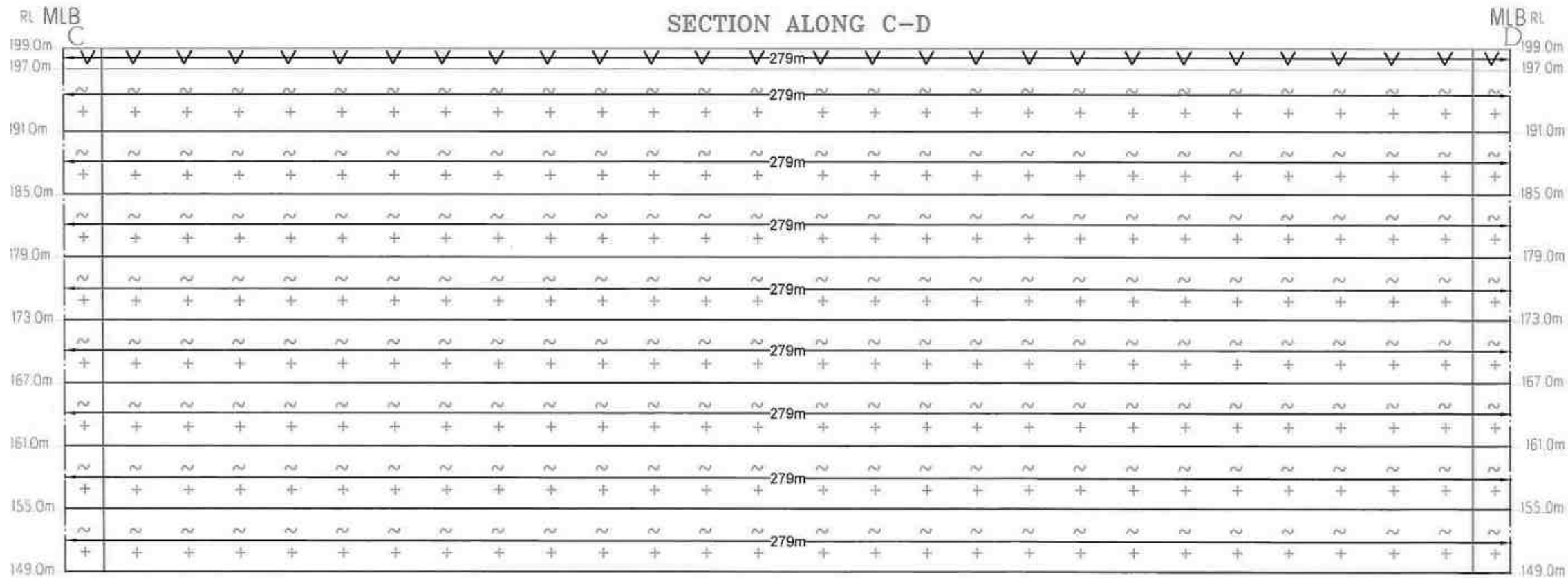
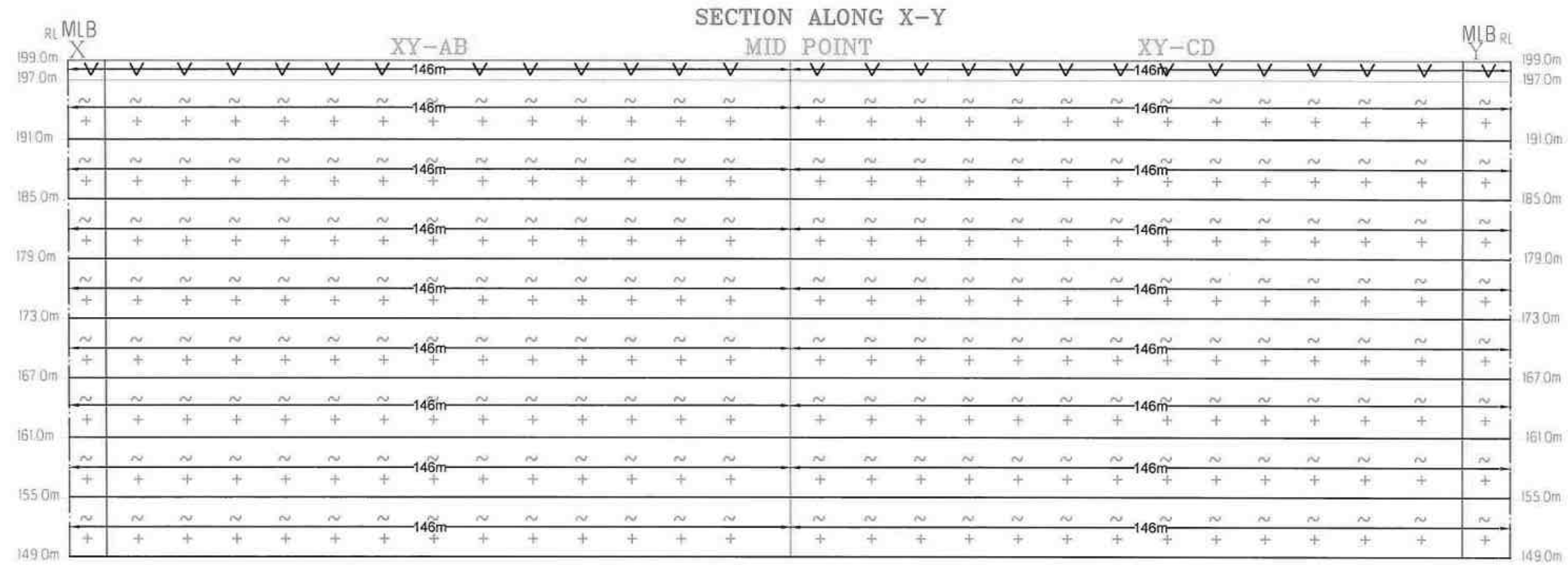


PLATE No- IIIA

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
 SURVEY No.506,
 KATTU MUNNUR,
 ARAVAKURICHI TALUK,
 KARUR DISTRICT - 639111.

LEASE APPLIED AREA:
 S.F.No : 134 & 135/1
 EXTENT : 6.83.5Hect
 VILLAGE : THENNILAI EAST
 TALUK : PUGALUR
 DISTRICT : KARUR

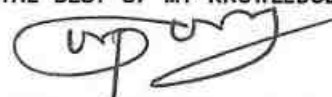
INDEX

MINE LEASE BOUNDARY 
 SAFETY DISTANCE 
 GRAVEL 
 ROUGH STONE 

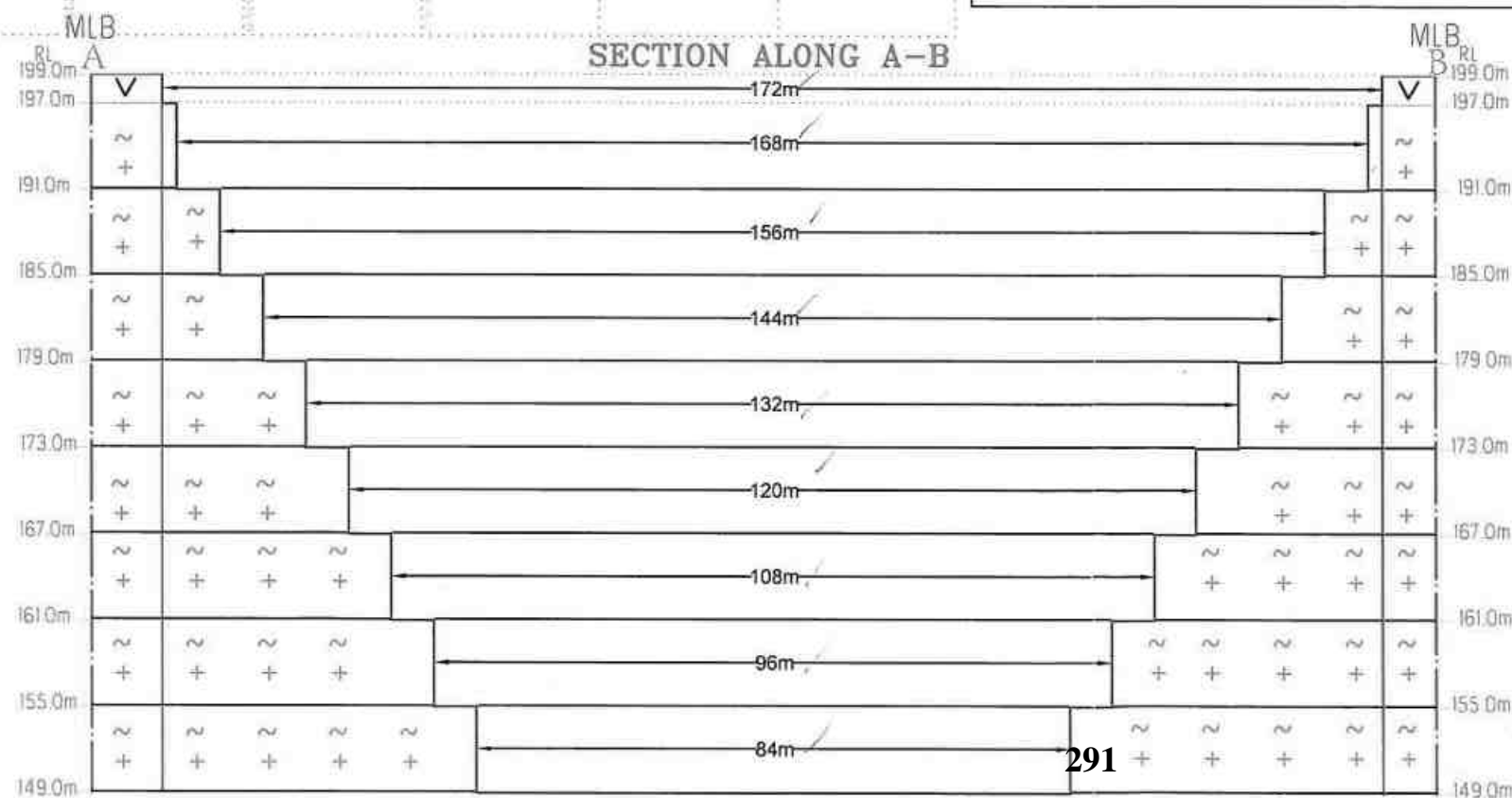
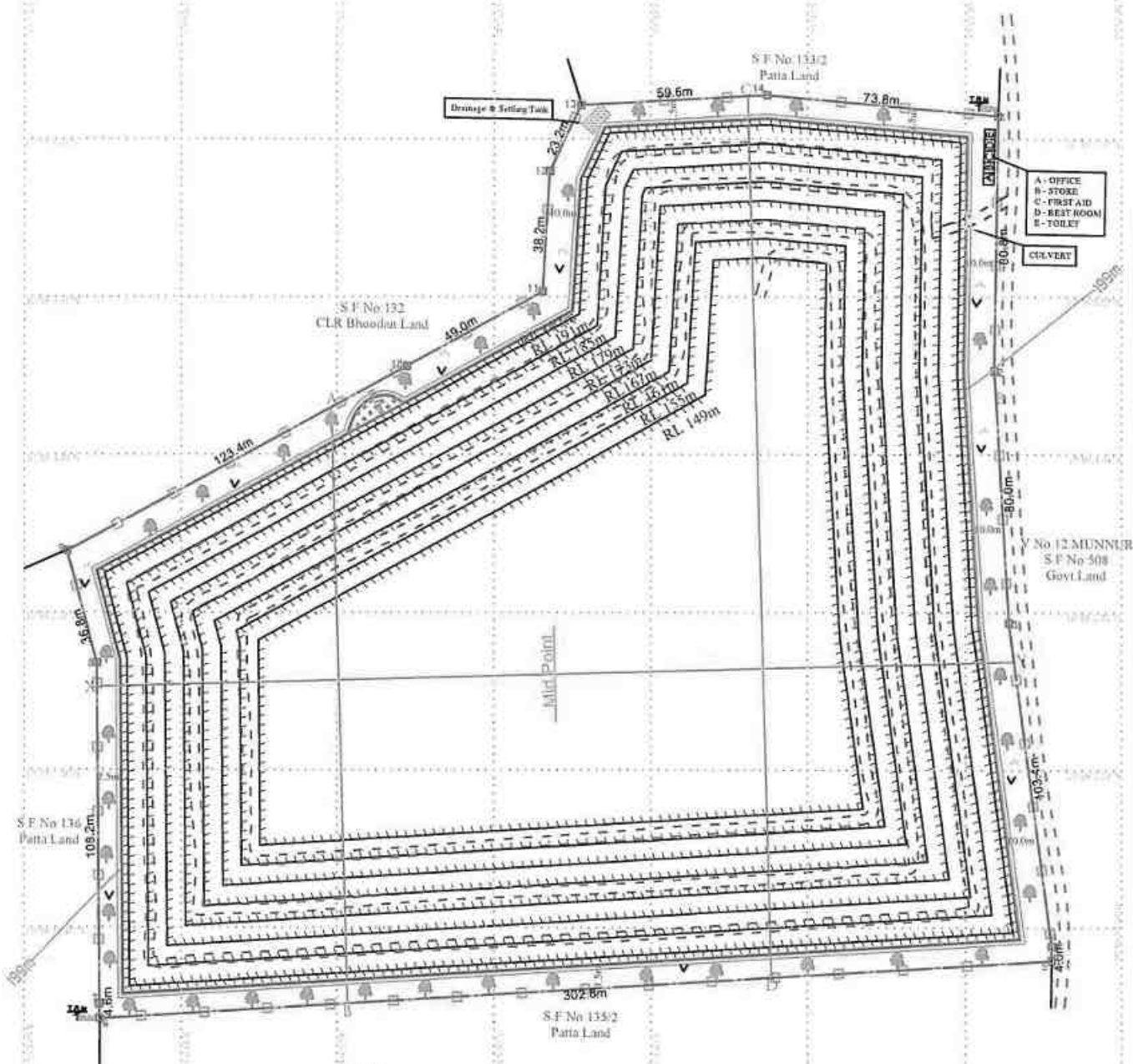
GEOLOGICAL SECTIONS
 SCALE - HOR 1 : 1000 & VER 1: 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
 BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE



Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A



MINEABLE RESERVES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Rough Stone in M ³	Gravel in M ³
XY-AB	I	138	172	2	47472	.....	47472
	II	136	168	6	137088	137088	.....
	III	130	156	6	121680	121680	.....
	IV	124	144	6	107136	107136	.....
	V	118	132	6	93456	93456	.....
	VI	112	120	6	80640	80640	.....
	VII	106	108	6	68688	68688	.....
	VIII	100	96	6	57600	57600	.....
	IX	94	84	6	47376	47376	.....
TOTAL					761136	713664	47472
XY-CD	I	136	264	2	71808	.....	71808
	II	134	260	6	209040	209040	.....
	III	128	248	6	190464	190464	.....
	IV	122	236	6	172752	172752	.....
	V	116	224	6	155904	155904	.....
	VI	110	212	6	139920	139920	.....
	VII	104	200	6	124800	124800	.....
	VIII	98	188	6	110544	110544	.....
	IX	92	176	6	97152	97152	.....
TOTAL					1272384	1200576	71808
GRAND TOTAL					2033520	1914240	119280

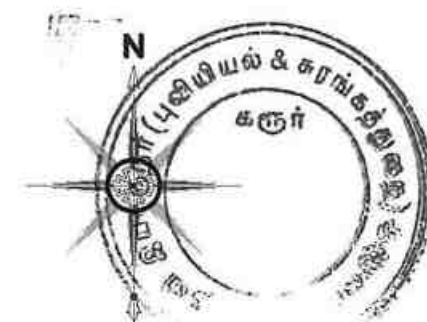


PLATE No- IV

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
 SURVEY No.506,
 KATTU MUNNUR,
 ARAVAKURICHI TALUK,
 KARUR DISTRICT - 639111.

LEASE APPLIED AREA:
 S.F.No : 134 & 135/1
 EXTENT : 6.83.5Hect
 VILLAGE : THENNILAI EAST
 TALUK : PUGALUR
 DISTRICT : KARUR

INDEX

MINE LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH & MINE HAUL ROAD	
CART ROAD	
BOUNDARY PILLAR STONES	
GRAVEL	
SHRUBS	
CONTOUR LINES	
TEMPORARY BENCH MARK	
ULTIMATE BENCH	
DRAINAGE & SETTLING TANK	
FENCING	
OUT CROP	

CONCEPTUAL PLAN & SECTION

SCALE 1: 2000

SCALE - HOR 1 : 1000 & VER 1: 500

Prepared By:

I DO HEREBY CERTIFY THAT THE PLATE HAS
 BEEN CHECKED BY ME AND IS CORRECT
 TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A

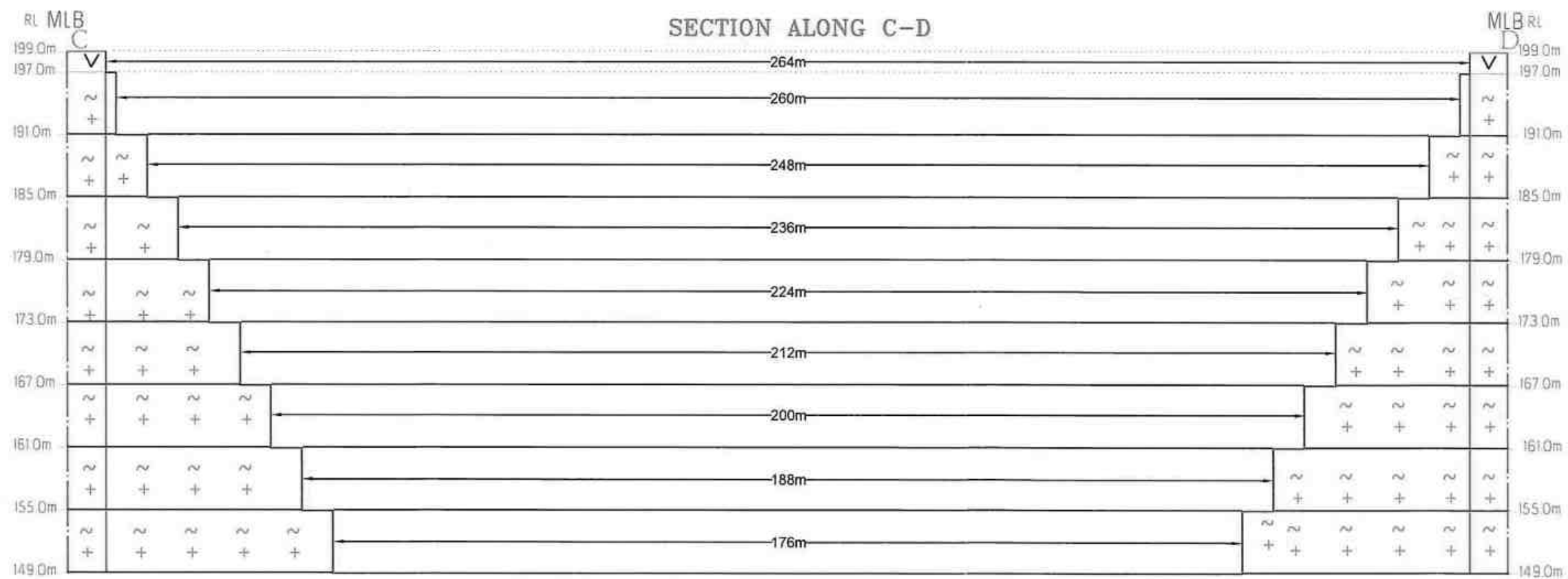
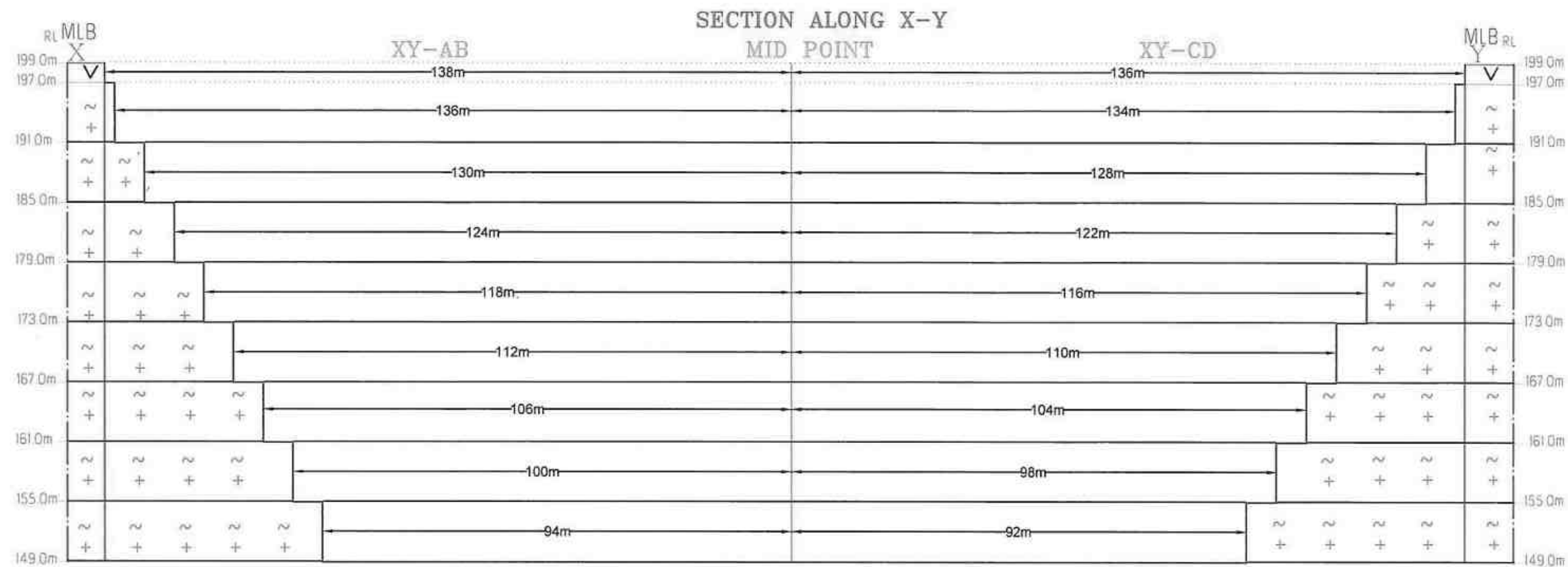


PLATE No- IVA

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
SURVEY No.506,
KATTU MUNNUR,
ARAVAKURICHI TALUK,
KARUR DISTRICT - 639111.

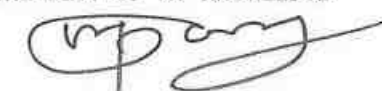
LEASE APPLIED AREA:
S.F.No : 134 & 135/1
EXTENT : 6.83.5Hect
VILLAGE : THENNILAI EAST
TALUK : PUGALUR
DISTRICT : KARUR

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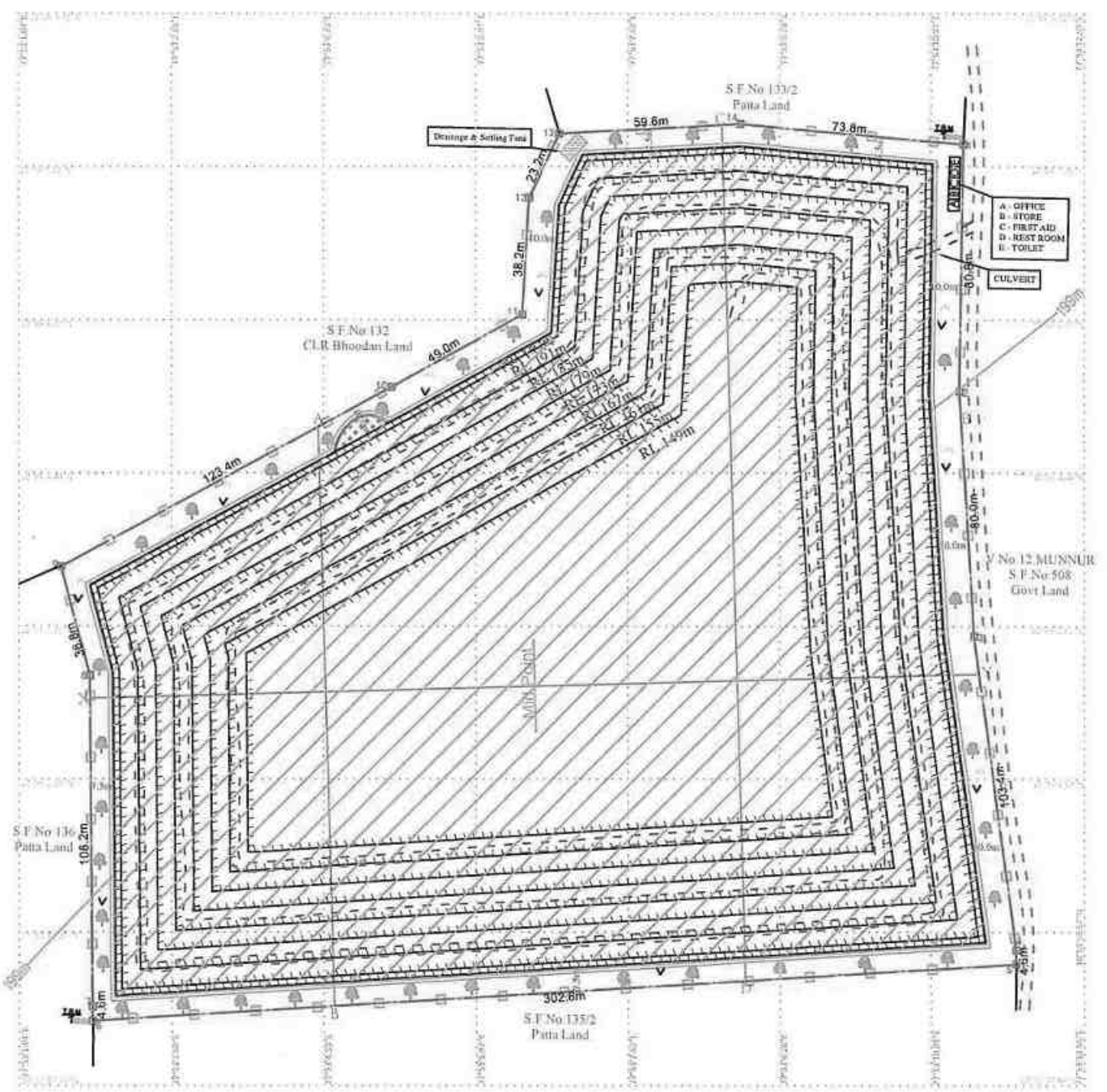
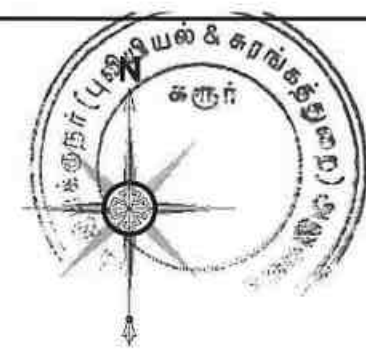
MINE LEASE BOUNDARY 
SAFETY DISTANCE 
GRAVEL 
ROUGH STONE 
ULTIMATE BENCH 

CONCEPTUAL SECTIONS
SCALE - HOR 1 : 1000 & VER 1 : 500

Prepared By:
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BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE



Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A



Plantation Proposed for I-Year

MINE LAYOUT LAND USE PATTERN

DESCRIPTION	PRESENT AREA (Hect)	AREA IN USE DURING THE QUARRYING PERIOD(Hect)	COLOR CODE
AREA UNDER QUARRYING	NIL	5.89.00	
INFRASTRUCTURE	NIL	0.02.0	
ROADS	NIL	0.05.0	
UN-UTILIZED AREA	6.83.5	NIL	
GREEN BELT	NIL	0.76.79	
DRAINAGE & SETTLING TANK	NIL	0.10.71	
GRAND TOTAL	6.83.5	6.83.5	

PLATE No- V

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
 SURVEY No.506,
 KATTU MUNNUR,
 ARAVAKURICHI TALUK,
 KARUR DISTRICT - 639111.

LEASE APPLIED AREA:
 S.F.No : 134 & 135/1
 EXTENT : 6.83.5Hect
 VILLAGE : THENNILAI EAST
 TALUK : PUGALUR
 DISTRICT : KARUR

INDEX

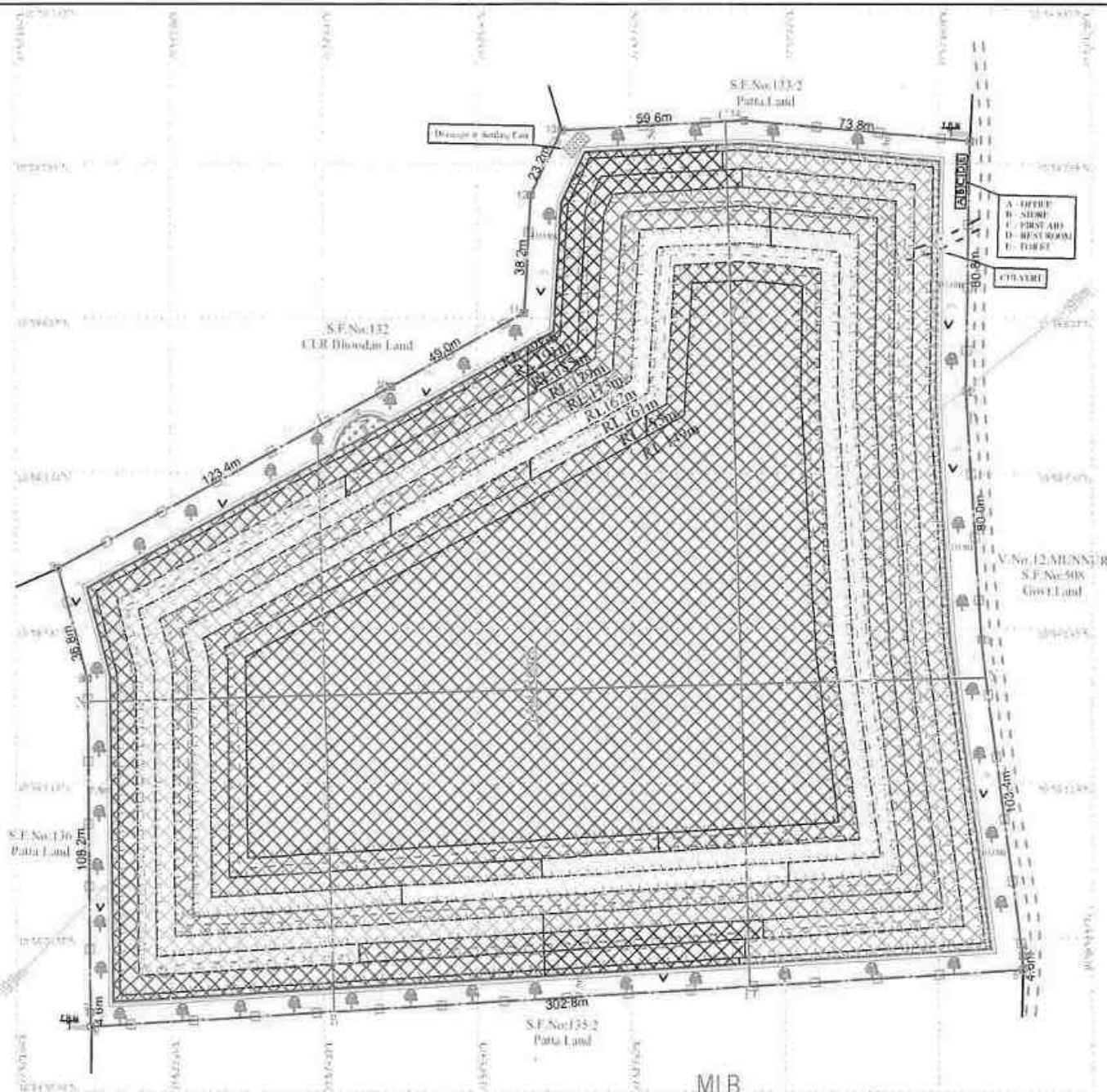
MINE LEASE BOUNDARY	
SAFETY DISTANCE	
APPROACH & MINE HAUL ROAD	
CART ROAD	
BOUNDARY PILLAR STONES	
GRAVEL	
SHRUBS	
CONTOUR LINES	
TEMPORARY BENCH MARK	
PROPOSED BENCH	
DRAINAGE & SETTLING TANK	
FENCING	
OUT CROP	

MINE LAYOUT PLAN & LAND USE PATTERN
 SCALE 1 : 2000

Prepared By:
 I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

(Signature)

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
 RECOGNIZED QUALIFIED PERSON
 RQP/MAS/263/2014/A



Plantation Proposed for I-Year

- I - Year Proposed area to be Quarried
- II - Year Proposed area to be Quarried
- III - Year Proposed area to be Quarried
- IV - Year Proposed area to be Quarried
- V - Year Proposed area to be Quarried
- VI - Year Proposed area to be Quarried
- VII - Year Proposed area to be Quarried
- VIII - Year Proposed area to be Quarried
- IX - Year Proposed area to be Quarried
- X - Year Proposed area to be Quarried

YEARWISE PRODUCTION FOR FIRST FIVE YEARS RESERVES								
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Rough Stone in M ³	Gravel in M ³
I-YEAR	XY-CD	I	73	264	2	38544	.....	38544
		II	69	260	6	107640	107640	.....
		III	57	248	6	84816	84816	.....
TOTAL						231000	192456	38544
II-YEAR	XY-CD	I	63	264	2	33264	.....	33264
		II	65	260	6	101400	101400	.....
		III	71	248	6	105648	105648	.....
TOTAL						240312	207048	33264
III-YEAR	XY-AB	I	138	172	2	47472	.....	47472
		II	136	168	6	137088	137088	.....
		III	60	156	6	56160	56160	.....
TOTAL						240720	193248	47472
IV-YEAR	XY-AB	III	70	156	6	65520	65520	.....
		IV	124	144	6	107136	107136	.....
TOTAL						172656	172656	0
V-YEAR	XY-CD	IV	122	236	6	172752	172752	.....
		V	116	224	6	155904	155904	.....
	XY-AB	V	118	132	6	93456	93456	.....
TOTAL						422112	422112	0
GRAND TOTAL					26	1306800	1187520	119280
YEARWISE PRODUCTION FOR NEXT FIVE YEARS RESERVES								
VI-YEAR	XY-AB	VI	90	120	6	64800	64800	.....
TOTAL						64800	64800	0
VII-YEAR	XY-AB	VI	22	120	6	15840	15840	.....
	XY-CD	VI	80	212	6	101760	101760	.....
TOTAL						117600	117600	0
VIII-YEAR	XY-CD	VI	30	212	6	38160	38160	.....
		VII	104	200	6	124800	124800	.....
TOTAL						162960	162960	0
IX-YEAR	XY-AB	VII	106	108	6	68688	68688	.....
		VIII	100	96	6	57600	57600	.....
	XY-CD	VIII	38	188	6	42864	42864	.....
TOTAL						169152	169152	0
X-YEAR	XY-CD	VIII	60	188	6	67680	67680	.....
		IX	92	176	6	97152	97152	.....
	XY-AB	IX	94	84	6	47376	47376	.....
TOTAL						212208	212208	0
GRAND TOTAL					24	726720	726720	0

SECTION ALONG A-B

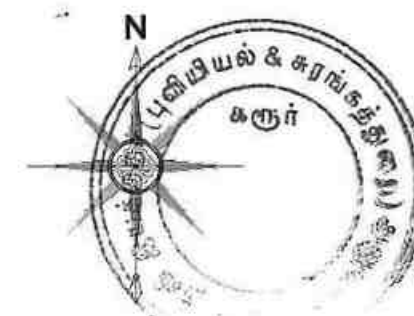
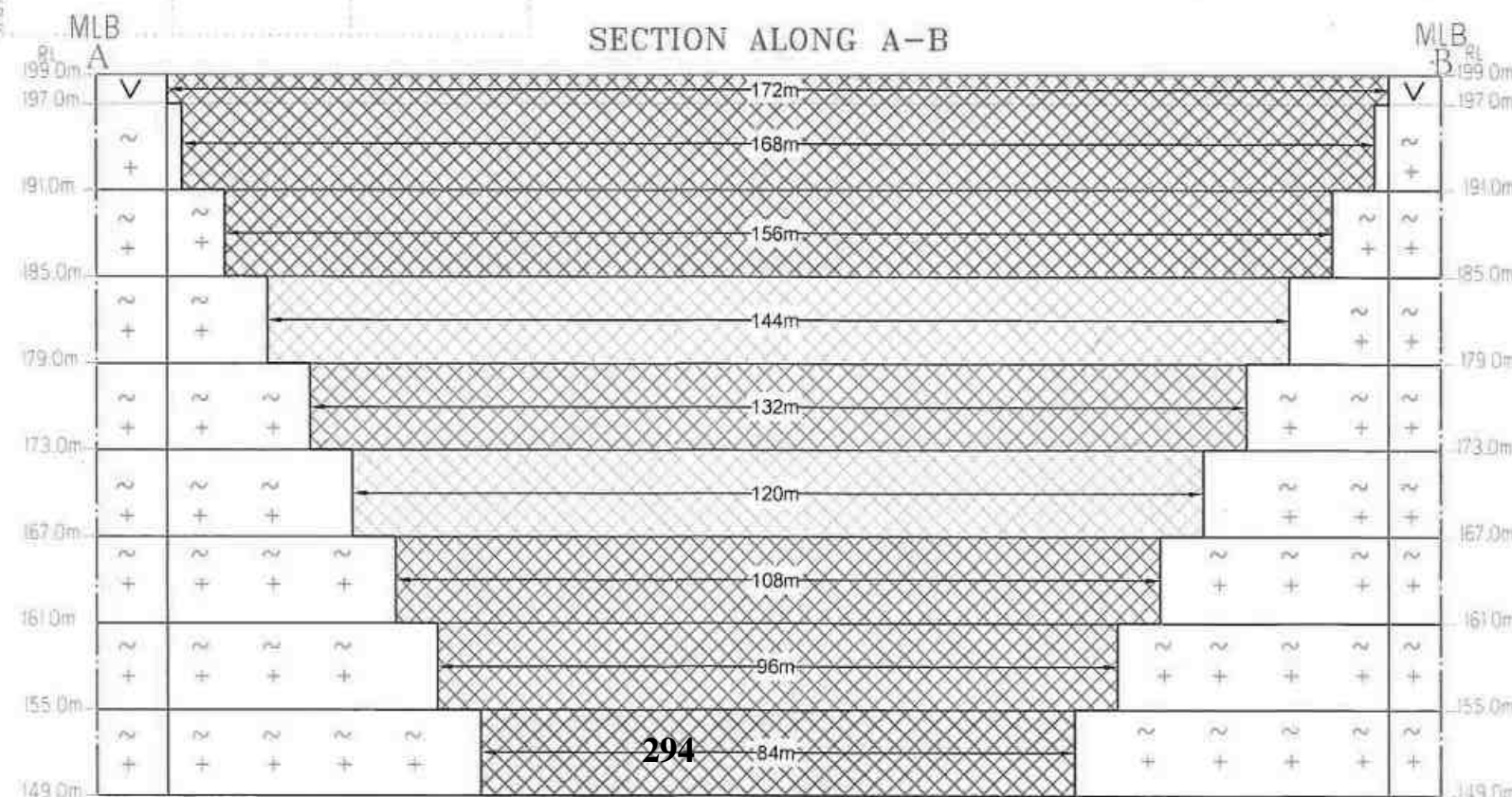


PLATE No- VI

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
SURVEY No.506,
KATTU MUNNUR,
ARAVAKURICHI TALUK,
KARUR DISTRICT - 639111.

LEASE APPLIED AREA:
S.F.No : 134 & 135/I
EXTENT : 6.83.5Hect
VILLAGE : THENNILAIEAST
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

MINE LEASE BOUNDARY	---
SAFETY DISTANCE	---
APPROACH & MINE HAUL ROAD	---
CART ROAD	---
BOUNDARY PILLAR STONES	□1□2
GRAVEL	V V V
SHRUBS	~ ~ ~
CONTOUR LINES	132m
TEMPORARY BENCH MARK	TBM
ULTIMATE BENCH	|||||
DRAINAGE & SETTLING TANK	|||||
FENCING	---
OUT CROP	....

YEARWISE DEVELOPMENT,
PRODUCTION PLAN & SECTION

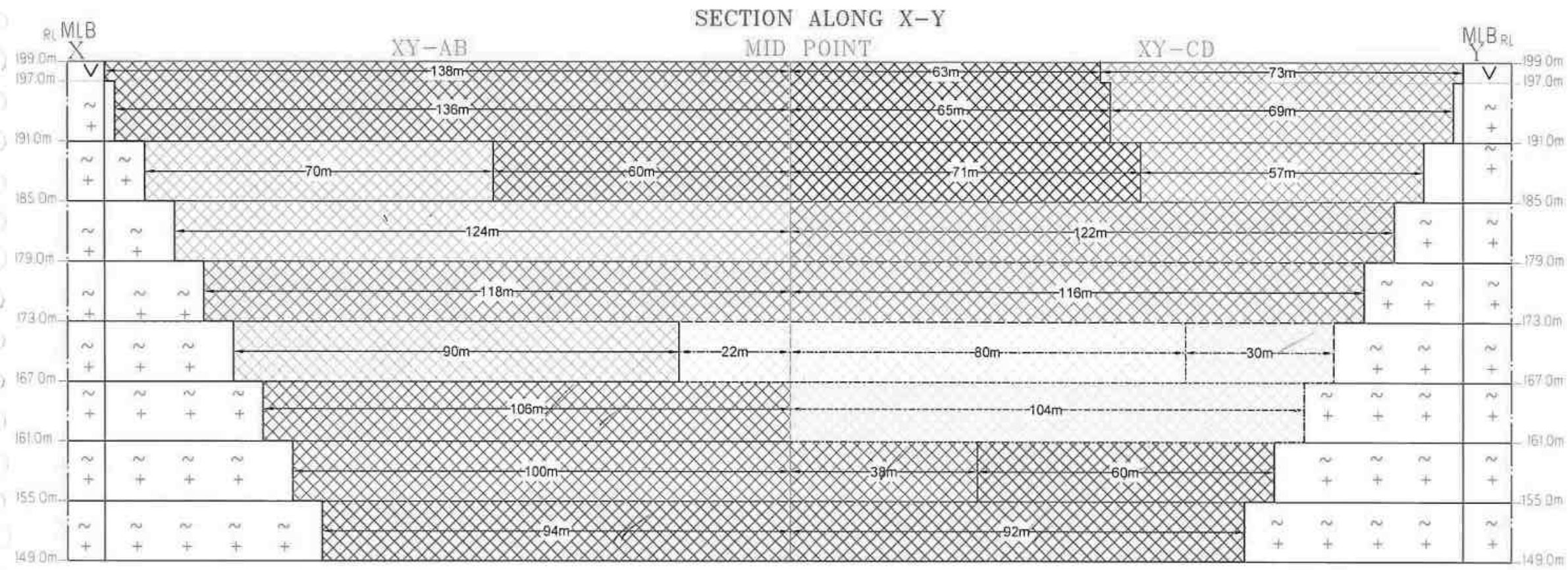
SCALE 1: 2000
SCALE- HOR 1 : 1000 & VER 1: 500

Prepared By:

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BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE

[Signature]

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A



- I - Year Proposed area to be Quarried
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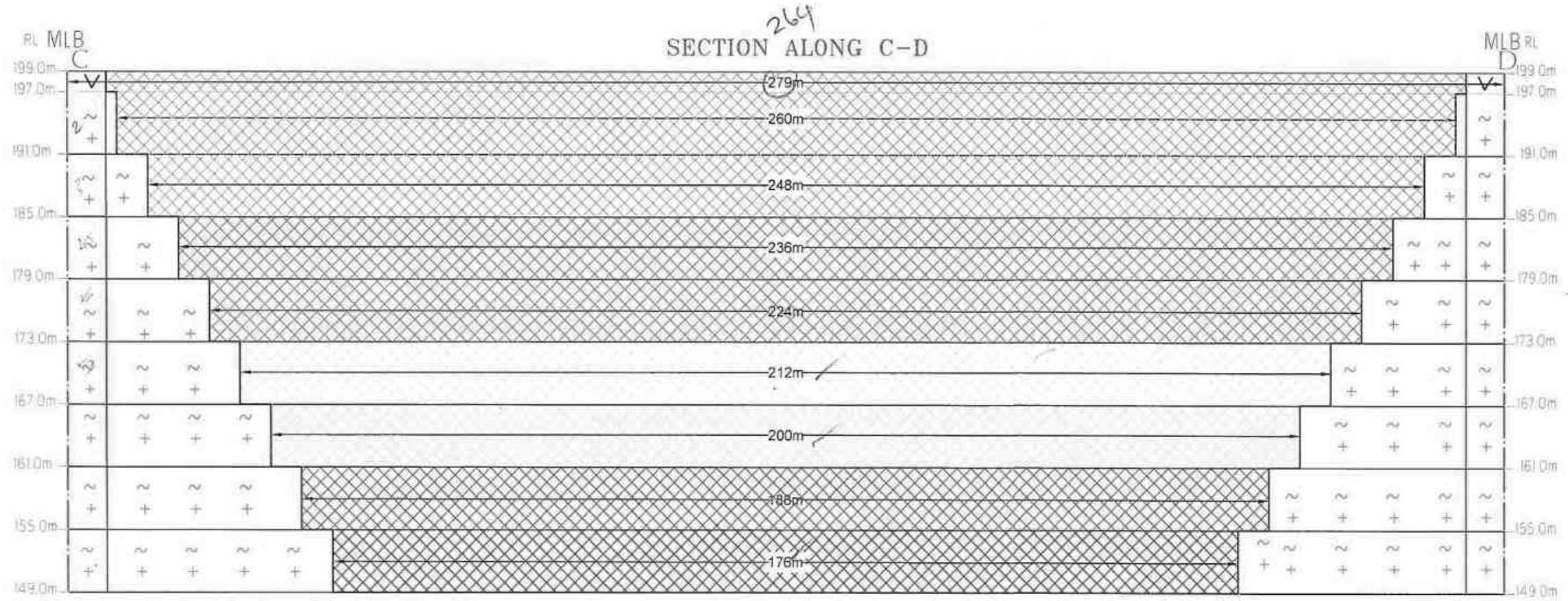


PLATE No- VIA

APPLICANT:
M/s. TERU MURUGAN BLUE METAL,
SURVEY No.506,
KATTU MUNNUR,
ARAVAKURICHI TALUK,
KARUR DISTRICT - 639111.

LEASE APPLIED AREA:
S.F.No : 134 & 135/I
EXTENT : 6.83.5Hect
VILLAGE : THENNILAI EAST
TALUK : PUGALUR
DISTRICT : KARUR

INDEX

- MINE LEASE BOUNDARY
- SAFETY DISTANCE
- GRAVEL
- ROUGH STONE
- ULTIMATE BENCH

**YEARWISE DEVELOPMENT &
PRODUCTION SECTIONS**
SCALE - HOR 1 : 1000 & VER 1 : 500

Prepared By:
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TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

Frühling

[illegible]

சிராமநிர்வாக அலுவலர்,
8, தென்னிலை கீழ்பாடம்,
புகளூர் வட்டம்.



National Accreditation Board for Education and Training

Certificate of Accreditation

Geo Technical Mining Solutions, Dharmapuri

5/1485-3, Salem Main Road, Elakkiyampatty, Dharmapuri, Tamil Nadu

*The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA/EMP reports in the following Sectors.*

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals - including opencast and underground mining	1	1 (a) (i)	A

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated January 24, 2024, 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/24/3142 dated Feb 19, 2024. The accreditation needs to be renewed before the expiry date by Geo Technical Mining Solutions, Dharmapuri following due process of assessment.

Issue Date
Feb 19, 2024

Valid up to
Dec 31, 2026



Mr. Ajay Kumar Jha
Sr. Director, NABET

Certificate No.
NABET/EIA/23-26/RA 0319

Prof (Dr) Varinder S Kanwar
(CEO NABET)