

**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 = 10.31.0 hectares

At

Panapatti Village, Kinathukkdavu Taluk,

Coimbatore District and Tamil Nadu

ToR letter No. Lr No. SEIAA-TN/F.No.10553/SEAC/ToR-1695/2024

Dated 13.05.2024

NAME AND ADDRESS OF THE PROPOSED PROJECT PROPONENT

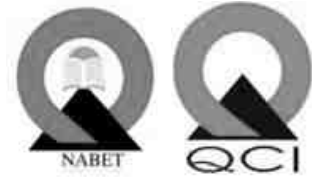
Name and Address	Extent & S.F.No.	Mineral Production in m³
Mr.M.Rajesh S/o.Mohandass, D.No.2/1, Doctor Kalaignar Street, Suleeswaranpatti, Coimbatore District- 642 006.	4.09.0Ha & 405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A	Rough Stone-346204 Gravel – 14976

ENVIRONMENTAL CONSULTANT

GEO TECHNICAL MINING SOLUTIONS



No: 1/213-B, Ground Floor, Natesan Complex
Oddapatti, Collectorate Post office,
Dharmapuri-636705. Tamil Nadu.
E-mail: info.gtmsdpi@gmail.com,
Website: www.gtmsind.com



NABET ACC. NO: NABET/EIA/23-26/RA 0319

Valid till: Dec 31, 2026

ENVIRONMENTAL LAB

EXCELLENCE LABORATORY

No.23/93, 5th Street Ram Nagar, S.S.Colony,

Madurai, Tamil Nadu

NABL Certificate Number: TC-6932, Valid Until : 19.03.2024

Baseline Study Period – October 2023 through December 2023

TERMS OF REFERENCE (ToR) COMPLIANCE

ToR issued vide Lr No. SEIAA-TN/F.No.10553/SEAC/ToR-1695/2024 Dated:13.05.2024

for Mr.M.Rajesh Rough stone and Gravel Quarry

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	The details regarding DD (Mines) letter are attached in the Annexure IV.
	(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)	Non-Compliance/Violation in the quarry during the past working	
	(vii)	Quantity of material mined out outside the mine lease area (or) in the adjacent quarry/land.	
	(viii)	Existing condition of safety zone/benches	
	(ix)	Details of any penalties levied on the PP for any violation in the quarry operation.	
2	Since the existing depth of quarry has reached 30m, the PP shall submit the stability status of the existing quarry wall and slope stability action plan by carrying 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	The details regarding Slope Stability is submitted in the final EIA report.	

	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.	
3	The PP shall submit the copy of the official documents (such as permits) showing the quantity of gravel & rough stone quarried during the previous spells.	Permit obtained quantity of previous spell are 71172cbm of rough stone and 540cbm of gravel. The document is attached in the Annexure IV.
4	The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m, (iv) 300 m, (v) 500 m 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	The details regarding the structures within the given radius will be submitted during final EIA report.
5	The study on impact of the proposed quarrying operations on the surrounding environment which includes Canal, Vaikkal, Water bodies, Odai, etc.	The impact of the Water bodies is discussed in the Section 4.3 under Chapter II in the EIA report page 92.
6	The PP shall carry out the blast-induced ground & air-vibrations caused during the quarrying operation in any of the quarry situated in the cluster for designing the safe maximum charge per round (kg) and maximum number of holes to be blasted/round in a day keeping the surrounding sensitive structures in mind.	The details regarding blasting design is discussed in the Section 2.6 under Chapter II in the EIA report page.18-25.
7	The Project Proponent shall furnish the revised EMP based on the study carried out on impact of the dust & other environmental impacts due to proposed quarrying operations on the nearby agricultural lands for remaining life of the mine in the format	The revised EMP budget is discussed in the Table 10.1 & 10.2 under Chapter X in the EIA report page.128-133.

	prescribed by the SEAC considering the cluster situation	
9	<p>Subsequently, the subject was placed in the 693rd authority meeting held on 08.02.2024. The authority noted that the subject was appraised in the 4361h SEAC meeting held on 29.12.2023. SEAC has furnished its recommendations for granting Terms of Reference with Public Hearing subject to the conditions stated therein.</p> <p>The Authority, after detailed discussions decided to consider the proposal after obtaining the following particulars from the project proponent.</p>	
	(i) Original pit dimension of the existing quarry.	The details regarding DD (Mines) letter are attached in the Annexure IV.
	(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 carried out, if any	
	(vi) Non-compliance/Violation in the quarry during the past working	
	(vii) Quantity of material mined out outside the mine lease area (or) in the adjacent quarry/land.	
	(viii) Existing condition of Safety zone/benches.	
	(ix) Details of any penalties levied on the PP for any violation in the quarry operation.	
10	Now, the project proponent has furnished the existing quarry details obtained from Deputy Director, Dept. of Geology and Mining vide Jetter dated 14.03.2024. But the DD Mines has not replied to the (ix) point	There are no penalties levied on the PP for any violation in the quarry operation. The details regarding DD (Mines) letter are attached in the Annexure IV.

	(Details of any penalties levied on the PP for any violation in the quarry operation)	
11	The subject was placed in the 704111-authority meeting held on 18.03.2024. In view of the above, the authority has decided to refer back the proposal to SEAC for getting specific remarks on the pp· s reply along with recommendation.	The details regarding will be submitted in the final EIA report.
Now, this proposal was again placed in this 4601h meeting of SEAC held on 24.04.2024. The Project proponent has made a presentation along with clarification for the above shortcomings observed by the SEIAA.		
S.No	SEIAA Query	Reply
1	In case of the existing quarry/operating mines, the PP shall obtain a letter from the concerned AD (Mines) which shall stipulate the following information:	AD-Letter obtained vide letter dated 14.03.2024.
(i)	Original pit dimension of the existing quarry.	
(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 carried out, if any.	
(vi)	Non-Compliance/Violation in the quarry during the past working.	
(vii)	Quantity of material mined out outside the mine lease area (or) in the adjacent quarry/land.	

	(viii)	Existing condition of Safety zone/benches.	
	(ix)	Details of any penalties levied on the PP for any violation in the quarry operation	The lessee Thiru.M.Rajesh had submitted the Affidavit to Dept of Geology and Mining stating.
2		Now, the project proponent has furnished the existing quarry details obtained from Deputy Director, Dept of Geology and Mining vide letter dated 14.03.2024. But the DD Mines has not replied to the (ix) point (Details of any penalties levied on the PP for any violation in the quarry operation)	<ul style="list-style-type: none"> • No quarry license in my name in Tamil Nadu. • No quarry lease granted in my name independently or combined so far in Tamil Nādu. • Hence no dues or no penalties levied on. • The PP for any violation in the quarry operation.
ANNEXURE-I			
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	The details regarding DD (Mines) letter are attached in the Annexure IV.
	(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 the Annexure V.
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, (iv) 300 m, (v) 500 m 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 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 final EIA report.
4	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the water bodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III in the EIA report page 38-51.
5	The proponent shall carry out Bio diversity study through reputed institution and the same shall be included in EIA Report.	The biodiversity study report 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	The slope stability report will be submitted in the final EIA report.

	<p>(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.</p>	
8	<p>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.</p>	<p>The details of slope stability plan will be submitted in the final EIA report.</p>
9	<p>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.</p>	<p>The affidavit for blasting is attached inn the Annexure III.</p>
10	<p>The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle</p>	<p>A conceptual design of blasting has been given in Section 2.6 under Chapter II in the EIA report page 18-25.</p>

	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.	There is no quarry lease granted in my name independently or combined so far in Tamil Nādu.
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?	The details regarding DD Mines letter is attached in the Annexure IV.
14	Quantity of minerals mined out.	
	<ul style="list-style-type: none"> • Highest production achieved in any one year 	
	<ul style="list-style-type: none"> • Detail of approved depth of mining. 	
	<ul style="list-style-type: none"> • Actual depth of the mining achieved earlier. 	
	<ul style="list-style-type: none"> • Name of the person already mined in that lease area. 	
	<ul style="list-style-type: none"> • If EC and CTO already obtained, the copy of the same shall be submitted. 	
	<ul style="list-style-type: none"> • 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,	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as

	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).	shown in Figure 2.4 under Chapter II in the EIA report page 13.
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	The drone video will be submitted during final 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 will be submitted during final presentation.
18	The Project Proponent shall provide the details of mineral reserves and mineable reserves planned production capacity proposed working methodology with justifications. The anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same.	The Resources and Reserves of Rough Stone were calculated based on cross-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 2.6 results of geological resources and reserves have been shown in Table 2.3. under Chapter II in the EIA report page 15-16.
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act, 1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Details of manpower required for this project have been given in Table 2.14 under Chapter II in the EIA report page 26.

20	<p>The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD/ TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly – be shown whether working will intersect groundwater, Necessary data and documentation in this regard may be provided.</p>	<p>The hydrogeological study was carried out and the results have been discussed in the Section 3.2 under Chapter III in the EIA report page 38-51.</p>
21	<p>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.</p>	<p>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 27-90.</p>
22	<p>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.</p>	<p>Results of cumulative impact study due to mining operations are given in Section 7.4 under Chapter VII in the EIA report page 118-121.</p>
23	<p>Rain water harvesting management with</p>	<p>As part of rainwater harvesting</p>

	recharging details along with water balance (both monsoon & non-monsoon) be submitted.	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 and submitted. Impact, if any, of change of land use should be given.	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, under Chapter III in the EIA report page 28-38. The details of surrounding sensitive ecological features have been provided in Table 3.39 under Chapter III in the EIA report page 88-89. 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 21.
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	As part of rainwater harvesting

	proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	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.	The traffic density study is given in EIA report, Section 3.7, under Chapter III in the EIA report page 86-88.
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 300m radius and the results have been discussed in Section 3.5 under Chapter III in the EIA report page 65-81.
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 21.
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 and local	A detailed greenbelt development plan has been provided in Section 4.6 under Chapter IV in the EIA report page 100-104.

	school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	
33	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities, botanist/Horticulture 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 3m 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 117-118.
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 114-116.
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.	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 page 104-105.

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 124-125.
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 22 people directly as discussed in Section 8.1 under Chapter VIII in the EIA report page 123.
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.
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.	Benefits of the project details have been given under Chapter VIII in the EIA report page 123-125.
41	If any quarrying operation 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.	CCR will be submitted in the final EIA report.
42	The PP Shall prepare the EMP for the entire	A detailed environment management

	life/lease period of mine and also Furnish the sworn affidavit starting to Abide the EMP for the entire life of mine.	plan has been prepared following the suggestion made by SEAC, as shown in Chapter X in the EIA report page 127-133. The sworn affidavit stating to abide the EMP for the entire life of mine is attached will be submitted during final presentation.
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.
<p><u>Discussion by SEIAA and the Remarks: -</u></p> <p>The subject was placed in the 667th Authority meeting held on 06.11.2023. The Authority noted that the subject was appraised in the 416th SEAC meeting held on 13.10.2023. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions and conditions in Annexure 'B' of this minutes.</p>		
Annexure 'B'		
Cluster Management Committee		
1	Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	A cluster management committee including all the proponents of the rough stone quarrying projects within the cluster of 500m 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 individual quarry in the form of route map and network.	All the information has been discussed in Section 2.6 under Chapter II in the EIA report page 18-25.
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	A proper action plan regarding the restoration will be followed by the

	respect to the individual quarry falling under the cluster in a holistic manner.	committee.
8	The committee shall furnish the Emergency Management plan within the cluster.	The committee will submit the emergency management plan to the respective authority in the stipulated time period.
9	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.
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	A proper action plan with reference to water, sanitation & safety will be devised and submitted by the committee to the respective authority.
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	The committee will submit the fire safety and evacuation plan as discussed in Section 7.2 under Chapter VII in the EIA report page 114-116.
Impact study of Mining		
12	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following	
	a)	Soil health & soil biological, physical land chemical features.
		Soil health and biodiversity have been discussed in Sections 3.1 and 3.5 respectively under Chapter III in the EIA report page 28-38 & 65-81.
	b)	Climate change leading to Droughts, Floods etc.
		Climatic condition of the proposed project area has been discussed in Section 3.3 under Chapter III in the EIA report page 51-61.
	c)	Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the
		The information about CO ₂ emission has been added to Section 4.6 under Chapter IV in the EIA report page 100-104.

		local People.	
	d)	Possibilities of water contamination and impact on aquatic ecosystem health.	Possibilities of both surface and ground water contamination have been discussed in Section 4.3 under Chapter IV in the EIA report page 92. The impact on aquatic species has been discussed in Section 4.6 under Chapter IV in the EIA report page 100-104.
	e)	Agriculture, Forestry, & Traditional practices.	Sorgum, millet, groundnut, and coconut are the primary crops that are cultivated in the study area.
	f)	Hydrothermal/Geothermal effect due to destruction in the Environment.	The average geothermal gradient of earth is 25 ⁰ C/km. As the proposed depth of mining is 45m below the local ground level, the temperature will increase by 1.12 ⁰ C at the depth of mining.
	g)	Bio-geochemical processes and its foot prints including environmental stress.	Data is not included.
	h)	Sediment geochemistry in the surface streams.	The details regarding sediment geochemistry are discussed in the Table 3.4 under Chapter III in the EIA report page 37.
	Agriculture & Agro-Biodiversity		
13		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 100-104..

14	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 68-83. 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.
15	Details of type of vegetations including no. of trees & shrubs within the proposed mining area shall be given 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 65-81. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV in the EIA report page 100-104.
16	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	The ecological details have been provided in Section 3.5 under Chapter III in the EIA report page 65-81 and measures have been provided in Section 4.6 under Chapter IV in the EIA report page 100-104.
17	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 91-107.
18	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	The impact of project on the land environment has been discussed in Section 4.1 under Chapter IV in the EIA report page 91.

Forests		
19	The project proponent shall 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.
20	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 107-113.
21	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 100-104.
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National parks, corridors and wildlife pathways, near project site.	The details of protected areas, National Parks, Corridors and Wildlife pathways near project site and the list of environmentally sensitive areas has been provided in Table 3.39 under Chapter III in the EIA report page 88-89.
Water Environment		
23	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III in the EIA report page 38-51.

24	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 92.
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby villages, waterbodies/rivers & any ecological fragile areas.	The matter has been discussed under Chapter IV in the EIA report page 91-107.
26	The project proponent shall study impact on fish habitats and the food WEB/food chain in the water body and Reservoir.	An analysis for food chain in aquatic ecosystem has been discussed in Section 3.5 under Chapter III in the EIA report page 65-81.
27	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 91-107.
28	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sits 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 100-104.
29.	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components.	The impact of mining on soil environment has been discussed in Section 4.2 under Chapter IV in the EIA report page 91-92.
30	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 92.

Energy		
31	The measures taken to control Noise, Air, water, Dust control and steps adopted to efficiently utilise the Energy shall be furnished.	The measures taken to control noise, air, water, and dust have been given under Chapter IV in the EIA report page 91-107.
Climate Change		
32	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	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 100-104.
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	The matter has been discussed in Chapter IV in the EIA report page 91-107.
Mine Closure Plan		
34	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 21.
EMP		
35	Detailed Environment Management plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	A detailed Environment Management plan has been given under Chapter X in the EIA report page 127-133.
36	The Environmental Impact Assessment should hold detailed study on EMP with	A detailed Environment Management plan has been given in Tables 10.1 &

	budget for green belt development and mine closure plan including disaster management plan.	10.2 under Chapter X in the EIA report page 128-133.
Risk Assessment		
37	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 114-116.
Disaster Management Plan		
38	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.	The disaster management plan for this project has been provided in Section 7.3 under Chapter VII in the EIA report page 117-118.
Others		
39.	The project proponent shall furnish VAO certificate with reference to 300 m radius regard to approved habitations, schools, Archaeological sites, structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, river, lake pond, tank etc.	The VAO certificate of 300 m radius have been attached in the attached in the Annexure V.
40	As per the MoEF & CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management plan.	The concerns raised during the public consultation will be submitted in the final EIA report.

41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	The matter on plastic waste management has been given in Section 7.5 under Chapter VII in the EIA report page 122.
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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 its management, mining technology etc. and should be in the name of the lessee.	All the documents related to mining plan, EIA and public hearing are compatible to each other and have been provided in the annexure part.
4.	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ toposheet, topographic sheet,	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as

	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).	shown in Figure 2.4 under Chapter II in the EIA report page 13.
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.
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 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	The proponent has framed Environmental Policy and the same has been discussed in Section 10.1 under Chapter X in the EIA report page 127-128.

	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 ⁰ bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.
9.	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period.	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 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	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 under Chapter III in the EIA report page 28-38. The details of surrounding

	operational phases and submitted. Impact, if any, of change of land use should be given.	sensitive ecological features have been provided in Table 3.39 under Chapter III in the EIA report page 88-89. 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 21.
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 Department to assist the Expert Appraisal Committees.	It is not applicable as there is no forest land involved within the proposed project area. The details have been discussed in Table 3.39 under Chapter III in the EIA report page 88-89.
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.	No Reserve Forest is found within the study area. The details of reserve forest within 10km have been discussed Table 3.39 under Chapter III in the EIA report page 88-89.
16.	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	There is no any wildlife/protected area from the periphery of the project area. Information regarding wildlife /protected area within 10km has been given in Table 3.39 under Chapter III in the EIA report page 88-89.
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	The details of National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km radius from the periphery of the project area has been given in Table 3.39 under Chapter III in the EIA report page 88-89.

	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.	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 65-81.
19.	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range'.
20.	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized	Not Applicable The project doesn't attract the C.R.Z.

	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).	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 aspects 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	Baseline data were collected for the period of October 2023 - December 2023 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 28-89.

	<p>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.</p>	
23.	<p>Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.</p>	<p>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 94-96.</p>
24.	<p>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.</p>	<p>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 24.</p>
25.	<p>Necessary clearance from the competent</p>	<p>Not Applicable.</p>

	Authority for drawl of requisite quantity of water for the project should be provided.	Water for dust suppression, greenbelt development and domestic use will be 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 92.
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	Not Applicable. The ground water table is found at the depth of 60m below ground level. The ultimate depth of quarry is 45m 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

	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.	under Chapter III in the EIA report page 38-51.
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 370m AMSL. Ultimate depth of the mine is 45m 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 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	Greenbelt development plan has been given in Section 4.6 under Chapter IV in the EIA report page 100-104.

	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 analyse the impact of transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details have been provided in Section 3.7 under Chapter III in the EIA report page 86-88.
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 2.6.7 under Chapter II in the EIA report page 24.
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 21.
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	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 104-105.

	specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	
36.	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No public health implications 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 124-125.
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 22 people directly as discussed in Section 8.1 under Chapter VIII in the EIA report page 123.
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 128-133.
39.	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	The outcome of public hearing will be submitted in the final EIA report.
40.	Details of litigation pending against the project, if any, with direction /order passed	No litigation is pending in any court against this project.

	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.	Project Cost is Rs. 1,30,33,200/- CER Cost is Rs. 5,00,000/- In order to implement the environmental protection measures, an amount of Rs.6023702 as capital cost and recurring cost as Rs.2283031 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 5 years will be Rs.18777950, as shown in Tables 10.1 & 10.2 under Chapter X in the EIA report page 128-133.
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 117-118.
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 123-125.
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	List of tables and source of the data

	especially in Tables, the period in which the data were collected and the sources should be indicated.	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 report 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 4th 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 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	No changes are made in the basic scope and the project parameters.

	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.	CCR will be submitted in the final EIA report.
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.

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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 in to 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 obtained vide Lr No. SEIAA-TN/F.No.10553/SEAC/ToR-1695/2024 Dated 13.05.2024, this EIA report has been prepared for the project proponent, Mr.M.Rajesh applied for rough stone and gravel quarry lease in the Patta land falling in S.F.No.405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A over an extent of 4.09.0 ha in Panapatti Village, Kinathukkdavu Taluk, Coimbatore District and Tamil Nadu. This EIA report takes into account the rough stone quarries within the cluster of 500 m radius from the periphery of the proposed project site. The cluster contains two proposed projects known as P1, P2 and two existing quarries known E1, E2 and one expired quarry known as EX1. 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 **10.31.0 ha**, 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 Quarries					
Code	Name of the Owner	S.F. No	Village	Extent (ha)	Status
P1	Thiru.M.Rajesh	405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A	Panapatti	4.09.0	Proposed Area
P2	Thiru.K.N.Venkatachalam	406/2B (P), 406/3A, 406/4A, 406/2G, 406/3B & 406/4B	Panappatti	2.00.0	Applied Area
Existing Quarries					
E1	P.Subramaniam	472/5(P)	Panappatti	1.40.0	25.01.2019 to 24.01.2024
E2	Tmt.V.Nirmaladevi	470(P)	Panapatti	1.10.0	01.06.2023 To 31.05.2028
Expired Quarry					
EX1	N.Somasundaram	402/2(P), 403/2(P) & 404/1B(P)	Panappatti	1.72.0	09.12.2016 to 08.12.2021
Total Cluster Extent				10.31.0	---

Source:

AD Letter - Rc.No.206/Mines/2023, Dated:20.09.2023.

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, 2023** 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/ 447079/2023, dated 05.10.2023 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) 24.11.2023.

Scoping

The proposal was placed in the 460th meeting of SEAC on 24.04.2024. 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 updated in the final EIA report for appraisal.

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.

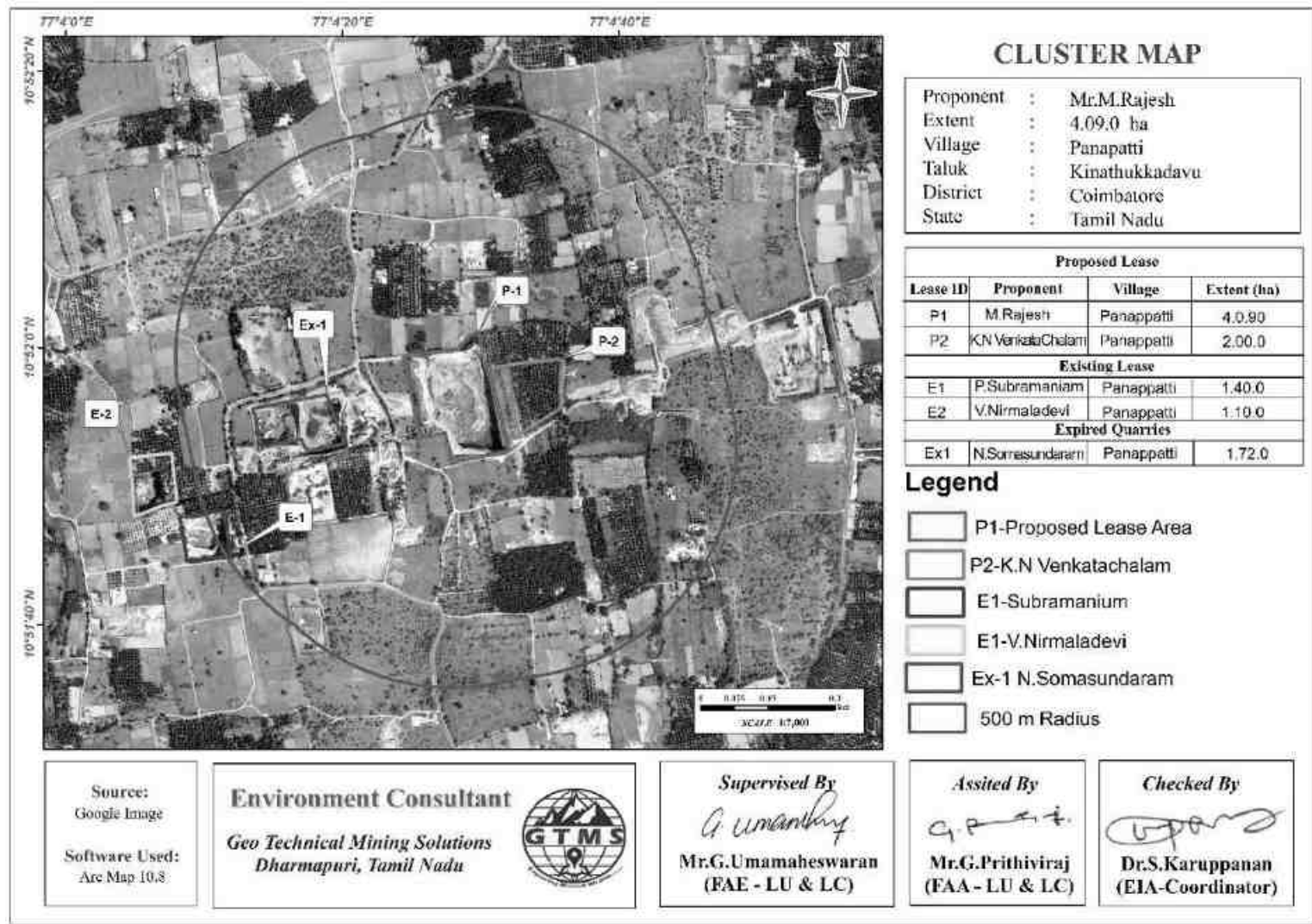


Figure 1.1 Location of the Proposed and Existing Rough Stone and Gravel Quarries in the Cluster of 500 m Radius

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 to the proponent vide **Lr No. SEIAA-TN/F.No.10553/SEAC/ToR-1695/2024 Dated 13.05.2024** for the preparation of an EIA report.

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).

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	Mr.M.Rajesh
Address	S/o.Mohandass, 2/1, Doctor Kalaignar Street, Suleeswaranpatti, Coimbatore District- 642 006.
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 5 m height and 5 m width. The proposed project site is located in Panapatti Village,

Kinathukkdavu Taluk, Coimbatore District, and Tamil Nādu State. 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	Mr.M.Rajesh Rough Stone and Gravel Quarry		
S.F. No	405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A		
Latitude	10°51'51.73"N to 10°52'1.11"N		
Longitude	77°4'24.39"E to 77°4'31.99"E		
Highest Elevation	370 m AMSL		
Proposed Depth as per ToR	45m BGL (R.L.370m to 325m)		
Ultimate Pit Dimension	Length (m)	Width (m)	Depth (m)
	156	83	45
Geological Resources	Rough Stone in m ³	Gravel in m ³	
	965359	20888	
Mineable Reserves	Rough Stone in m ³	Gravel in m ³	
	346204	14976	
Proposed reserves for five years	Rough Stone in m ³	Gravel in m ³	
	346204	14976	
Method of Mining	Open-Cast Semi Mechanized Method		
Topography	Flat Terrain		
Machinery proposed	Jack Hammer	4	
	Compressor	2	
	Hydraulic Excavator	1	
	Tippers	4	
Blasting Method	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.		
Proposed Manpower Deployment	22 Nos		
Project Cost	Rs.1,30,33,200 /-		
CER Cost	Rs.5,00,000/-		
Proposed Water Requirement	4.5 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 2023** 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.

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 Mr.M.Rajesh 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 22.02.2023 to extract rough stone and gravel. The precise area communication letter was issued by Department of Geology and Mining, Coimbatore vide Rc.No.206/Mines/2023, dated:25.08.2023. Based on the precise area communication letter, mining plan was prepared. The mining plan thus prepared was approved by Deputy Director Department of Geology and Mining, Coimbatore Rc.No 206/Mines/2023, dated: 20.09.2023. 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 Panapatti Village, Kinathukkdavu Taluk, Coimbatore District, Tamilnadu as shown in Figure 2.2 & 2.3. The area lies between Latitudes from $10^{\circ}51'51.73''\text{N}$ to $10^{\circ}52'1.11''\text{N}$ and Longitudes from $77^{\circ}4'24.39''\text{E}$ to $77^{\circ}4'31.99''\text{E}$. The maximum altitude of the project area is 370 m AMSL. Accessibility details to the proposed project site have been given in Table 2.1.

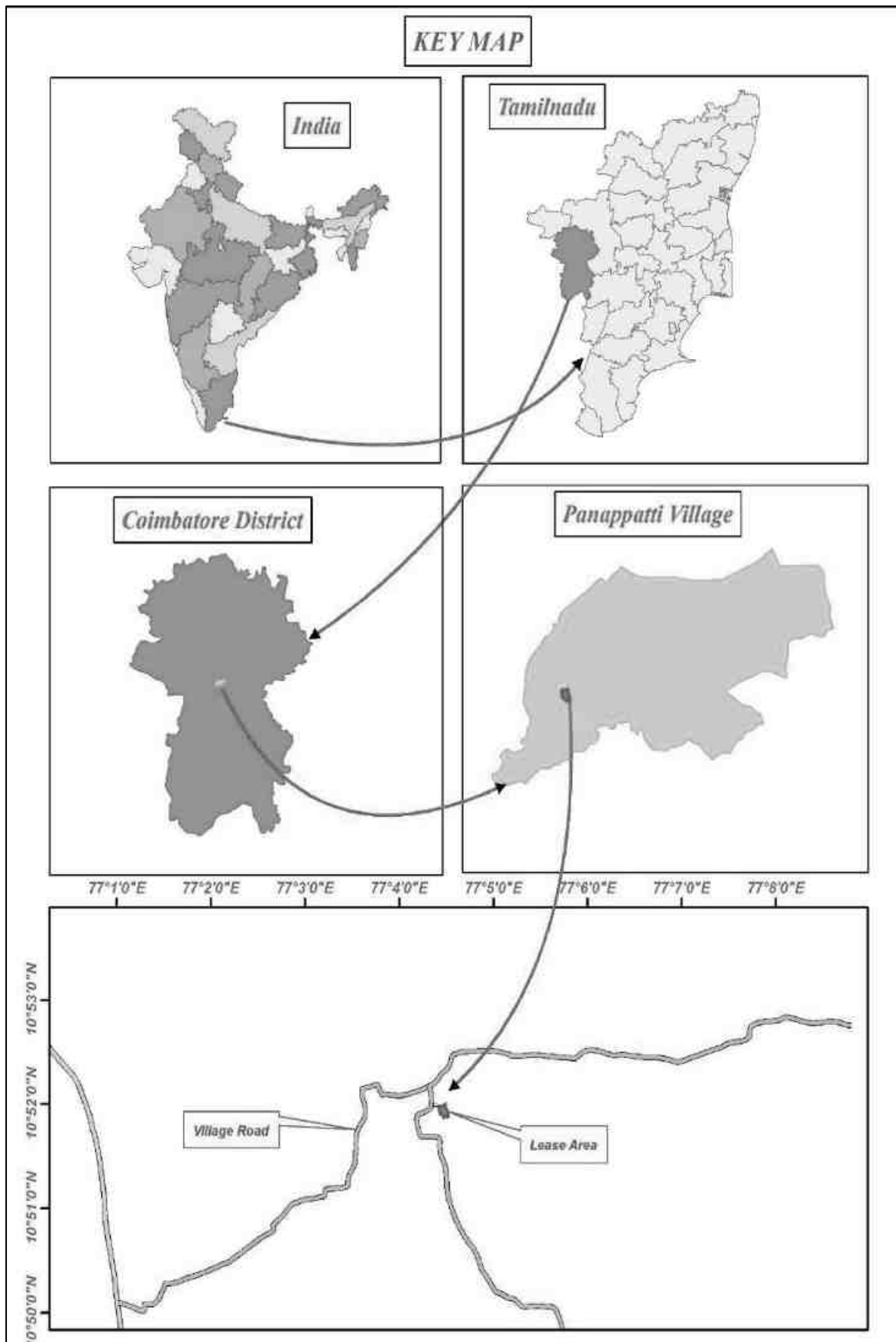


Figure 2.2 Key Map Showing Location of the Project Site

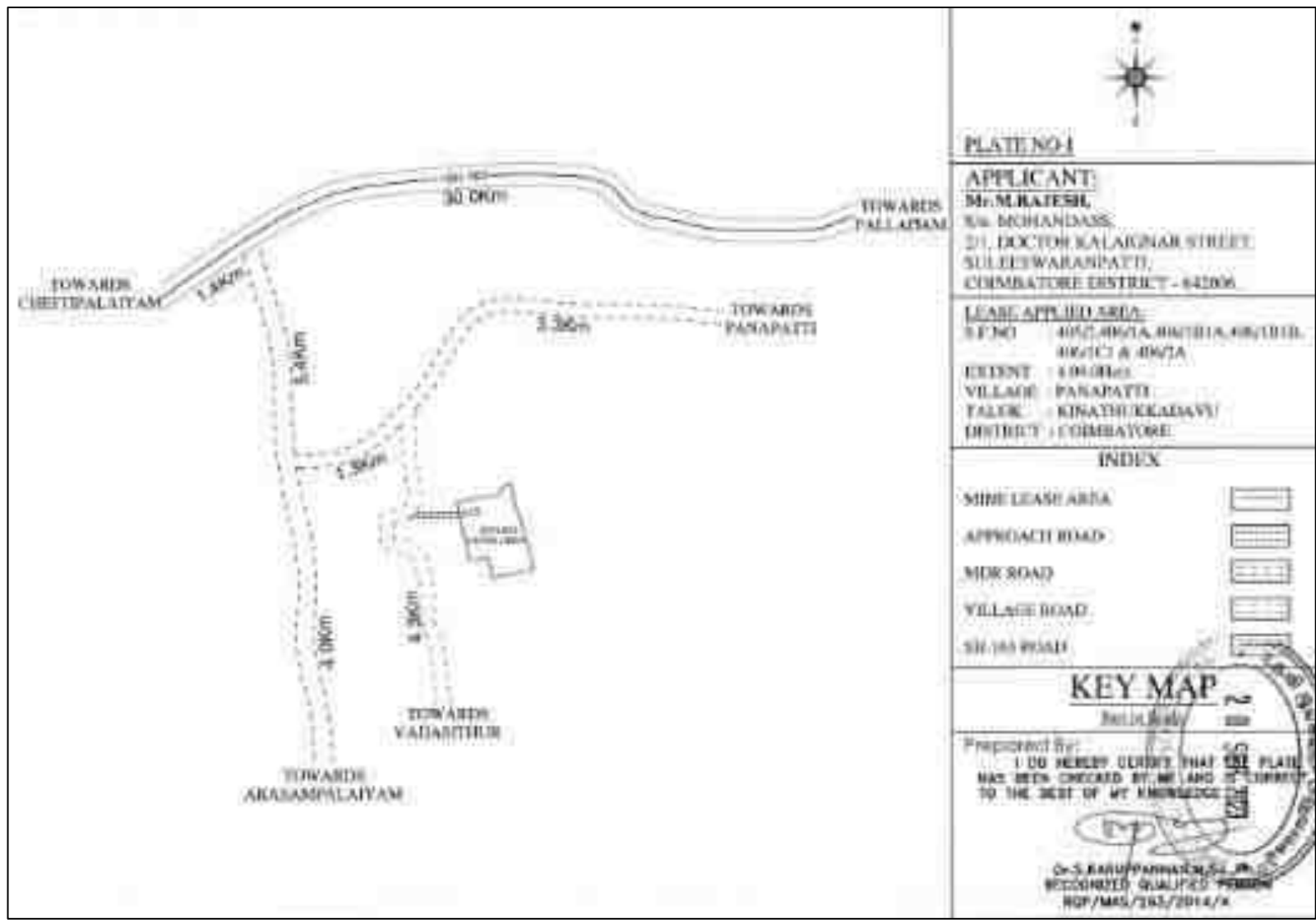


Figure 2.3 Site Connectivity to the Lease Area

Table 2.1 Site Connectivity to the Project Area

Nearest Roadways	MDR – 522	100m W
Nearest Town	Vadasithur	3.2 km S
Nearest Railway Station	Kinathukadavu	6.5 km SW
Nearest Airport	Coimbatore	17.8 km N
Nearest Seaport	Cochin	134 km SW
Nearest Villages	Karachery	1.07 km NW
	Panappatti	2.66 km E
	Vadasithur	2.9 km S
	Arasampalayam	3.75 km W

2.3 LEASEHOLD AREA

- ❖ The extent of the proposed project site is 4.09.0 ha.
- ❖ 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 2.4.

Table 2.2 Corner Coordinates of Proposed Project

Pillar ID	Latitude	Longitude	Pillar ID	Latitude	Longitude
1	10°52'1.11"N	77°4'29.89"E	7	10°51'52.00"N	77°4'29.08"E
2	10°51'59.04"N	77°4'30.20"E	8	10°51'51.73"N	77°4'27.91"E
3	10°51'57.85"N	77°4'30.65"E	9	10°51'53.86"N	77°4'27.43"E
4	10°51'53.38"N	77°4'31.87"E	10	10°51'53.54"N	77°4'25.62"E
5	10°51'52.67"N	77°4'31.99"E	11	10°51'53.82"N	77°4'25.56"E
6	10°51'52.43"N	77°4'31.84"E	12	10°51'59.37"N	77°4'24.39"E

2.4 GEOLOGY AND GEOMORPHOLOGY

The lease area geologically occurs on Hornblende-Biotite Gneiss. The Charnockite, commercially called as rough stone. In addition, the lease area geomorphologically occurs over Pediment Pediplain Complex.

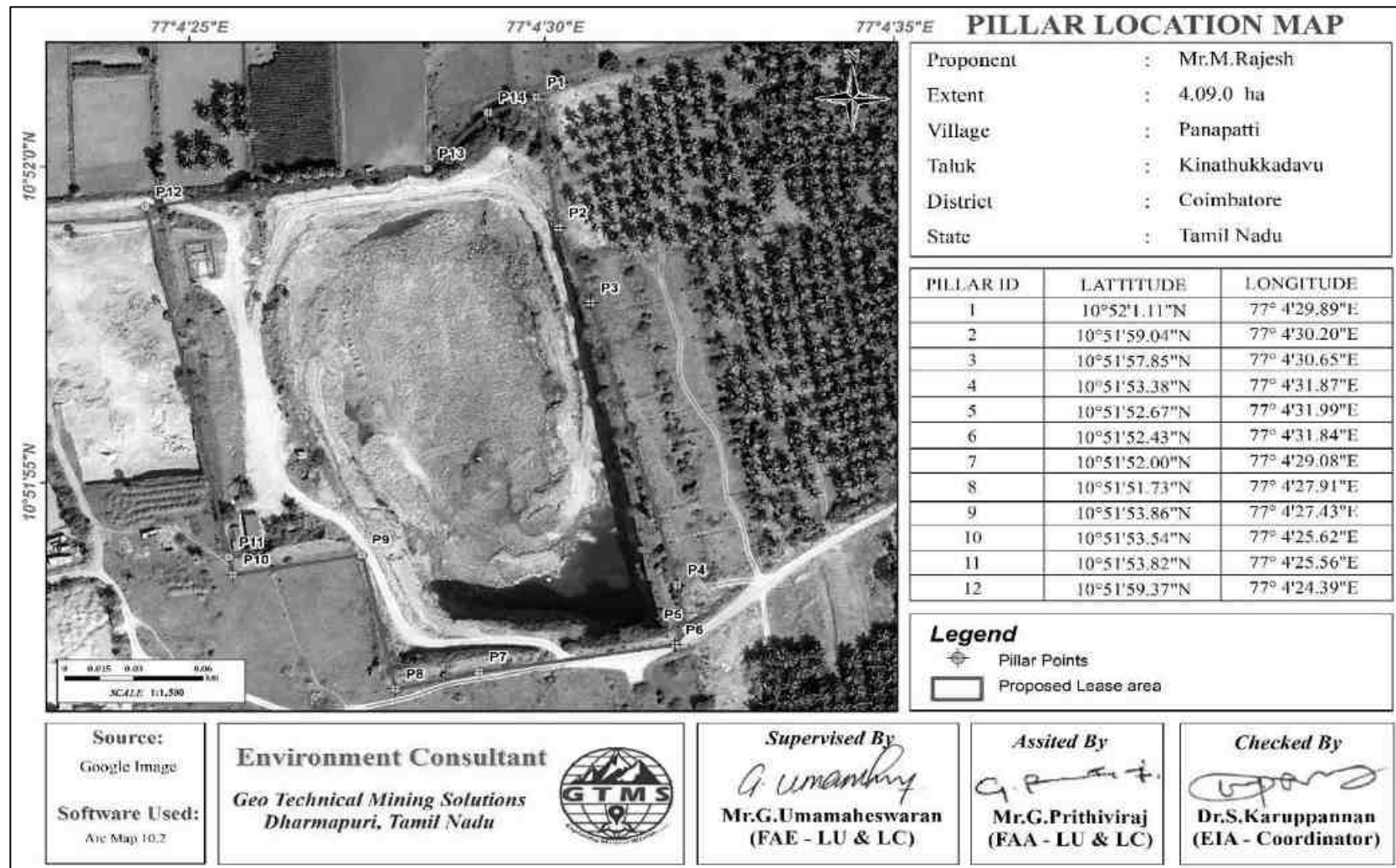


Figure 2.4 Google Earth Image Showing Lease Area with Pillars

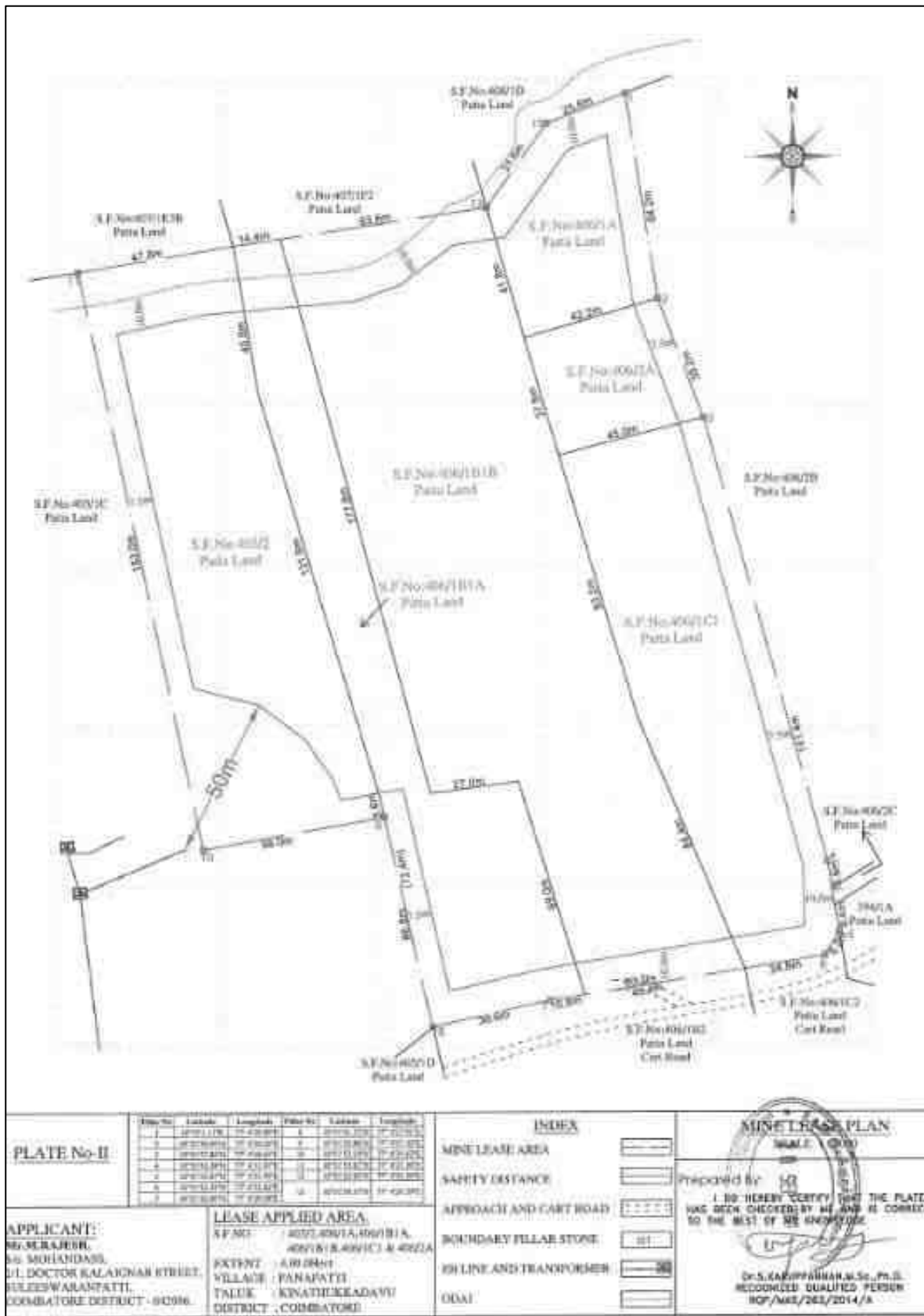


Figure 2.5 Mine Lease Plan

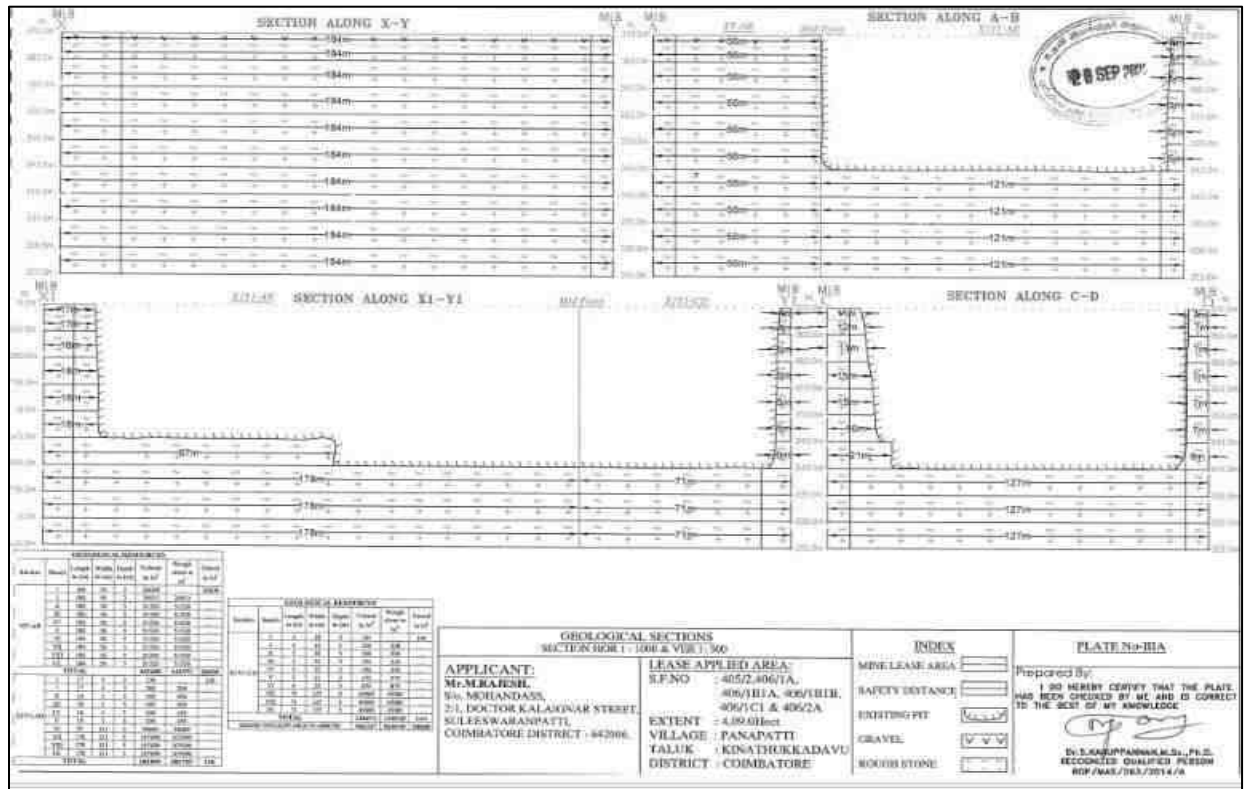
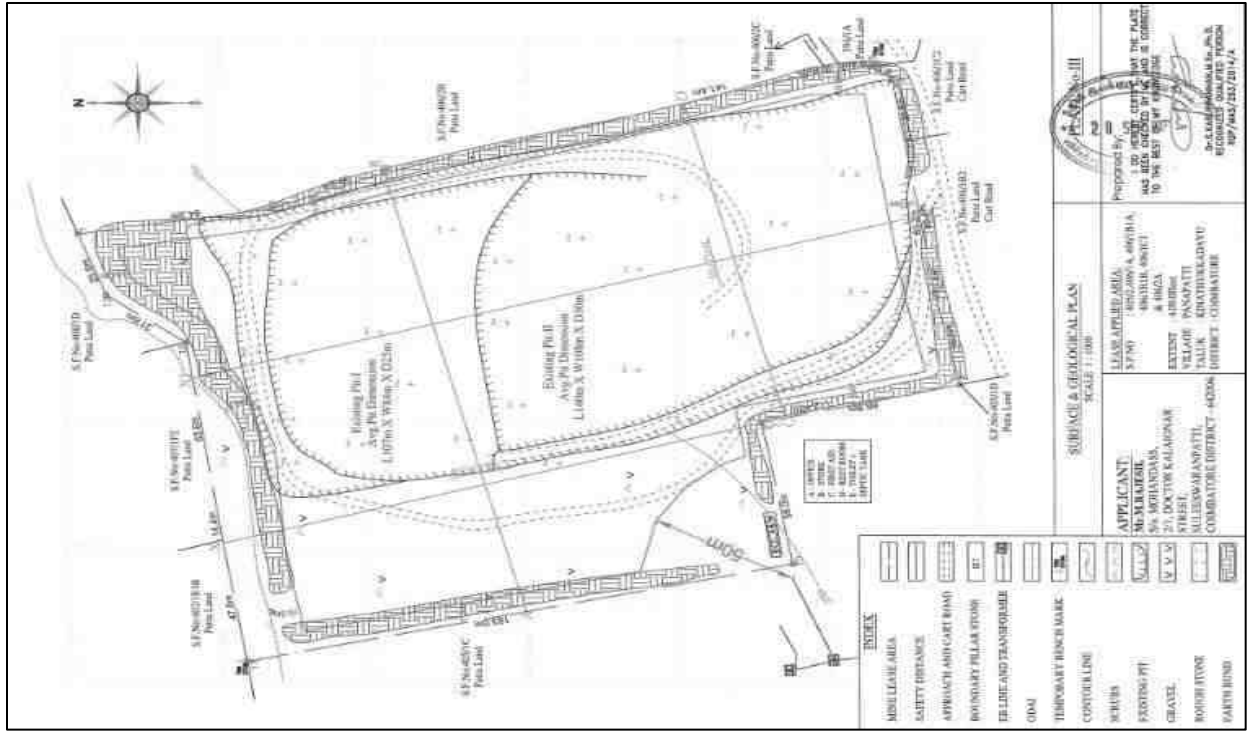


Figure 2.6 Surface and Geological plan and Sections

2.5 QUANTITY OF RESERVES

The resources and reserves of rough stone 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 10 m 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 45m considering there is no waste / overburden / side burden (100% Recovery anticipated) for the proposed project. The plate used for reserve estimation has been shown in Figure 2.6 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	965359	20888
Mineable Reserves as per ToR in m ³	346204	14976
Proposed production as per ToR for 5 years m ³	346204	14976

Based on the year wise development and production plan and sections, the year wise production results have been given in Table 2.4 & Figure 2.7.

Table 2.4 Year-Wise Production Details

Year	Rough stone in (m ³) / 5 years	Gravel in (m ³) / 3 years
I	79694	14976
II	76500	--
III	73970	--
IV	77230	--
V	38810	--
Total	346204	14976

Source: Approved Mining Plan & ToR

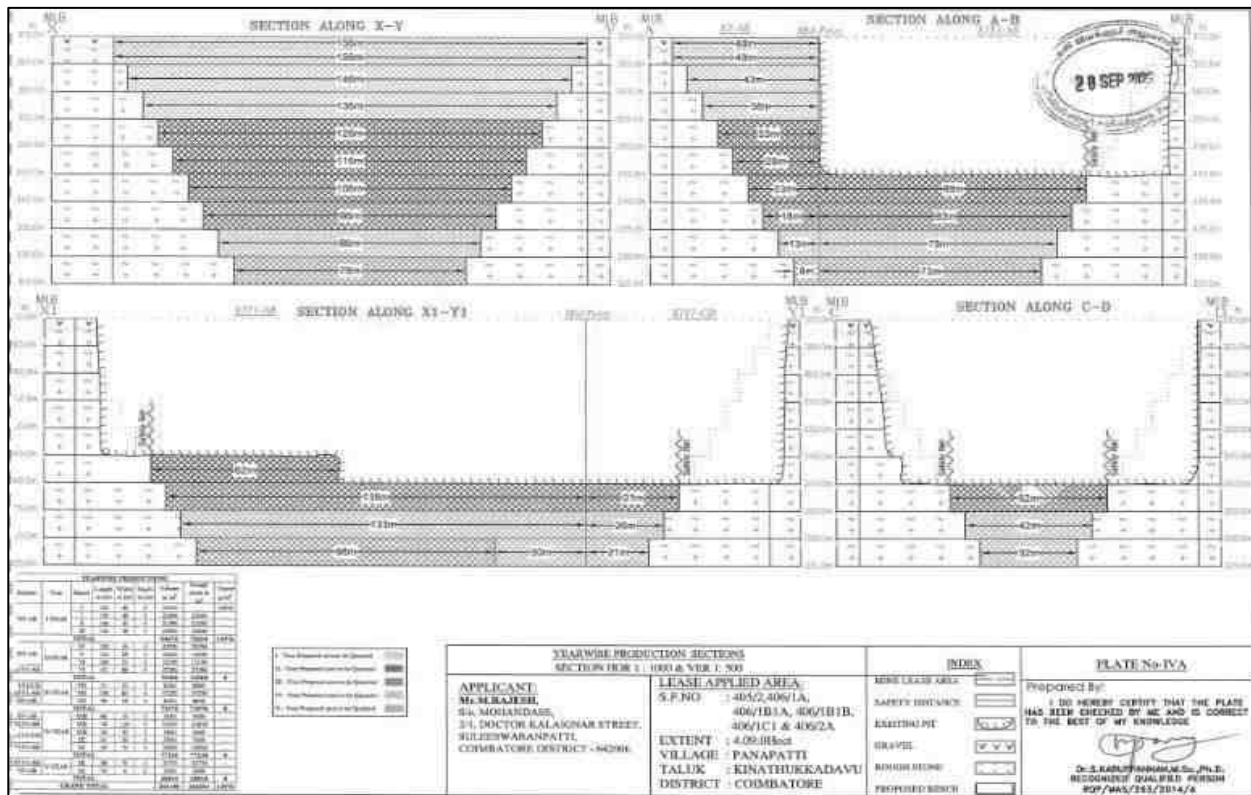
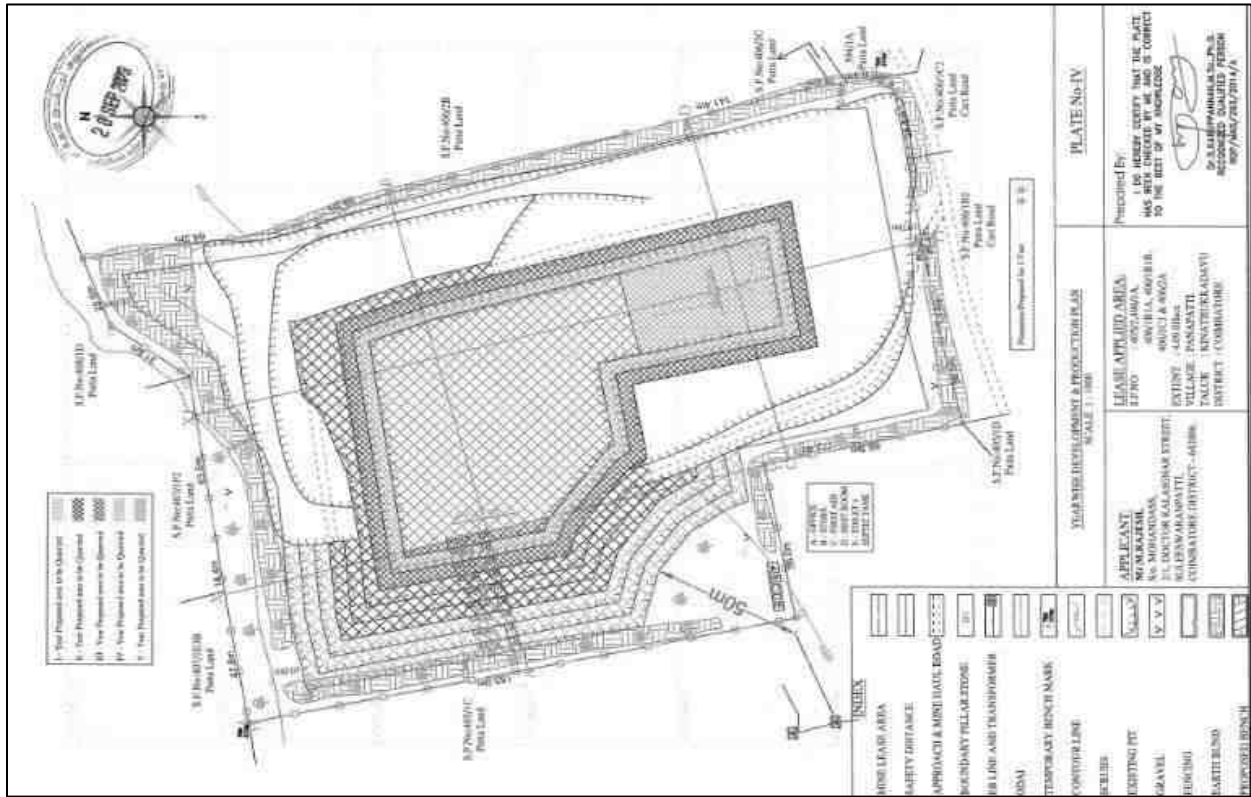


Figure 2.7 Year wise Development and Production Plan and Sections

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 5 m each. The open cast semi-mechanized method involving drilling and blasting is proposed to extract rough stone and gravel. 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.

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 ([Chapter8 \(nps.gov\)](#)). 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	256
Number of blastholes/day	62
Blasthole pattern	Staggered / Rectangular
Mass of explosive /day in kg	24.70
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 / 5 years	Gravel/ 1 year
Proposed production for 5 years	346204	14976
Number of Working Days /Annum	270	270
Production of /Day (m ³)	256	11
No. of Lorry Loads	43	2

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	Capacity	Make	Motive Power
1	Jack Hammers	4	Hand held	-	Diesel
2	Compressor	2	Air	-	Diesel
3	Excavator	1	-	-	Diesel
Haulage & Transport Equipment					
4	Tipper	4	-	-	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, the present area of the mine, about 2.52.45 ha will have been quarried, about 0.02.00 ha of land is used for infrastructure, about 0.03.00 of land is used for roads and whereas at the end of the mine life, about 2.08.80 ha of land will have been quarried; about 0.02.00 ha of land will be used for infrastructure, about 0.08.00 ha of land will be used for roads, about 0.52.20 ha of land will be used for green belt & dump, about 1.38.00 ha of land will be 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	2.52.45	2.08.80
Infrastructure	0.02.00	0.02.00
Roads	0.03.00	0.08.00
Green Belt	0.52.20	0.52.20
Unutilized area	0.99.35	1.38.00
Total	4.09.00	4.09.00

2.6.4 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
818 plants inside the lease area	163600
1227 plants outside the lease area	368100
Wire Fencing	818000
Renovation of Garland Drain	40900
Total	13,90,600

Source: Environment Management Plan.

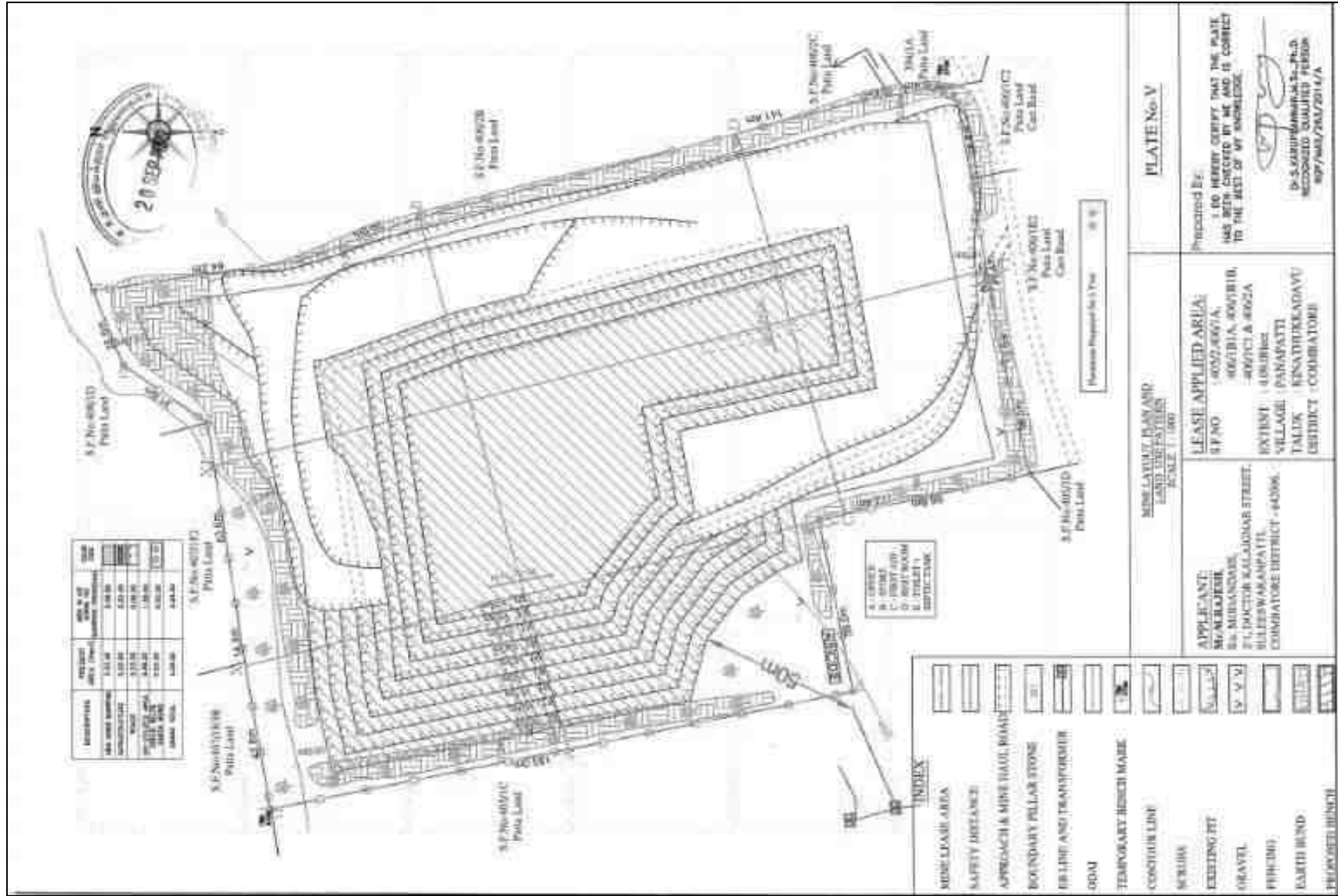


Figure 2.8 Mine Layout Plan and Land Use Pattern

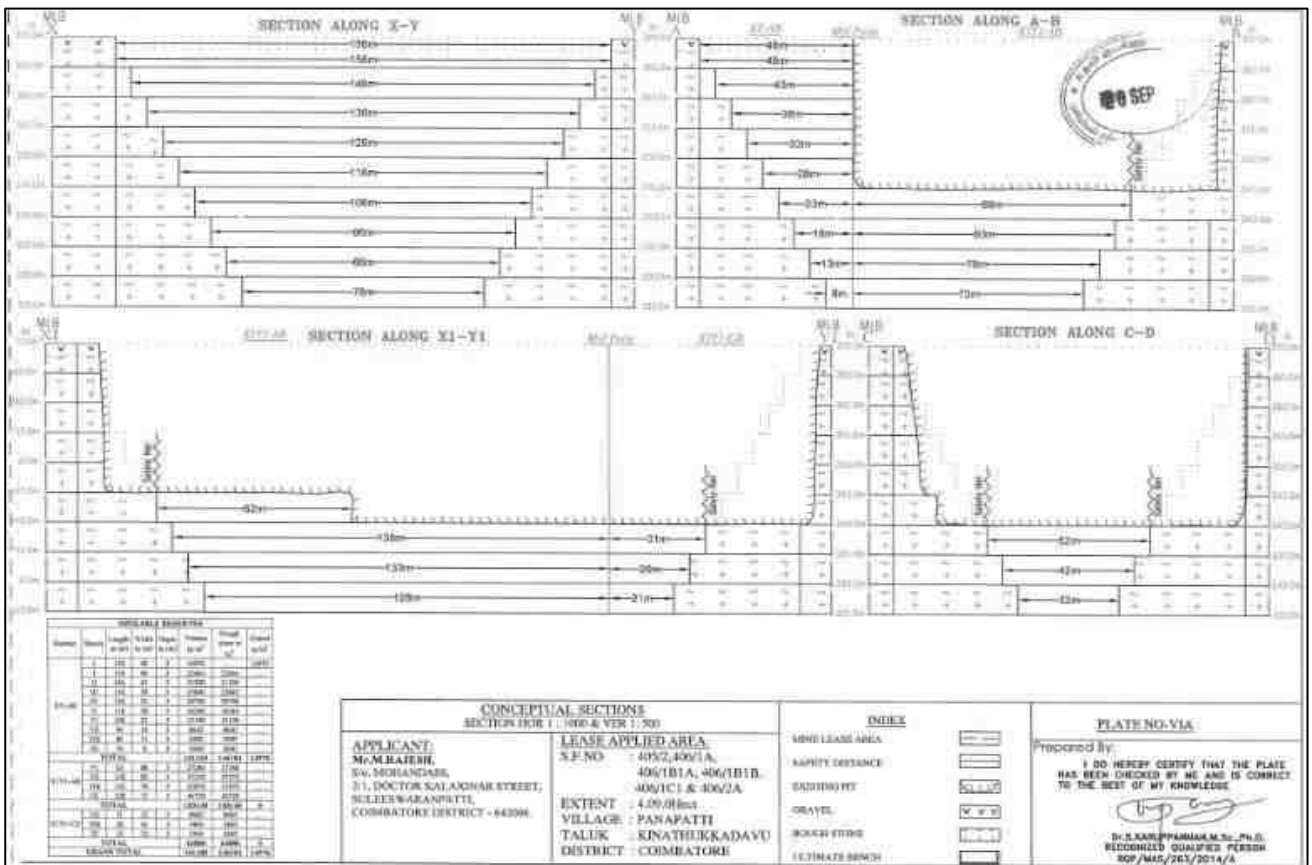
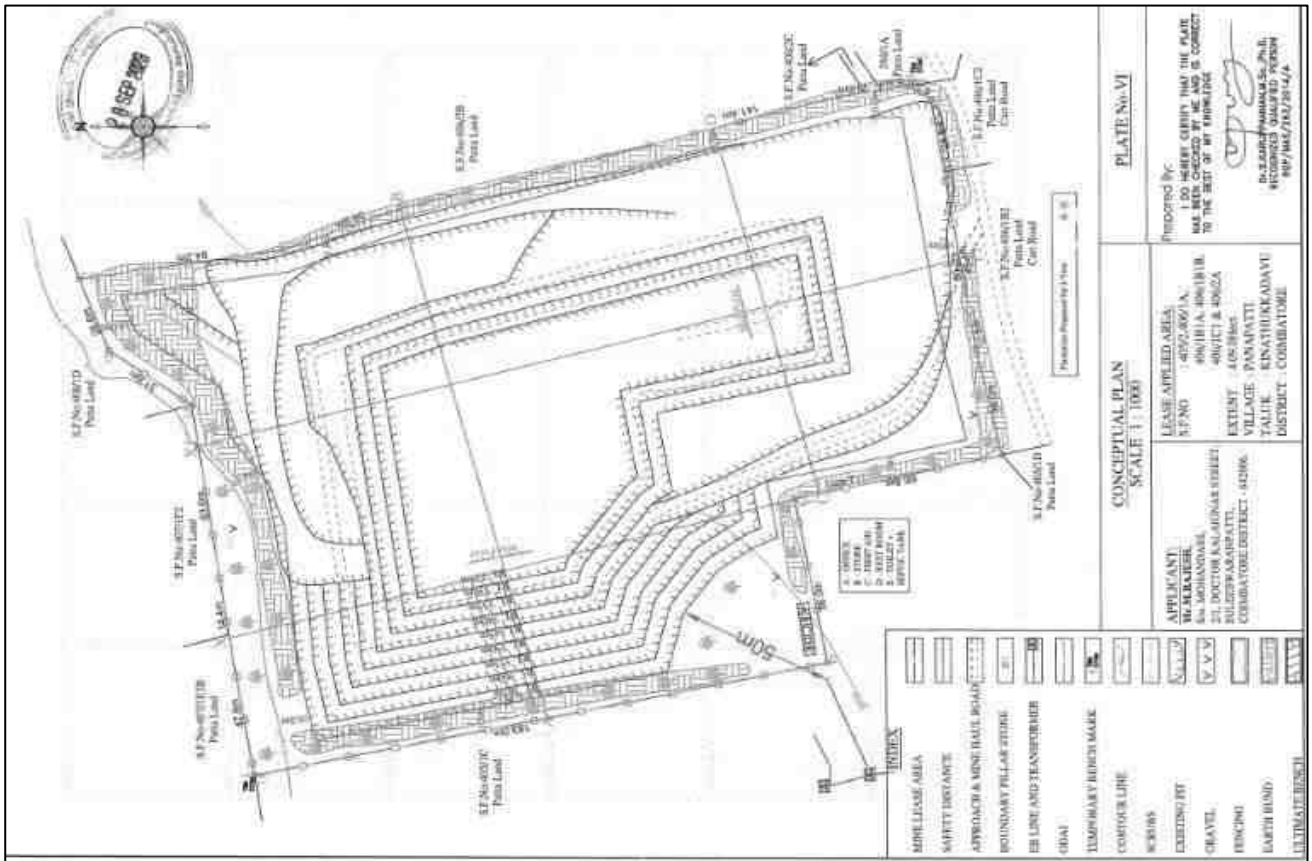


Figure 2.9 Conceptual Plan and Sections

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.

Table 2.10 Ultimate Pit Dimension

Pit	Length (m)	Width (m) (Max)	Depth (m)
I	156	88	45

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 4.5 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	1.5 KLD	Existing bore wells nearby the lease area
Drinking & Domestic	2.0 KLD	Existing bore wells and approved water vendors
Total	4.5 KLD	

Source: Prefeasibility Report

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 **1516873** 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 (307059 m³)	Gravel (39852 m³)	Total Diesel (litre)
Average Rate of Fuel Consumption (l/hr)	16	10	---
Working Capacity (m ³ /hr)	20	60	---
Time Required (hours)	17310	250	---
Total Diesel Consumption for 5 years (litre)	276963	2496	279459
Fuel Requirement for Compressor			
Average Rate of Fuel Consumption/hole (litre)	0.4	---	---
Number of Drillholes/day	62	---	---
Total Diesel Consumption for 5 years (litre)	33480	---	33480
Fuel Requirement for Tipper			
Average Rate of Fuel Consumption/Trip (litre)	20	20	---
Carrying Capacity in m ³	6	6	---
Number of Trips / days	43	2	---
Number of Trips / 5 years	57701	2496	---
Total Diesel Consumption for 5 years (litre)	1154013	49920	1203933
Total Diesel Consumption by Excavator, Compressor and Tipper			1516873

2.6.9 Capital Requirement

The project proponent will invest Rs.1,30,33,200/- 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	Rs.73.33.200
2	Machinery Cost	Rs.25,00,000
3	EMP Cost	Rs.32,00,000
Total Project Cost		Rs.1,30,33,200

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	II nd Mines Manager	1
		Mine Geologist	1
		Blaster	1
2	Unskilled	Driver	4
		Hitachi Operator	3
		Musdoor / Labours	12
Total			22

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. Field monitoring studies to evaluate the base line status of the project site were carried out covering **October through December, 2023** with CPCB guidelines. Environmental baseline data were collected by an NABL accredited and MoEF notified **Excellence Laboratory** 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	6 (1 core & 5 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	8 (1 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/automatic weather station	1	Site specific primary data & secondary data from IMD Station
*Ambient Air Quality	PM ₁₀ PM _{2.5} SO ₂ NO _x Fugitive dust	24 hours, twice a week	7 (1 core & 6 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient noise	Hourly observation for 24 hours per location	7 (1 core & 6 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing flora and fauna	Through field visit during the study period	Study area	Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio-economic characteristics, Population statistics and existing infrastructure in the study area	Site visit & Census Handbook, 2011	Study area	Primary Survey, census handbook & need based assessments.

**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 mainly composed of Acid intermediate Charnockite, Granite, Pink Migmatite, Pyroxene Granulite as shown in Figure 3.1. The lease area occurs in Hornblende biotite gneiss terrain. Among the geomorphic units, shallow weathered/buried pediplain and pediment dominate the study area, as shown in Figure 3.2. The lease area occurs in buried pediplain Complex 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. Totally, 6 LULC were mapped. The areal extent of each LULC is provided in Table 3.2. Of the total area, mining area covers only 334.73 ha accounting for 4.30%, of which cluster area of 4.09.0 ha contributes only about 0.0344%. This small percentage of mining activities shall not have any significant impact on the land environment.

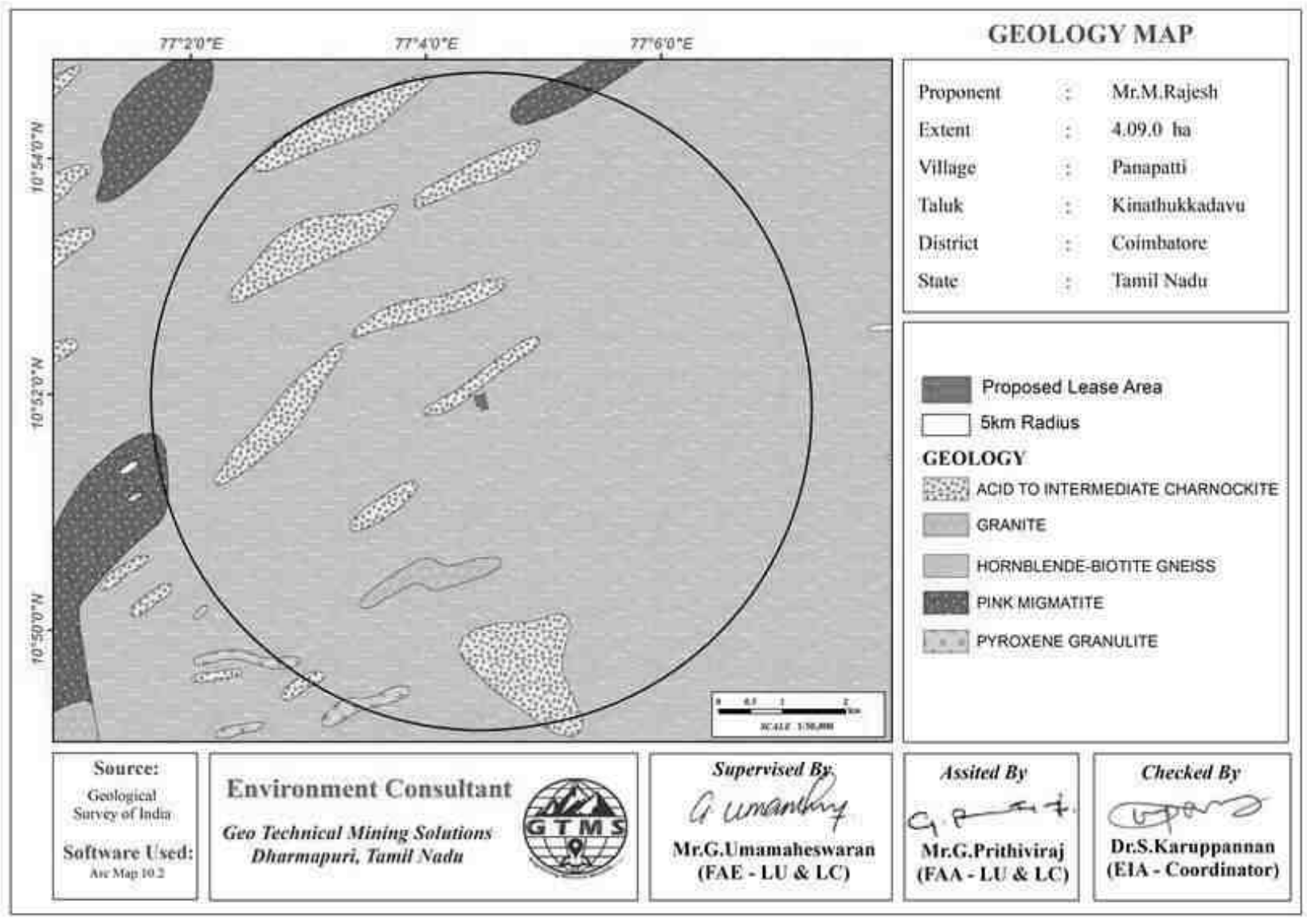


Figure 3.1 Geology Map of 5 km Radius from Proposed Project Site

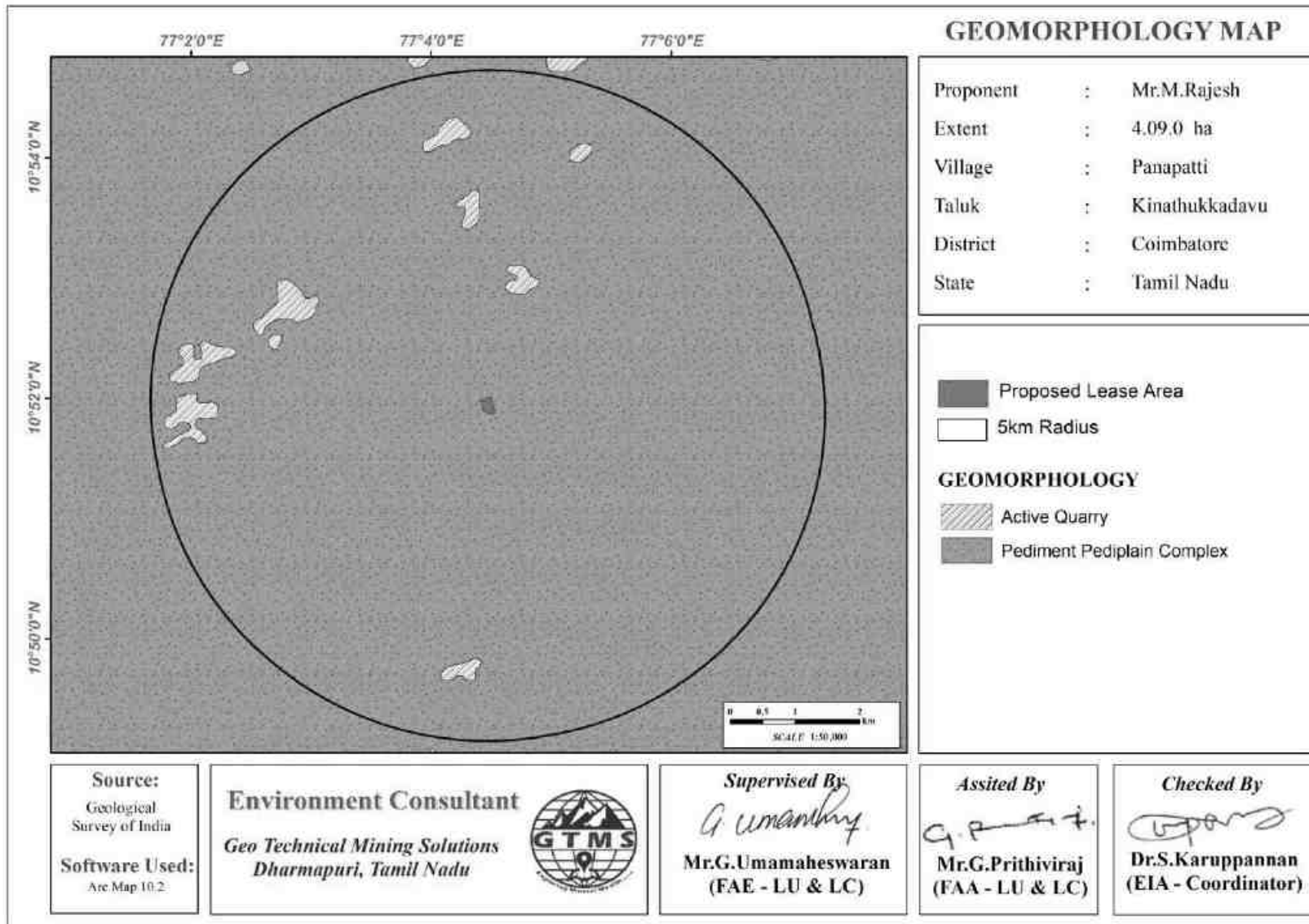


Figure 3.2 Geomorphology Map of 5 km Radius from Proposed Project Site

Table 3.2 LULC Statistics of the Study Area

S. No.	Classification	Area (ha)	Area (%)
1	Crop land	5731.13	73.55
2	Dense Forest	149.68	1.92
3	Fallow Land	572.06	7.34
4	Mining / Industrial wastelands	334.73	4.30
5	Plantations	959.02	12.31
6	Settlement	45.59	0.59
Total		7792.21	100.0

Source: Sentinel II Satellite Imagery

3.1.3 Topography

The proposed lease area is located in an undulated terrain with an altitude range of 415-426 m AMSL, showing relief of 11 m.

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

3.1.6 Soil Environment

Soil is one of the important components of the land environment. Composite soil samples were collected from the study area and analysed for different parameters to determine the baseline soil characteristics of the study area.

3.1.6.1 Methodology

7 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 as per the standard methods prescribed in “Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India”. The physical and chemical characteristic results of soil samples are provided in Table 3.4.

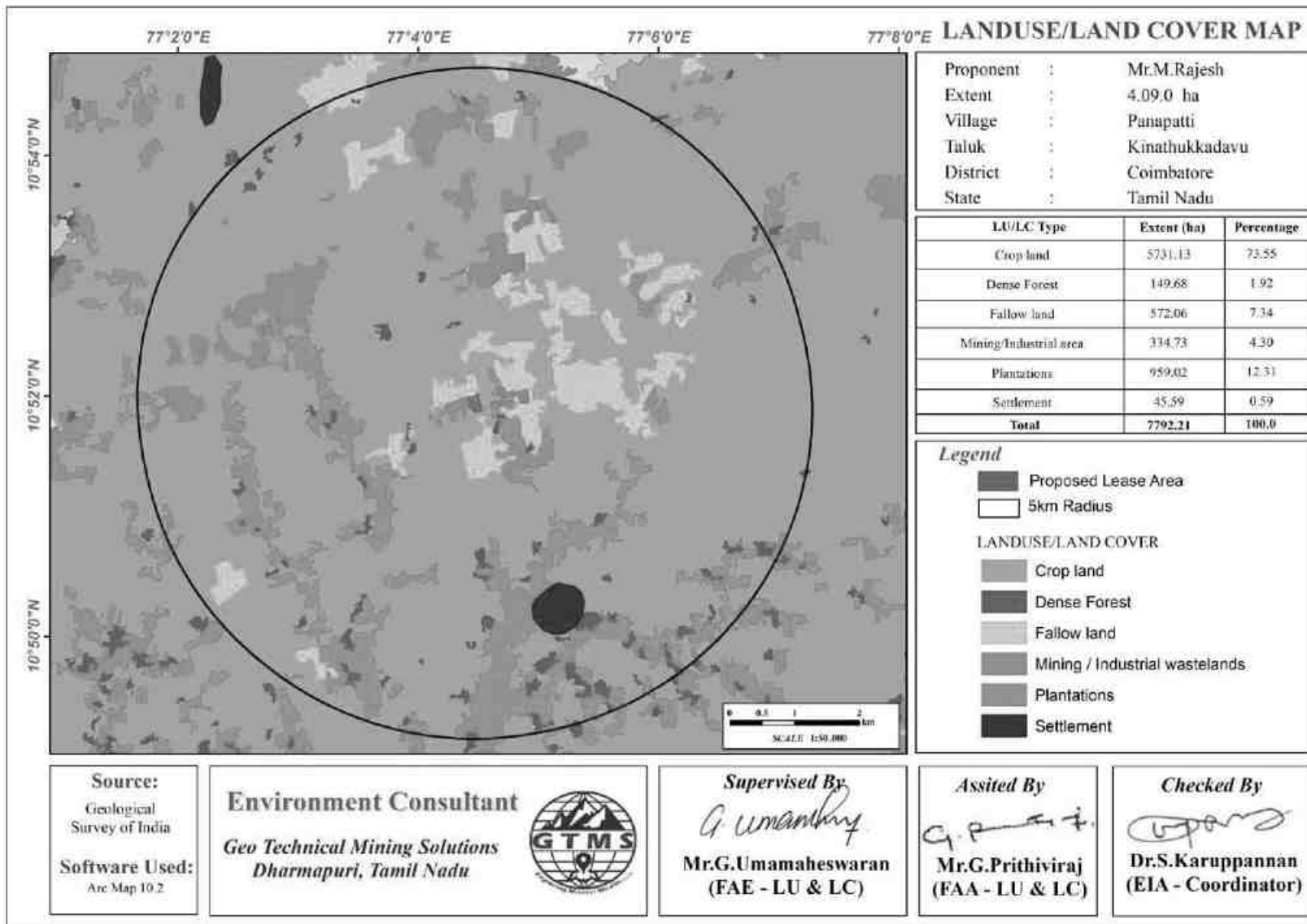


Figure 3.3 LULC Map of 5 km Radius from the Proposed Project Site

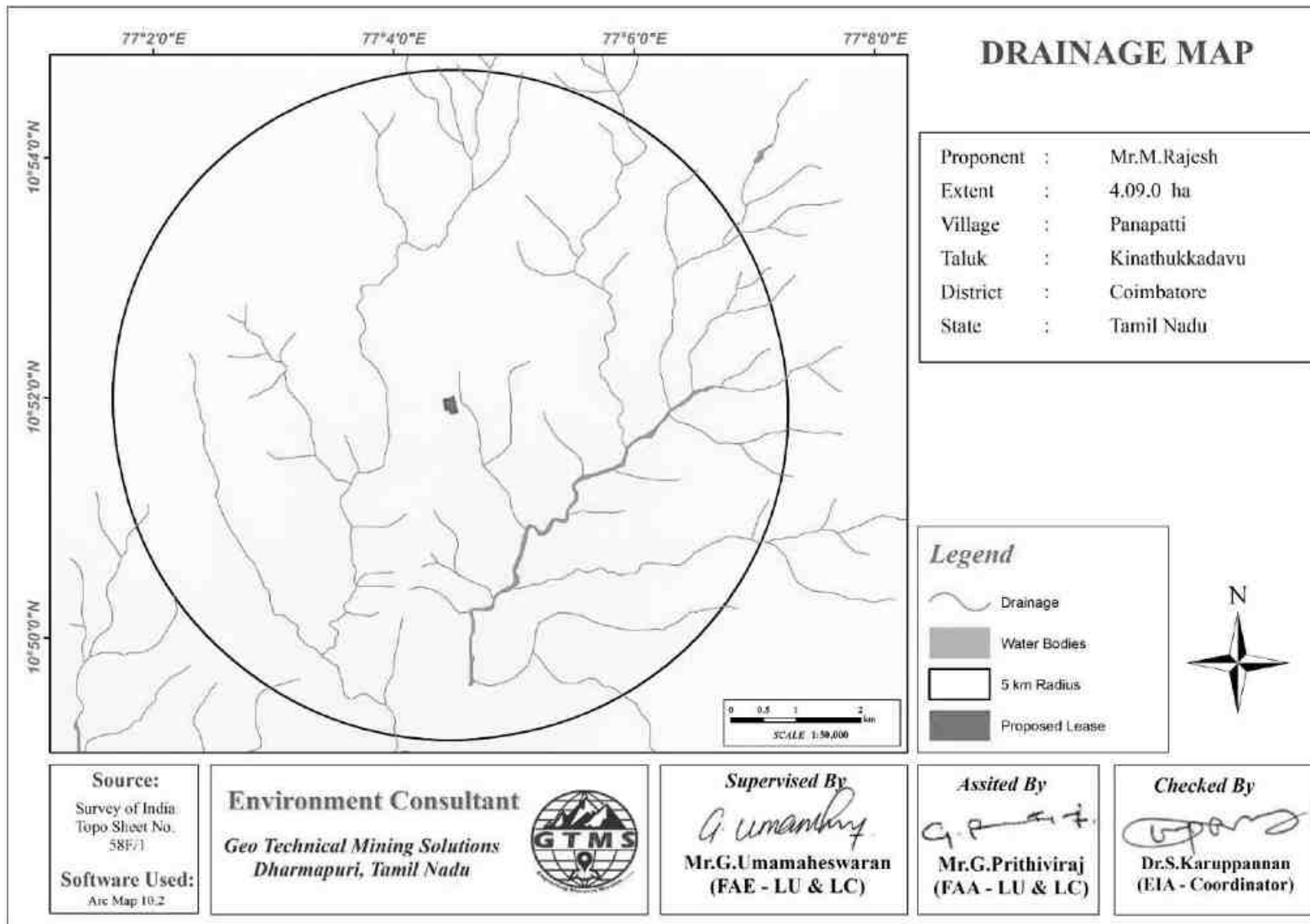


Figure 3.4 Drainage Map of 5 km Radius from the Proposed Project Site Showing a Portion of Dendritic Pattern

Table 3.3 Soil Sampling Locations

S. No	Location	Distance (km)	Direction	Coordinates
1	Core	---	---	10°52'0.12"N 77° 4'29.49"E
2	Vadasithur	3.71	S	10°49'52.93"N 77° 4'50.49"E
3	Panappatti	2.79	SE	10°51'4.79"N 77° 5'49.97"E
4	Arasampalayam	4.32	W	10°51'20.68"N 77° 2'7.50"E
5	Karachery	1.20	NW	10°52'24.16"N 77° 3'54.04"E
6	Pachapalayam	3.90	N	10°54'7.88"N 77° 4'30.77"E

Source: On-site monitoring/sampling by *Excellence Laboratory*, in association with GTMS.

3.1.6.2 Results and Discussion

Physical Characteristics & Chemical Characteristics

The soil samples in the study area show loamy textures varying between sandy loam, silty loam and Sandy Clay. pH of the soil varies from 7.8 to 8.0 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 303 to 547 μ s/cm. Bulk density ranges between 1.2 and 1.4 g/cm³. Figure 3.5 shows the soil composition as calculated based on the laboratory report. Manganese ranges between 236 and 411 mg/kg Chlorides ranges between 353 and 574 mg/kg. Potassium ranges between 0.084 and 0.217%. Calcium ranges between 298 and 462 mg/kg. Organic matter content ranges between 1 and 2.3 %.

Soil Erosion

There is no soil erosion in the mining lease area. The northern east part of the lease area has less moderate soil erosion as shown in the soil erosion map in Figure 3.6.

Soil Quality Assessment

Soil quality is the foundation of sustainable crop production. Soil quality assessment helps to understand soil conditions and adopt suitable production practices. It can be done using physical, chemical, and biological properties of soil. For this assessment, four soil quality parameters including PH, EC, OM, and BD were taken into account. The soil quality score for each sample has been provided in Table 3.5.

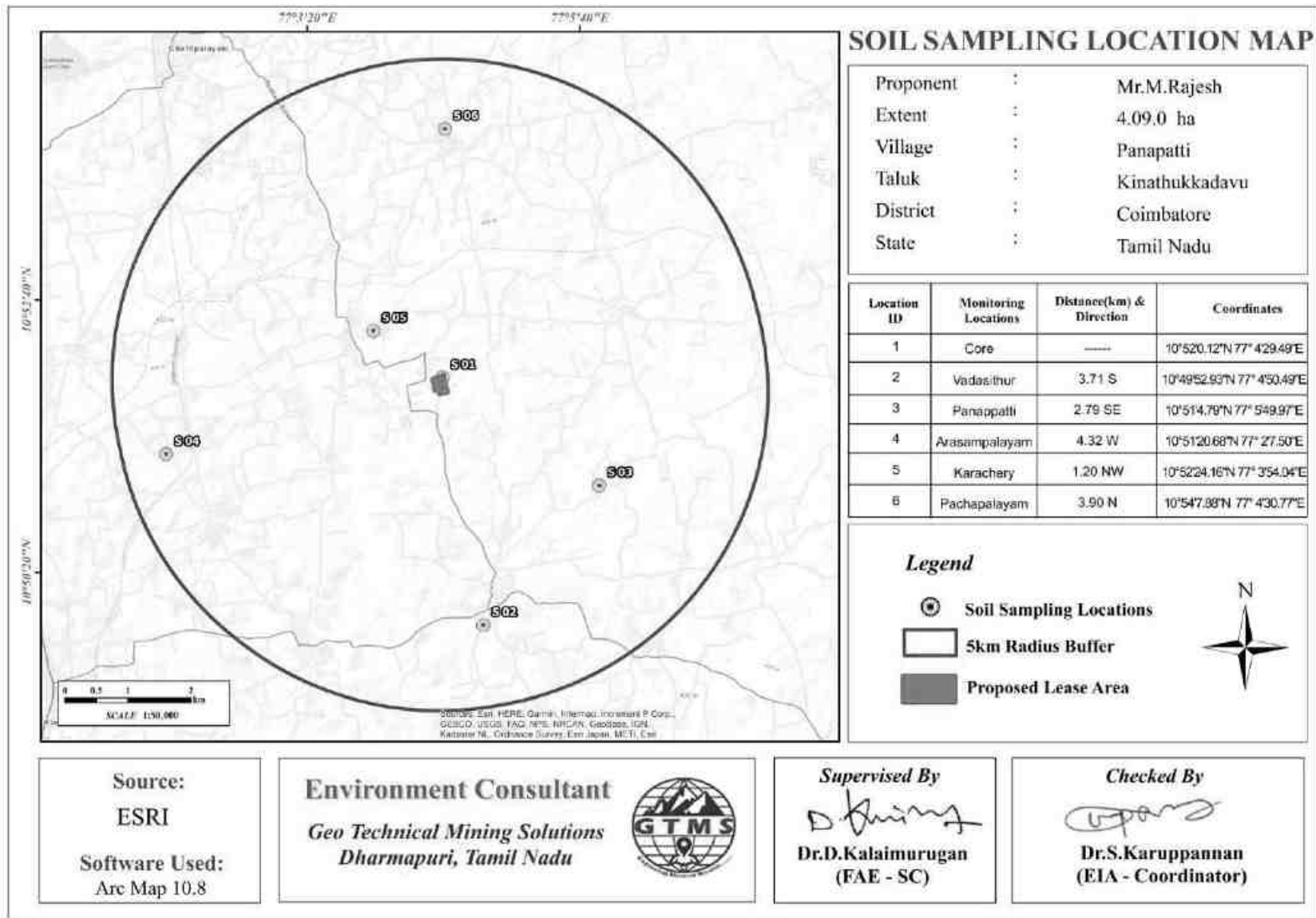


Figure 3.5 Map Showing in Soil Sampling Locations within 5 km Radius around the Proposed Project Site

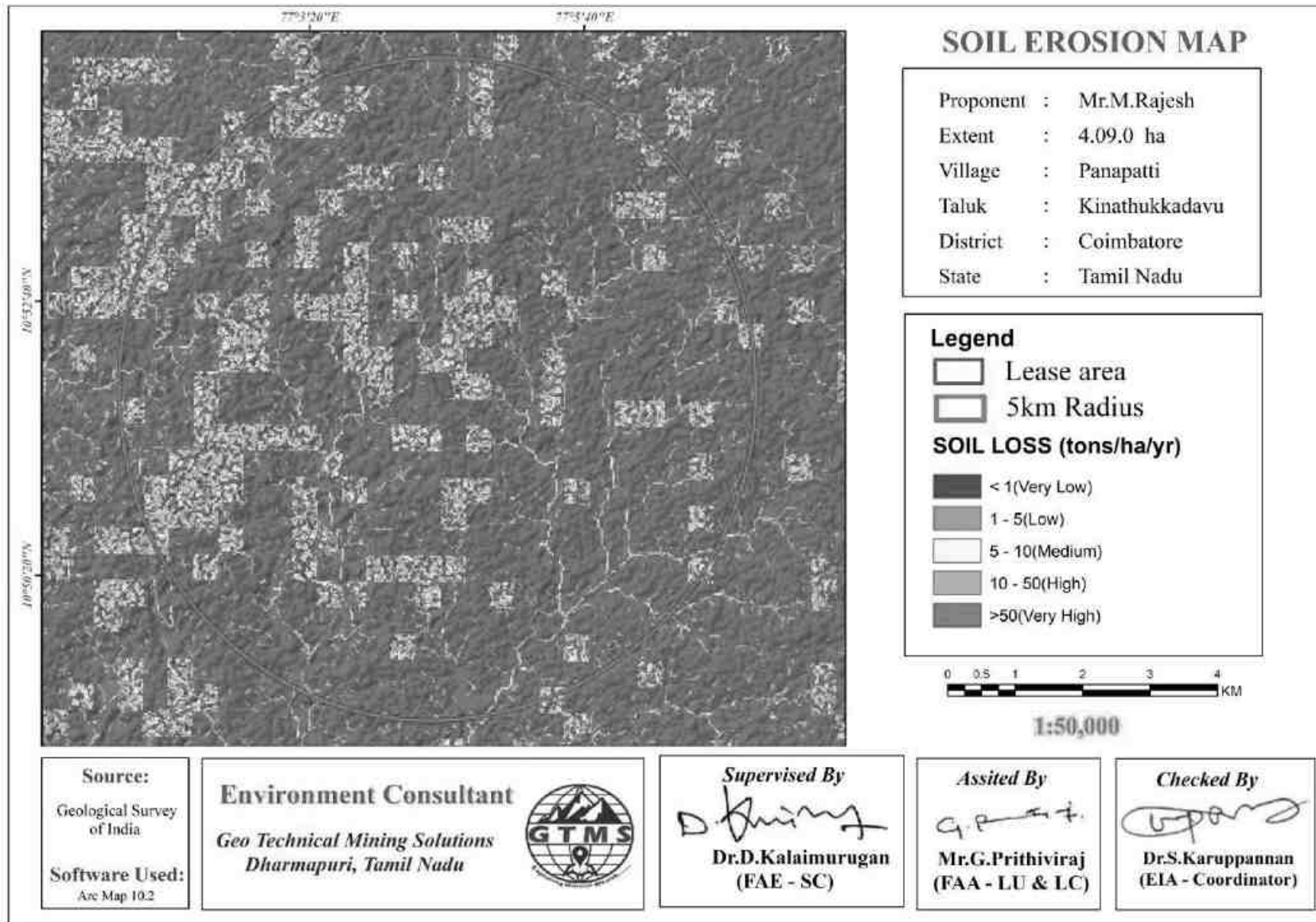


Figure 3.6 Soil Erosion map within 5 km Radius around the Proposed Project Site

Table 3.4 Soil Quality of the Study Area

S. No	Parameters	Unit	Core Soil	Minimum	Maximum	average
1	Bulk Density	g/cm ³	1.4	1.2	1.4	1.3
2	Cadmium (Cd)	mg/kg	<1.0	<1.0	<1.0	<1.0
3	CEC	meq%	36	30	83	46.4
4	Chromium (Cr)	mg/kg	93	58	421	190.6
5	Copper (Cu)	mg/kg	23	18	36	27.2
6	Iron (Fe)	mg/kg	54071	44889	50170	46824
7	Lead (Pb)	mg/kg	<1.0	<1.0	<1.0	<1.0
8	Manganese (Mn)	mg/kg	281	236	411	317.6
9	Nitrogen (N)	%	1.3	1.1	1.6	1.42
10	Organic Matter @ 155°C	%	0.82	1	2.2	1.64
11	pH value @ 25°C	--	8.1	7.8	8	7.9
12	Phosphate (P)	%	0.38	0.35	1.5	0.752
13	Potassium (K)	%	0.224	0.084	0.217	0.1566
14	EC @ 25°C	µS/Cm	297	303	547	378
15	Total Carbon	%	3.9	1.8	4.2	2.78
16	Sulphates (SO ₄)	%	0.35	0.31	0.68	0.494
17	Zinc (Zn)	mg/kg	86	64	87	73.6
18	Boron (B)	mg/kg	<0.1	<0.1	<0.1	<0.1
19	Calcium (Ca)	mg/kg	342	298	462	365.6
20	Chlorides (Cl)	mg/kg	739	353	574	467.6
21	Texture	-	Sandy Clay	Sandy Loam, Sandy Clay, Silty clay loam		
22	Sand	%	58.60	9.6	65.3	45.736
23	Clay	%	38.30	10.6	38.2	22.26
	Silt	%	3.10	5.6	56.1	32.004

Source: Sampling Results by *Excellence Laboratory (P) Limited*, in association with GTMS.

Table 3.5 Assigning Scores to Soil Quality Indicators

S. No.	OM	BD	PH	CEC	EC	Total Score	Recommendation
1	30	12	12	6	10	70	The soil requires major and immediate treatment
2	30	12	12	6	10	70	
3	30	12	12	6	10	70	
4	30	12	12	10	10	74	
5	30	12	12	10	10	74	
6	30	12	6	6	10	64	

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 3.6 Water Sampling Locations

S. No	Sampling ID	Location	Distance (km)	Direction	Coordinates
1	SW1	Panappatti	2.63	NE	10°53'0.11"N 77° 5'32.51"E
2	OW1	Kinathukadavu	3.03	SW	10°50'13.99"N 77° 4'13.51"E
3	BW2	Kondampatty	4.47	SW	10°49'42.29"N 77° 3'20.60"E
4	BW3	Arasampalayam	3.95	W	10°50'55.74"N 77° 2'29.19"E
5	BW4	Panapatti	2.94	E	10°52'35.35"N 77° 6'0.20"E
6	BW5	Karachery	1.48	NW	10°52'11.33"N 77° 3'37.14"E
7	BW6	Thekani	2.53	NW	10°53'5.90"N 77° 3'35.33"E
8	BW7	Pachapalayam	3.62	N	10°53'58.86"N 77° 4'28.75"E

Source: Sampling Results by *Excellence Laboratory (P) Limited*, in association with GTMS.

3.2.1 Surface Water Resources and Quality

Panappatti Lake are the prominent surface water resources present in the study area. This lake is ephemeral in nature, which convey water only after rainfall events. The proposed

project area is located 2.63 km NE Panappatti Lake, as shown in Table 3.6 and Figure 3.8. Surface water sample, known as SW01 are collected from the surface water body to assess the baseline water quality. Table 3.7 summarizes surface water quality data of the sample. Results for surface water samples in the Table 3.7 indicate that the physical and chemical parameters, and heavy metals are within permissible limits. Of the two biological parameters, *Coliform* and *E-coli* bacteria is present in the water sample.

3.2.2 Ground Water Resources and 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. 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 OW1, BW2, BW3, BW4, BW5, BW6 and BW7 were collected from bore wells and open well analysed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water. Ground water sampling locations and their distance and direction from the lease area are provided in Table 3.6 and the spatial occurrence of water sampling locations is shown in Figure 3.8. Table 3.7 summarizes ground water quality data of the six samples. Results for ground water samples in the Table 3.7 indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

3.2.3 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.

3.2.3.1 Rainfall

Rainfall data for the study area were collected for the period of 1981-2022. 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 3.11 shows that rainfall is generally high in the months of June, July and October in every year. Particularly, rainfall in July, August and October of 2022 is higher than the previous years.

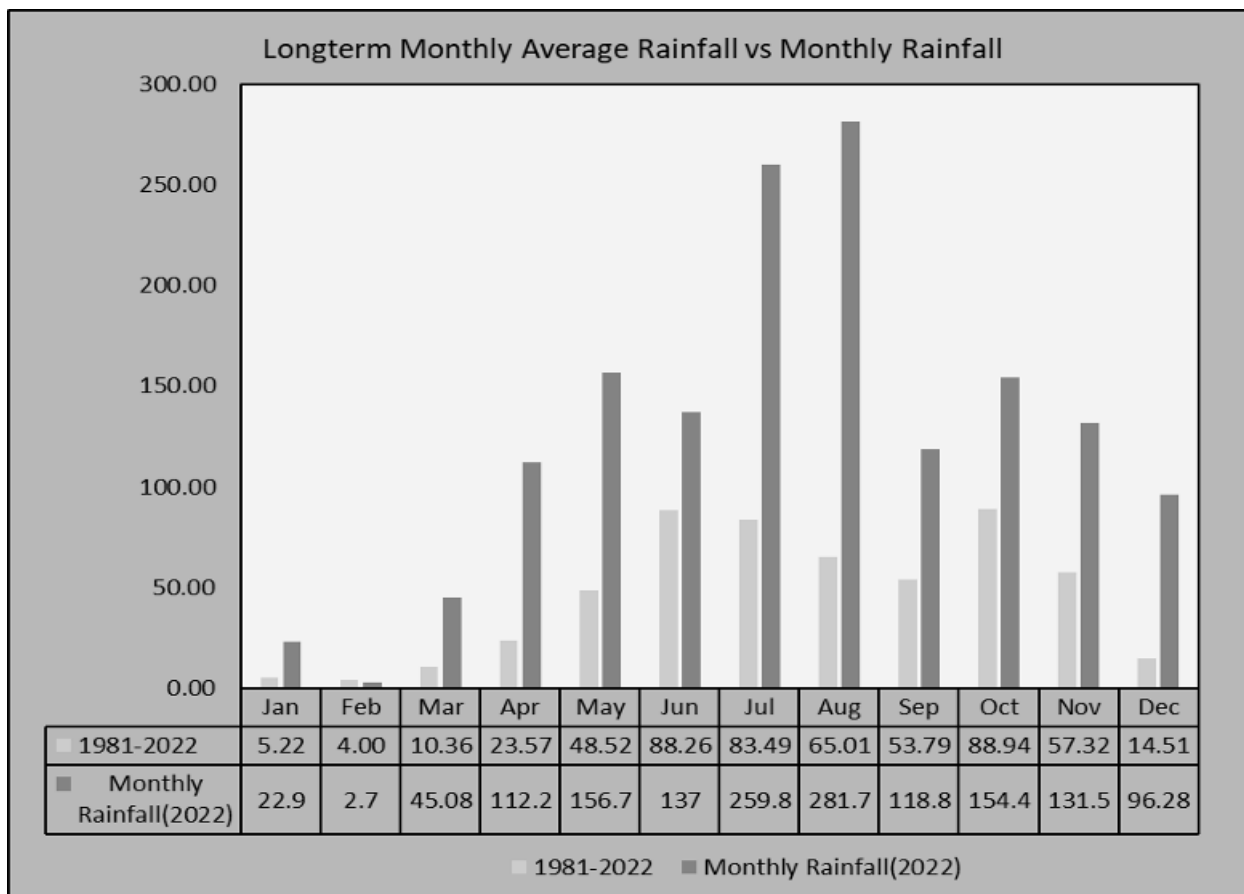


Figure 3.7 Long-Term Monthly Average Rainfall vs Monthly Rainfall

3.2.3.2 Groundwater Levels and Flow Direction

As the groundwater moves from the points of highest static groundwater elevation to the points of lowest static groundwater elevation under the influence of gravity, 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 October through December, 2023 (Post Monsoon Season) and from March through May, 2023 (Pre-Monsoon Season). The open well water level data thus collected onsite are provided in Tables 3.8 and 3.9. According to the data, average depths to the static water table in open wells range from 19.03 to 21.13 m BGL in post monsoon and from 22.9 to 25.4 m BGL in pre monsoon. The bore well data thus collected onsite are provided in Tables 3.10 and 3.11. The average depths to static potentiometric surface in bore wells for the period of October through December 2023 (Post-Monsoon Season) vary from 70.53 to 74.70 m and from 72.80 to 75.50 m for the period of March through May, 2023 (Pre-Monsoon Season).

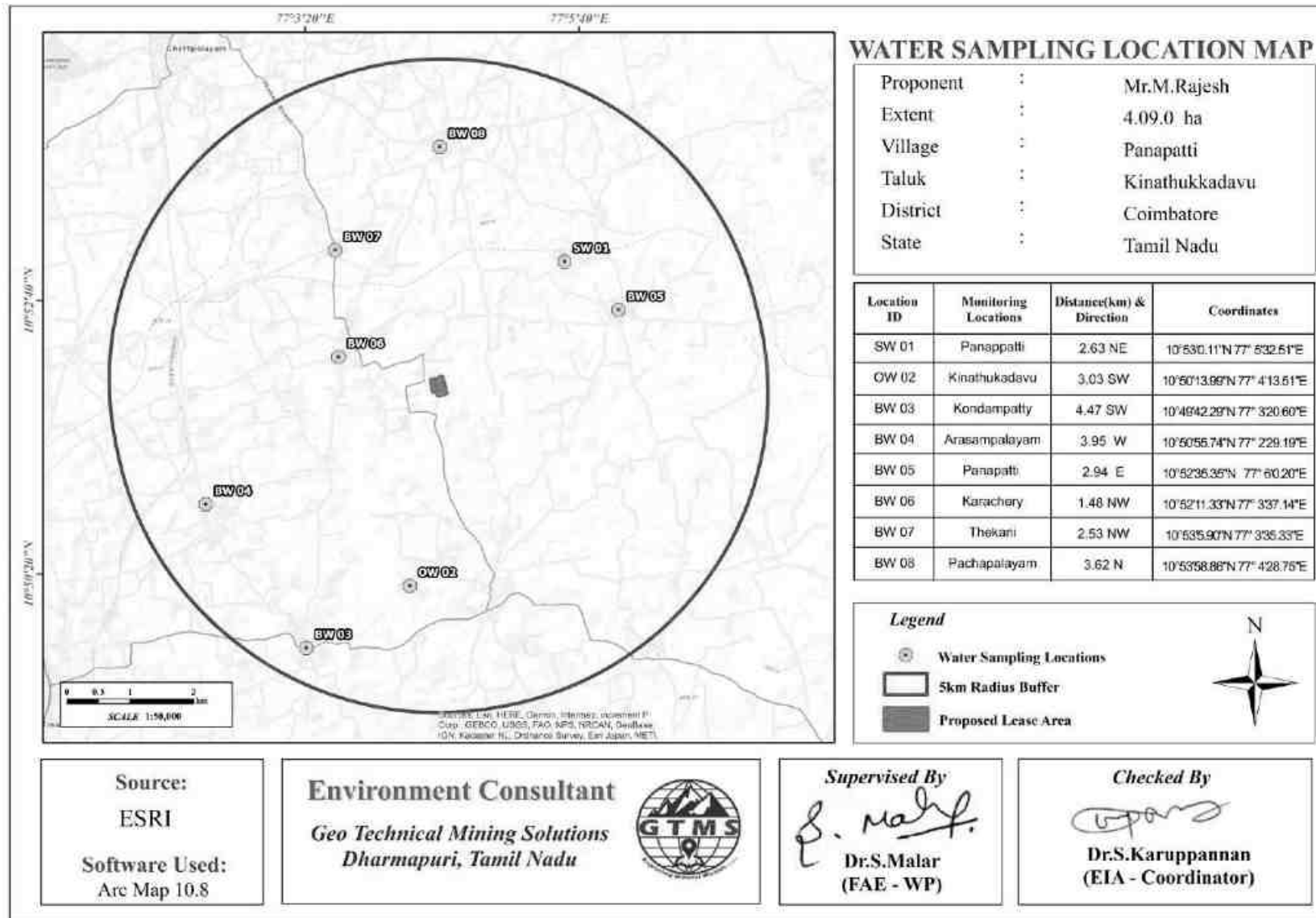


Figure 3.8 Map Showing Water Sampling Locations within 5 km Radius around the Proposed Project Site

Table 3.7 Ground & Surface Water Quality Result

S. No.	Parameters	Units	Result				10500:2012 (Acceptable)	10500:2012 (Permissible)
			SW1	Minimum	Maximum	Average		
1	<i>Coliforms Bacteria</i>	MPN	Present	Present	Present	Present	Shall not be detectable in any 100 ml sample	Shall not be detectable in any 100 ml sample
2	<i>E. Coli</i>	MPN	Present	Present	Present	Present	Shall not be detectable in any 100 ml sample	Shall not be detectable in any 100 ml sample
3	Aluminium (Al)	mg /l	<0.02	<0.02	<0.02	<0.02	0.03	0.2
4	Ammonia (NH ₃)	mg /l	<0.1	<0.1	<0.1	<0.1	0.5	No relaxation
5	Anionic Detergents	mg /l	<0.01	<0.01	<0.01	<0.01	0.2	1.0
6	Barium (Ba)	mg /l	<0.1	<0.1	<0.1	<0.1	0.5	No relaxation
7	Boron (B)	mg /l	<0.1	<0.1	<0.1	<0.1	0.5	1.0
8	Cadmium (Cd)	mg /l	<0.003	<0.003	<0.003	<0.003	0.003	No relaxation
9	Calcium (Ca)	mg /l	191	105	172	147.33	75	200
10	Chloride (Cl)	mg /l	548	106	730	401.85	250	1000
11	Colour	Hazen	<1.0	<1.0	<1.0	<1.0	5	15
12	Copper (Cu)	mg/l	<0.02	<0.02	<0.02	<0.02	0.05	1.5
13	Cyanide (CN)	mg/l	<0.02	<0.02	<0.02	<0.02	0.05	No relaxation
14	Fluoride (F)	mg/l	00	1.1	1.7	1.1	1.0	1.5
15	Free Residual Chlorine (RFC)	mg/l	<0.1	<0.1	<0.1	<0.1	0.2	1.0

16	Iron (Fe)	mg/l	<0.05	<0.05	<0.05	<0.05	0.3	No relaxation
17	Lead (Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
18	Magnesium (Mg)	mg/l	18	17	45	29	30	100
19	Manganese (Mn)	mg/l	<0.01	<0.01	<0.01	<0.01	0.1	0.3
20	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	0.001	No relaxation
21	Molybdenum	mg/l	<0.05	<0.05	<0.05	<0.05	0.07	No relaxation
22	Nitrate (NO ₃)	mg/l	43	10	29	16.88	45	No relaxation
23	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
24	pH value @ 25°C	--	7.8	7.2	8.9	7.94	6.5-8.5	No relaxation
25	Phenolic Compounds	mg/l	<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	No relaxation
27	EC @ 25°C	µS/Cm	1220	25	3960	1990.71	-	-
28	Sulphates (SO ₄)	mg/l	230	37	210	149.28	200	400
29	Sulphide (H ₂ S)	mg/l	<0.05	<0.05	<0.05	<0.05	0.05	No relaxation
30	Total Alkalinity	mg/l	449	239	474	340.85	200	600
31	Arsenic (As)	mg/l	<0.005	<0.005	<0.005	<0.005	0.01	0.05
32	Chromium (Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	0.05	No relaxation
33	TDS	mg/l	732	675	1580	1125.444	500	2000
34	TH (CaCO ₃)	mg/l	320	190	528	324	200	600
35	TSS @ 105°C	mg/l	<5.0	<5.0	<5.0	<5.0	-	-
36	Turbidity	NTU	<0.1	<0.1	<0.1	<0.1	1	5
37	Zinc (Zn)	mg/l	<0.05	<5.0	<5.0	0.07	5	15

Source: Sampling Results by *Excellence Laboratory (P) Limited*, in association with GTMS.

Data on the depths to static water table and potentiometric surface were used to calculate static groundwater table and potentiometric surface elevations for open wells and borewells, respectively to draw contour lines connecting groundwater elevation (also known as equipotential hydraulic head) to determine the groundwater flow direction perpendicular to the contour lines. The maps thus produced are shown in Figures 3.9-3.10. From the maps of Open well water flow direction, it is understood that most of the open well groundwater for the post- and pre-monsoon seasons flows towards the open well number 6 located in Southeast direction and open well number 6 located in Southeast direction of the proposed project site respectively. The maps thus produced in bore wells are shown in Figures 3.11-3.12. From the groundwater flow map in fare that two monsoon seasons groundwater flows towards the bore well number 4 located in East 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 3.8 Pre-Monsoon Water Level of Open Wells within 2 Km Radius

Station ID	Depth to Static Water Table BGL(m)				Latitude	Longitude
	Mar-2023	Apr-2023	May- 2023	Average		
OW01	22.8	23.1	25.3	23.7	10°51'59.94"N	77° 4'37.89"E
OW02	22.4	22.8	23.4	22.9	10°51'46.68"N	77° 4'34.23"E
OW03	22.5	23.1	23.8	23.1	10°51'46.92"N	77° 4'7.25"E
OW04	24.1	25.2	26.1	25.1	10°52'1.44"N	77° 4'21.88"E
OW05	24.2	25.6	26.4	25.4	10°52'44.49"N	77° 4'24.08"E
OW06	23.9	24.4	25.2	24.5	10°51'50.22"N	77° 5'34.65"E
OW07	23.1	24.7	25.6	24.5	10°51'11.56"N	77° 4'38.07"E
OW08	23.6	24.4	25.5	24.5	10°51'49.45"N	77° 3'26.92"E
OW09	23.8	24.5	26.1	24.8	10°52'41.93"N	77° 3'49.89"E

Source: Onsite monitoring data

Table 3.9 Post-Monsoon Water Level of Open Wells within 2 km Radius

Station ID	Depth to Static Water Table BGL(m)				Latitude	Longitude
	Oct-2023	Nov-2023	Dec-2023	Average		
OW01	21.6	20.1	17.9	19.87	10°51'59.94"N	77° 4'37.89"E
OW02	20.4	19.6	17.4	19.13	10°51'46.68"N	77° 4'34.23"E
OW03	20.8	19.6	17.9	19.43	10°51'46.92"N	77° 4'7.25"E

OW04	21.4	20.2	19.1	20.23	10°52'1.44"N	77° 4'21.88"E
OW05	22.2	21.4	19.8	21.13	10°52'44.49"N	77° 4'24.08"E
OW06	21.4	18.4	17.3	19.03	10°51'50.22"N	77° 5'34.65"E
OW07	21.1	18.8	17.5	19.13	10°51'11.56"N	77° 4'38.07"E
OW08	21.6	19.1	18.2	19.63	10°51'49.45"N	77° 3'26.92"E
OW09	21.8	20.6	19.4	20.60	10°52'41.93"N	77° 3'49.89"E

Source: Onsite monitoring data

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

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Mar-2023	Apr-2023	May- 2023	Average		
BW01	74.6	75.8	76.1	75.50	10°52'13.10"N	77° 4'16.73"E
BW02	74.9	73.2	75.8	74.63	10°52'11.28"N	77° 3'37.06"E
BW03	73.1	73.4	75.9	74.13	10°51'48.63"N	77° 3'39.13"E
BW04	74.5	74.8	76.1	75.13	10°51'59.92"N	77° 5'27.38"E
BW05	71.3	74.4	76.5	74.07	10°51'10.61"N	77° 5'22.55"E
BW06	72.8	73.1	76.3	74.07	10°51'18.53"N	77° 4'29.08"E
BW07	71.2	71.5	75.7	72.80	10°52'29.89"N	77° 5'17.72"E
BW08	70.6	71.9	76.5	73.00	10°52'59.62"N	77° 4'6.92"E
BW09	72.8	73.1	75.6	73.83	10°52'48.19"N	77° 4'46.35"E

Source: Onsite monitoring data

Table 3.11 Post-Monsoon Water Level of Bore Wells within 2 km Radius

Station ID	Depth to Static Potentiometric Surface BGL(m)				Latitude	Longitude
	Oct-2023	Nov-2023	Dec-2023	Average		
BW01	73.1	72.9	72.8	72.93	10°52'13.10"N	77° 4'16.73"E
BW02	73.6	73.4	73.2	73.40	10°52'11.28"N	77° 3'37.06"E
BW03	72.9	72.7	72.5	72.70	10°51'48.63"N	77° 3'39.13"E
BW04	74.2	73.9	73.6	73.90	10°51'59.92"N	77° 5'27.38"E
BW05	75.2	75.1	73.8	74.70	10°51'10.61"N	77° 5'22.55"E
BW06	72.5	72.3	71.9	72.23	10°51'18.53"N	77° 4'29.08"E
BW07	70.9	70.6	70.1	70.53	10°52'29.89"N	77° 5'17.72"E
BW08	73.2	72.9	72.7	72.93	10°52'59.62"N	77° 4'6.92"E
BW09	72.6	72.4	72.3	72.43	10°52'48.19"N	77° 4'46.35"E

Source: Onsite monitoring data

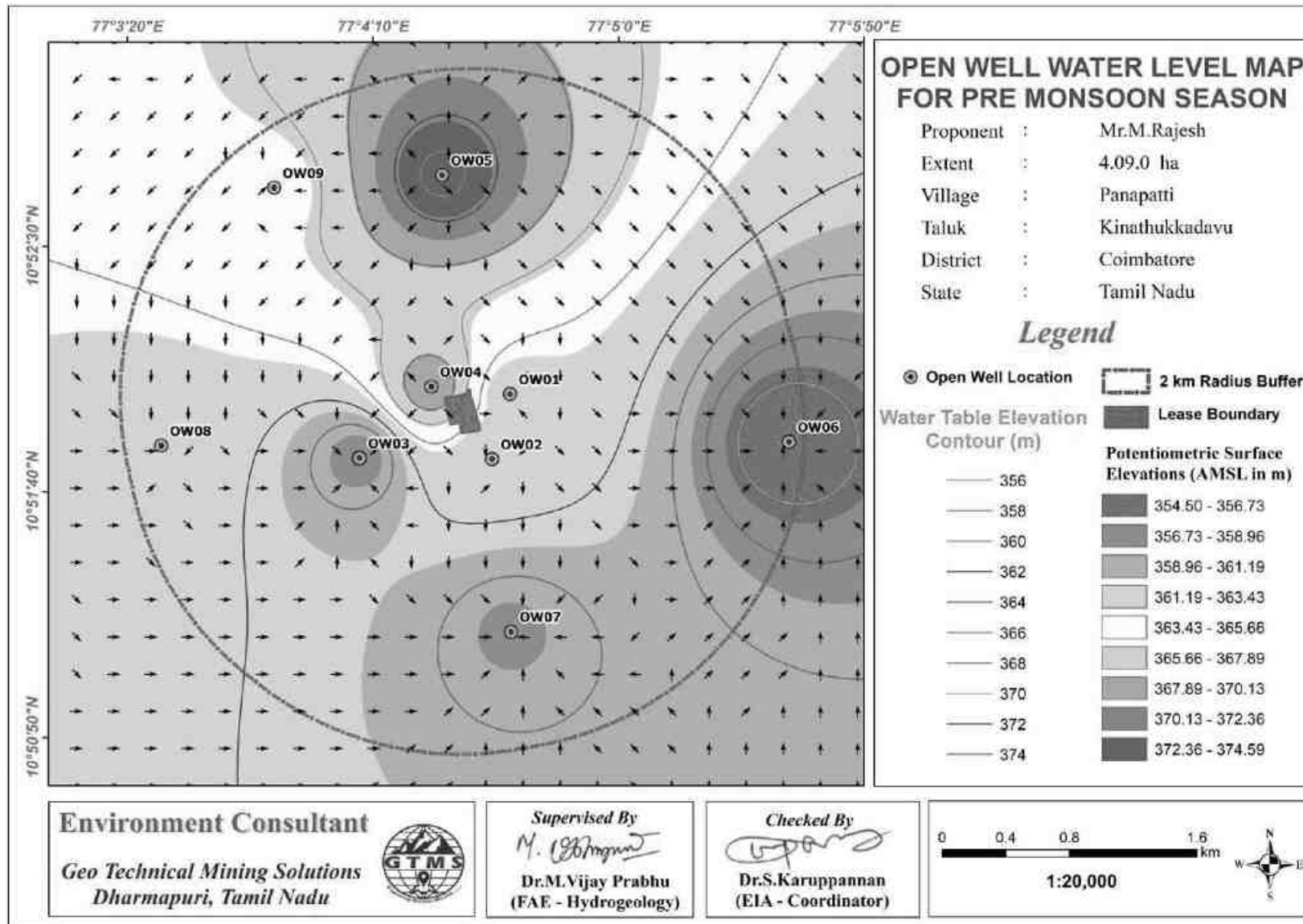


Figure 3.9 Open Well Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Pre-Monsoon Season

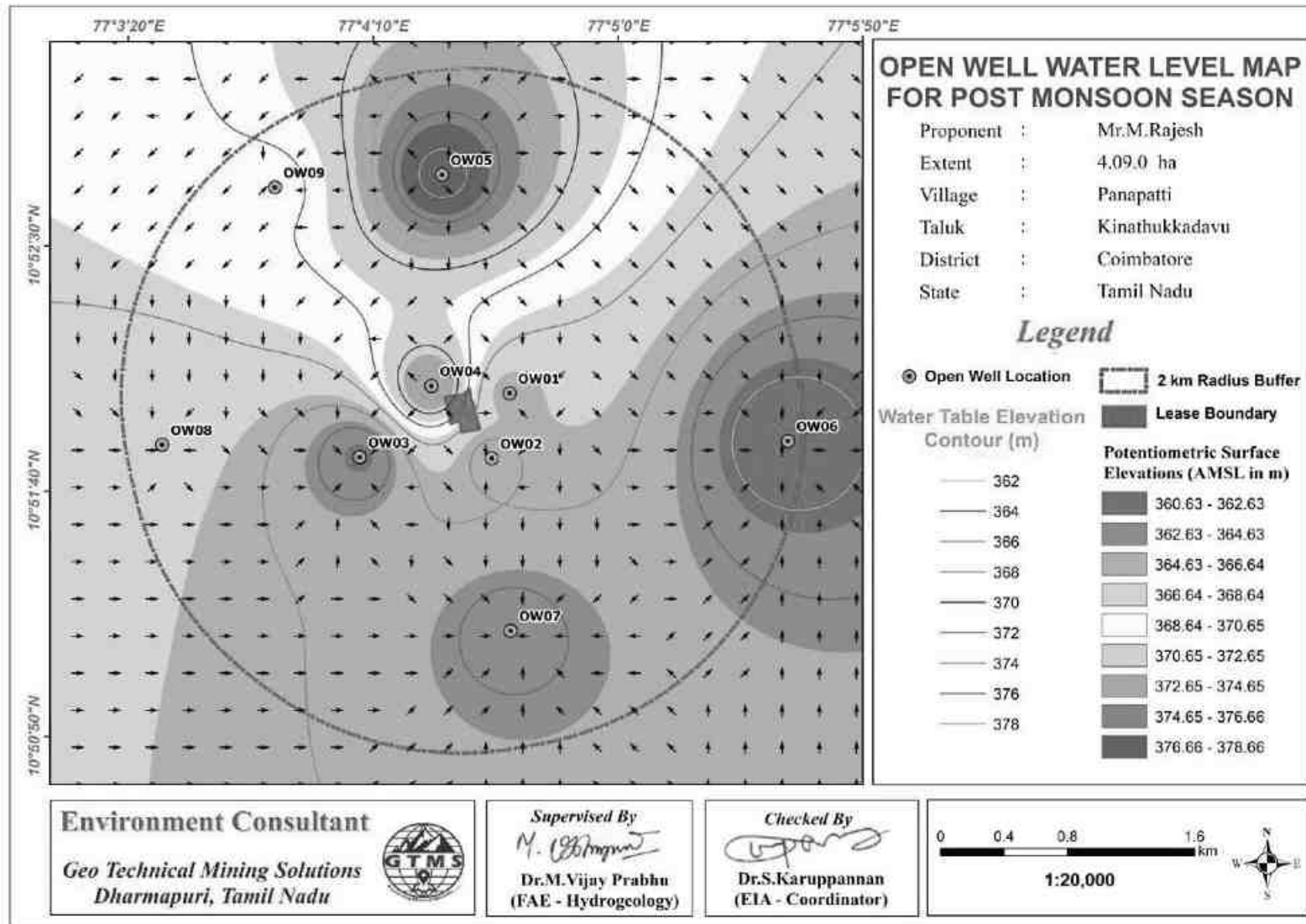


Figure 3.10 Open Well Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Post-Monsoon Season

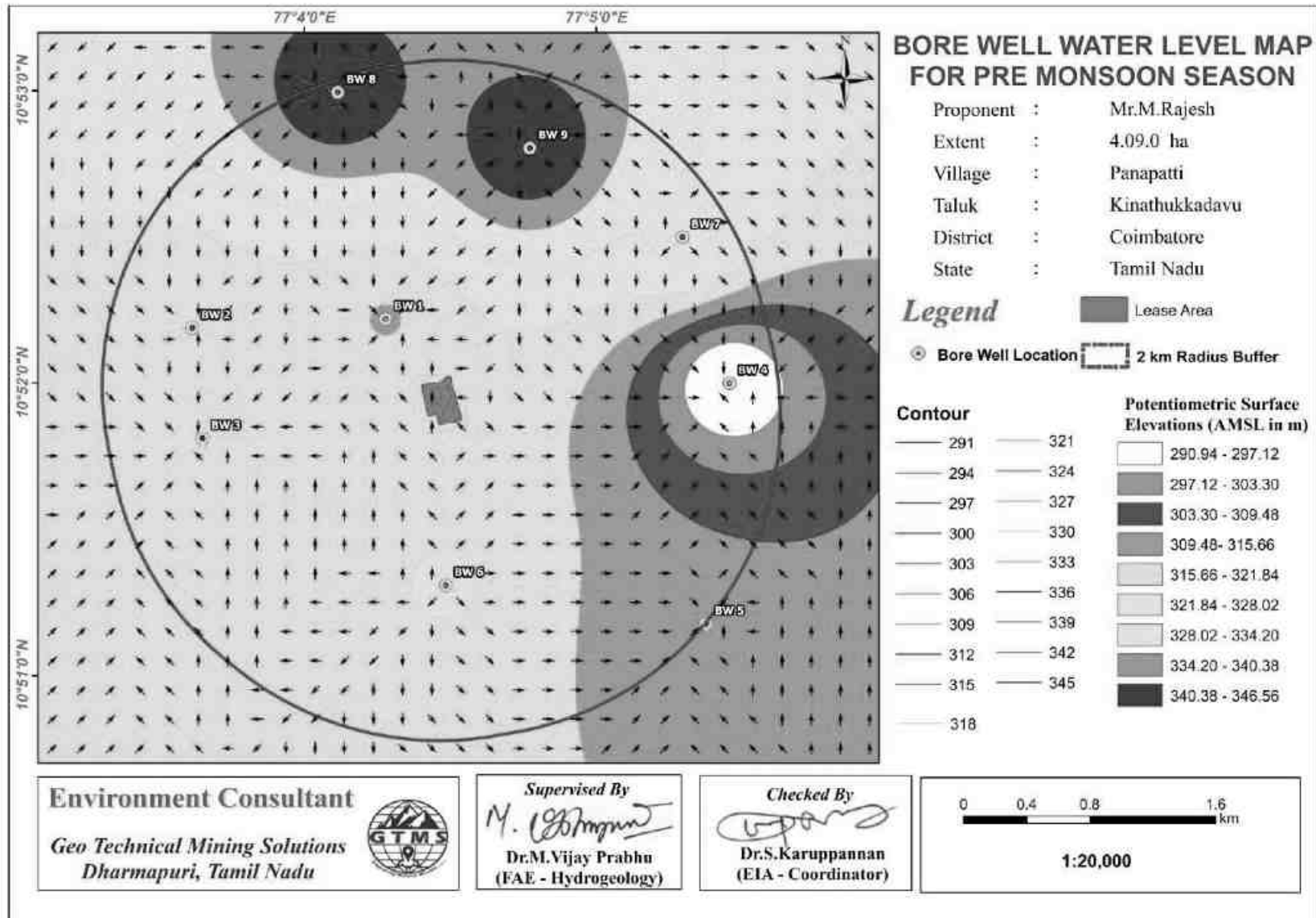


Figure 3.11 Borewell Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Pre-Monsoon Season

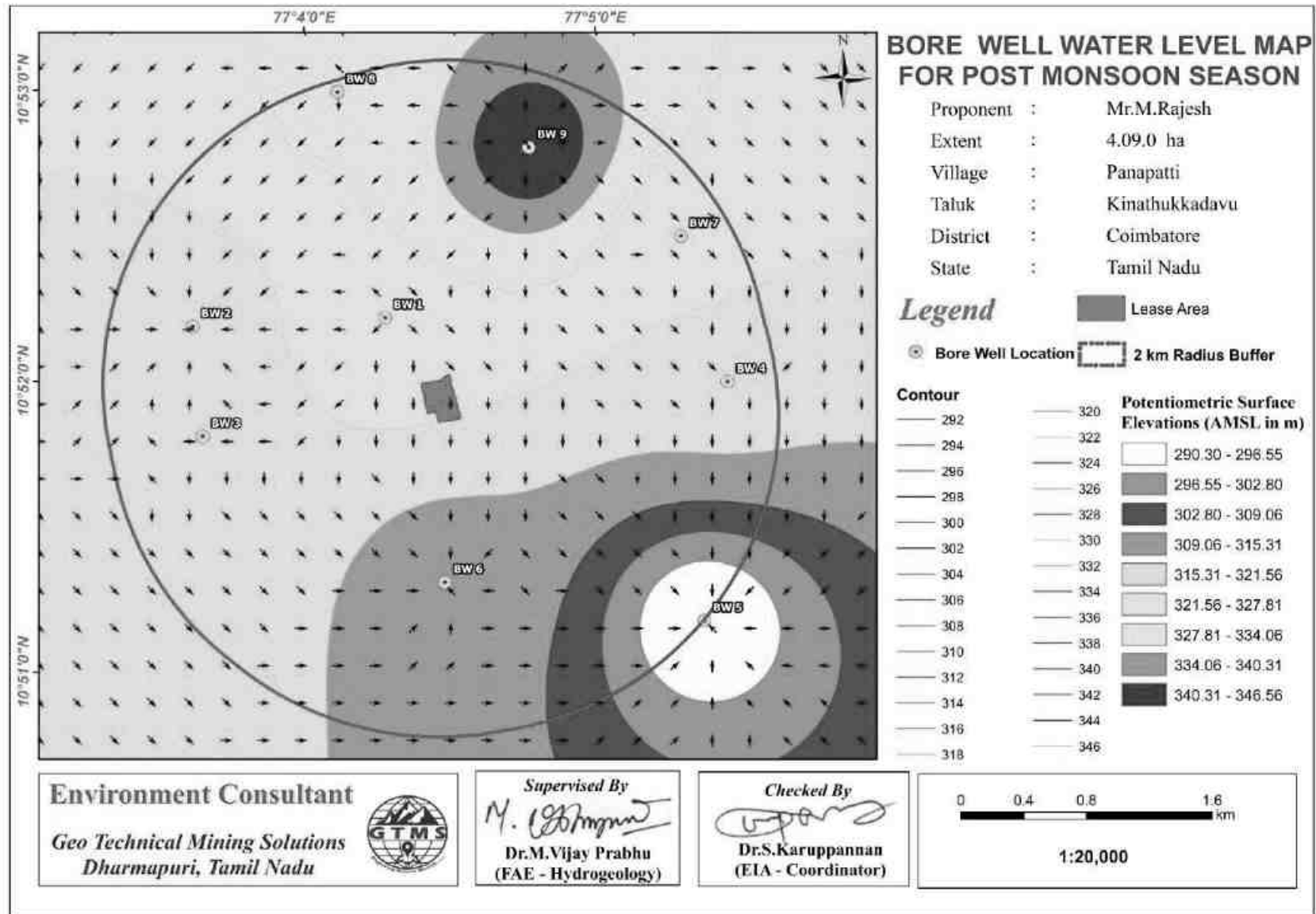


Figure 3.12 Borewell Static Groundwater Elevation Map Showing the Direction of Groundwater Flow During Post-Monsoon Season

3.2.3.3 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 3.12. 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 3.13.

Table 3.12 Vertical Electrical Sounding Data

Location Coordinates - 10°51'56.99"N 77° 4'25.88"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in Ω	Apparent Resistivity in Ωm
1	2	2	11.78	13.248	156.06
2	4	2	49.46	6.127	303.04
3	6	5	112.26	3.937	441.97
4	8	5	200.18	2.798	560.10
5	10	5	75.36	8.997	678.01
6	15	10	173.49	5.188	900.07
7	20	10	310.86	3.558	1106.04
8	25	10	487.49	2.603	1268.94
9	30	10	274.75	5.001	1374.02
10	35	10	376.8	3.883	1463.11
11	40	10	494.55	3.16	1562.78
12	45	10	628	2.683	1684.92
13	50	10	1256	1.004	1261.02
14	65	20	453.6	2.213	1003.82
15	70	20	989.1	2.651	2622.10
16	80	20	777.15	1.943	1510.00
17	90	20	1554.3	1.846	2869.24
18	100	20	1653.6	2.213	3659.42

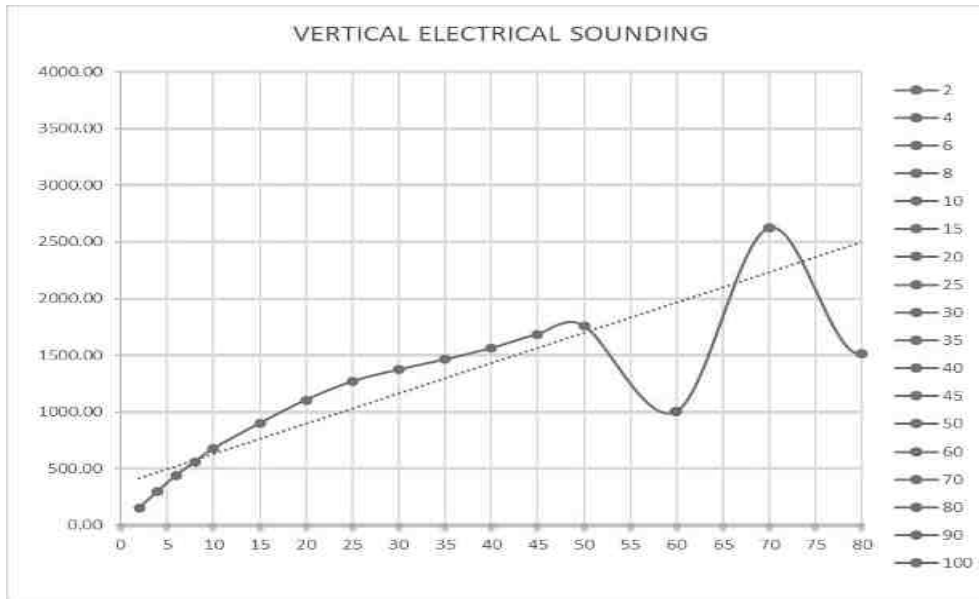


Figure 3.13 Graph Showing Occurrence of Water Bearing Fracture Zones at the Depth of 60 m Below Ground Level in Proposed Project

The rock formation of low resistivity values indicates occurrence of water at the depth of about 60 m below ground level. The maximum depth proposed for the proposed project is 45 m 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 3 m 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 3.13.

According to the onsite data, the temperature in October, 2023 varied from 17.51 to 29.55°C with the average of 23.76°C; in November, 2023 from 15.57 to 29.27°C with the average of 22.83°C; and in December, 2023 from 17.90 to 18.83°C with the average of 18.27°C. In October, 2023, relative humidity ranged from 60.12 to 100 % with the average of 86.73%; in November, 2023, from 57.25 to 100% with the average of 86.60%; and in December, 2023, from 96.75 to 100% with the average of 99.05%. The wind speed in

October, 2023 varied from 0.08 to 6.72m/s with the average of 2.17m/s; in November, 2023 from 0.47m/s to 7.11 with the average of 2.87m/s; and in December, 2023 from 1.84 to 1.97m/s with the average of 1.88 m/s. In October,2023, wind direction varied from 0.0 to 359.79⁰ with the average of 97.30⁰; in November, 2023, from 5.79 to 357.83⁰ with the average of 102.43⁰; and in December, 2023, from 68.33 to 85.44⁰ with the average of 74.61⁰. In October,2023, surface pressure varied from 94.72 to 95.49kPa with the average of 95.11kPa; in November, 2023, from 94.57 to 95.64 kPa with the average of 95.13kPa; and in December, 2023, from 95.16 to 95.28kPa with the average of 95.21 kPa.

Table 3.13 Onsite Meteorological Data

S. No.	Parameters		OCT, 2023	NOV,2023	DEC,2023
1	Temperature (°C)	Min	17.51	15.57	17.90
		Max	29.55	29.27	18.83
		Avg	23.76	22.83	18.27
2	Relative Humidity (%)	Min	60.12	57.25	96.75
		Max	100.00	100.00	100.00
		Avg	86.73	86.60	99.05
3	Wind Speed (m/s)	Min	0.08	0.47	1.84
		Max	6.72	7.11	1.97
		Avg	2.17	2.87	1.88
4	Wind Direction (degree)	Min	0.00	5.79	68.33
		Max	359.79	357.83	85.44
		Avg	97.30	102.43	74.61
5	Surface Pressure(kPa)	Min	94.72	94.57	95.16
		Max	95.49	95.64	95.28
		Avg	95.11	95.13	95.21

Source: On-site monitoring/sampling by *Excellence Laboratory* 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 through December of the years 2019-2022 and the seasonal wind rose for the study period of October through December of the years 2023. The wind rose diagrams thus produced are shown in Figures 3.14-3.14a. Figure 3.15 reveals that:

- ❖ The measured average wind velocity during the study period is 3.23m/s.
- ❖ Predominant wind was dominant in the directions ranging from Southeast to Northwest.

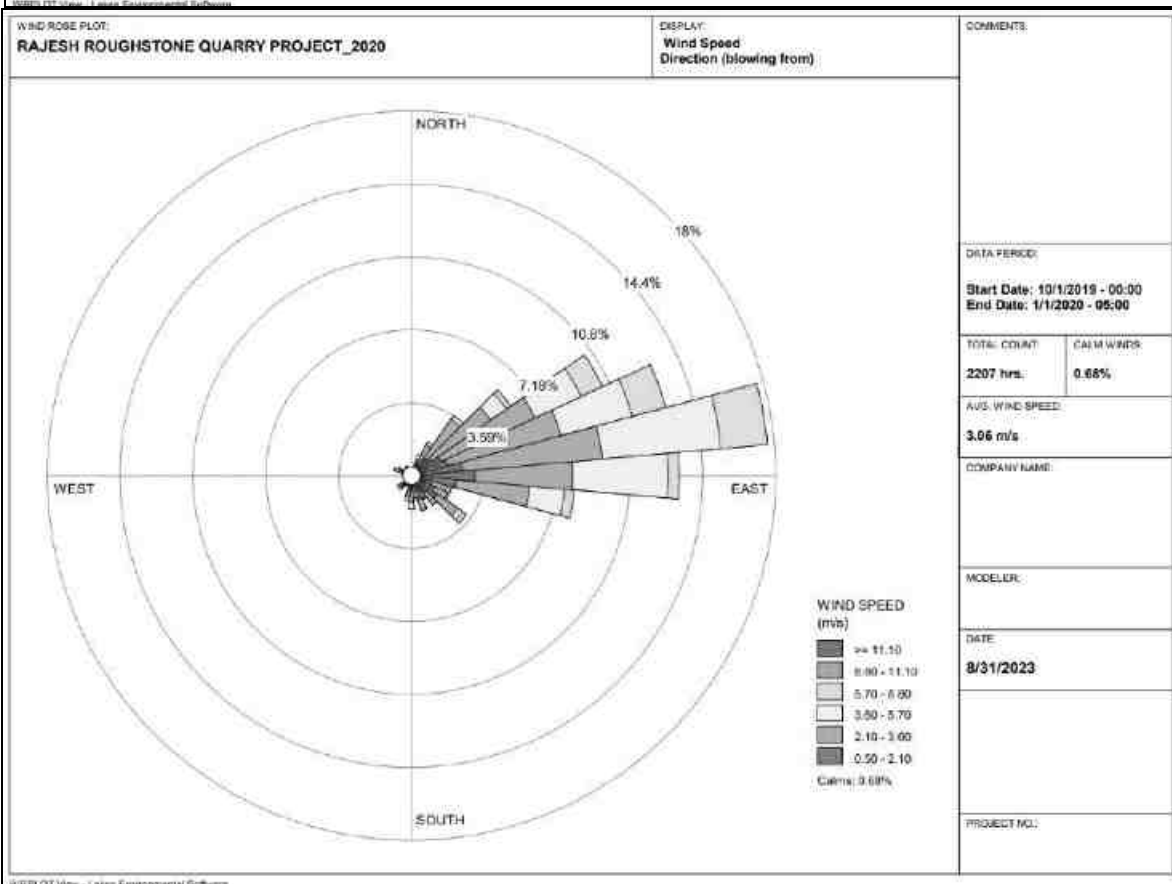
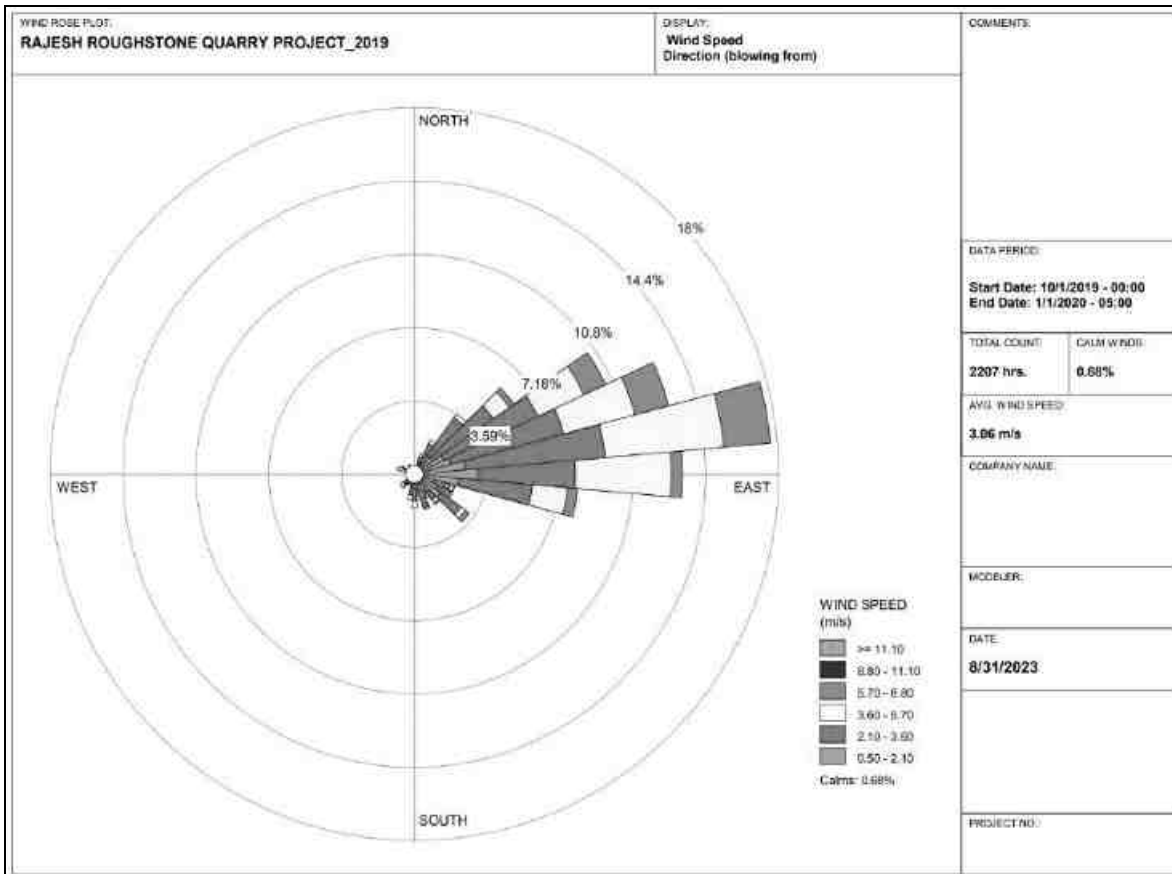


Figure 3.14 Windrose Diagram for October to December -2019-2020

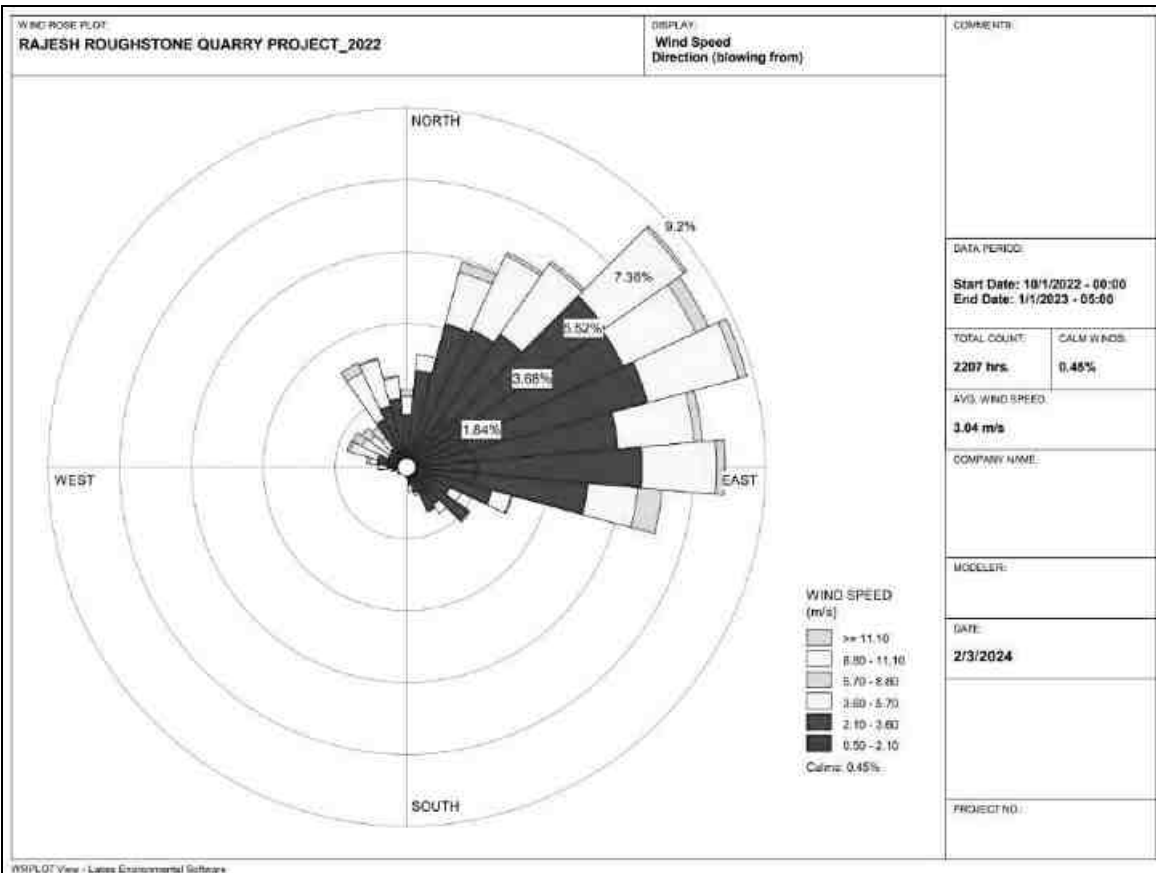
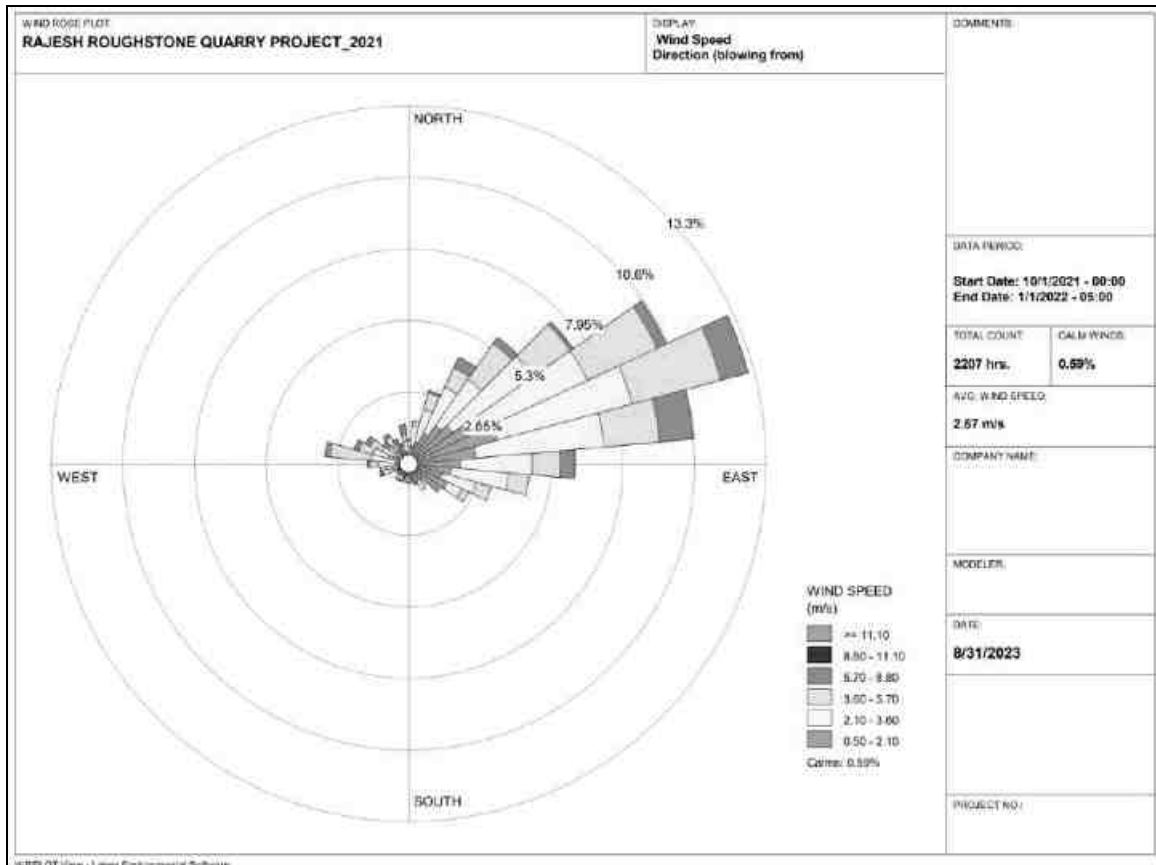


Figure 3.14(A) Windrose Diagram for October to December 2021-2022

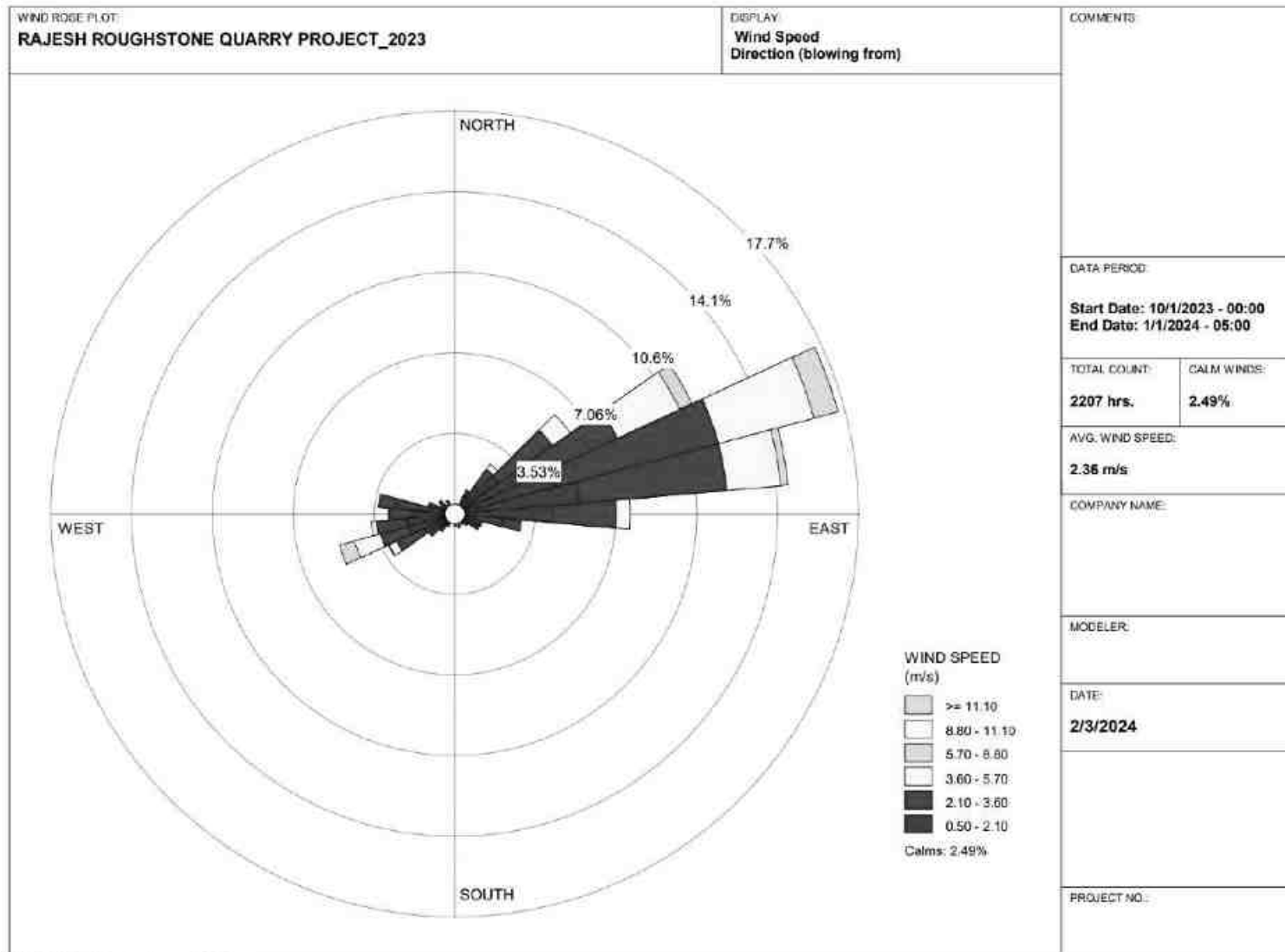


Figure 3.15 Onsite Wind Rose Diagram

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 3.14 Methodology and Instrument Used for AAQ Analysis

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

Source: Sampling Methodology based on *Excellence Laboratory* & CPCB Notification

Table 3.15 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 Seven (07) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period **October through December 2023** 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 PM_{10} , $\text{PM}_{2.5}$, sulphur dioxide (SO_2) and nitrogen dioxide (NO_x). The sampling locations are shown in Figure 3.16 and average concentrations of air pollutants are summarized in Tables 3.16.

Table 3.16 Ambient Air Quality (AAQ) Monitoring Locations

S. No	Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates	
1	AAQ1	Core	--	--	10°51'54.60"N	77° 4'26.06"E
2	AAQ2	Pannappatti	2.88	NE	10°52'35.48"N	77° 5'58.17"E
3	AAQ3	Karachery	1.31	NW	10°52'11.61"N	77° 3'43.06"E
4	AAQ4	Vadasithur	3.08	SSE	10°50'14.74"N	77° 4'54.65"E
5	AAQ5	Kondampatty	4.15	SW	10°49'54.63"N	77° 3'19.81"E
6	AAQ6	Kumarapalayam	5.16	SW	10°51'4.26"N	77° 1'43.18"E
7	AAQ7	Pachapalayam	3.62	NNE	10°53'58.71"N	77° 4'33.14"E

Source: On-site monitoring/sampling by **Excellence Laboratory** in association with GTMS

Results

As per the monitoring data, $\text{PM}_{2.5}$ ranges from $15.0 \mu\text{g}/\text{m}^3$ to $16.7 \mu\text{g}/\text{m}^3$; PM_{10} from $36.8 \mu\text{g}/\text{m}^3$ to $41.1 \mu\text{g}/\text{m}^3$; SO_2 $2.6 \mu\text{g}/\text{m}^3$ to $4.2 \mu\text{g}/\text{m}^3$; NO_x from $8.7 \mu\text{g}/\text{m}^3$ to $13.8 \mu\text{g}/\text{m}^3$. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

Air Quality Index (AQI)

The AQI shows that the air quality of the study area falls within good category 39 causing minimal impact to human health.

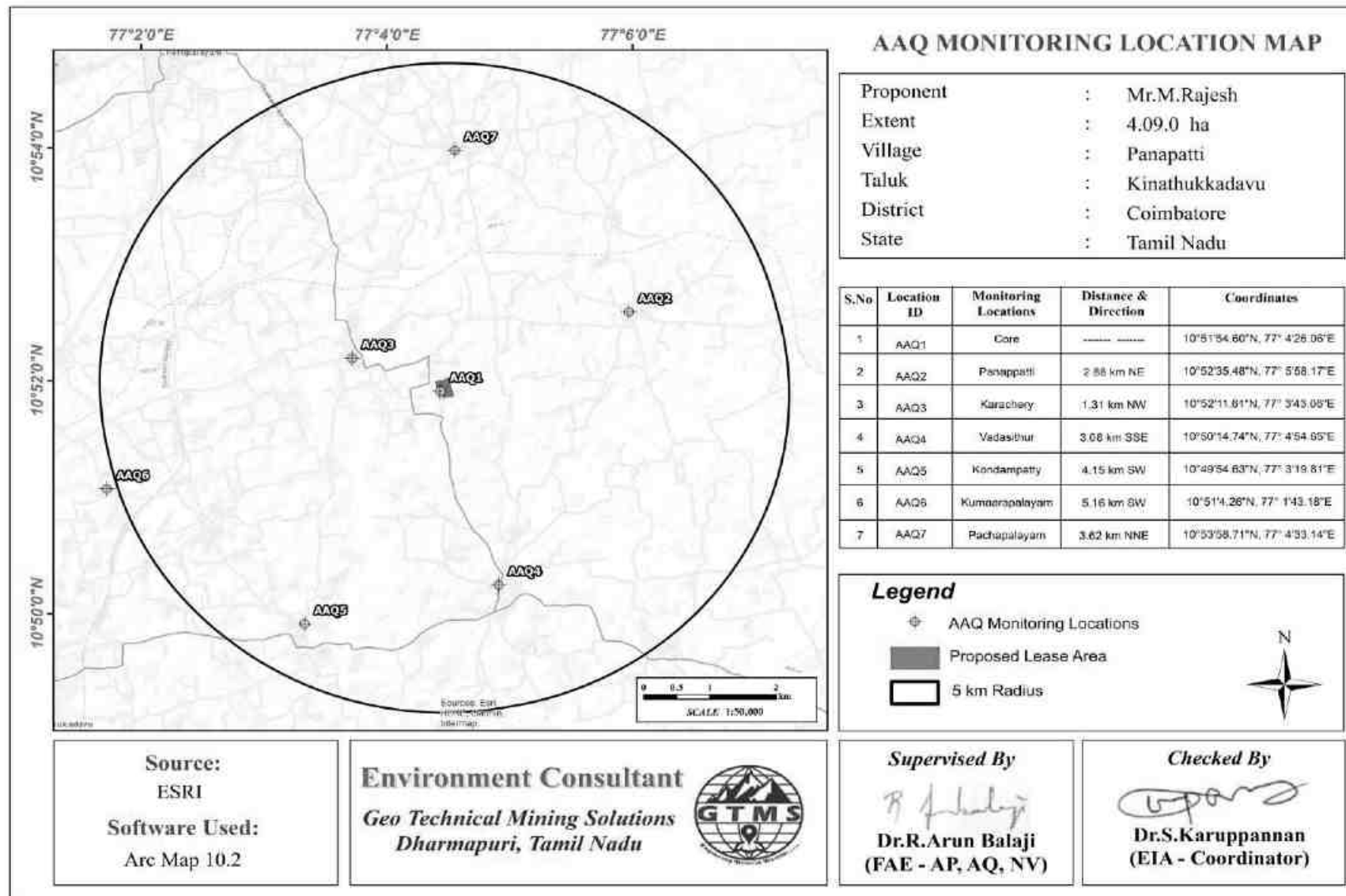


Figure 3.16 Map Showing Ambient Air Quality Monitoring Station Locations around 5 Km Radius from the Proposed Project Site

Table 3.17 Summary of AAQ Result

PM _{2.5}					PM ₁₀			
Station ID	Max	Min	Mean	98 th Percentile	Max	Min	Mean	98 th Percentile
AAQ1	16.6	15.5	16.1	16.5	41.4	38.8	40.2	41.4
AAQ2	17.6	15.5	16.7	17.6	44.0	38.8	41.8	44.0
AAQ3	15.1	13.5	14.3	14.7	37.8	33.8	35.7	37.6
AAQ4	15.6	13.5	14.7	15.6	39.0	33.8	36.8	39.0
AAQ5	16.3	13.8	15.2	16.3	40.8	34.4	38.0	40.7
AAQ6	16.2	15.1	15.6	16.1	40.6	37.8	39.1	40.4
AAQ7	19.8	18.3	19.2	19.8	43.8	40.4	42.4	43.7
SO ₂					NO _x			
AAQ1	2.7	1.7	2.2	2.7	9.5	6.0	7.6	9.3
AAQ2	5.1	3.8	4.4	5.0	15.8	11.8	13.6	15.5
AAQ3	4.0	2.1	2.6	3.0	12.4	6.5	8.2	11.8
AAQ4	3.9	2.2	3.2	3.9	10.9	6.2	8.8	10.9
AAQ5	4.1	2.6	3.2	4.0	14.4	9.1	11.3	14.0
AAQ6	4.9	2.9	3.9	4.9	15.2	9.0	12.0	15.0
AAQ7	4.8	3.2	4.1	4.7	18.7	12.5	15.8	17.6

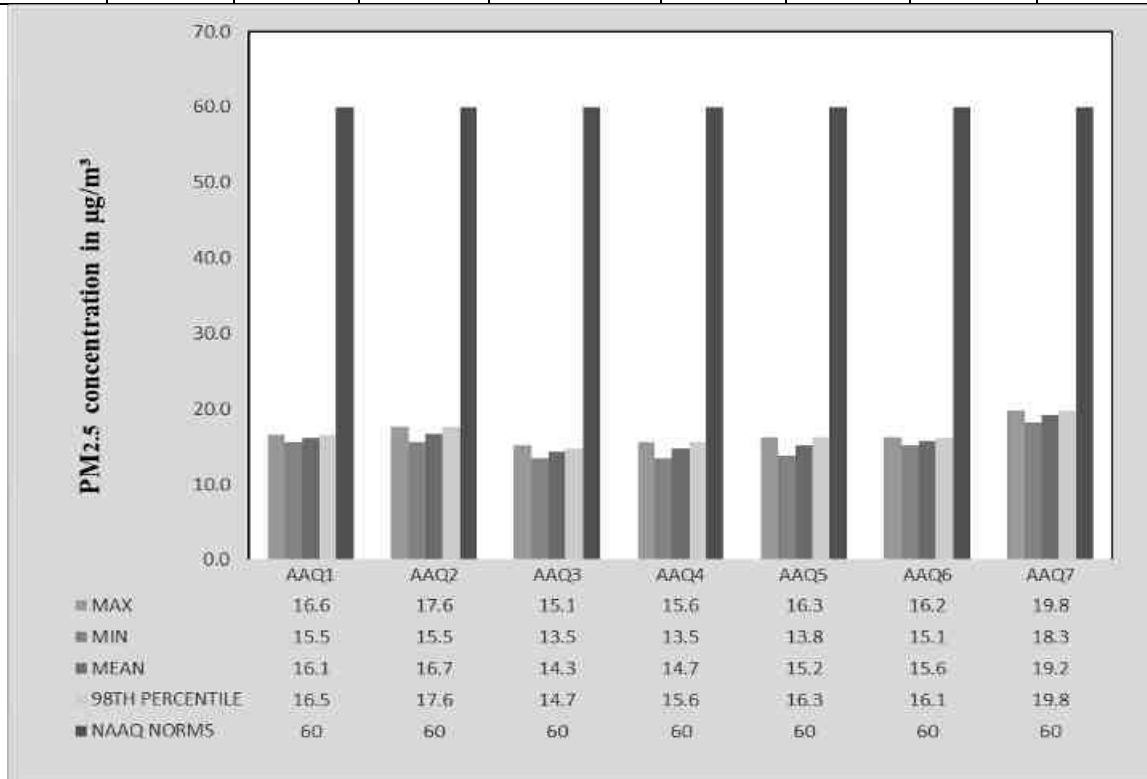


Figure 3.17 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of PM_{2.5} Measured from the 7 Air Quality Monitoring Stations within 5 km Radius

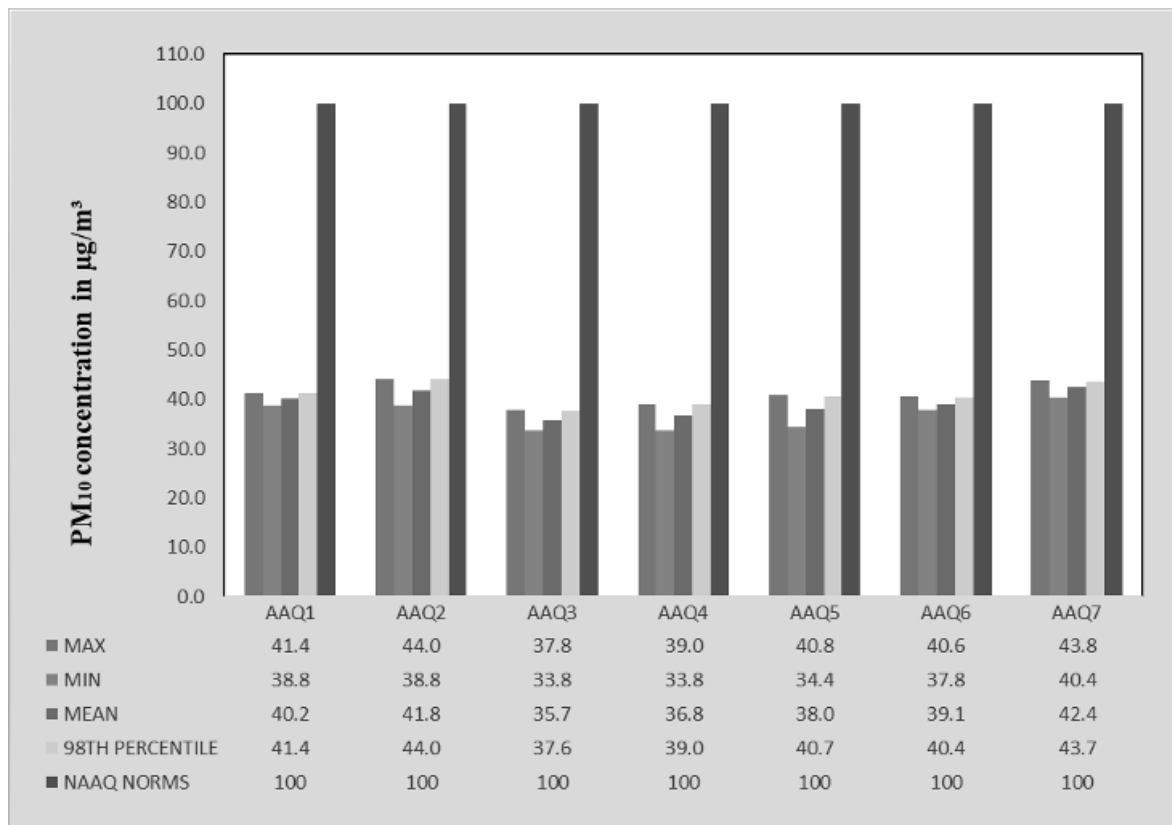


Figure 3.18 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of PM₁₀ Measured from the 7 Air Quality Monitoring Stations within 5km Radius

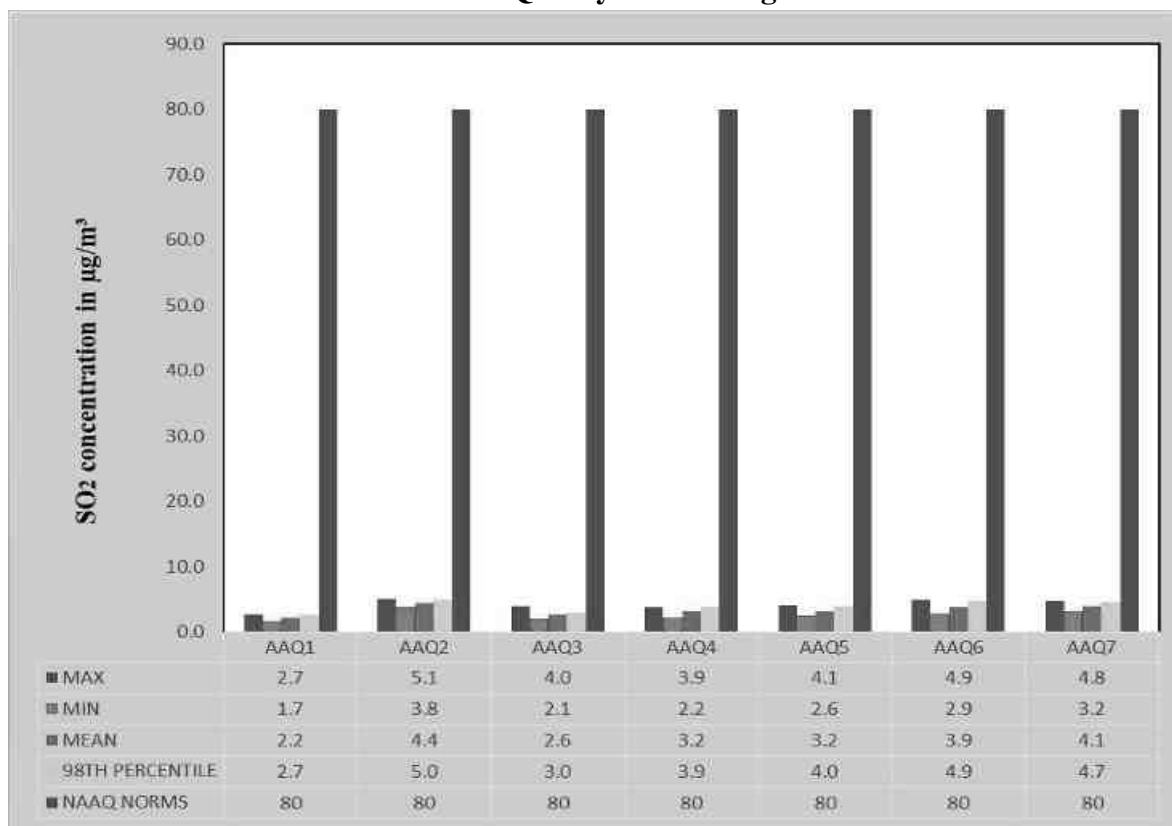


Figure 3.19 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of SO₂ Measured from the 7 Air Quality Monitoring Stations within 5 km Radius

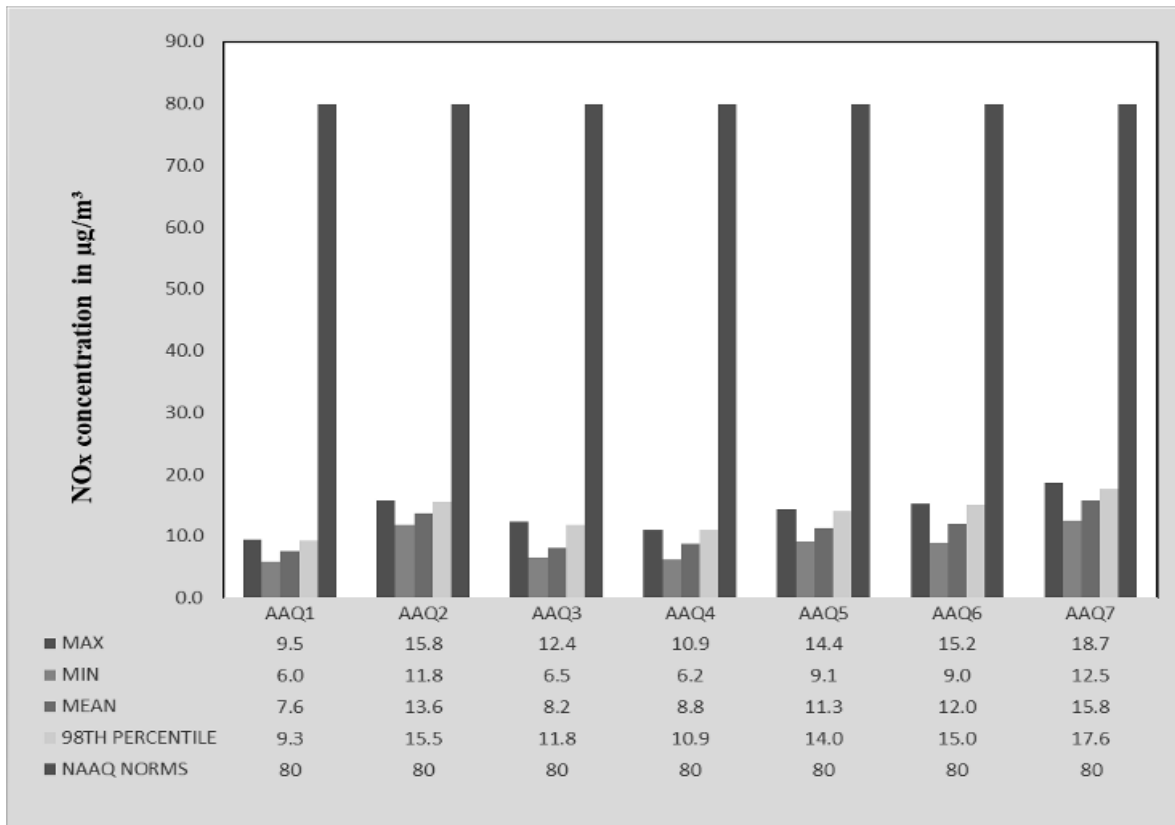


Figure 3.20 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of NO_x Measured from the 7 Air Quality Monitoring Stations within 5km Radius

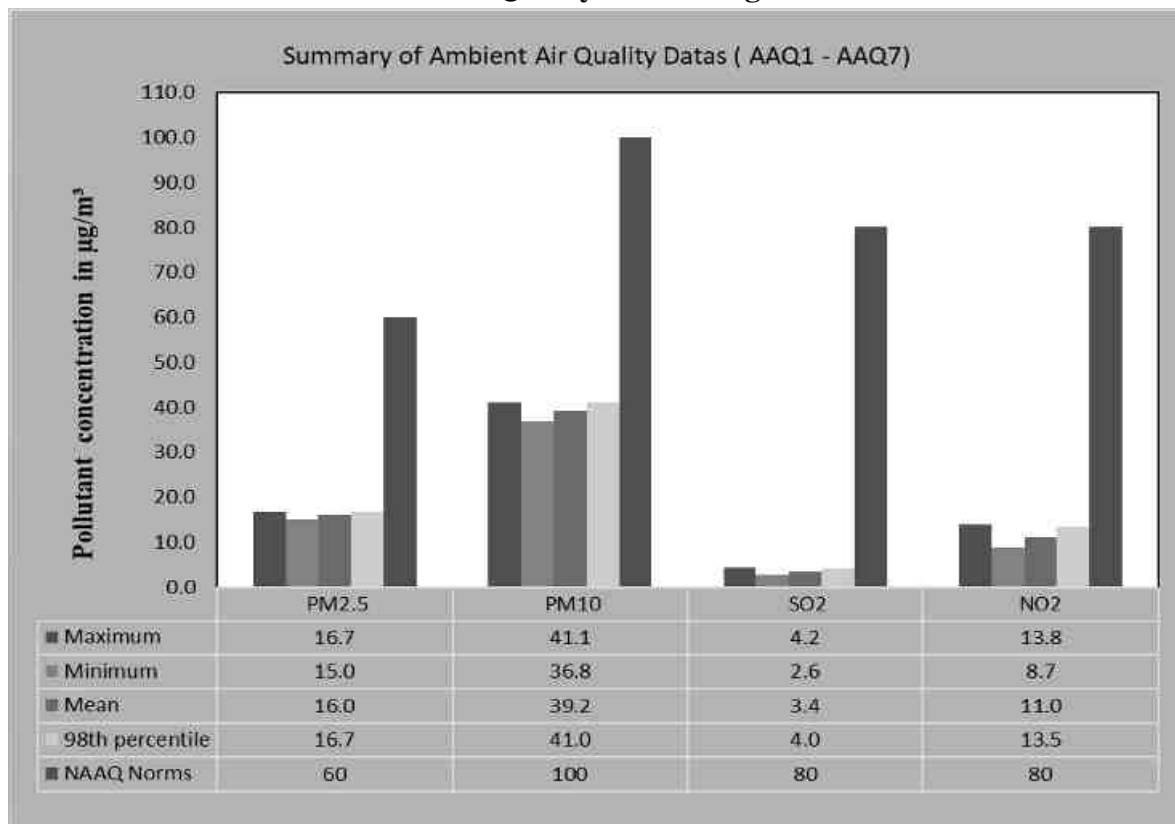


Figure 3.21 Bar Chart Showing Maximum, Minimum, and the Average Concentrations of Pollutants in the Atmosphere within 5 km Radius

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 Seven (07) locations covering commercial, residential, rural areas within the radius of 5 km. Details of noise monitoring locations are provided in Table 3.18 and spatial occurrence of the locations are shown in Figure 3.24.

Table 3.18 Noise Monitoring Locations

S. No.	Location Code	Monitoring Locations	Distance in km	Direction	Coordinates	
1	N1	Core	--	--	10°51'57.56"N	77° 4'25.72"E
2	N2	Panappatti	2.94	NE	10°52'33.42"N	77° 6'0.84"E
3	N3	Karachery	1.26	NW	10°52'14.97"N	77° 3'46.07"E
4	N4	Vadasithur	3.18	SSE	10°50'12.75"N	77° 5'0.48"E
5	N5	Kondampatty	4.14	SW	10°49'55.41"N	77° 3'19.10"E
6	N6	Kumarapalayam	5.21	SW	10°51'1.09"N	77° 1'42.25"E
7	N7	Pachapalayam	3.51	NNE	10°53'54.88"N	77° 4'39.84"Eh

Source: On-site monitoring/sampling by Excellence Laboratory in association with GTMS

Table 3.19 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	Core	Industrial area	45.8	32.8	75	70
N2	Pachapalayam	Residential area	45.7	41.4	55	45
N3	Panappatti	Residential area	52.8	43.9	55	45
N4	Thekani	Residential area	52.5	42.6	55	45
N5	Karachery	Residential area	39.5	32.5	55	45
N6	Edayampalayam	Residential area	45.7	40.2	55	45
N7	Orattukuppai	Residential area	49.3	40.3	55	45

The Table 3.19 shows that noise level in core zone was 45.8 dB (A) Leq during day time and 32.8WESdB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 39.5 to 52.8dB (A) Leq and during night time from 32.5 to 43.9dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB. The results are also depicted below in Figures 3.22 and 3.23.

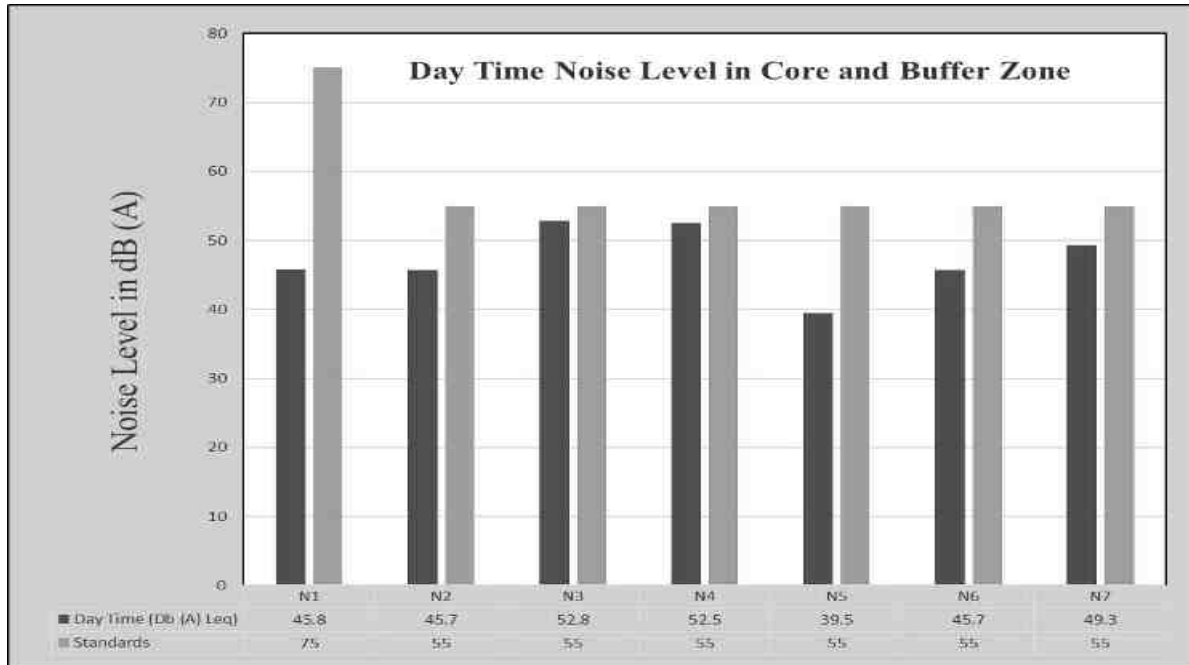


Figure 3.22 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones

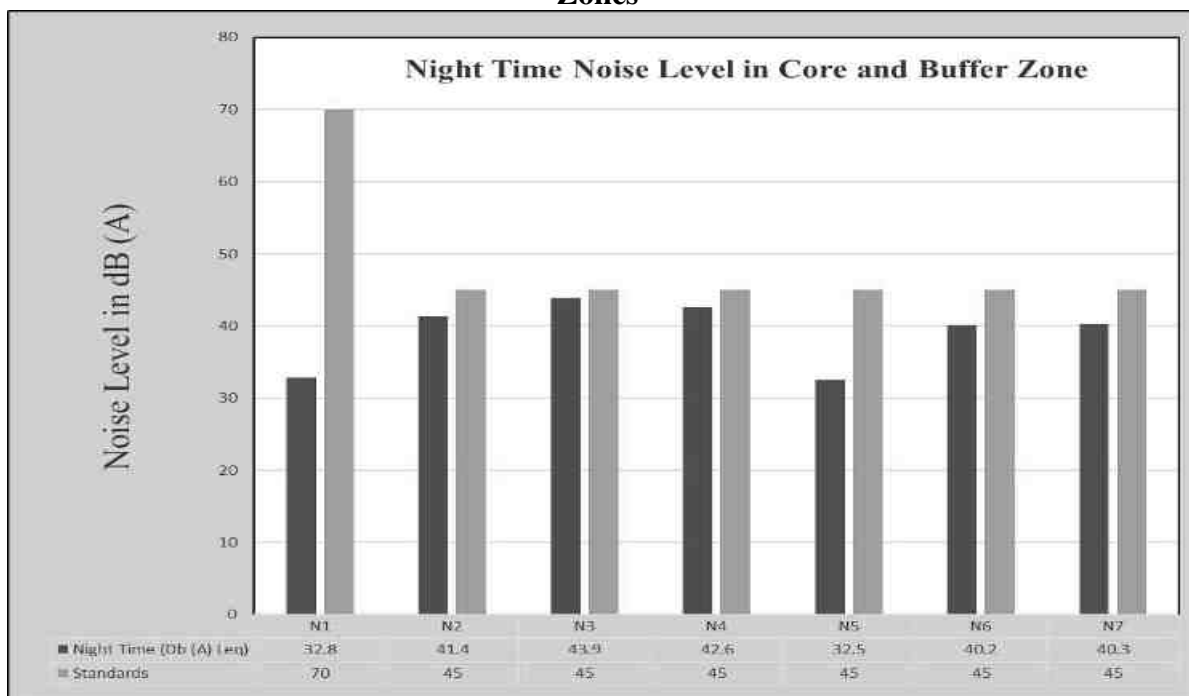


Figure 3.23 Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones

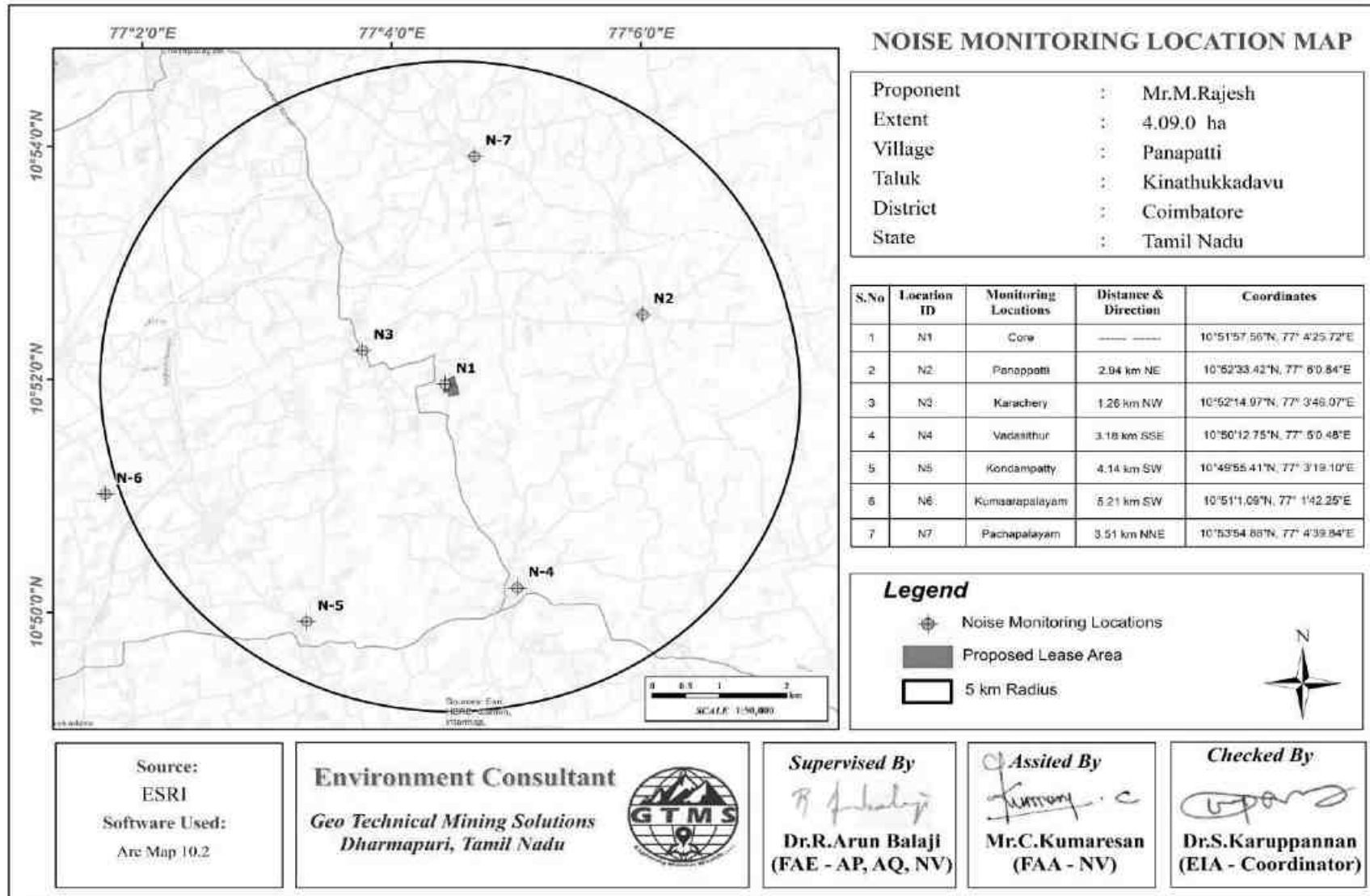


Figure 3.24 Map Showing Noise Level Monitoring Station Locations Around 5 km Radius from the Proposed Project Site

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

Sampling locations were selected with reference to topography, land use, vegetation pattern, etc. In this study, quadrats of 25 m × 25 m were laid down to assess trees and quadrats of 10 m × 10 m were laid down for shrubs.



Figure 3.25 Quadrates Sampling Methods of Flora

Phyto-Sociological Studies

Phyto sociological parameters, such as **Density, Frequency, Abundance and Importance Value Index** of individual species were determined in randomly placed quadrat of different sizes in the study area, as shown in Table 3.20. Relative frequency, and relative density were calculated and the sum of these three represented Importance Value Index (IVI) for various species. For shrubs, herbs and grasses, **Density, Frequency, Relative Density & Relative Frequency were found**. Sample plots were selected in such a way to get maximum representation of different types of vegetation and plots were laid out in different part of the study area of 10 km radius. Analysis of the vegetation will help in determining the relative

importance of each species in the study area and to reveal if any economically valuable species is threatened in the process.

Table 3.20 Calculation of Density, Frequency (%), Dominance, Relative Density, Relative Frequency, Relative Dominance & Important Value Index

Parameters	Formula
Density	Total No. of individuals of species/ Total No. of Quadrats used in sampling
Frequency (%)	(Total No. of Quadrats in which species occur/ Total No. of Quadrats studied)100
Abundance	Total No. of individuals of species/ No. of Quadrats in which they occur
Relative Density	(Total No. of individuals of species/Sum of all individuals of all species) * 100
Relative Frequency	(Total No. of Quadrats in which species occur/ Total No. of Quadrats occupied by all species) * 100
Important Value Index	Relative Density + Relative Frequency

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 corresponding formulas are given in Table 3.21.

Table 3.21 Calculation of Species Diversity by Shannon – Wiener Index, Evenness and Richness

Description	Formula
Species diversity – Shannon – Wien Index	$H = - \sum (p_i) \cdot \ln(p_i)$ <p>Where p_i: Proportion of total sample represented by species i: number of individuals of species i/ total number samples</p>

Evenness	H/H max H _{max} = ln(s)= maximum diversity possible, S=No. of species
Species Richness by Margalef	RI = S-1/ln N Where S = Total Number of species in the community N = Total Number of individuals of all species in the Community

3.5.1 Flora

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

There are no plant species in the mining lease area.

Flora within 300 m radius Zone

A variety of plant species are found within a radius of 300 meters. It is an arid landscape. There is no agricultural land nearby. It contains a total of 37 species belonging to 19 families have been recorded from the buffer zone. 11 Trees (27%), 7 Shrubs (19%) and 19 Herbs and Climbers, Creeper, Grass & Cactus (52%) were identified. Details of flora with the scientific name details and of diversity species Rich ness index were mentioned in Table 3.22-24 and figure 3.26. There is no threat to the Flora species in 300-meter radius.

Flora in 10 km radius zone

Similar type of environment also in buffer area but with more flora diversity compare than core zone area because nearby agriculture land was found to dominate mostly in Southeast and Southwest directions. Majority of the flat landscape around project unit is occupied by agriculture fields. It contains a total of 94 species belonging to 43 families have been recorded from the buffer zone. The floral (94) varieties among them Thirty-eight Trees 38 (41%) twenty-one Herbs 21 (22%) and Eighteen Shrubs 18 (19%) and twelve Climbers 12 (13%), two Creepers 2 (2%), two Grass 2 (2%) and one Cactus 1 (1%) were identified. The result of buffer zone of flora studies shows that Fabaceae and Euphorbiaceae, Solanaceae are the main dominating species in the study area it mentioned in Table No.3.25

Table 3.22 Flora in 300 m radius

S.No	Local Name	Scientific name	Family name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IVI	IUCN Conservation Status
Trees													
1	Karuvealan	<i>Prosopis juliflora</i>	Fabaceae	5	4	5	1.0	80.0	1.3	14.7	16.0	30.7	Not Listed
2	Palm tree	<i>Borassus flabellifer</i>	Fabaceae	3	2	5	0.6	40.0	1.5	8.8	8.0	16.8	Not Listed
3	Vembu	<i>Azadirachta indica</i>	Meliaceae	4	3	5	0.8	60.0	1.3	11.8	12.0	23.8	Not Listed
4	Unjai maram	<i>Albizia amara</i>	Fabaceae	3	2	5	0.6	40.0	1.5	8.8	8.0	16.8	Not Listed
5	Vetpalai	<i>Wrightia tinctoria</i>	Apocynaceae	5	4	5	1.0	80.0	1.3	14.7	16.0	30.7	Not Listed
7	Teak maram	<i>Tectona grandis</i>	Lamiaceae	3	2	5	0.6	40.0	1.5	8.8	8.0	16.8	Not Listed
8	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	4	3	5	0.8	60.0	1.3	11.8	12.0	23.8	Not Listed
9	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	3	2	5	0.6	40.0	1.5	8.8	8.0	16.8	Not Listed
10	Puliyamaram	<i>Tamarindus indica</i>	Legumes	4	3	5	0.8	60.0	1.3	11.8	12.0	23.8	Not Listed
11	Nuna	<i>Morinda citrifolia</i>	Rubiaceae	3	2	5	0.6	40.0	1.5	8.8	8.0	16.8	Not Listed
Shrubs													
1	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	8	7	10	0.8	70.0	1.1	15.7	15.9	31.6	Not Listed
2	Uumaththai	<i>Datura metel</i>	Solanaceae	6	5	10	0.6	50.0	1.2	11.8	11.4	23.1	Not Listed

3	Thuthi	<i>Abutilon indicum</i>	Meliaceae	7	6	10	0.7	60.0	1.2	13.7	13.6	27.4	Not Listed
4	Avarai	<i>Senna auriculata</i>	Fabaceae	9	8	10	0.9	80.0	1.1	17.6	18.2	35.8	Not Listed
5	Unichadi	<i>Lantana camara</i>	Verbenaceae	6	5	10	0.6	50.0	1.2	11.8	11.4	23.1	Not Listed
6	Suraimullu	<i>Zizyphus Oenoplia</i>	Rhamnaceae	7	6	10	0.7	60.0	1.2	13.7	13.6	27.4	Not Listed
7	Acacia	<i>Acacia holosecicea</i>	Fabaceae	8	7	10	0.8	70.0	1.1	15.7	15.9	31.6	Not Listed
Herbs													
1	Nayuruv	<i>Achyranthes aspera</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	4.3	4.2	8.5	Not Listed
2	Nearunji mull	<i>Tribulus zeyheri</i>	Zygophyllaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	
3	Pill	<i>Cenchrus ciliaris</i>	Poaceae	8	7	15	0.5	46.7	1.1	5.8	5.8	11.6	Not Listed
4	Pulapoo	<i>Aerva lanata</i>	Amaranthaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed
5	kapok bush	<i>Aerva javani</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	4.3	4.2	8.5	Not Listed
6	Rail poondu	<i>Croton bonplandianus</i>	Euphorbiaceae	8	7	15	0.5	46.7	1.1	5.8	5.8	11.6	Not Listed
7	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	9	8	15	0.6	53.3	1.1	6.5	6.7	13.1	Not Listed
8	Thumbai chadi	<i>Leucas aspera</i>	Lamiaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed
9	Umathai	<i>Datura metel</i>	Solanaceae	8	7	15	0.5	46.7	1.1	5.8	5.8	11.6	Not Listed
10	Sethamutti	<i>Sida cordata</i>	Malvaceae	6	5	15	0.4	33.3	1.2	4.3	4.2	8.5	Not Listed
11	Kolunji	<i>Tephrosia purpurea</i>	Fabaceae	9	8	15	0.6	53.3	1.1	6.5	6.7	13.1	Not Listed
12	Vealiparuthi	<i>Pergularia daemia</i>	Apocynaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed
13	Seppu nerinji	<i>Indigofera linnaei Ali</i>	Fabaceae	8	7	15	0.5	46.7	1.1	5.8	5.8	11.6	Not Listed
14	Sapathikalli	<i>Opuntia ficus-indica</i>	Cactaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed
15	Pal kodi	<i>Cynanchum viminalis</i>	Apocynaceae	6	5	15	0.4	33.3	1.2	4.3	4.2	8.5	Not Listed
16	Ilia perandai	<i>Cissus rotundifolia</i>	Vitaceae	9	8	15	0.6	53.3	1.1	6.5	6.7	13.1	Not Listed
17	Katralai	<i>Aloe vera</i>	Asphodelaceae	8	7	15	0.5	46.7	1.1	5.8	5.8	11.6	Not Listed
18	Seammulli	<i>Barleria prionitis</i>	Acanthaceae	6	5	15	0.4	33.3	1.2	4.3	4.2	8.5	Not Listed
19	Kandakathri	<i>Solanum virginianum</i>	Solanaceae	7	6	15	0.5	40.0	1.2	5.0	5.0	10.0	Not Listed

Table 3.23 Calculation of Species Diversity in 300m radius

S. No	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
Trees						
1	Karuvealan	<i>Prosopis juliflora</i>	5	0.13	-2.05	-0.26
2	Palm tree	<i>Borassus flabellifer</i>	3	0.08	-2.56	-0.20
3	Vembu	<i>Azadirachta indica</i>	4	0.10	-2.28	-0.23
4	Unjai maram	<i>Albizia amara</i>	3	0.08	-2.56	-0.20
5	Vetpalai	<i>Wrightia tinctoria</i>	5	0.13	-2.05	-0.26
6	Teak maram	<i>Tectona grandis</i>	3	0.08	-2.56	-0.20
7	Pongam oiltree	<i>Pongamia pinnata</i>	4	0.10	-2.28	-0.23
8	Thennai maram	<i>Cocos nucifera</i>	3	0.08	-2.56	-0.20
9	Puliyamaram	<i>Tamarindus indica</i>	4	0.10	-2.28	-0.23
10	Karuvealan	<i>Prosopis juliflora</i>	5	0.13	-2.05	-0.26
11	Nuna maram	<i>Morinda citrifolia</i>	3	3	0.08	-2.56
H (Shannon Diversity Index) =2.28						
Shrubs						
1	Erukku	<i>Calotropis gigantea</i>	8	0.16	-1.85	-0.29
2	Uumaththai	<i>Datura metel</i>	6	0.12	-2.14	-0.25
3	Thuthi	<i>Abutilon indicum</i>	7	0.14	-1.99	-0.27
4	Avarai	<i>Senna auriculata</i>	9	0.18	-1.73	-0.31
5	Unichadi	<i>Lantana camara</i>	6	0.12	-2.14	-0.25
6	Suraimullu	<i>Zizyphus Oenopia</i>	7	0.14	-1.99	-0.27
7	Acacia	<i>Acacia holosecicea</i>	8	0.16	-1.85	-0.29
H (Shannon Diversity Index) =1.94						
Herbs						
1	Nayuruv	<i>Achyranthes aspera</i>	6	0.04	-3.14	-0.14
2	Nearunji mull	<i>Tribulus zeyheri</i>	7	0.05	-2.99	-0.15
3	Pill	<i>Cenchrus ciliaris</i>	8	0.06	-2.86	-0.16
4	Pulapoo	<i>Aerva lanata</i>	7	0.05	-2.99	-0.15
5	Kapok bush	<i>Aerva javani</i>	6	0.04	-3.14	-0.14
6	Rail poondu	<i>Croton bonplandianus</i>	8	0.06	-2.86	-0.16
7	Perandai	<i>Cissus quadrangularis</i>	9	0.06	-2.74	-0.18
8	Thumbai chadi	<i>Leucas aspera</i>	7	0.05	-2.99	-0.15
9	Umathai	<i>Datura metel</i>	8	0.06	-2.86	-0.16
10	Sethamutti	<i>Sida cordata</i>	6	0.04	-3.14	-0.14

11	Kolunji	<i>Tephrosia purpurea</i>	9	0.06	-2.74	-0.18
12	Vealiparuthi	<i>Pergularia daemia</i>	7	0.05	-2.99	-0.15
13	Seppu nerinji	<i>Indigofera linnaei Ali</i>	8	0.06	-2.86	-0.16
14	Sapathikalli	<i>Opuntia ficus-indica</i>	7	0.05	-2.99	-0.15
15	Pal kodi	<i>Cynanchum viminale</i>	6	0.04	-3.14	-0.14
16	Ila perandai	<i>Cissus rotundifolia</i>	9	0.06	-2.74	-0.18
17	Katralai	<i>Aloe vera</i>	8	0.06	-2.86	-0.16
18	Seammulli	<i>Barleria prionitis</i>	6	0.04	-3.14	-0.14
19	Kandakathri	<i>Solanum virginianum</i>	7	0.05	-2.99	-0.15
H (Shannon Diversity Index) =2.93						

Table 3.24 Species Richness (Index) in 300-meter radius

Details	H	H max	Evenness	Species Richness
Tree	2.28	2.30	0.99	2.46
Shrubs	1.94	1.95	0.99	1.53
Herbs	2.93	2.94	1.00	3.65

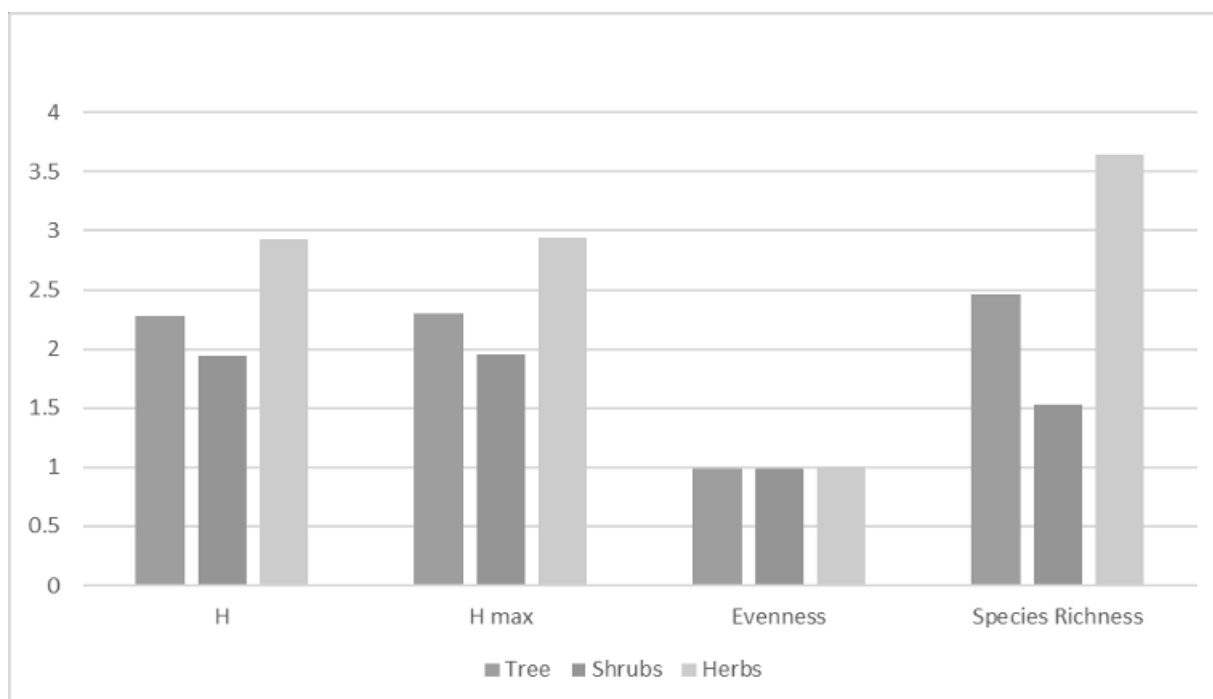


Figure 3.26 Floral diversity species Richness (Index) in 300m radius

Table 3.25 Flora in Buffer Zone

S. No.	English Name	Scientific Name	Family Name	Resource use type *(E, M, EM)
Trees				
1	Millettia pinnata	<i>Pongamia pinnata</i>	Fabaceae	E
2	Tamarind	<i>Tamarindus indica</i>	Legumes	EM
3	Coconut	<i>Cocos nucifera</i>	Arecaceae	EM
4	Noni	<i>Morinda citrifolia</i>	Rubiaceae	M
5	Lemon	<i>Citrus lemon</i>	Rutaceae	EM
6	Madras Thorn	<i>Pithecellobium dulce</i>	Mimosaceae	EM
7	Mango	<i>Mangifera indica</i>	Anacardiaceae	E
8	Sesban	<i>Sesbania sesban</i>	Fabaceae	M
9	Neem or Indian lilac	<i>Azadirachta indica</i>	Meliaceae	M
10	Creamy Peacock Flower	<i>Delonix elata</i>	Fabaceae	M
11	Beauty leaf	<i>Calophyllu inophyllum</i>	Calophyllaceae	M
12	Castor oil plant	<i>Ricinus communis</i>	Euphorbiaceae	M
13	Gum arabic tree	<i>Acacia nilotica</i>	Mimosaceae	NE
14	Eucalyptus	<i>Eucalyptus globules</i>	Myrtaceae	EM
15	Bitter Albizia	<i>Albizia amara</i>	Fabaceae	M
16	Chebolic myrobalan	<i>Terminalia chebula</i>	Combretaceae	M
17	Asian Palmyra palm	<i>Borassus flabellifer</i>	Arecaceae	E
18	Banana tree	<i>Musa</i>	Musaceae	EM
19	Giant thorny bamboo	<i>Bambusa bambos</i>	Poaceae	M
20	Black plum	<i>Sygygium cumini</i>	Myrtaceae	EM
21	Indian fig tree	<i>Ficus recemosa</i>	Moraceae	EM
22	Custard apple	<i>Annona reticulata</i>	Annonaceae	E
23	Gooseberry	<i>Phyllanthus acidus</i>	Euphorbiaceae	EM
24	Teak	<i>Tectona grandis</i>	Verbenaceae	E
25	Indian gooseberry	<i>Emblica officinalis</i>	Phyllanthaceae	EM
26	Jack fruit	<i>Artocarpus heterophyllus</i>	Moraceae	E
27	Henna	<i>Lawsonia inermis</i>	Lythraceae	EM
28	Five leaf chastera	<i>Vitex negundo</i>	Lamiaceae	M

29	Papaya	<i>Carica papaya L</i>	Caricaceae	EM
30	Acacia Nilotica	<i>Vachellia nilotica</i>	Fabaceae	M
31	Indian bael	<i>Aegle marmelos</i>	Rutaceae	EM
32	Banyan tree	<i>Ficus benghalensis</i>	Moraceae	E
33	Chinese chaste tree	<i>Vitex negundo</i>	Verbenaceae	E
34	Peepal	<i>Ficus religiosa</i>	Moraceae	M
35	Indian fir tree	<i>Polylathia longifolia</i>	Annonaceae	E
36	Guava	<i>Psidium guajava</i>	Myrtaceae	EM
37	Curry tree	<i>Murraya koenigii</i>	Asclepiadaceae	EM
38	Bamboo	<i>Bambusa bambo</i>	Poaceae	E
Shrubs				
39	Avaram	<i>Senna auriculata</i>	Fabaceae	M
40	Indian Oleander	<i>Nerium indicum</i>	Apocynaceae	M
41	Ceylon Date Palm	<i>Phoenix pusilla</i>	Arecaceae	EM
42	Rosy Periwinkle	<i>Cathranthus roseus</i>	Apocynaceae	M
43	Wild Caper Bush.	<i>Capparis sepiaria</i>	Capparaceae	M
44	Rosary pea	<i>Abrus precatorius</i>	Fabaceae	M
45	Ceylon Date Palm	<i>Phoenix pusilla</i>	Arecaceae	EM
46	Flame of the Woods	<i>Xoracoc cinea</i>	Rubiaceae	M
47	Puriging nut	<i>Jatropha curcas</i>	Euphorbiaceae	EM
48	Columnar Cactus	<i>Cereus pterogonus</i>	Cactaceae	M
49	Thorn apple	<i>Datura stramonium</i>	Solanaceae	E
50	Night shade plan	<i>Solanum torvum</i>	Solanaceae	EM
51	Indian mallow	<i>Abutilon indicum</i>	Meliaceae	M
52	Triangular spruge	<i>Euphorbia antiquorum</i>	Euphorbiaceae	NE
53	Shoe flower	<i>Hibiscu rosa-sinensis</i>	Malvaceae	EM
54	Datura metel	<i>Datura metel</i>	Solanaceae	NE
55	Milk Weed	<i>Calotropis gigantea</i>	Apocynaceae	M
56	Touch-me-not	<i>Mimosa pudica</i>	Mimosaceae	M
Herbs				
57	Prickly chaff flower	<i>Achyranthes aspera</i>	Amaranthaceae	M
58	Tridax daisy	<i>Tridax procumbens</i>	Asteraceae	M
59	Hibiscus hispidissimus	<i>Hibiscus hispidissimus</i>	Malvaceae	M

60	Indian Copperleaf	<i>Acalypha indica</i>	Euphorbiaceae	M
61	Cleome viscosa	<i>Celome viscosa</i>	Capparidaceae	M
62	False daisy	<i>Eclipta prostrata</i>	Asteraceae	EM
63	Punarnava	<i>Boerhaavia diffusa</i>	Nyctaginaceae	EM
64	Node Flower	<i>Allmania nodiflora</i>	Amaranthaceae	M
65	Poor land flatsedg	<i>Cyperus compressus</i>	Cyperaceae	NE
66	Gale of the wind	<i>Phyllanthus niruri</i>	Phyllanthaceae	EM
67	Benghal dayflower	<i>Commelina benghalensis</i>	Commelinaceae	M
68	Common leucas	<i>Leucas aspera</i>	Lamiaceae	M
69	Carrot grass	<i>Parthenium hysterophorus</i>	Asteraceae	NE
70	Turmeric's	<i>Curcuma longa</i>	Zingiberaceae	EM
71	Creeping wood sorrel	<i>Oxalis corniculata</i>	Oxalidaceae	M
72	Black Mustard Seed	<i>Brassica juncea</i>	Brassicaceae	EM
73	Red Hogweed	<i>Boerhavia diffusa</i>	Nyctaginaceae	M
74	Holy basil	<i>Ocimum tenuiflorum</i>	Lamiaceae	M
75	Digeria muricata	<i>Digeria muricata</i>	Amarantheceae	EM
76	Indian doab	<i>Cynodon dactylon</i>	Poaceae	E
77	European black nightshade	<i>Solanumnigrum</i>	Solanaceae	EM
Climber				
78	Ivy gourd	<i>Coccinia grandis</i>	Cucurbitaceae	M
79	Stemmed vine	<i>Cissus quadrangularis</i>	Vitaceae	M
80	Balloon vine	<i>Cardiospermum helicacabum</i>	Sapindaceae	M
81	Betel	<i>Piper betle</i>	Piperaceae	EM
82	Butterfly pea	<i>Clitoria ternatea</i>	Fabaceae	M
83	Wild bitter	<i>Momordica charantia</i>	Cucurbitaceae	EM
84	Purple peaeggplant	<i>Solanum trilobatum</i>	Solanaceae	EM
85	Indian sarsparilla	<i>Hemidesmus indicus</i>	Asclepiadaceae	M
86	Pointed gourd	<i>Trichosanthes dioica</i>	Cucurbitaceae	EM
87	Butterfly-pea	<i>Clitoriaternatia</i>	Fabaceae	M
88	Wild jasmine	<i>Jasminum augustifolium</i>	Oleaceae	EM
89	Bottle Guard	<i>Lagenaria siceraria</i>	Cucurbitaceae	EM

Creeper				
90	Ground Spurge	<i>Euphorbia prostrata</i>	Euphorbiaceae	EM
91	Creeping-oxeye	<i>Wedelia trilobata</i>	Asteraceae	M
Grass				
92	Jungle rice	<i>Echinochloa colona</i>	Poaceae	NE
93	Windmill grass	<i>Chloris barbata</i>	Amaranthaceae	NE
Cactus				
94	Prickly pear	<i>Opuntia dillenii</i>	Cactaceae	M

3.5.2 Fauna

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 3.26 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 in Core Zone

A total of 18 varieties of species belonging to 14 families were observed in the core zone. Among them are 6 Insects, 3 Reptiles, 1 Mammal and 8 Avian. Number of species decreases towards the mining area due the lack of vegetation. None of these species are threatened or endemic. There is no Schedule I species and 6 species are under schedule IV according to Indian wild life Act 1972. There are no critically endangered, endangered, vulnerable and endemic species there. Details of fauna in core zone and their scientific name were mentioned in Table. 3.27.

Fauna in Buffer Zone

A total of 48 species belonging to 33 families were recorded in the buffer zone. Based on habitat classification the majority of species were 19 Birds (41%), followed by 15 Insects (31%), 7 Reptiles (15%), 4 Mammals (8%) and 3 Amphibians (6%). There are 4 schedule II species and 27 schedule IV species according to Indian wild life Act 1972. There are no critically endangered, vulnerable and endemic species observed. List of fauna in the buffer zone is provided in Table 3.28.

Table 3.27 Fauna in 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
REPTILES					
7	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
8	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
9	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
MAMMALS					
10	Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	NL
AVES					
11	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
12	Koel	Cucalidae	<i>Eudynamys</i>	Schedule IV	LC
13	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
14	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
15	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
16	Crow Pheasant	Cucalidae	<i>Centropus sinensis</i>	Schedule IV	LC
17	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
18	Grey drongo	Dicruridae	<i>Dicrurus leucophaeus</i>	Schedule IV	LC

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

Table 3.28 Fauna in Buffer Zone

S.No.	Common Name/English Name	Family Name	Scientific Name	Schedule List Wildlife Protection Act 1972	IUCN Red List Data
INSECTS					
1	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
2	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
3	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
4	Indian honey bee	Apidae	<i>Apis cerana</i>	Schedule IV	LC
5	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
6	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
7	Lime butterfly	Papilionidae	<i>Papilio demoleus</i>	Schedule IV	LC
8	Ant	Formicidae	<i>Camponotus Vicinus</i>	NL	NL
9	Dragonfly	Gomphidae	<i>Ceratogomphus pictus</i>	Schedule IV	LC
10	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
11	Common Indian crow	Nymphalidae	<i>Euploea core</i>	Schedule IV	LC
12	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
13	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
14	Lesser grass blue	Lycaenidae	<i>Zizina Otis indica</i>	Schedule IV	LC
15	Jewel beetle	Buprestidae	<i>Eurythyrea austriaca</i>	Schedule IV	NA
REPTILES					
16	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
17	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
18	Indian chameleon	Chamaeleonidae	<i>Chamaeleo</i>	Sch II (Part I)	LC

			<i>zeylanicus</i>		
19	Olive keelback water snake	Natricidae	<i>Atretium schistosum</i>	Sch II (Part II)	LC
20	Brahminy skink	Scincidae	<i>Eutropis carinata</i>	NL	LC
21	Rat snake	Colubridae	<i>Ptyas mucosa</i>	Sch II (Part II)	LC
22	Common skink	Scincidae	<i>Mabuya carinatus</i>	NL	LC
MAMMALS					
23	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
24	Indian hare	Leporidae	<i>Lepus nigricollis</i>	Schedule IV	LC
25	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
26	Asian Small Mongoose	Herpestidae	<i>Herpestes javanicus</i>	Schedule (Part II)	LC
AVES					
27	Indian pond heron	Ardeidae	<i>Ardeola grayii</i>	Schedule IV	LC
28	Black drongo	Dicruridae	<i>Dicrurus macrocerus</i>	Schedule IV	LC
29	Asian green bee- eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
30	Red-breasted parakeet	Psittaculidae	<i>Psittacula alexandri</i>	NL	LC
31	Common Coot	Rallidae	<i>Fulica atra</i>	Schedule IV	LC
32	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
33	Shikra	Accipitridae	<i>Accipiter badius</i>	NL	LC
34	Koel	Cucalidae	<i>Eudynamys</i>	Schedule IV	LC
35	Common Quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
36	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotuscafer</i>	Schedule IV	LC
37	Brahminy starling	Sturnidae	<i>Sturnia pagodarum</i>	Schedule IV	LC
38	Indian golden	Oriolidae	<i>Oriolus kundoo</i>	Schedule IV	LC

	oriole				
39	Rose-ringed parkeet	Psittaculidae	<i>Psittacula krameria</i>	NL	LC
40	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
41	Common quail	Phasianidae	<i>Coturnix coturnix</i>	Schedule IV	LC
42	White-breasted waterhen	Rallidae	<i>Amaurornis phoenicurus</i>	NL	LC
43	Two-tailed Sparrow	Dicruridae	<i>Dicrurus macrocerus</i>	Schedule IV	LC
44	Grey Francolin	Phasianidae	<i>Francolinus pondicerianus</i>	Schedule IV	LC
45	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
AMPHIBIANS					
46	Indian Burrowing frog	Dicroglossidae	<i>Sphaerotheca breviceps</i>	Schedule IV	LC
47	Green Pond Frog	Ranidae	<i>Rana hexadactyla</i>	Schedule IV	LC
48	Tiger Frog	Chordata	<i>Hoplobatrachus tigerinus (Rana tigerina)</i>	Schedule IV	LC

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

Aquatic Vegetation

There are no water bodies, tanks, Ponds and canals in 1km radius around the mine lease area. so, no aquatic flora and fauna in around the mine lease area.

Forest Vegetation

There are no Reserve Forest or Biosphere Reserves or Wildlife Sanctuaries or National Parks or Important Bird Areas (IBAs), or migratory routes of fauna in 10km Radius.

Endangered and endemic species as per the IUCN Red List

There are no rare, endangered and endemic species found in the study area.

3.5.3 Agriculture & Horticulture in 1km radius:

The district has a total Geographical area of 367097 Ha with net cultivated area of about 165260Ha. Coconut is the major plantation crop cultivated in an area of about 85831Ha. The other Agricultural crops cultivated are Millets, Pulses, Oilseeds, Cotton and Sugarcane. Coimbatore's horticulture landscape covers an average of 1,25,000 hectares. The

district excels in cultivating various crops, with significant acreage dedicated to coconut, tea, arecanut, banana, mango, tomato, small onion, curry leaves, gourds, brinjal, and bhendi.

Major Agricultural Crops

Major horticulture crops cultivated in this district are vegetables crops like tomato, brinjal, chillies, onion and turmeric. Details of major field crops and horticulture in 1km radius is given in Table. 3.29.

Table 3.29 Major Crops in 1km radius

S. No	Major crops	Scientific name	Families
1	Sorghum	<i>Sorghum bicolor</i>	Poaceae
2	Gingelly	<i>Sesamum indicum</i>	Pedaliaceae
3	Groundnut	<i>Arachis hypogaea</i>	Legumes
4	Sugarcane	<i>Saccharum officinarum</i>	Poaceae
5	Millets	<i>Panicum miliaceum L</i>	Poaceae
6	Sesame	<i>Sesamum indicum</i>	Pedaliaceae
7	Cotton	<i>Gossypium herbaceum</i>	Malvaceae
8	horse gram	<i>Macrotyloma uniflorum</i>	Fabaceae

Major Horticulture Crops

Horticulture includes cultivation of fruits, vegetables, nuts, seeds, herbs, sprouts, mushrooms, algae, flowers, seaweeds and non-food crops such as grass and ornamental trees and plants. It also includes plant conservation, landscape restoration, landscape and garden design.

Horticulture

Major horticulture crops cultivated in Coimbatore district are fruit crops like Coconut, mango, banana, Sapota and guava, vegetables like tomato, brinjal, Veandai, chillies, onion and tapioca, spices like turmeric. Details of major field crops and horticulture cultivation in 1km radius is given in Table 3.30.

Table 3.30 Major Field Crops & Horticulture cultivation in 1km radius.

S. No	Common Name	Scientific Name	Family
Major Horticultural Crops			
1	Coconut	<i>Cocos nucifera</i>	Arecaceae
1	Guava	<i>Psidium guajava</i>	Myrtaceae
2	Sapota	<i>Manilkara zapota</i>	Sapotaceae
3	Lemon	<i>Citrus × limon</i>	Rutaceae
4	Papaya	<i>Carica papaya</i>	Caricaceae

Vegetables			
8	Onion	<i>Allium cepa</i>	Amaryllidaceae
9	Tapioca	<i>Manihot esculenta</i>	Spurges
10	Brinjal	<i>Solanum melongena</i>	Nightshade
11	Tomato	<i>Solanum lycopersicum</i>	Nightshade
12	Bottle Gourd	<i>Lagenaria siceraria</i>	Cucurbits
13	Veandai kai	<i>Abelmoschus esculentus</i>	Mallows

Results

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

3.6 SOCIO-ECONOMIC ENVIRONMENT

Socio-economic study is an essential part of environmental study. It is a measure of an individual's or family's or group of people's economic and social position based on education, income, health, and occupation. Socio-economic most important determinant of livelihoods as levels of knowledge, skill and income conditions which mean for their living. People from one income group to another consumption power is also differ among income groups of population This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project It is expected that the socio-economic status of the area will substantially improve because of this proposed project. As the proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area, thus leading to the improvement of their standard of living.

3.6.1 Objectives of the Study

The main objectives of the study are as follows:

- ❖ To study the demographic conditions by level of income of sample population in the study area.
- ❖ To analyses the level of education among different income groups of population.

- ❖ To investigate the housing situation by level of income of the sample population in the study unit

3.6.2 Scope of Work

- ❖ To study the socio-economic environment of the area from the secondary sources
- ❖ Data Collection & Analysis
- ❖ Prediction of project impact
- ❖ Mitigation Measures

3.6.3 Socio-Economic Status of Study area

The study area covers 9 Villages including Arasampalayam, Bogampatti, Kondampatti, Kurunallipalayam, Mettubavi, Myleripalayam, Pachapalayam, Solavampalayam, Vadasithur. As Panappatti is the village in which the proposed project site is located, the summary of population facts for the village is exclusively provided in Table 3.31 and for other 8 villages in Tables 3.32 - 3.34.

Table 3.31 Panapatti Village Population Facts

Panappatti	
Number of Households	763
Population	2635
Male Population	1383
Female Population	1252
Children Population	199
Sex-ratio	905
Literacy	71.43%
Male Literacy	80.79%
Female Literacy	61.23%
Scheduled Tribes (ST) %	0
Scheduled Caste (SC) %	450
Total Workers	1579
Main Worker	1566
Marginal Worker	13

Source: <https://www.census2011.co.in/data/village/635497-kuppam-tamil-nadu.html>

Table 3.32 Population and Literacy Data of Study Area

Village	No of Households	Total Population Person	Total Population Male	Total Population Female	Literates Population Person	Literates Population Male	Literates Population Female	Illiterate Persons	Illiterate Male	Illiterate Female
Arasampalayam	1090	3818	1894	1924	2473	1384	1089	1345	510	835
Bogampatti	686	2415	1254	1161	1515	905	610	900	349	551
Kondampatty	738	2467	1218	1249	1625	889	736	842	329	513
Kurunallipalayam	528	1753	887	866	1014	599	415	739	288	451
Mettubavi	719	2485	1281	1204	1671	971	700	814	310	504
Myleripalayam	1393	4990	2451	2539	3169	1746	1423	1821	705	1116
Pachapalayam	683	2359	1191	1168	1516	867	649	843	324	519
Solavampalayam	1837	6387	3195	3192	4074	2234	1840	2313	961	1352
Vadasithur	1532	5080	2483	2597	3452	1878	1574	1628	605	1023

Table 3.33 Details on Educational Facilities, Water, and Drainage & Health Facilities

Village	Private Primary School (Numbers)	Govt Vocational Training School/ITI (Numbers)	Primary Health Centre (Numbers)	Tap Water Untreated	River/Canal	Is the Area Covered under Total Sanitation Campaign (TSC)?	Telephone (landlines)	Public Bus Service	Gravel (kutchra) Roads	Commercial Bank	Agricultural Credit Societies	Self - Help Group (SHG)	Nutritional Centres-Anganwadi Centre	Community Centre with/without TV	Power Supply for Domestic Use
Arasampalayam	2	2	0	1	2	2	1	1	1	2	1	1	1	2	1
Bogampatti	2	2	0	1	2	2	1	2	1	2	2	1	1	1	1
Kondampatty	1	2	0	1	1	2	1	1	1	2	2	1	1	2	1
Kurunallipalayam	0	2	0	1	2	2	1	1	1	2	1	1	1	1	1
Mettubavi	2	2	0	1	2	2	1	1	1	2	2	1	1	1	1
Myleripalayam	2	2	1	1	2	2	1	1	1	2	2	1	1	1	1
Pachapalayam	2	2	0	1	2	2	1	1	1	2	2	1	1	1	1
Solavampalayam	0	2	0	1	2	2	1	1	1	2	2	1	1	2	1
Vadasithur	2	2	0	1	2	1	1	1	1	2	1	1	1	1	1

Table 3.34 Workers' Profile of Study Area

Village	Total Worker Population Person	Total Worker Population Male	Total Worker Population Female	Main Working Population Person	Main Working Population Male	Main Working Population Female	Main Cultivator Population Person	Main Agricultural Labourers Population Person	Main Other Workers Population Person	Non-Working Population Person
Bogampatti	1165	813	352	985	731	254	470	278	223	1250
Kondampatty	1310	818	492	986	635	351	140	414	423	1157
Kurunallipalayam	1070	614	456	1061	612	449	335	427	299	683
Mettubavi	1372	891	481	1325	879	446	477	457	383	1113
Myleripalayam	2912	1666	1246	2581	1539	1042	568	584	1343	2078
Pachapalayam	1255	808	447	1186	780	406	194	363	595	1104
Solavampalayam	3367	2134	1233	2014	2014	1023	240	926	1827	3020
Vadasithur	2512	1671	841	2419	1631	788	548	717	1126	2568
Vadavalli	2519	1395	1124	2420	1357	1063	1029	641	660	1340

3.6.4 Recommendation and Suggestion

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

3.6.5 Summary & Conclusion

The socio-economic study in the study area 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 a lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis. The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

3.7 TRAFFIC DENSITY

The traffic survey conducted based on the transportation route of material, the rough stone is proposed to be transported mainly through Periyakuyili - Edayarpalayam and Panapatti to Karacherry Road as shown in Table 3.37 and in Figure 3.28. 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 3.35 Traffic Survey Locations

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Periyakuyili to Edayarpalayam	0.81 km-N	Periyakuyili to Edayarpalayam
TS2	Panapatti to Karacherry	1.73 km-S	Panapatti to Karacherry

Source: On-site monitoring by GTMS FAE & TM

Table 3.36 Existing Traffic Volume

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	65	195	44	44	80	40	282
TS2	70	210	54	54	91	45	309

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 3.37 Rough Stone Transportation Requirement

Transportation of Rough Stone & Gravel per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	46	138

Source: Approved Mining Plan

Table 3.38 Summary of Traffic Volume

Station Code	Existing traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960 guidelines
TS1	282	138	420	1200
TS2	309	138	447	1200

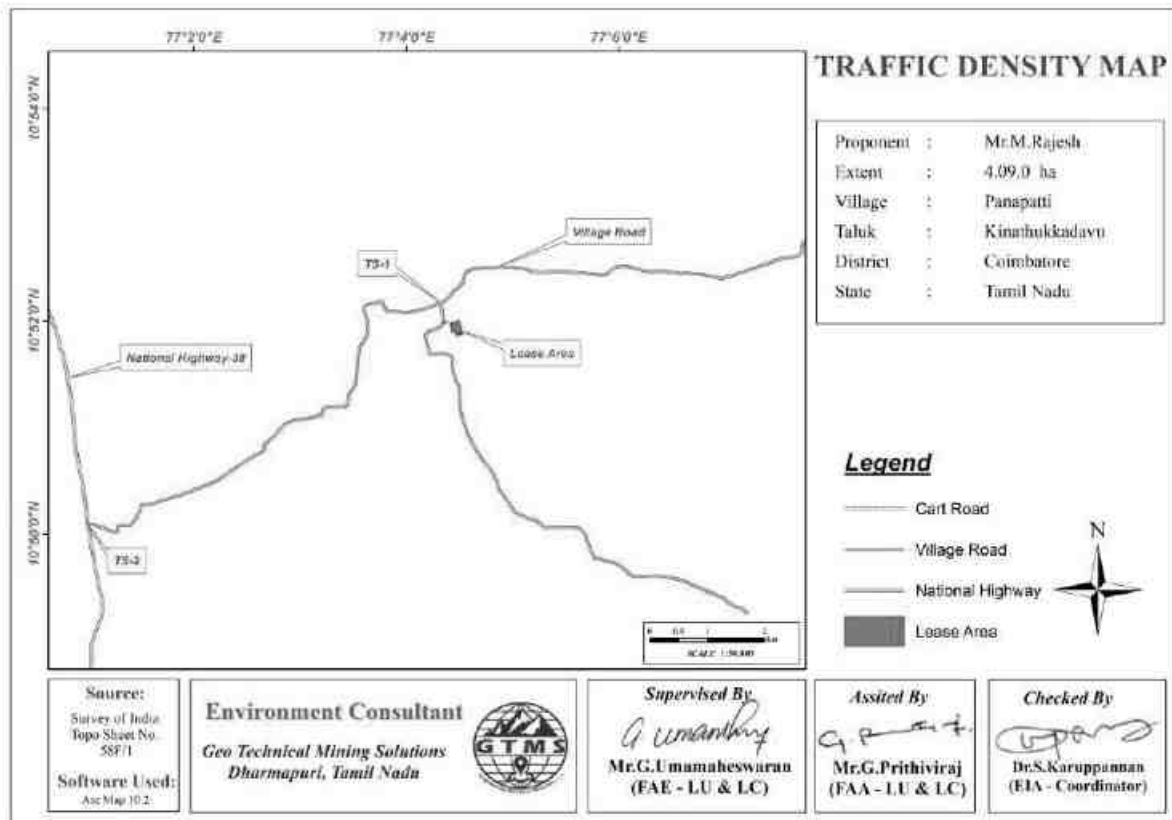


Figure 3.27 Traffic Density Map

- 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.

3.8 SITE SPECIFIC FEATURES

There are no Wildlife Sanctuaries, Reserve Forest, National Park within the project area. There is no Protected Mining area is found within 10 km radius from the proposed project area. Therefore, there will be no need of acquisition/diversion of forest land. The details related to the environment sensitivity around the proposed mine lease area i.e., 10 km radius and the nearby water bodies are given in the Table 3.39.

Table 3.39 Details of Environmentally Sensitive Ecological Features in the Study Area

Sl. No	Sensitive Ecological Features	Name	Areal Distance in km from cluster
1	National Park / Wild life Sanctuaries	None	Nil within 10 km radius
		None	Nil within 10 km radius
2	Reserve Forest	Bolampatti I R. F	14.89km- W
3	Lake's/Reservoirs/	Seasonal Odai	2.08km- SE

	Dams/Streams/Rivers		
4	Tiger Reserve/Elephant Reserve/ Biosphere Reserve	None	Nil within 10 km radius
5	Critically Polluted Areas	None	Nil within 10 km radius
6	Mangroves	None	Nil within 10 km radius
7	Mountains/Hills	None	Nil within 10 km radius
8	Notified Archaeological Sites	None	Nil within 10 km radius
9	Industries/ Thermal Power Plants	None	Nil within 10 km radius
10	Defence Installation	None	Nil within 10 km radius

Source: Survey of India Toposheet





Figure 3.28 Field Study & Socio-Economic 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 change on land use and land cover.
- ❖ Change in topography of the mine lease area.
- ❖ 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 agricultural fields during the rainy season
- ❖ Increase in agricultural productivity of land when mine water is discharged to the surrounding lands for irrigation

4.1.2 Common Mitigation Measures from Proposed Project

- ❖ 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
- ❖ 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 and 50 m 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

- ❖ Deterioration of soil quality in the surrounding area due to runoff from the project area

- ❖ Decrease in the agricultural productivity of the surrounding land due to soil quality degradation

4.2.2 Common Mitigation Measures from proposed project

- ❖ Construction of garland drains, settling pits, and check dams to prevent runoff and siltation
- ❖ 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 the settling tanks to reduce suspended sediment loads before runoff is discharged from the quarry site.
- ❖ Retain existing or re-plant the vegetation will be retained 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 4.5 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.

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 (PM), gases such as sulphur dioxide, oxides of nitrogen from vehicular exhaust are the main air pollutants.
- ❖ Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.
- ❖ The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- ❖ Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

4.4.2 Emission Estimation

Emission resulting from different mining activities is estimated using relevant empirical formulae developed by Chauya 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	$E = [u^{0.4} a^{0.2} \{9.7 + 0.01p + b / (4 + 0.3b)\}]$	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}	0.198409548	40900	4.85109E-06
Overall Mine	PM ₁₀	1.322730322	40900	3.23406E-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} 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	--	--	16.1	5.51	21.61	Below standard	34.2	Not significant
AAQ2	2.88	NE	16.7	1	17.7		6.0	
AAQ3	1.31	NW	14.3	1	15.3		7.0	
AAQ4	3.08	SSE	14.7	0.1	14.8		0.7	
AAQ5	4.15	SW	15.2	0.5	15.7		3.3	
AAQ6	5.16	SW	15.6	0.5	16.1		3.2	
AAQ7	3.62	NNE	19.2	0.5	19.7		2.6	

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	--	--	40.2	10.9	51.1	Below standard	27.1	Not significant
AAQ2	2.88	NE	41.8	5	46.8		12.0	
AAQ3	1.31	NW	35.7	5	40.7		14.0	
AAQ4	3.08	SSE	36.8	0.5	37.3		1.4	
AAQ5	4.15	SW	38.0	1	39		2.6	
AAQ6	5.16	SW	39.1	5	44.1		12.8	
AAQ7	3.62	NNE	42.4	0	42.4		0.0	

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.

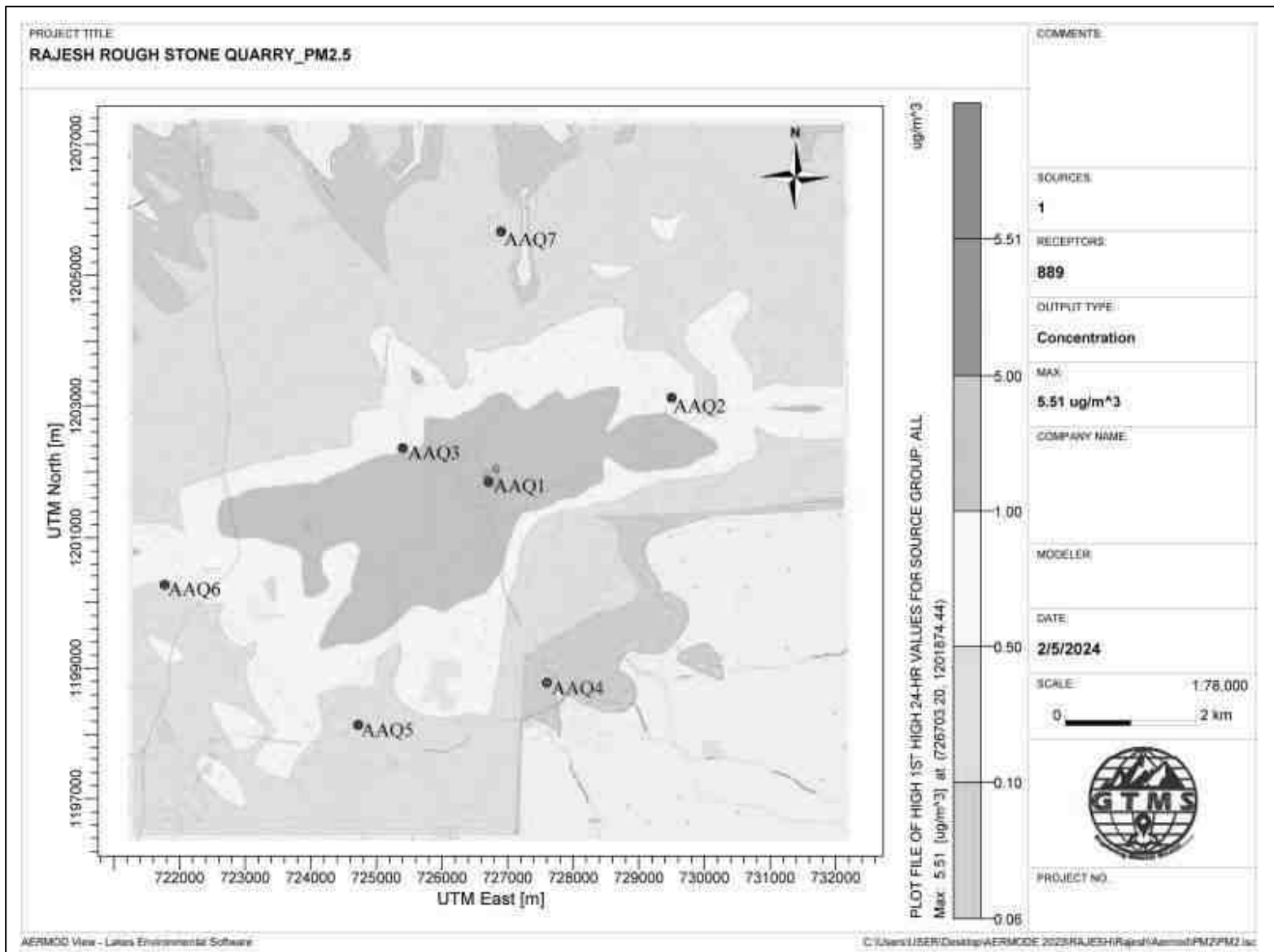


Figure 4.1 Predicted Incremental Concentration of PM_{2.5}

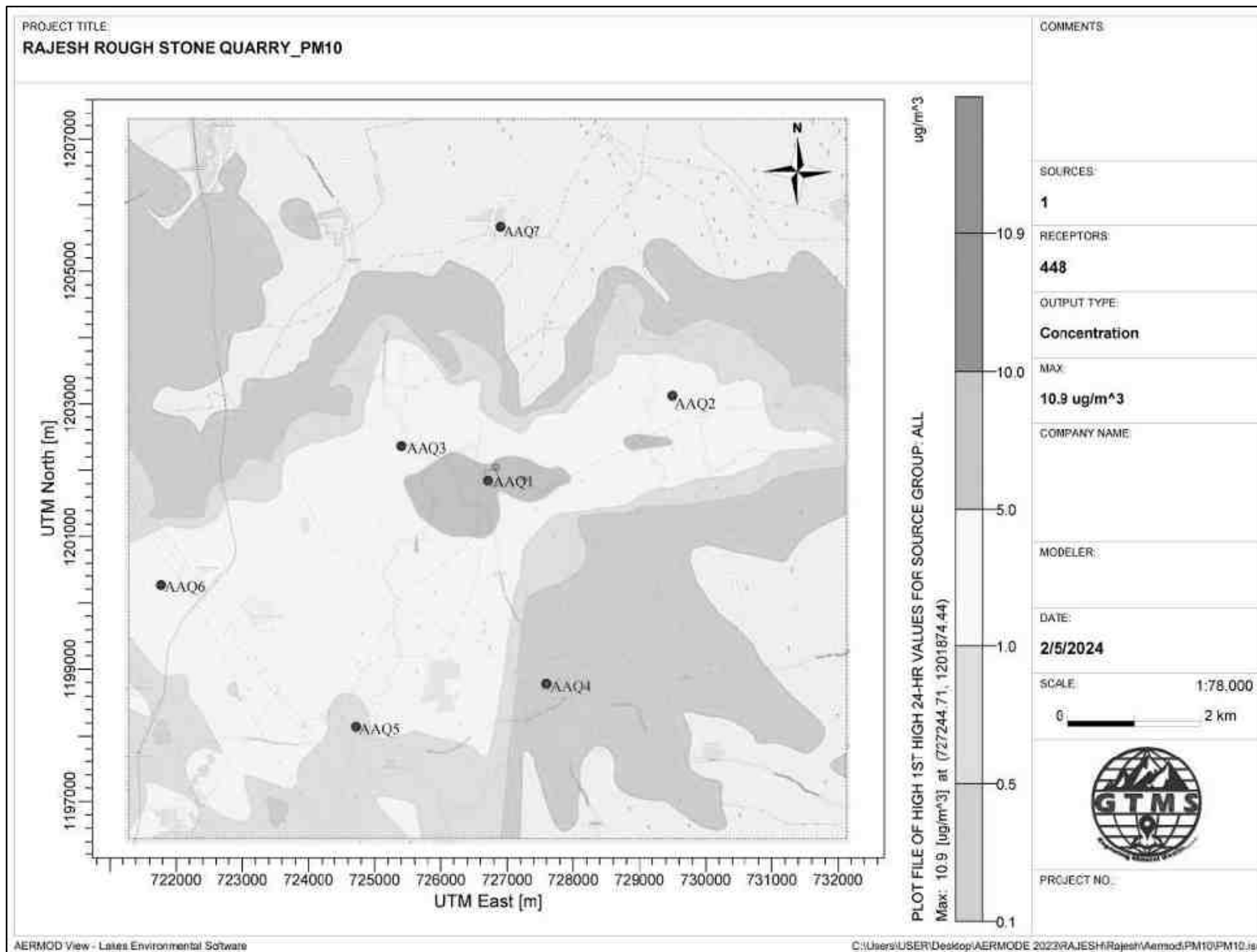


Figure 4.2 Predicted Incremental Concentration of PM₁₀

4.5 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.

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

Where, Lp_1 & Lp_2 are sound levels at points located at distances r_1 and r_2 from the source; $Ae_{1,2}$ is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

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

4.5.1 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). We have considered the total noise to be produced by mining activity to be 95.8 dB (A) for noise prediction modelling.

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)
Core	100	45.8	43.96	47.99
Pannappatti	3940	45.7	12.05	45.70
Karachery	1260	52.8	21.95	52.80
Vadasithur	3180	52.5	13.91	52.50
Kondampatty	4140	39.5	11.62	39.51
Kumarapalayam	5210	45.7	9.62	45.70
Pachapalayam	3510	49.3	13.05	49.30
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

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 kutcha 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. 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	24.70	1260	0.071	19	0.03	123

Table 4.8 Predicted PPV Values due to Blasting at 100-500 m 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	24.70	100	4.10	19	0.62	150
		200	1.35		0.27	143
		300	0.70		0.16	138
		400	0.44		0.12	135
		500	0.31		0.09	133

The PPV results shows that the ground vibration is well below the permissible limits set by DGMS through circular 7,1997 for domestic houses near by the lease area at the dominant frequency of <8 Hz.

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
- ❖ 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

- ❖ During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly

- ❖ The Number of plants in the mining lease area is given in Chapter III Table 3.21 which vegetation in the lease area may be removed during mining.
- ❖ Carbon released from quarrying machineries and tippers during quarrying would be 3011 kg per day, 813044 kg per year and 4065218 kg over five years, as provided 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	207	55892	279459
Fuel consumption of compressor	24.8	6696	33480
Fuel consumption of tipper	892	240787	1203933
Total fuel consumption in liters	1124	303375	1516873
CO ₂ emission in kg	3011	813044	4065218

4.6.2 Mitigation Measures on Flora

- ❖ 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.
- ❖ None of the plants in the lease area will be cut during operational phase of the mine. we recommend uprooting and planting of the 10 trees along the 7.5 m safety zone to prevent environmental pollution during quarrying. As the survival rate due to uprooting was only 30%, 100 seedlings will be procured at the rate of 10 seedlings per tree and planted in 7.5 m safety zone.
- ❖ Existing roads will be used; new roads will not be constructed to reduce impact on flora.
- 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 49031 kg 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 1313 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 245155 kg of the total carbon, as provided in Table 4.10.

Table 4.10 CO₂ Sequestration

CO ₂ sequestration in kg	182	49031	245155
Remaining CO ₂ not sequestered in kg	2830	764013	3820064
Trees required for environmental compensation	31834		
Area required for environmental compensation in hectares	64		

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	Nettilingam	Tree	
4	<i>Albizia lebbek</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		
	818	654	7362
	Number of plants outside the mine lease area		
	1227	982	11043
Total	2045	1636	18405

Table 4.13 Budget for Greenbelt Development Plan

Activity	Plantation in the construction phase(3Months)	Cost	Capital Cost (Rs.)	Recurring Cost-per annum
Plantation inside the mine lease area (in safety margins)	818	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area	163600	24540

		and @ 30 per plant maintenance (recurring))"		
Plantation outside the area	1227	Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	368100	36810
Total			531700	61350

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

Mitigation Measures on Flora

- ❖ 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

4.6.4 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.

4.6.5 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.
- ❖ It is a granite quarry, no explosives are used, there is no possibility of vibration and dust, thus there is no possibility of damage to the adjacent agricultural land.

- ❖ 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.

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

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

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 2 m 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, spirometry 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.

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 III, 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 Semi Mechanized mining method with secondary blasting will be applied to extract rough stone 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 / trippers 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 Semi 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.

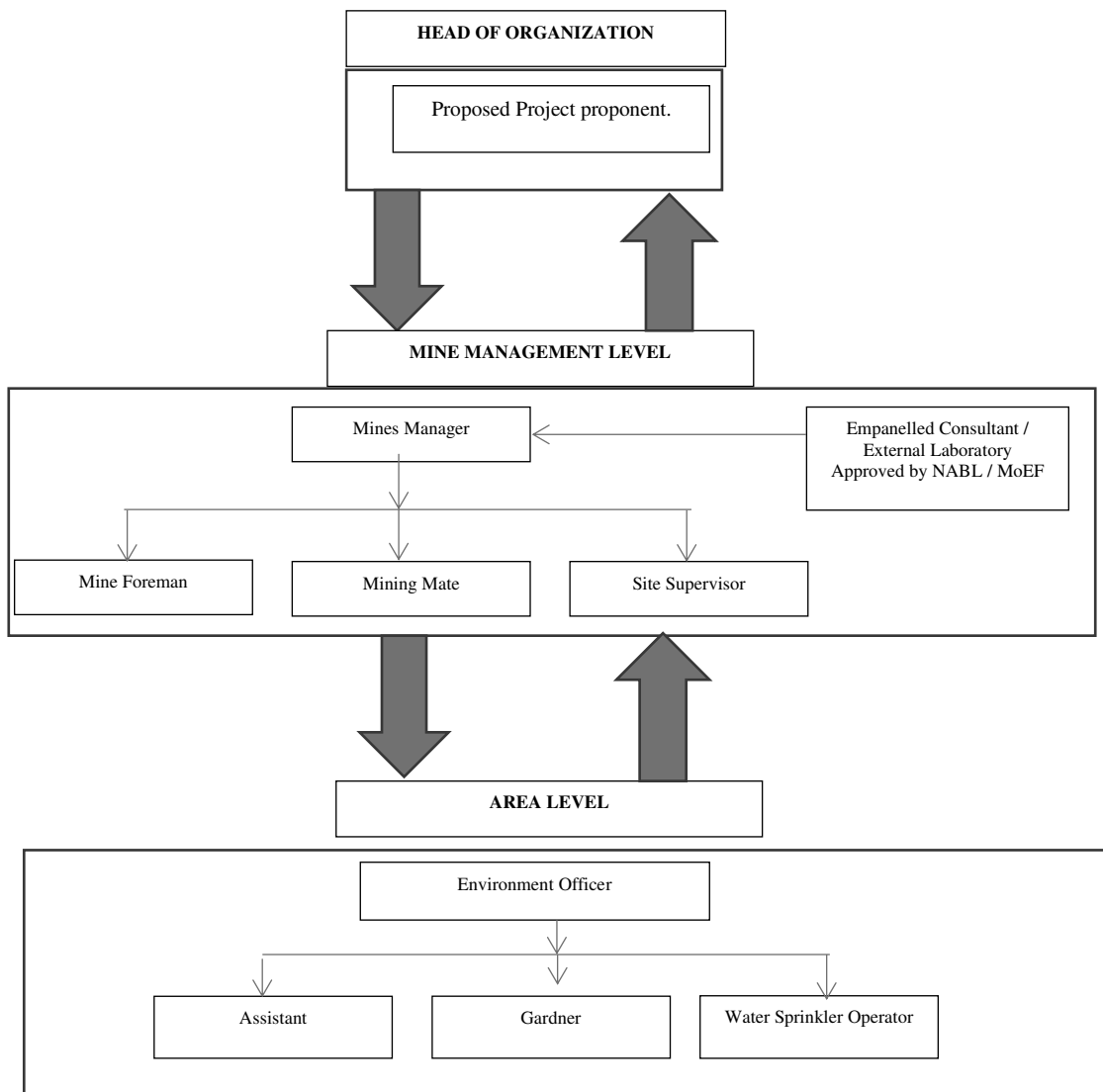


Figure 6.1 Proposed Environmental Monitoring Chart

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 mining machineries.	Improper handling and unsafe working practice	<ul style="list-style-type: none"> ✓ All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations. ✓ Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited. ✓ Fire-fighting and first-aid provisions in the mine office complex and mining area. ✓ Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use. ✓ Working of quarry, as per approved plans and regularly updating the mine plans. ✓ Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut. ✓ Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager. ✓ Maintenance and testing of all mining equipment as per manufacturer's guidelines.
2	Drilling	Improper and unsafe practices; Due to high pressure of compressed air, hoses may burst; Drill Rod may break;	<ul style="list-style-type: none"> ✓ Safe operating procedure established for drilling (SOP) will be strictly followed. ✓ Only trained operators will be deployed. ✓ No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places, ✓ Drilling shall not be carried on simultaneously on the benches at places directly one above the other.

			<ul style="list-style-type: none"> ✓ 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	Transportation	<p>Potential hazards and unsafe workings contributing to accident and injuries</p> <p>Overloading of material</p> <p>While reversal & overtaking of vehicle</p> <p>Operator of truck leaving his cabin when it is loaded.</p>	<ul style="list-style-type: none"> ✓ Before commencing work, drivers personally check the 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
4	Natural calamities	Unexpected happenings	<ul style="list-style-type: none"> ✓ Escape Routes will be provided to prevent inundation of storm water ✓ Fire Extinguishers & Sand buckets
5	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	<ul style="list-style-type: none"> ✓ Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m.

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 III. The area is far away from the sea. Hence, the disaster due to heavy floods and tsunamis are not anticipated. The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities. The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

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

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

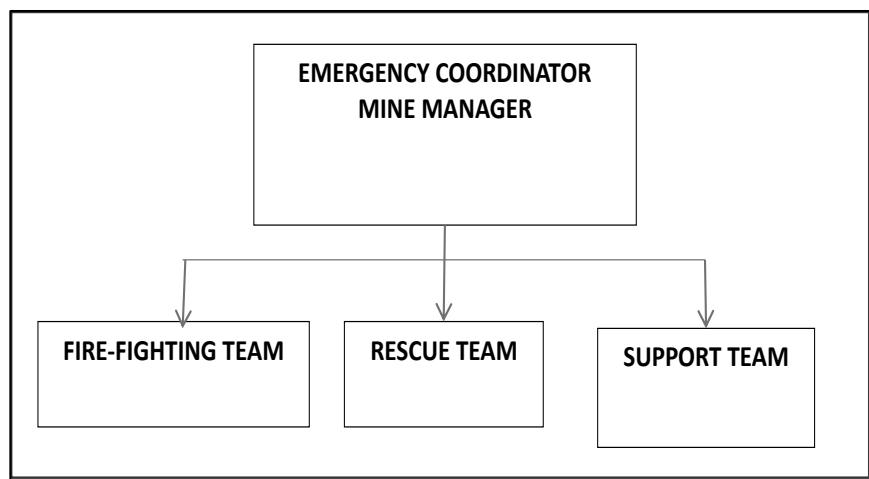


Figure 7.1 Disaster management team layout for proposed project

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 quarries within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting. For this cumulative study, 2 proposed projects, known as P1, P2 are taken into consideration. The details of P1 have been given in Table 1.2 and the details of P2 are given in the Table 7.2.

Table 7.2 Salient Features of the Proposed Project P2

Name of the Quarry	K.N.Venkatachalam Rough Stone Quarry	
Type of Land	Patta Land	
Extent	2.00.0 Ha	
S.F. No	406/2B(P), 406/3A, 406/4A, 406/2G, 406/3B & 406/4B	
Toposheet No	58 F/01	
Location of Project Site	10°51'52.99"N to 10°51'59.17"N 77°04'30.46"E to 77°04'35.95"E	
Highest Elevation	530 m AMSL	
Proposed depth of Mining	42 m	
Geological Resources	Rough Stone in m ³	Top Soil in m ³
	900450	40020
Mineable Reserves	Rough Stone in m ³	Top Soil in m ³

	295680	30208
Proposed reserves for five years	Rough Stone in m ³	Top Soil in m ³
	147280	30208
Method of Mining	Open-Cast Semi Mechanized mining	
Topography	Flat Topography	
Machinery proposed	Jack Hammer	6
	Compressor	2
	Tipper	3
	Excavator	2
Blasting Method	The quarrying operation is proposed to carried out by open cast mining using jack hammer drilling and blasting for shattering effect and loosen the rough stone.	
Proposed Manpower Deployment	28 Nos	
Project Cost	Rs.71,99,000 /-	
CER Cost	Rs. 5,00,000/-	
Proposed Water Requirement	3.5 KLD	

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 from the two proposed projects have been given in Tables 7.2 and 7.3.

Table 7.3 Cumulative Production Load of Rough Stone

Proposed Production Details				
Quarry	5 Years in m ³	Per Year in m ³	Per Day in m ³	Number of Lorry Load Per Day
P1	346204	69241	256	43
P2	147280	29456	109	18
Grand Total	493484	98697	365	61

Table 7.4 Cumulative Production Load of Gravel

Quarry	Production for 5 Years (m ³)	Yearly Production(m ³)	Daily Production(m ³)	Number of Lorry Loads Per Day
P1	14976	2995	11	2
P2	30208	6041	22	4
Grand Total	45184	9036	33	6

The cumulative study shows that the overall production of rough stone from the quarry is 365 m³ per day with a capacity of 61 trips of rough stone per day and that production of gravel from the proposed quarry is 33 m³ per day accounting for 6 trips/day.

7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact of the two proposed projects on air environment of the cluster have been provided in Table 7.5. The cumulative values resulting from two proposed projects for each pollutant do not exceed the permissible limits set by CPCB.

Table 7.5 Cumulative Impact Results from 2 proposed projects

Pollutants	Baseline Data ($\mu\text{g}/\text{m}^3$)	Incremental Values ($\mu\text{g}/\text{m}^3$)		Cumulative Value ($\mu\text{g}/\text{m}^3$)
		P1	P2	
PM _{2.5}	16.0	5.51	3.25	24.76
PM ₁₀	39.2	10.9	7.48	57.58

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 quarries within the 500 m radius.

Table.7.6 Cumulative Impact of Noise from the 2 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	1260	NW	52.8	21.95	52.80	55
Habitation Near P1	1640	NW	52.8	20.79	52.80	
Cumulative Noise (dB (A))					53.20	

Source: Lab Monitoring Data

The cumulative analysis of noise due to the two proposed projects shows that habitation will receive about 53.20dB (A) respectively. The cumulative results for all the villages 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 quarry have been shown in Table 7.7.

Table 7.7 Cumulative Effect of Ground Vibrations Resulting from 2 proposed quarries

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1	24.70	1260	0.071
P2	3	1640	0.009
Total			0.008

Results from the above tables 7.7 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 two proposed projects were calculated and the results have been shown in Table 7.8 the project together will contribute Rs. 10,00,000/-towards CER fund.

Table 7.8 Socio Economic Benefits from the 2 proposed projects

Location ID	Project Cost	CER Cost
P1	Rs.1,30,33,200	Rs. 5,00,000
P2	Rs.71,99.000	Rs. 5,00,000
Grand Total	Rs.2,02,32,200	Rs. 10,00,000

Table 7.9 Employment Benefits from 2 proposed projects

Location ID	Employment
P1	22
P2	28
Grand Total	50

A total of 50 peoples will get employment due to the two proposed projects in cluster

7.4.4 Ecological Environment

Table 7.10 Greenbelt Development Benefits from 2 proposed projects

Code	Number of Trees proposed	Area to be covered (m ²)	No. of Trees expected to be grown @ 80% survival rate	Species recommended
P1	2045	18405	1636	<i>Azadirachta indica, Albizia lebbeck, Delonix regia, Techtona grandis, etc.,</i>
P2	1000	9000	800	
Total	3045	27405	2436	

Cumulative studies show that the two proposed projects will plant about 3045 native tree species like *Azadirachta indica, Albizia lebbeck, Delonix regia, Techtona grandis*, etc inside

and outside the lease area. It is expected that 80 % of trees, i.e., 2436 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 7.11.

Table 7.11 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 Panapatti Village aims to produce **346204 m³** of rough stone and **14976 m³** 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 22 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 15 persons in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

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

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

The proposed quarry is located in Pachapalayam Village, Sulur Taluk and Coimbatore District is well established. The following physical infrastructure facilities will further improve due to proposed mine.

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

Employment is expected during civil construction period, in trade, garbage lifting, sanitation and other ancillary services, Employment in these sectors will be primarily temporary or contractual and involvement of unskilled labour will be more. A major part of the labour force will be mainly from local villagers who are expected to engage themselves both

in agriculture and mining activities. This will enhance their income and lead to overall economic growth of the area.

8.5 OTHER TANGIBLE BENEFITS

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

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

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 10 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these schemes, proponent will interact with LSG. The schemes will be selected from the following broad areas –

- ❖ Health Services
- ❖ Social Development
- ❖ Infrastructure Development
- ❖ Education & Sports
- ❖ Self-Employment
- ❖ CSR Cost Estimation
- ❖ CSR activities will be taken up in the Panapatti village mainly contributing to education, health, training of women self-help groups and contribution to infrastructure etc., 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 of capital investment towards CER as per directions of EAC/SEAC. However, the SEAC has suggested to allocate CER fund with reference to 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.38896418** 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	31158360	838656
District Mineral Foundation Tax @ 10% of Seigniorage	3115836	83865
Green Tax @ 10% of Seigniorage	3115836	83865
Total	37890032	1006386

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 Mr.M.Rajesh 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/annu m
			(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	40900	40900
	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 /	0	5000

		steel mesh / old tyres / used conveyor belts		
	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	100000	10000
	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	20000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes	0	5000
	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	81800
	Installing wheel wash system near exit gate of quarry	Installation + Maintenance + Supervision	50000	20000
Total Air Environment			1010900	277700
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 site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Competent Person	0	0
	Provision for Portable blaster shed	Installation of portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 tons of blasted material	0	969371
Total Noise Environment			50000	971371
Water Environment	Water Management	Provision for garland drain @ Rs. 10,000/- per hectare with maintenance of Rs. 5,000/- per annum (4.82.7 ha X 10000)	40900	20450
Total Water Environment			40900	20450
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 and Safety	Workers will be provided with Personal Protective Equipment	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee)	88000	22000
	Health checkup for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	22000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	16360
	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 (4.82.7 hectare)	818000	40900
	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	204500	40900
	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			1150500	929160
Development 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))"	163600	24540
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	368100	36810
Total Development of Green Belt			531700	61350
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)		0	139060
	G.O.(Ms)No.23, Dated: 28.09.2021	Section IVA of TNMMCR 1959 (@10% of Seigniorage Fee) (Seigniorage Fee for Roughstone = Rs.90)	3199702	0
Total Seigniorage Fee				
TOTAL			6023702	2283031 (Excl. Mine Closure)

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

Ist Year	IInd Year	IIIrd Year	IVth Year	Vth Year (including Mine Closure Cost)	Total Recurring Cost	Total EMP Cost
2283031	2397183	2517042	2642894	2914099	12754249	18777950

In order to implement the environmental protection measures, an amount of **Rs.6023702** as capital cost and recurring cost as **Rs.2283031** 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 5 years will be **Rs.18777950** 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 (P1) falls within the quarry cluster of 500 m radius with the total extent of 10.31.00 ha, it requires submission of EIA report for grant of Environmental Clearance (EC) after conducting public hearing. The proposed project falling in S.F.No. 405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A over the extent of 4.09.0 ha is situated in the cluster falling in Panapatti Village, Kinathukkdavu Taluk, Coimbatore District and Tamil Nadu. The quarries involved in the calculation of cluster extent are two proposed quarries, two existing quarries, and the one expired quarry.

11.2 PROJECT DESCRIPTION

The proposed project area is located between Latitudes from 10°51'51.73"N to 10°52'1.11"N and Longitudes from 77°4'24.39"E to 77°4'31.99"E in Panapatti Village Kinathukkdavu Taluk, Coimbatore District and Tamil Nadu. According to the approved mining plan, about 346204m³ of rough stone and 14976m³ of gravel will be mined up to the ultimate depth of 45m in the five years. The quarrying operation is proposed to be carried out by opencast semi mechanized mining method involving drilling, blasting, and formation of benches of the prescribed dimensions.

11.3 DESCRIPTION OF THE ENVIRONMENT

Baseline data were collected to evaluate the existing environmental condition in the core and buffer areas during October to December, 2023 as per CPCB guidelines. The data were collected by both the FAEs and NABL accredited and MoEF notified Excellence Laboratory for the environmental attributes including soil, water, noise, air 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 1.

Table.1 LULC Statistics of the Study Area

S. No.	Classification	Area (ha)	Area (%)
1	Crop land	5731.13	73.55
2	Dense Forest	149.68	1.92
3	Fallow Land	572.06	7.34
4	Mining / Industrial wastelands	334.73	4.30
5	Plantations	959.02	12.31
6	Settlement	45.59	0.59
	Total	7792.21	100.0

11.3.2 Soil Environment

Physical Characteristics & Chemical Characteristics

The soil samples in the study area show loamy textures varying between sandy loam, silty loam and Sandy Clay. pH of the soil varies from 7.8 to 8.0 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 303 to 547 μ s/cm. Bulk density ranges between 1.2 and 1.4 g/cm³. Figure 3.5 shows the soil composition as calculated based on the laboratory report. Manganese ranges between 236 and 411 mg/kg. Chlorides ranges between 353 and 574 mg/kg. Potassium ranges between 0.084 and 0.217%. Calcium ranges between 298 and 462 mg/kg. Organic matter content ranges between 1 and 2.3 %.

11.3.3 Water Environment

Panapatti Lake are the prominent surface water resources present in the study area. This lake is ephemeral in nature, which convey water only after rainfall events. The proposed project area is located 2.63 km NE Panapatti Lake, as shown in Table 3.6 and Figure 3.8. Surface water sample, known as SW01 are collected from the surface water body to assess the baseline water quality. Table 3.7 summarizes surface and groundwater quality data of the sample. Results for surface water samples in the Table 3.7 indicate that the physical and chemical parameters, and heavy metals are within permissible limits. Of the two biological parameters, *Coliform* and *E-coli* bacteria is present in the water sample. Seven groundwater samples, known as OW1, BW2, BW3, BW4, BW5, BW6 and BW7 were collected from bore wells and open well analysed for physico-chemical conditions, heavy metals and bacteriological contents in order to assess baseline quality of ground water.

Results for ground water samples in the Table 3.7 indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

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 October through December, 2023 (Post Monsoon Season) and from March through May, 2023 (Pre-Monsoon Season). The open well water level data thus collected onsite are provided in Tables 3.8 and 3.9. According to the data, average depths to the static water table in open wells range from 19.03 to 21.13 m BGL

in post monsoon and from 22.9 to 25.4 m BGL in pre monsoon. The bore well data thus collected onsite are provided in Tables 3.10 and 3.11. The average depths to static potentiometric surface in bore wells for the period of October through December 2023 (Post-Monsoon Season) vary from 70.53 to 74.70 m and from 72.80 to 75.50 m for the period of March through May, 2023 (Pre-Monsoon Season).

11.3.4 Air Environment

As per the monitoring data, PM_{2.5} ranges from 15.0 µg/m³ to 16.7µg/m³; PM₁₀ from 36.8µg/m³ to 41.1µg/m³; SO₂ 2.6µg/m³ to 4.2µg/m³; NO_x from 8.7µg/m³ to 13.8µg/m³. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

Air Quality Index (AQI)

The AQI shows that the air quality of the study area falls within good category 39 causing minimal impact to human health.

11.3.5 Noise Environment

Noise level in core zone was 45.8 dB (A) Leq during day time and 32.8WESdB (A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 39.5 to 52.8dB (A) Leq and during night time from 32.5 to 43.9dB (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

There are no plant species in the mining lease area. It is a kind of dry land.

Flora within 300 m radius Zone

A variety of plant species are found within a radius of 300 meters. It is an arid landscape. There is no agricultural land nearby. It contains a total of 37 species belonging to 19 families have been recorded from the buffer zone. 11 Trees (27%), 7 Shrubs (19%) and 19 Herbs and Climbers, Creeper, Grass & Cactus (52%) were identified. Details of flora with the scientific name details and of diversity species Rich ness index were mentioned in Table 3.23-25 and figure 3.25. There is no threat to the Flora species in 300-meter radius.

Flora in 10 km radius zone

Similar type of environment also in buffer area but with more flora diversity compare than core zone area because nearby agriculture land was found to dominate mostly in Southeast and Southwest directions. Majority of the flat landscape around project unit is occupied by agriculture fields. It contains a total of 94 species belonging to 43 families have been recorded from the buffer zone. The floral (94) varieties among them Thirty-eight Trees 38 (41%) twenty-one Herbs 21 (22%) and Eighteen Shrubs 18 (19%) and twelve Climbers 12 (13%), two Creepers 2 (2%), two Grass 2 (2%) and one Cactus 1 (1%) were identified. The result of buffer zone of flora studies shows that Fabaceae and Euphorbiaceae, Solanaceae are the main dominating species in the study area it mentioned in Table No.3.26

Fauna in Core Zone

A total of 18 varieties of species belonging to 14 families were observed in the core zone. Among them are 6 Insects, 3 Reptiles, 1 Mammal and 8 Avian. Number of species decreases towards the mining area due the lack of vegetation. None of these species are threatened or endemic. There is no Schedule I species and 6 species are under schedule IV according to Indian wild life Act 1972. There are no critically endangered, endangered, vulnerable and endemic species there. Details of fauna in core zone and their scientific name were mentioned in Table. 3.31.

Fauna in Buffer Zone

A total of 48 species belonging to 33 families were recorded in the buffer zone. Based on habitat classification the majority of species were 19 Birds (41%), followed by 15 Insects (31%), 7 Reptiles (15%), 4 Mammals (8%) and 3 Amphibians (6%). There are 4 schedule II species and 27 schedule IV species according to Indian wild life Act 1972. There are no critically endangered, vulnerable and endemic species observed. List of fauna in the buffer zone is provided in Table 3.32.

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

- Change in land use and land cover and topography of the mine lease area

- Problems to human habitations due to dust and noise caused by movement of heavy vehicles
- Soil erosion and sediment deposition in the nearby water bodies during the rainy season
- Siltation of water course due to wash off from the exposed working area
- Deterioration of soil quality in the surrounding area due to runoff from the project area
- Decrease in the agricultural productivity of the surrounding land due to soil quality degradation

Mitigation Measures

- Construction of garland drains, settling pits, and check dams to prevent runoff and siltation
- Runoff water will be discharged into the settling tanks to reduce suspended sediment loads before runoff is discharged from the quarry site
- The vegetation will be retained at the site wherever possible
- Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season

11.4.2 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 4.5 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.

11.4.3 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

11.4.4 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 24.70kg 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.

11.4.5 Biological Environment

Impact on Ecology and Biodiversity

- During loading the truck, dust generation will be likely. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly
- The Number of plants in the mining lease area is given in chapter 3 table 3.21 which vegetation in the lease area may be removed during mining.
- Carbon released from quarrying machineries and tippers during quarrying would be 3011 kg per day, 813044 kg per year and 4065218 kg over five years,

Mitigation Measures on Flora

- 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.
- None of the plants in the lease area will be cut during operational phase of the mine. we recommend uprooting and planting of the 10 trees along the 7.5m,10m and 50m safety zone to prevent environmental pollution during quarrying. As the survival rate due to uprooting was only 30%, 100 seedlings will be procured at the rate of 10 seedlings per tree and planted in 7.5m,10m and 50m safety zone.
- Existing roads will be used; new roads will not be constructed to reduce impact on flora.
- 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 31469 kg 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 4.13), about 1313 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 30812 kg of the total carbon, as provided in Table 4.12.

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

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

11.4.6 Socio Economic Environment

An essential part of environmental study is socio-economic environment incorporating various facts related to socio-economic conditions in the area, which deals with the total environment. Socio economic study includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature of aesthetic significance such as temples, historical monuments etc. at the baseline level. This would help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project. Socio-economic study of an area provides a good opportunity to assess the socio -economic condition and possibly makes a change in living and social standards of the particular area benefitted due to the project.

11.4.7 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	Hourly /	Continuous	Wind speed, Wind

		start of Air Quality Monitoring & IMD Secondary Data	Daily	online monitoring	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 four 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 two proposed projects is well below the permissible limit of Peak Particle Velocity of 5 mm/s
- The two proposed projects will allocate Rs.10,00,000/- towards CER as recommended by SEAC.
- The two proposed projects will directly provide jobs to 50 local people, in addition to indirect jobs
- The two proposed projects will plant 3045 about trees in and around the lease area
- The two proposed projects will add 201 PCU per day to the nearby roads.

11.7 Project Benefits

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

- Direct employment to 22 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.6023702** as capital cost and recurring cost as **Rs.2283031** 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 5 years will be **Rs.18777950**.

CHAPTER XII

DISCLOSURES OF CONSULTANT

The Project Proponent, Mr.M.Rajesh 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.

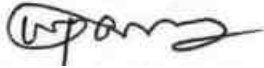
The accredited experts and associated members who were engaged in this EIA study are given below:

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	B
2.	Dr. M. Vijay Prabhu	In-house FAE	1(a)(i)	HG, LU, GEO	B
3.	Dr. J. Rajarajeswari	In-house, FAE	1(a)(i)	EB, SC	B
4.	Dr. G. Prabakaran	In-house, FAE	1(a)(i)	SE	B
5.	Dr. R. Arunbalaji	In-house, FAE	1(a)(i)	AP, AQ, NV	B
6.	J.N. Manikandan	Empanelled FAE	1(a)(i)	RH, SHW, AP	B
7.	Dr. S. Malar	In-house, FAE	1(a)(i)	WP	B
8.	G. Umamaheswaran	In-house, FAE	1(a)(i)	HG, LU, GEO	B
9.	S. Gopalakrishnan	In-house, FAE	1(a)(i)	HG, GEO	B
10.	P. Venkatesh	In-house, FAE	1(a)(i)	AP	B
11.	Dr. D.Kalaimurugan	In-house, FAE	1(a)(i)	SC	B
Approved Functional Area Associates					
12.	G. Prithiviraj	FAA	1(a)(i)	LU, HG	B
13.	C. Kumaresan	FAA	1(a)(i)	NV	B

14.	P. Vellaiyan	FAA	1(a)(i)	HG, GEO	B
15.	P.Dhatchayini	FAA	1(a)(i)	AQ	B
16.	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		

DECLARATION 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 Mr.M.Rajesh rough stone and gravel quarry project with the extent of 4.09.00 ha situated in the cluster with the extent of **10.31.0 ha** in Panapatti Village, Kinathukkdavu Taluk, Coimbatore District and 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	<ul style="list-style-type: none"> ○ Identification of different sources of air pollution due to the proposed mine activity ○ Prediction of air pollution and propose mitigation measures / control measures 	J. N. Manikandan	
			P. Venkatesh	
2	WP	<ul style="list-style-type: none"> ○ Suggesting water treatment systems, drainage facilities ○ Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures. 	Dr.S. Malar	
3	HG	<ul style="list-style-type: none"> ○ Interpretation of ground water table and predict impact and propose mitigation measures. ○ Analysis and description of aquifer Characteristics 	Dr.M. Vijay Prabhu	
4	GEO	<ul style="list-style-type: none"> ○ 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.Gopala Krishnan	
5	SE	<ul style="list-style-type: none"> ○ Revision in secondary data as per Census of India, 2011. ○ Impact Assessment & Preventive Management Plan ○ Corporate Environment Responsibility. 	Dr. G. Prabhakaran	
6	EB	<ul style="list-style-type: none"> ○ Collection of Baseline data of Flora and Fauna. ○ Identification of species labelled as Rare, Endangered and threatened as per IUCN list. ○ Impact of the project on flora and fauna. ○ Suggesting species for greenbelt development. 	Dr.J. Rajarajeshwari	


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

List of Functional Area Associate Engaged in this Project

S.No.	Name	Functiona l Area	Involvement	Signature
1	G. Prithiviraj	LU, HG	<ul style="list-style-type: none"> ○ Site visit with FAE ○ Provide inputs & Assisting FAE for LU and HG 	
2	C. Kumaresan	NV	<ul style="list-style-type: none"> ○ Assistance to FAE in both primary and secondary data collection ○ Assistance in noise prediction modelling 	
3	P. Vellaiyan	HG & GEO	<ul style="list-style-type: none"> ○ Field visits along with FAE ○ Assistance to FAE in both primary and secondary data collection 	
4	P.Dhatchayini	AQ	<ul style="list-style-type: none"> ○ Site visit with FAE ○ Assistance to FAE in collection of both primary and secondary data 	
5	V.Malavika	NV, SHW	<ul style="list-style-type: none"> ○ 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 Mr.M.Rajesh rough stone and gravel quarry project with the extent of 4.09.00 ha situated in the cluster with the extent of **10.31.0 ha** in Panapatti Village, Kinathukkdavu Taluk, Coimbatore District and Tamil Nadu is true and correct to the best of our knowledge.

Signature : 

Date :

Name : **Dr. S. Karuppannan**

Designation : Managing Partner

Name of the EIA Consultant Organization : Geo Technical Mining Solutions

NABET Certificate No : NABET/EIA/23-26/RA0319

Validity : Valid till Dec 31, 2026



THIRU. A.R. RAHUL NADH, I.A.S.
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU

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

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.10553/SEAC/ToR-1695/2024 Dated: 13.05.2024

To

Thiru. M. Rajesh,
S/o. Mohandass,
D.No.2/1, Doctor Kalaingar Street,
Suleeswaranpatti,
Coimbatore District - 642 006.

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough Stone and Gravel quarry over an extent of 4.09.0 Ha at S.F.Nos. 405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A of Panapatti Village, Kinathukkadavu Taluk, Coimbatore District, Tamil Nadu by Thiru. M. Rajesh – 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/447079/2023, dated: 05.10.2023
 2. Your application submitted for Terms of Reference dated: 24.11.2023
 3. Minutes of the 436th SEAC meeting held on 29.12.2023
 4. Minutes of the 693rd SEIAA meeting held on 08.02.2024
 5. Proponent reply dated: 15.03.2024
 6. Minutes of the 704th SEIAA meeting held on 18.03.2024
 7. Minutes of the 460th SEAC meeting held on 24.04.2024
 8. Minutes of the 719th SEIAA meeting held on 13.05.2024

MEMBER SECRETARY
SEIAA-TN

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

The proponent, Thiru. M. Rajesh has submitted application for Terms of Reference (ToR) on 24.11.2023, in Form-I. Pre-Feasibility report for the Proposed Rough Stone and Gravel quarry over an extent of 4.09.0 Ha at S.F.Nos. 405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A of Panapatti Village, Kinathukkadavu Taluk, Coimbatore District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough Stone and Gravel quarry over an extent of 4.09.0 Ha at S.F.Nos. 405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A of Panapatti Village, Kinathukkadavu Taluk, Coimbatore District, Tamil Nadu by Thiru. M. Rajesh - For Terms of Reference.

The proposal was placed for appraisal in this 460th meeting of SEAC held on 24.04.2024. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

1. The Project Proponent, Thiru. M. Rajesh has applied seeking Terms of Reference for the proposed Rough Stone and Gravel quarry over an extent of 4.09.0 Ha at S.F.Nos. 405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A of Panapatti Village, Kinathukkadavu Taluk, Coimbatore District, Tamil Nadu.
2. The proposed quarry/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006, as amended.
3. The precise area communication was issued for the period of 5 Years. The mining plan is for 5 Years. The annual peak production shall not exceed 79694 m³ of Rough Stone for the ultimate depth of 45m below ground level.
4. Earlier, EC was accorded to the ex-proponent Thiru. H. Karthik vide Lr. No. SEIAA-TN/F.No.3268/EC/1(a)/2515/2015 dated: 01.12.2015 for the Proposed Rough Stone and Gravel quarry lease over an extent of 3.14.0 Ha at S.F.Nos. 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A of Panapatti Village, Kinathukkadavu Taluk, Coimbatore District, Tamil Nadu, for the quantity of 115198 cu.m of Rough Stone & 11775 cu.m of Gravel upto a depth of 29m Rough Stone & 5m Gravel.
5. The ex-proponent Thiru. H. Karthik obtained consent from Tmt. Velathal on 08.03.2021 and the deed cancelled on 9th June 2022. Tmt. Velathal sold the land to Thiru. Rameshkumar and Thiru. Rameshkumar sold the land to Sankar Anand Infra and last the land purchased by the proponent Thiru. M. Rajesh on 28th January 2023.



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6. The ex-proponent Thiru. H. Karthik earlier applied seeking Environment Clearance (File No. 8458 and Online Proposal No. SIA/TN/MIN/203361/2021 dated: 13.03.2021) for the Proposed Rough Stone and Gravel quarry lease over an extent of 3.14.0 Ha at S.F.Nos. 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A of Panapatti Village, Kinathukadavu Taluk, Coimbatore District, Tamil Nadu. The proposal was placed for appraisal in the 229th meeting of SEAC held on 27.08.2021. Based on the presentation and documents furnished by the project proponent, SEAC noted that there are no benches, no green belt development in already mined out area and also there are 2 odai nearby. Hence the SEAC decided that MS, SEIAA shall write a letter to AD mines to check whether mining plan is followed during mining when the project proponent comes for second mining activity and also recommended that AD mines may visit the site and then shall approve the mining plan. The visit proceedings by the AD (mines) may also be submitted. On receipt of the above AD mines letter, the committee would further deliberate on this project and decide the further course of action.

Subsequently, the subject was placed in the 468th Authority meeting held on 11.10.2021 & 12.10.2021. After detailed discussions, the Authority decided to request the MS-SEIAA to write a letter to AD/Mines, Coimbatore with a copy to Director of Mines requesting to furnish clarifications as requested by SEAC as per the decision taken in 229th SEAC meeting. On receipt of details, it may be sent to SEAC. Also, the minutes of SEAC shall be communicated to the Project Proponent.

Meanwhile, the Proponent had submitted a request vide letter dated: 18.10.2023 to withdraw the online proposal No. SIA/TN/MIN/203361/2021 dated: 13.03.2021. Hence, the proposal was again placed in the 674th Authority meeting held on 20.11.2023. The Authority after detailed discussions, decided to request the MS-SEIAA to write a reminder letter to AD/Mines, Coimbatore with a copy to Director of Mines requesting to furnish clarifications as requested by SEAC as per the decision taken in 229th SEAC meeting. On receipt of details, it may be sent to SEAC.

Now, the proposal was placed in the 433rd meeting of SEAC held on 21.12.2023. The Committee noted that the Project Proponent vide letter dated 18.10.2023 has requested for withdrawal of the application and as per the facts made available it is not a case of violation. The Committee, therefore, decided to accept the withdrawal request of the Project Proponent and close the file.

Subsequently, the subject was placed in the 690th Authority meeting held on 05.02.2024. The Authority noted that the subject was appraised in the 433rd SEAC meeting held on 21.12.2023. Authority noted that, based on the 229th SEAC minutes, certain details were requested from the AD/Mines, Coimbatore District vide Lr.No.SEIAA-TN/F.No.8458/2021 dated: 20.11.2023. So far, no reply has been furnished by AD/Mines. Therefore, based on the above, Authority decided that MS, SEIAA may write DO letter to Commissioner of Geology and Mining regarding the above and shall request Commissioner of Geology and Mining to obtain the details sought earlier and furnish the same to SEIAA-TN to take further course of action.

7. In 674th SEIAA minutes mentioned that the ex-proponent Thiru. H. Karthik would submit the letter obtained from AD Mines but the land ownership subsequently changed to the proponent Thiru. M. Rajesh.
8. Earlier, the proposal was placed for appraisal in the 436th meeting of SEAC held on 29.12.2023. Based on the presentation made by the project proponent, **SEAC decided to recommend for grant of Terms of Reference (TOR) with Public Hearing**, subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC and additional ToR conditions given in **ANNEXURE-I** are to be included in EIA/EMP Report:

- 1) In case of the existing quarry/operating mines, the PP shall obtain a letter from the concerned AD (Mines) which shall stipulate the following information:
 - i. Original pit dimension of the existing quarry
 - 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 carried out, if any
 - vi. Non-compliance/Violation in the quarry during the past working.
 - vii. Quantity of material mined out outside the mine lease area (or) in the adjacent quarry/land.
 - viii. Existing condition of Safety zone/benches
 - ix. Details of any penalties levied on the PP for any violation in the quarry operation
- 2) Since the existing depth of quarry has reached 30 m, the PP shall submit the stability



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status of the existing quarry wall and slope stability action plan by carrying 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.

- 3) The PP shall submit the copy of the official documents (such as permits) showing the quantity of gravel & rough stone quarried during the previous spells.
 - 4) The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc.
 - 5) The study on impact of the proposed quarrying operations on the surrounding environment which includes Canal, Vaikkal, water bodies, Odai etc.
 - 6) The PP shall carry out the blast-induced ground & air-vibrations caused during the quarrying operation in any of the quarry situated in the cluster for designing the safe maximum charge per round (kg) and maximum number of holes to be blasted / round in a day keeping the surrounding sensitive structures in mind.
 - 7) The Project Proponent shall furnish the revised EMP based on the study carried out on impact of the dust & other environmental impacts due to proposed quarrying operations on the nearby agricultural lands for remaining life of the mine in the format prescribed by the SEAC considering the cluster situation.
9. Subsequently, the subject was placed in the 693rd authority meeting held on 08.02.2024. The authority noted that the subject was appraised in the 436th SEAC meeting held on 29.12.2023. SEAC has furnished its recommendations for granting Terms of Reference with Public Hearing subject to the conditions stated therein.

The Authority, after detailed discussions decided to consider the proposal after obtaining the following particulars from the project proponent:

- 1) In case of the existing quarry/operating mines, the PP shall obtain a letter from the concerned AD (Mines) which shall stipulate the following information:
 - i. Original pit dimension of the existing quarry
 - ii. Quantity achieved Vs EC Approved Quantity



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- 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 carried out, if any
- vi. Non-compliance/Violation in the quarry during the past working.
- vii. Quantity of material mined out outside the mine lease area (or) in the adjacent quarry/land.
- viii. Existing condition of Safety zone/benches
- ix. Details of any penalties levied on the PP for any violation in the quarry operation

10. Now, the project proponent has furnished the existing quarry details obtained from Deputy Director, Dept. of Geology and Mining vide letter dated 14.03.2024. But the DD Mines has not replied to the (ix) point (Details of any penalties levied on the PP for any violation in the quarry operation)

11. The subject was placed in the 704th authority meeting held on 18.03.2024. In view of the above, the authority has decided to refer back the proposal to SEAC for getting specific remarks on the PP's reply along with recommendation.

Now, this proposal was again placed in this 460th meeting of SEAC held on 24.04.2024. The Project proponent has made a presentation along with clarification for the above shortcomings observed by the SEIAA.

S. No	SEIAA Query	Reply
1.	In case of the existing quarry/operating mines, the PP shall obtain a letter from the concerned AD (Mines) which shall stipulate the following information:	AD- Letter obtained vide letter dated 14.03.2024
i.	Original pit dimension of the existing quarry	
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 carried out, if any	
vi.	Non-compliance/Violation in the quarry during	


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	the past working.	
vii.	Quantity of material mined out outside the mine lease area (or) in the adjacent quarry/land.	
viii.	Existing condition of Safety zone/benches	
ix.	Details of any penalties levied on the PP for any violation in the quarry operation	The lessee Thiru. M. Rajesh had submitted the Affidavit to Dept of Geology and Mining stating
2.	Now, the project proponent has furnished the existing quarry details obtained from Deputy Director, Dept. of Geology and Mining vide letter dated 14.03.2024. But the DD Mines has not replied to the (ix) point (Details of any penalties levied on the PP for any violation in the quarry operation)	<ul style="list-style-type: none"> • No quarry license in my name in Tamil Nadu. • No quarry lease granted in my name independently or combined so far in TamilNadu. Hence no dues or no penalties levied on the PP for any violation in the quarry operation.

Based on the presentation made and the documents furnished by the Project proponent, SEAC decided to reiterate its **recommendation already made in its 436th** meeting of SEAC held on 29.12.2023. All other conditions mentioned in the minutes will remain unchanged and unaltered.

ANNEXURE-I

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.



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3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.
4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the 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.
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.



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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.



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28. Impact on local transport infrastructure due to the Project should be indicated.
29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc..) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be 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.

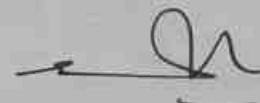


38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be 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.

Appendix

List of Native Trees Suggested for Planting

1. *Aegle marmelos* – Vilvam
2. *Adenaanthera pavonina* - Manjadi
3. *Albizia lebbeck* – Vaagai
4. *Albizia amara* - Usil
5. *Bauhinia purpurea* - Mantharai
6. *Bauhinia racemosa* - Aathi
7. *Bauhinia tomentosa* – Iruvathi
8. *Buchanania axillaris* - Kattuma
9. *Borassus flabellifer* - Panai
10. *Butea monosperma* - Murukka maram
11. *Bobax ceiba* – Ilavu, Sevvilavu
12. *Calophyllum inophyllum* - Punnai
13. *Cassia fistula* - Sarakondrai



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14. *Cassia roxburghii*- Sengondrai
15. *Chloroxylon sweitenia* - Purasa maram
16. *Cochlospermum religiosum* – Kongu, Manjal Ilavu
17. *Cordia dichotoma* – Mookuchali maram
18. *Creteva adansonii* – Mavalingum
19. *Dillenia indica* – Uva, Uzha
20. *Dillenia pentagyna* – Siru Uva, Sitruzha
21. *Diospyros ebenum* - Karungali
22. *Diospyros chloroxylon* – Vaganai
23. *Ficus amplissima* – Kal Itchi
24. *Hibiscus tiliaceus* – Aatru poovarasu
25. *Hardwickia binata* – Aacha
26. *Holoptelia integrifolia* - Aayili
27. *Lannea coromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthus tetraphylla* - Neikottai maram
30. *Limonia acidissima* - Vila maram
31. *Litsea glutinosa* –Pisin pattai
32. *Madhuca longifolia* - Illuppai
33. *Manilkara hexandra* – Ulakkai Paalai
34. *Mimusops elengi* - Magizha maram
35. *Mitragyna parvifolia* - Kadambu
36. *Morinda pubescens* – Nuna
37. *Morinda citrifolia* – Vellai Nuna
38. *Phoenix sylvestre* - Eachai
39. *Pongamia pinnata* – Pungam
40. *Premna mollissima* – Munnai
41. *Premna serratifolia* – Narumunnai
42. *Premna tomentosa* - Purangai Naari, Pudanga Naari
43. *Prosopis cinerea* - Vanni maram
44. *Pterocarpus marsupium* - Vengai
45. *Pterospermum canescens* – Vennangu, Tada
46. *Pterospermum xylocarpum* - Polavu



47. *Puthranjiva roxburghii* – Puthranjivi
48. *Salvadora persica* – Uгаа Maram
49. *Sapindus emarginatus* - Manipungan. Soapu kai
50. *Saraca asoca* - Asoca
51. *Streblus asper* - Piraya maram
52. *Strychnos nuxvomica* – Yetti
53. *Strychnos potatorum* - Therthang Kottai
54. *Syzygium cumini* - Naval
55. *Terminalia bellerica* - Thandri
56. *Terminalia arjuna* - Ven marudhu
57. *Toona ciliate* – Sandhana vembu
58. *Thespesia populnea* - Puvarasu
59. *Walsuratrifoliata* – valsura
60. *Wrightia tinctoria* – Veppalai
61. *Pithecellobium dulce* – Kodukkapuli

Discussion by SEIAA and the Remarks:-

The subject was placed in the 719th Authority meeting held on 13.05.2024. The authority noted that the subject was appraised in the 460th SEAC meeting held on 24.04.2024. SEAC has furnished its recommendations for granting Terms of Reference (ToR) with Public Hearing subject to the conditions stated therein.

After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) for the quantity of 3,46,204 m³ of Rough Stone and 14,976 m³ of Gravel up to the ultimate depth of 45m below ground level and the annual peak production should not exceed 79,694 m³ of Rough Stone, along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the conditions in '**Annexure B**' of this minutes.

Annexure 'B'

Cluster Management Committee

1. Cluster Management Committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.



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2. The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development, Water sprinkling, tree plantation, blasting etc.,
3. The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.
4. Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.
5. The committee shall deliberate on risk management plan pertaining to the cluster in a holistic manner especially during natural calamities like intense rain and the mitigation measures considering the inundation of the cluster and evacuation plan.
6. The Cluster Management Committee shall form Environmental Policy to practice sustainable mining in a scientific and systematic manner in accordance with the law. The role played by the committee in implementing the environmental policy devised shall be given in detail.
7. The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.
8. The committee shall furnish the Emergency Management plan within the cluster.
9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.

Impact study of mining

12. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
 - a) Soil health & soil biological, physical land chemical features .
 - b) Climate change leading to Droughts, Floods etc.
 - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
 - d) Possibilities of water contamination and impact on aquatic ecosystem health.
 - e) Agriculture, Forestry & Traditional practices.

- f) Hydrothermal/Geothermal effect due to destruction in the Environment.
- g) Bio-geochemical processes and its foot prints including environmental stress.
- h) Sediment geochemistry in the surface streams.

Agriculture & Agro-Biodiversity

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

Forests

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

Water Environment

- 23. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided, covering the entire mine lease period.

24. Erosion Control measures.
25. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
26. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
27. The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.
28. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
29. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
30. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.

Energy

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

Climate Change

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

Mine Closure Plan

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

EMP

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

Risk Assessment

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

Disaster Management Plan

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

Others

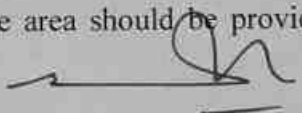
39. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.

40. As per the MoEF& CC office memorandum F.No.22-65/2017-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.

41. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.

A. STANDARD TERMS OF REFERENCE

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided.


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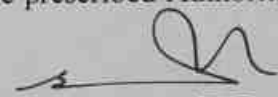
Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).

- 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


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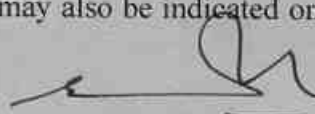
contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such 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



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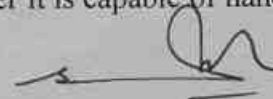
- as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease 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



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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



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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.



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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 is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)



18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.



- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -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.



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Copy to:

1. The Additional Chief Secretary to Government, Environment, Climate Change and 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 - 110 032.
3. The Chairperson, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032.
4. The APCCF (C), Regional Office, MoEF & CC (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.

5. Monitoring Cell, IA Division, Ministry of Environment, Forests & CC,
Paryavaran Bhavan, CGO Complex, New Delhi - 110 003.
6. The District Collector, Coimbatore District.
7. Stock File.



From
V.Sasikumar, M.Sc.,
Assistant Director,
Dept. of Geology and Mining,
Coimbatore.

To
Thiru.M.Rajesh
S/o. Mohandass,
2/1, Doctor Kalaingar Street,
Suleeswaran patti,
Coimbatore

Rc.No.206/Mines/2023

Dated: 20.09.2023

Sir,

Sub: Mines & Minerals - Minor Mineral - Coimbatore District - Kinathukadavu Taluk - Panappatti Village - Survey Nos.405/2 (0.95.0 hectares), 406/1A (0.27.5 hectares), 406/1B1A (0.54.5 hectares), 406/1B1B (1.48.0 hectares), 406/1C1 (0.68.0 hectares), 406/2A (0.16.0 hectares) - over an extent of 4.09.0 hectares of patta land - Application preferred by Thiru. M.Rajesh for quarrying Rough stone and gravel - Precise area communicated - Details of quarries situated within 500 meter radial distance - Requested - furnished - reg.

- Ref. 1. Assistant Director, Dept. of Geology and Mining, Coimbatore Letter Rc.No.206/Mines/2023, Dated: 25.08.2023.
2. Mining Plan submitted by Thiru. M. Rajesh dated: 15.09.2023.

I invite kind attention to the reference cited wherein Thiru. K. Jaison have been issued precise area for the grant of Rough Stone and gravel quarry lease over an extent of 4.09.0 hectares of patta land in Survey Nos.405/2 (0.95.0 hectares), 406/1A (0.27.5 hectares), 406/1B1A (0.54.5 hectares), 406/1B1B (1.48.0 hectares), 406/1C1 (0.68.0 hectares), 406/2A (0.16.0 hectares) over an extent of 4.09.0 hectares of Panappatti Village, Kinathukadavu Taluk, Coimbatore District.

In the reference 2nd cited of Thiru. M.Rajesh has requested to furnish the details of quarries situated within 500 meter radial distance from the proposed area.

In this connection the details of abandoned, expired, existing and proposed quarries situated within 500 meter radial distance from the proposed area are furnished below.

i) Existing Quarries

Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Lease period	Remarks
1.	P.Subramaniam	Panapatti 472/5 (P)	1.40.0	25.01.2019 to 24.01.2024	
2.	Tmt.V.Nirmaladevi	Panapatti 470 (P)	1.10.0	01.06.2023 to 31.05.2028	

ii) Expired Quarries

Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Lease period	Remarks
1.	N.Somasundaram	Panapatti 402/2(P), 403/2 (P) & 404/1B (P)	1.72.0	09.12.2016 to 08.12.2021	

iii) Abandoned quarries

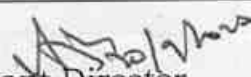
Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Lease period	Remarks
--Nil--					

iv) Proposed quarries

Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Remarks
1.	Thiru.M. Rajesh	Panappatti 405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A	4.09.0	Subject area Precise area communicated
2.	Thiru.K.N. Venkatachalam	Panappatti 406/2B(P), 406/3A, 406/4A, 406/2G, 406/3B& 406/4B	2.00.0	Pending with SEIAA

v) Future Proposed quarries

Sl. No.	Name of the Owner	Village & S.F.Nos.	Extent in Hect.	Remarks
---NIL---				


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

From
V.Sasikumar, M.Sc.,
Assistant Director,
Dept. of Geology and Mining,
Coimbatore.

To
Thiru.M.Rajesh
S/o. Mohandass,
2/1, Doctor Kalaignar Street,
Suleeswaran patti,
Coimbatore

Rc.No.206/Mines/2023 **Dated: 20.09.2023**

Sir,

Sub: Mines & Minerals – Minor Mineral – Coimbatore District – Kinathukadavu Taluk – Panappatti Village - Survey Nos.405/2 (0.95.0 hectares), 406/1A (0.27.5 hectares), 406/1B1A (0.54.5 hectares), 406/1B1B (1.48.0 hectares), 406/1C1 (0.68.0 hectares), 406/2A (0.16.0 hectares) - over an extent of 4.09.0 hectares of patta land - Application preferred by Thiru. M. Rajesh for quarrying Rough stone and gravel – Submission of mining plan for approval – approved – regarding.

- Ref: 1. Quarry lease application dated 22.02.2023 preferred by Thiru. M. Rajesh, Coimbatore.
2. Assistant Director, Dept. of Geology and Mining, Coimbatore Letter Rc.No.206/Mines/2023, Dated: 25.08.2023.
3. Mining Plan submitted by Thiru. M. Rajesh dated: 15.09.2023.

In response to the precise area communicated by the Assistant Director of Geology and Mining, Coimbatore the applicant Thiru. M. Rajesh has submitted three copies of mining plan vide reference 3rd cited for the grant of rough stone and gravel quarry lease over an extent of 4.09.0 hectares of patta land in Survey Nos.405/2 (0.95.0 hectares), 406/1A (0.27.5 hectares), 406/1B1A (0.54.5 hectares), 406/1B1B (1.48.0 hectares), 406/1C1 (0.68.0 hectares), 406/2A (0.16.0 hectares) over an extent of 4.09.0 hectares of Panappatti Village, Kinathukkavu Taluk, Coimbatore District.

2. The mining plan submitted for the grant of Rough stone and gravel quarry lease over an extent of 4.09.0 hectares of patta land in Survey Nos.405/2 (0.95.0 hectares), 406/1A (0.27.5 hectares), 406/1B1A (0.54.5 hectares), 406/1B1B (1.48.0 hectares), 406/1C1 (0.68.0 hectares), 406/2A (0.16.0 hectares) over an extent of 4.09.0

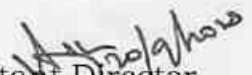
hectares of Anupparpalayam Village, Kinathukkavu Taluk, Coimbatore District has been verified in detail.


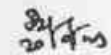
3. As per the guidelines/instructions issued by the Commissioner of Geology and Mining, Chennai vide letter Rc.No.3868/LC/2012, dated 19.11.2012, the mining plan is hereby approved, subject to the following conditions:

- (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) Amended Act, 2015, 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) 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) As per the Assistant Director, Dept. of Geology and Mining, Coimbatore letter Rc.No.206/Mines/2023, Dated: 25.08.2023 the following conditions have been incorporated in the Mining Plan.
 - a) No hindrance should be caused to the adjacent pattadars and public.
 - b) A safety distance of 7.5 meters should be provided for the adjacent patta lands from the lease applied area.
 - c) A safety distance of 50 meters should be provided to the EB Line passing on the western side of the applied area.

- d) No hindrance should be caused to an odai passing 10 meters away from the applied area on the North and Eastern side.
- e) DGPS survey should be done by the Government recognized agency and boundary stones should be erected along the entire boundary of the leased out area.
- f) As per the orders of the Hon'ble Supreme Court of India in W.P.(C) No.144/2014 Dated 08.01.2020 soon after determination / expiry of the lease period, the damaged part of the lease hold area shall be made fit for cultivation of Plantations, Fauona, Flora etc.,
- g) Quarrying should be done in are seeking permission along after leaving proper safety distance.
- v) 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.

Encl: Two copies of Approved Mining Plan.


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

 
Copy to The Commissioner of Geology and Mining, Chennai-32.

MINING PLAN

20 SEP 2023

FOR

PANAPATTI VILLAGE ROUGH STONE AND GRAVEL MINING LEASE
PROGRESSIVE QUARRY CLOSURE PLAN

Patta- Ryotwari land/Open cast-Semi-Mechanized mining/Non-forest/Captive Use – “B2” Category

Lease period 5 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 : COIMBATORE
TALUK : KINATHUKKDAVU
VILLAGE : PANAPATTI
S.F.NO'S : 405/2, 406/1A, 406/1B1A, 406/1B1B,
406/1C1 & 406/2A
EXTENT : 4.09.0 Hectares

ADDRESS OF THE APPLICANT

Mr.M.Rajesh,
S/o. Mohandass,
2/1, Doctor Kalaignar Street,
Suleeswaranpatti,
Coimbatore District – 642006.

PREPARED BY

Dr.S.KARUPPANNAN.M.Sc., Ph.D.,
RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

(A NABET Accredited & ISO Certified Company)
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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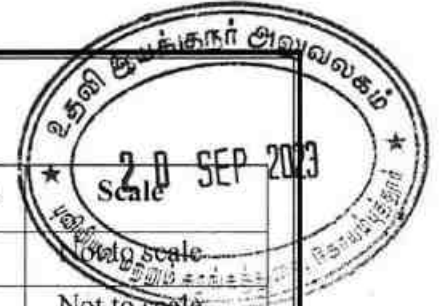
ANNEXURES



Sl. No.	Description	Annexure No.
1.	Copy of precise area communication letter	
2.	Copy of previous lease particulars a. Environmental Clearance b. District Collector Proceeding letter c. Lease execution deed	II
3.	Copy of FMB (Field Measurement book)	III
4.	Copy of Combined Sketch	IV
5.	Copy of "A" register	V
6.	Copy of computer Chitta & Adangal	VI
7.	Photo copy of the applied lease area	VII
8.	Copy of ID Proof of the authorized signatory	VIII
9.	Copy of RQP Certificate	IX

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
4.	Satellite imagery map	I-C	1: 5,000
5.	Environmental plan	I-D	1: 5,000
6.	Mine lease plan	II	1:1000
7.	Surface & Geological plan	III	1:1000
8.	Geological Sections	IIIA	Sections Hor 1:1000 Ver 1:500
9.	Year wise Development & Production plan	IV	1:1000
10.	Year wise Development, Production Sections	IVA	Sections Hor 1:1000 Ver 1:500
11.	Mine layout plan and Land use pattern	V	1:1000
12.	Conceptual plan	VI	1:1000
13.	Conceptual sections	VIA	Sections Hor 1:1000 Ver 1:500



Mr.M.Rajesh,
S/o. Mohandass,
2/1, Doctor Kalaignar Street,
Suleeswaranpatti,
Coimbatore District – 642006



CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of rough stone and gravel quarry lease in S.F.No's: 405/2 (0.95.0Hect), 406/1A (0.27.5Hect), 406/1B1A (0.54.5Hect), 406/1B1B (1.48.0Hect), 406/1C1 (0.68.0Hect) & 406/2A (0.16.0Hect) over an extent of 4.09.0hectares of Panapatti Village, Kinathukkdavu Taluk, Coimbatore 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, Coimbatore 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.,
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
(A NABET Accredited & ISO certified Company)
No: 1/213-B, Ground Floor, Natesan Complex,
Oddapatti, Collectorate Post office, Dharmapuri-636705
Ph: +91 9443937841,7010076633.
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: Coimbatore, TN.

Date:


Signature of the applicant
(M.Rajesh)



Mr.M.Rajesh,
S/o. Mohandass,
2/1, Doctor Kalaignar Street,
Suleeswaranpatti,
Coimbatore District – 642006

DECLARATION

The Mining Plan in respect of rough stone and gravel quarry lease in S.F.No's: 405/2 (0.95.0Hect), 406/1A (0.27.5Hect), 406/1B1A (0.54.5Hect), 406/1B1B (1.48.0Hect), 406/1C1 (0.68.0Hect) & 406/2A (0.16.0Hect) over an extent of 4.09.0hectares of Panapatti Village, Kinathukkdavu Taluk, Coimbatore 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: Coimbatore, TN.

Date:

m. A S
Signature of the applicant
(M.Rajesh)

Dr. S.KARUPPANNAN.M.Sc., Ph.D.,
RQP/MAS/263/2014/A

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Website: www.gtmsind.com



CERTIFICATE

This is to certify that, the provisions of 19(1) and 20 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's: 405/2 (0.95.0Hect), 406/1A (0.27.5Hect), 406/1B1A (0.54.5Hect), 406/1B1B (1.48.0Hect), 406/1C1 (0.68.0Hect) & 406/2A (0.16.0Hect) over an extent of 4.09.0hectares of Panapatti Village, Kinathukkdavu Taluk, Coimbatore District, Tamil Nadu State applied to **Mr.M.Rajesh**, Coimbatore District – 642006.

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: 15/9/23

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



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

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

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Oddapatti, Collectorate Post office, Dharmapuri-636705

Ph: +91 9443937841, 7010076633

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's: 405/2 (0.95.0Hect), 406/1A (0.27.5Hect), 406/1B1A (0.54.5Hect), 406/1B1B (1.48.0Hect), 406/1C1 (0.68.0Hect) & 406/2A (0.16.0Hect) over an extent of 4.09.0hectares of Panapatti Village, Kinathukkdavu Taluk, Coimbatore District, Tamil Nadu State prepared to **Mr.M.Rajesh**, Coimbatore District -642006, 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: 15/9/23

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 PANAPATTI VILLAGE ROUGH STONE AND GRAVEL MINING LEASE

PROGRESSIVE QUARRY CLOSURE PLAN

Patta- Ryotwari land / Open cast-Semi-Mechanized mining/Non-forest/Captive Use – “B2’ Category

Lease period 5 Years from the date of lease execution

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

INTRODUCTORY NOTES:

- a) **Introduction:** The applicant Mr.M.Rajesh S/o. Mohandass residing at 2/1, Doctor Kalaingar Street, Suleeswaranpatti, Coimbatore District, Tamil Nadu State – 642006 and filed with application renewed an existing quarry lease for extended to the next five years for new proposals has submitted to the Assistant Director, Department of Geology and Mining (ADG & M), Coimbatore dated 22.02.2023 had requested to grant the quarry lease for rough stone and gravel in S.F.No’s: 405/2 (0.95.0Hect), 406/1A (0.27.5Hect), 406/1B1A (0.54.5Hect), 406/1B1B (1.48.0Hect), 406/1C1 (0.68.0Hect) & 406/2A (0.16.0Hect) over an extent of 4.09.0 hectares of Panapatti Village, Kinathukkdavu Taluk, Coimbatore District, Tamil Nadu State.
- b) **The Precise area communication letter:** The Assistant Director, Department of Geology and Mining, Coimbatore has directed to the applicant Mr.M.Rajesh through his precise area communication letter Rc.No. 206/Mines/2023 Dated 25.08.2023, for quarrying lease rough stone and gravel at Tamil Nadu State, Coimbatore District, Kinathukkdavu Taluk, Panapatti Village in S.F.No’s: 405/2 (0.95.0Hect), 406/1A (0.27.5Hect), 406/1B1A (0.54.5Hect), 406/1B1B (1.48.0Hect), 406/1C1 (0.68.0Hect) & 406/2A (0.16.0Hect) over an extent of 4.09.0hectares has recommended as following conditions for a period of five (5) years under Rule 19 (1) and 20 of Tamil Nadu Minor Mineral Concession Rules, 1959.
- (i) Safety should be maintained nearby patta lands and peoples without any hindrance while quarrying of rough stone and gravel.
- (ii) A safety distance of 7.5meter should be provided to the adjacent patta lands.
- (iii) Quarry Work should be carried out leaving a safety distance of 50 meters to the power transformer and power line located on the western side of the applied lease area.
- (iv) Quarry work should be carried out in such a way that there is no disturbance to the power lines located in the western part of the applied lease area.



- (v) Excavation work should be carried out leaving a safety distance of 10 meters to the patta odai running to the north and east side of the applied lease area.
- (vi) The applied lease area should be Surveyed using DGPS and Demarcation of boundary pillars by the Government Recognized firm.
- (vii) Hon'ble Supreme Court W.P.(C)No.144/2014 Dated: 08.01.2020 of the judgement issued in the quarries after completion of the quarrying work in the said land basically the affected area should be rehabilitated and converted into suitable land for growing plants and grasslands.
- (viii) Child Labourers are not allowed in this quarry operation.

c) **The previous lease particulars:** The proposed lease area was previously granted to quarrying of rough stone and gravel in favor of Mr.Rajasekar S/o. Kalimuthu, by the District Collector, Coimbatore his proceedings vide Roc. No.1226/2007/MM2 dated 28.06.2008 in S.F.No's: 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A over an extent of 3.14.0hectares. The lease was executed on 28.06.2008 to 27.06.2013 for a period of five years.

The applicant Mr.H.Karthik, S/o.Hariharan, by the District Collector, Coimbatore District proceedings vide Roc. No.172/Mines/2014 dated 03.03.2016 in S.F.No's: 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A over an extent of 3.14.0hectares. The lease was executed on 03.03.2016 to 02.03.2021 for a period of 5years.

Now, the renewed application was submitted by Mr.M.Rajesh S/o. Mohandass have submitted to the Assistant Director, Department of Geology and Mining (ADG & M), Coimbatore dated 22.02.2023 and his precise area communication letter **Rc.No. 206/Mines/2023 Dated 25.08.2023** for period of five years for quarrying lease rough stone and gravel at Tamil Nadu State, Coimbatore District, Kinathukkdavu Taluk, Panapatti Village in S.F.No's: 405/2 (0.95.0Hect), 406/1A (0.27.5Hect), 406/1B1A (0.54.5Hect), 406/1B1B (1.48.0Hect), 406/1C1 (0.68.0Hect) & 406/2A (0.16.0Hect) over an extent of 4.09.0hectares.

There is existing pit was noticed with an average pit dimension as given under the table and the existing pit marked in the surface and Geological plan (Ref Plate No: III).

AVERAGE EXISTING PIT DIMENSIONS			
Bench	Length in Meter	Width in Meter	Depth in Meter
I	107	84	25
II	140	108	30

d) **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. **Rc.No. 206/Mines/2023 Dated 25.08.2023.**

e) **Geological resources and Mineable reserves:** Geological resource of estimated as 986247m^3 including the resources of safety zone, gravel etc. Of which, rough stone resources of about 965359m^3 , and gravel is 20888m^3 . The total mineable reserve is estimated to be 361180m^3 by deducting the reserve safety zone, block in benches from the total Geological resources. of which, rough stone is about 346204m^3 and gravel is 14976m^3 up to a depth of 45m from the below ground level (R.L.370m to 325m) (Refer Plate No. VI & VIA).

f) **Proposed Production Schedule:** Total proposed production rough stone is 346204m^3 and gravel is 14976m^3 up to a depth of 45m from the below ground level (R.L.370m to 325m) for five years plan period. (Refer Plate No. IV & IVA)

g) **Environmental Sensitivity of the proposed lease area: -**

i). **Interstate boundary:** There is no interstate boundary within the 10km radius from the lease area.

ii). **Wildlife Protection Act, 1972:** There is no wild life animal sanctuary within radius of 10Km from the project site area under the Wildlife (Protection) Act, 1972.

iii). **Indian Reserve Forest Act, 1980:** There is no reserve forest within the 1.0km radius periphery of proposed lease area.

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	:	Mr.M.Rajesh
	Applicant address	:	S/o. Mohandass, 2/1, Doctor Kalaignar Street, Suleeswaranpatti,
	District	:	Coimbatore
	State	:	Tamil Nadu
	Pin code	:	642006
	Phone	:	
	Fax	:	Nil
	Gram	:	Nil
	Telex	:	Nil
E-mail	:	.....
b.	Status of the Applicant	:	
	Private individual	:	Private individual
	Cooperative Association	:	---
	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 /renewed/ proposed to be applied	:	The precise area has been communicated to the applicant for quarrying period of five (5) years.
	Name of the RQP / QP 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, Ground Floor, 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. 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, Coimbatore vide Rc.No. 206/Mines/2023 Dated 25.08.2023.

2.0 LOCATION AND ACCESSIBILITY:

a.	Details of the Area:	:	Refer plate no: IA & IB																																													
	District & State	:	Coimbatore, Tamil Nadu																																													
	Taluk	:	Kinathukkdavu																																													
	Village	:	Panapatti																																													
	Khasra No./ Plot No./ Block Range/ Felling Series etc.:																																															
	<table border="1"> <thead> <tr> <th>Survey No.</th> <th>Sub division</th> <th>Total Extent in Hect</th> <th>Patta No.</th> <th>Village and Name of the Land Owner</th> <th>Mine lease Applied S.F. No.</th> <th>Mine lease Applied Area out of total area in hect.</th> </tr> </thead> <tbody> <tr> <td>405</td> <td>2</td> <td>0.95.0</td> <td rowspan="7">2300</td> <td rowspan="7">Mr.M.Rajesh S/o.Mohandass</td> <td>405/2</td> <td>0.95.0</td> </tr> <tr> <td>406</td> <td>1A</td> <td>0.27.5</td> <td>406/1A</td> <td>0.27.5</td> </tr> <tr> <td>406</td> <td>1B1A</td> <td>0.54.5</td> <td>406/1B1A</td> <td>0.54.5</td> </tr> <tr> <td>406</td> <td>1B1B</td> <td>1.48.0</td> <td>406/1B1B</td> <td>1.48.0</td> </tr> <tr> <td>406</td> <td>1C1</td> <td>0.68.0</td> <td>406/1C1</td> <td>0.68.0</td> </tr> <tr> <td>406</td> <td>2A</td> <td>0.16.0</td> <td>406/2A</td> <td>0.16.0</td> </tr> <tr> <td colspan="2">Total Extent</td> <td>4.09.0</td> <td colspan="2">Applied lease area extent</td> <td>4.09.0</td> </tr> </tbody> </table>	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.	405	2	0.95.0	2300	Mr.M.Rajesh S/o.Mohandass	405/2	0.95.0	406	1A	0.27.5	406/1A	0.27.5	406	1B1A	0.54.5	406/1B1A	0.54.5	406	1B1B	1.48.0	406/1B1B	1.48.0	406	1C1	0.68.0	406/1C1	0.68.0	406	2A	0.16.0	406/2A	0.16.0	Total Extent		4.09.0	Applied lease area extent		4.09.0		
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406	1B1A	0.54.5			406/1B1A	0.54.5																																										
406	1B1B	1.48.0			406/1B1B	1.48.0																																										
406	1C1	0.68.0			406/1C1	0.68.0																																										
406	2A	0.16.0			406/2A	0.16.0																																										
Total Extent		4.09.0			Applied lease area extent		4.09.0																																									
	Lease area (hectares)	:	4.09.0 Hectares																																													
	Whether the area is recorded to be in forest (please specify whether protected, reserved, etc)	:	It is a patta land																																													
	Ownership / Occupancy	:	This is a patta land S.F.No's. 405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A is registered in the name of I.Mr.M.Rajesh S/o.Mohandass as vide patta no. 2300. (Ref. Annex. No: V & VI).																																													
	Existence of Public Road / Railway line if any nearby and approximate distance	:	<input checked="" type="checkbox"/> Exploited quarry materials will be transported to the village road in situated on the southern side. <input checked="" type="checkbox"/> There is a MDR-522 road situated on																																													



	<p>the west side about 100m from the lease area which is connected to vadasithur road.</p> <p>✓ There is no SH or NH road situated around 5km radius from the lease area.</p> <p>✓ There is a railway line is situated on the west side about 3.9km from the lease area.</p>																																										
<p>Toposheet No. with latitude and longitude</p>	<p>: Toposheet No. 58 F/1</p> <p>Latitude: From 10°51'51.73"N to 10°52'1.11"N</p> <p>longitude: From 77° 4'24.39"E to 77° 4'31.99"E</p>																																										
<p>Geo-Coordinates of the lease boundary:</p> <table border="1"> <thead> <tr> <th>Pillar No</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr><td>1</td><td>10°52'1.11"N</td><td>77° 4'29.89"E</td></tr> <tr><td>2</td><td>10°51'59.04"N</td><td>77° 4'30.20"E</td></tr> <tr><td>3</td><td>10°51'57.85"N</td><td>77° 4'30.65"E</td></tr> <tr><td>4</td><td>10°51'53.38"N</td><td>77° 4'31.87"E</td></tr> <tr><td>5</td><td>10°51'52.67"N</td><td>77° 4'31.99"E</td></tr> <tr><td>6</td><td>10°51'52.43"N</td><td>77° 4'31.84"E</td></tr> <tr><td>7</td><td>10°51'52.00"N</td><td>77° 4'29.08"E</td></tr> <tr><td>8</td><td>10°51'51.73"N</td><td>77° 4'27.91"E</td></tr> <tr><td>9</td><td>10°51'53.86"N</td><td>77° 4'27.43"E</td></tr> <tr><td>10</td><td>10°51'53.54"N</td><td>77° 4'25.62"E</td></tr> <tr><td>11</td><td>10°51'53.82"N</td><td>77° 4'25.56"E</td></tr> <tr><td>12</td><td>10°51'53.82"N</td><td>77° 4'25.56"E</td></tr> <tr><td>13</td><td>10°51'59.37"N</td><td>77° 4'24.39"E</td></tr> </tbody> </table>		Pillar No	Latitude	Longitude	1	10°52'1.11"N	77° 4'29.89"E	2	10°51'59.04"N	77° 4'30.20"E	3	10°51'57.85"N	77° 4'30.65"E	4	10°51'53.38"N	77° 4'31.87"E	5	10°51'52.67"N	77° 4'31.99"E	6	10°51'52.43"N	77° 4'31.84"E	7	10°51'52.00"N	77° 4'29.08"E	8	10°51'51.73"N	77° 4'27.91"E	9	10°51'53.86"N	77° 4'27.43"E	10	10°51'53.54"N	77° 4'25.62"E	11	10°51'53.82"N	77° 4'25.56"E	12	10°51'53.82"N	77° 4'25.56"E	13	10°51'59.37"N	77° 4'24.39"E
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<p>Land use pattern (Forest, Agricultural, Grazing, Barren etc.)</p>	<p>: It is an barren Land.</p>																																										
<p>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></p>	<p>: Refer plate no-IA & IB</p>																																										

i) INFRASTRUCTURE AND COMMUNICATION:

S.No	Description	Place	Distance*	Direction
a.	Nearest post office	Vadasithur	3.2Km	South
b.	Nearest police station	Chettipalayam	6.9km	North
c.	Nearest fire station	Kinathukadavu	6.7km	West
d.	Nearest medical facility	Vadasithur	3.2Km	South
e.	Nearest school	Panapatti	2.8km	Northeast
f.	Nearest railway station	Kinathukadavu	6.5km	Southwest
g.	Nearest port facility	Cochin	134km	Southwest
h.	Nearest airport	Coimbatore	17.8km	North
i.	Nearest DSP office	Coimbatore	18.8km	North
j.	Nearest villages	Karachery	1.07Km	Northwest
		Panappatti	2.66Km	East
		Vadasithur	2.9Km	South
		Arasampalayam	3.75km	West



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 exhibits flat topography which is an average altitude of about 370m AMSL. The slope is towards North side and falls in Toposheet no. 58-F/1.
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(ii) General Geology of the district:
Geologically, the district is covered by rocks belonging to Archean age comprising the khondalite group, Charnockite Group, migmatite group, Sathayamangalam group, Bhavani Group and Alkali complex of Proterozoic age and Recent to Late Pleistocene rocks of Cainozoic age. The Charnockite Group of rocks consisting of Charnockite, pyroxene granulites and associated magnetite quartzite, the Knodalite Group comprising gametiferous – sillimanite gneiss, calc-granulite, crystalline limestone, sillimanite quartzites and associated migmatitic gneisses. The rocks are restricted to the central and southern portions of the district, especially around Sulur, Pollachi and Pollachi taluks. The fissile homblende gneisses (Peninsular gneiss – younger phase) of Bhavani Group with enclaves of schistose, micaceous and amphibolitic rocks, fuchsitge – kyanite quartzites, ferruginous quartzite (Satyamangalam Group) intruded by a number of ultramafic and basic rocks and granites are seen in the Northern portions of the district especially around Mettupalayam and Northern areas of Coimbatore. The granites are Proterozoic age and occupy the Western end and Eastern Part of the District as separate bodies and are recognized as Maruthamalai Granite and Punjapuliyampatti Granites respectively. The quaternary alluvium is seen in the Western areas of Coimbatore town. The alluvium is more than 30m thick in the Chinnathadagam valley northwest of Coimbatore and in the Siruvani valley west of Coimbatore.

Order of superposition of the proposed lease area,

Age	Group	Rock Formation
Recent to Sub recent	---	Block Soil (1-2m thick),
Proterozoic	Acid intrusive	Granite, Granite gneiss
Archaean	Charnockite Group	Charnockite / Crystalline limestone / limekankar





(iii) Local / Mine Geology of The Mineral Deposit:

Topography of the proposed lease area:

The proposed lease area exhibits flat topography which is an average altitude of about 370m AMSL. The slope is towards Northern side.

Gravel is obtained about 0-2.0m (R.L.370 to 368m) and rough stone starts from 2-45m (R.L.368 to 325m) from the ground 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,**

Age	Group	Rock Formation
Recent to Sub recent	----	Gravel (Clayey soil)
Archaean	Charnockite Group	Charnockite.

(iv) Drainage Pattern : There is no major river situated around 50m radius from the lease area. The drainage in the area is dendritic in nature.

(b) *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:*

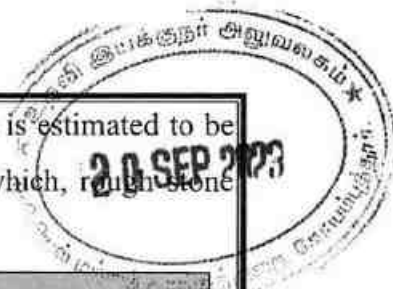


	a. Present status:	:	The RQP examined the surface features during survey. It is an Existing quarry pit noticed Pit - I 25m and Pit - II 30m depth, two existing pits noticed during the mining survey.																														
	b. Surface Plan	:	Surface plan showing elevation contour, Existing pit Details and accessibility road was prepared at the scale of 1: 1000, 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)	<p><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></p> <table border="1"> <thead> <tr> <th>Year</th> <th>No.of boreholes</th> <th>Total meterage</th> <th>No.of Pits and Dimensions</th> <th>No.of Trenches and Dimensions</th> </tr> </thead> <tbody> <tr> <td>I</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>II</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>III</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>IV</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>V</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> </tbody> </table> <p>No future programmed proposed in this area. Its massive homogeneous parent rock. Hence exploration proposal is not required to this mining project.</p>			Year	No.of boreholes	Total meterage	No.of Pits and Dimensions	No.of Trenches and Dimensions	I	N.A	---	---	N.A	II	N.A	---	---	N.A	III	N.A	---	---	N.A	IV	N.A	---	---	N.A	V	N.A	---	---	N.A
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V	N.A	---	---	N.A																													

(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.

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 two sections (one longitudinal and two transverse) to calculate the volume of material up to the depth of 45m from the below ground level (R.L.370m to 325m) for five years plan period. (Refer Plate No. III & IIIA). The longitudinal and transverse cross sections were assigned XY-AB, X1-AB &

XIY1-CD as respectively. Using the cross-sectional method, total reserve is estimated to be 986247m³ including the resources of safety zone, and gravel, etc. Of which, rough stone resources of about 965359m³ and gravel is 20888m³.



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	184	56	2	20608	.....	20608
	I	184	56	3	30912	30912	.....
	II	184	56	5	51520	51520	.....
	III	184	56	5	51520	51520	.....
	IV	184	56	5	51520	51520	.....
	V	184	56	5	51520	51520	.....
	VI	184	56	5	51520	51520	.....
	VII	184	56	5	51520	51520	.....
	VIII	184	56	5	51520	51520	.....
	IX	184	56	5	51520	51520	.....
TOTAL					463680	443072	20608
XIY1-AB	I	17	4	2	136	.....	136
	I	17	4	3	204	204	.....
	II	18	5	5	450	450	.....
	III	18	5	5	450	450	.....
	IV	18	5	5	450	450	.....
	V	18	5	5	450	450	.....
	VI	97	121	5	58685	58685	.....
	VII	178	121	5	107690	107690	.....
	VIII	178	121	5	107690	107690	.....
	IX	178	121	5	107690	107690	.....
TOTAL					383895	383759	136
XIY1-CD	I	4	18	2	144	.....	144
	I	4	19	3	228	228	.....
	II	5	20	5	500	500	.....
	III	5	22	5	550	550	.....
	IV	5	22	5	550	550	.....
	V	5	23	5	575	575	.....
	VI	6	29	5	870	870	.....
	VII	71	127	5	45085	45085	.....
	VIII	71	127	5	45085	45085	.....
	IX	71	127	5	45085	45085	.....
TOTAL					138672	138528	144
GRAND TOTAL(XY-AB,XIY1-AB&XIY1-CD)					986247	965359	20888

தலைநகர் திருச்சி
 20 SEP 2023

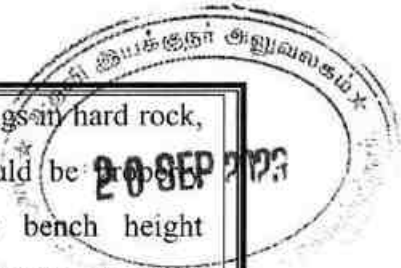
(f) Indicate mineable reserves by slice plan / level plan method, as applicable, as per the proposed mining parameters: -

The total mineable reserve is estimated to be **361180m³** by deducting the reserve safety zone, block in benches from the total Geological resources up to a depth of 45m below ground level (R.L.370m to 325m). Of which, rough stone is about **346204m³** and gravel is about **14976m³**. The commercially viable rough stone has been prepared on 1: 1000 scale and sections are prepared in a scale of 1:1000 in horizontal axis and 1:500 as vertical axis (Refer plate no's.VIA).

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	156	48	2	14976	.....	14976
	I	156	48	3	22464	22464	.....
	II	146	43	5	31390	31390	.....
	III	136	38	5	25840	25840	.....
	IV	126	33	5	20790	20790	.....
	V	116	28	5	16240	16240	.....
	VI	106	23	5	12190	12190	.....
	VII	96	18	5	8640	8640	.....
	VIII	86	13	5	5590	5590	.....
	IX	76	8	5	3040	3040	.....
TOTAL					161160	146184	14976
X1Y1-AB	VI	62	88	5	27280	27280	.....
	VII	138	83	5	57270	57270	.....
	VIII	133	78	5	51870	51870	.....
	IX	128	73	5	46720	46720	.....
TOTAL					183140	183140	0
X1Y1-CD	VII	31	52	5	8060	8060	.....
	VIII	26	42	5	5460	5460	.....
	IX	21	32	5	3360	3360	.....
TOTAL					16880	16880	0
GRAND TOTAL					361180	346204	14976

4.0 MINING:

a)	Briefly describe the existing / proposed method for developing / working the deposit with all design	:	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,
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parameters.
(Note: In case of pocket deposits, sequence of development/working may be indicated on the same plan)

1961 in all open cast workings in hard rock, the benches and sides should be benched and sloped. The bench height should not exceed 5m 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 rough stone is about **346204m³** and Gravel is about **14976m³** up to a depth of 45m from the below ground level (R.L.370m to 325m) for five years plan period. (Refer Plate No's. IVA).

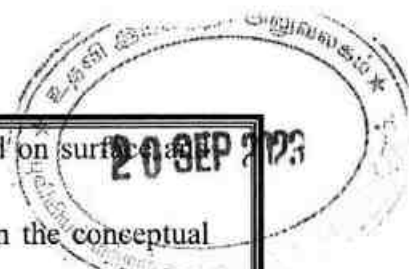
Year	Pit No.(s)	Topsoil/Overburden (m ³)	ROM (m ³)	Saleable rough stone (m ³) @ 100%	Rough stone rejects(m ³)	Sub grade/Weathered rock (m ³)	Saleable Gravel (m ³)	Rough stone to waste ratio
First	I	...	94670	79694	...	...	14976	...
Second	I	...	76500	76500	...	...	...	...
Third	I	...	73970	73970	...	...	...	...
Fourth	I	...	77230	77230	...	...	...	...
Fifth	I	...	38810	38810	...	...	...	...
Total	—	...	361180	346204	...	...	...	...

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

YEARWISE PRODUCTIONS								
Section	Year	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- Year	I	156	48	2	14976	.....	14976
		I	156	48	3	22464	22464	.....
		II	146	43	5	31390	31390	.....
		III	136	38	5	25840	25840	.....
TOTAL						94670	79694	14976
XY-AB	II- Year	IV	126	33	5	20790	20790	.....
		V	116	28	5	16240	16240	.....
		VI	106	23	5	12190	12190	.....
XIYI-AB		VI	62	88	5	27280	27280	.....
TOTAL						76500	76500	0
XIYI-CD	III-	VII	31	52	5	8060	8060	.....

X1Y1-AB	Year	VII	138	83	5	57270	57270	.....
XY-AB		VII	96	18	5	8640	8640	.....
TOTAL						73970	73970	.....
XY-AB	IV- Year	VIII	86	13	5	5590	5590	.....
X1Y1-AB		VIII	78	133	5	51870	51870	.....
X1Y1-CD		VIII	26	42	5	5460	5460	.....
		IX	21S	32	5	3360	3360	.....
X1Y1-AB		IX	30	73	5	10950	10950	.....
TOTAL						77230	77230	0
X1Y1-AB	V- Year	IX	98	73	5	35770	35770	.....
XY-AB		IX	76	8	5	3040	3040	.....
TOTAL						38810	38810	0
GRAND TOTAL						361180	346204	14976

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)	<p><i>Indicate proposed rate of production when the mine is fully developed and the expected life of the mine and the year from which effected:</i></p> <p>At this rate of production, the expected life of quarry is calculated as given below:</p> <p><u>Rough stone:</u></p> <p>Mineable reserves of rough stone = 346204m³</p> <p>Yearly production = 69240m³</p> <p>Monthly production of rough stone = 5770m³</p> <p><u>Gravel:</u></p> <p>Mineable reserves of gravel = 14976m³</p>		
f)	<p><i>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></p>		
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:	:	Exploration program is not proposed in this area. It's an Existing quarry lease and Massive Charnockites Homogeneous parent rock.



ii) Whether ultimate pit limit has been determined and demarcated on surface geological plan:-

The ultimate pit limit has been determined and demarcated in the conceptual plan

ULTIMATE PIT LIMIT-(XY-AB)						
Bench	Bench R.L	Period	Overburden/ Mineral	L (m)	W (m)	D (m)
I	R.L.370-368m	5 years	Gravel	156	48	2
I	R.L.368-365m			156	48	3
II	R.L.365-360m		Rough stone	146	43	5
III	R.L.360-355m			136	38	5
IV	R.L.355-350m			126	33	5
V	R.L.350-345m			116	28	5
VI	R.L.345-340m			106	23	5
VII	R.L.340-335m			96	18	5
VIII	R.L.335-330m			86	13	5
IX	R.L.330-325m			76	8	5
Total Depth						45
ULTIMATE PIT LIMIT-(XIY1-AB)						
Bench	Bench R.L	Period	Overburden/ Mineral	L (m)	W (m)	D (m)
--	R.L.370-345m	5 years	Existing pit	-	-	25
VI	R.L.345-340m			62	88	5
VII	R.L.340-335m		Rough stone	138	83	5
VIII	R.L.335-330m			133	78	5
IX	R.L.330-325m			128	83	5
Total Depth						45
ULTIMATE PIT LIMIT-(XIY1-CD)						
Bench	Bench R.L	Period	Overburden/ Mineral	L (m)	W (m)	D (m)
--	R.L.370-345m	5 years	Existing pit	-S	-	30
VII	R.L.340-335m			31	52	5
VIII	R.L.335-330m		Rough stone	26	42	5
IX	R.L.330-325m			21	32	5
Total Depth						45

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: -

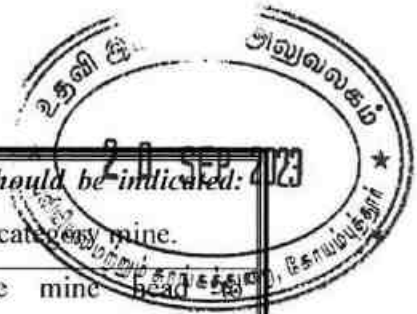
: The recovery of rough stone in this quarry is 100%. There are no rough stone rejects and any other wastes removed in this lease area.



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 backfill the quarry pit.
v)	Whether post mining land use envisaged: -	:	At the end of mining activities over the quarry pit may be utilized fish culture or storage of rain water reservoir used for irrigation purposes.
g)	Open cost mining	:	
i)	Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, manual)	:	<p>The mining operation is open-cast, semi-mechanized methods 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 5m and the bench width should not less than the bench height. The slope of the benches should not exceed 45° from horizontal.</p> <p>Machineries like Tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic Excavators and tipper combination are adapted.</p>
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 5m 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 = 5mts. Bench width = 5mts.																																													
	a. Details of Topsoil/Overburden		There is no topsoil shall 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)	<p>Extent of mechanization: Describe briefly including the calculation for adequacy and type of machinery and equipment proposed to be used in different mining operations.</p> <p>(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.</p> <table border="1"> <thead> <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> </thead> <tbody> <tr> <td>Jack Hammer</td> <td>4</td> <td>32 mm</td> <td>Hand held</td> <td>--</td> <td>Diesel</td> <td>--</td> </tr> <tr> <td>Compressor</td> <td>2</td> <td>---</td> <td>Air</td> <td>--</td> <td>Diesel</td> <td>--</td> </tr> </tbody> </table> <p>(2) Loading Equipment:</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Nos</th> <th>Size / Capacity</th> <th>Make</th> <th>Motive power</th> <th>H.P.</th> </tr> </thead> <tbody> <tr> <td>Hydraulic Excavator</td> <td>1</td> <td>2.9-4.5m³</td> <td>--</td> <td>Diesel</td> <td>--</td> </tr> </tbody> </table> <p>(3) Haulage and Transport Equipment (a) Haulage within the mining leasehold:</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Nos</th> <th>Size / Capacity</th> <th>Make</th> <th>Motive power</th> <th>H.P.</th> </tr> </thead> <tbody> <tr> <td>Tipper</td> <td>4</td> <td>--</td> <td>--</td> <td>Diesel</td> <td>--</td> </tr> </tbody> </table>			Type	Nos	Dia of hole (mm)	Size / Capacity	Make	Motive power	H.P.	Jack Hammer	4	32 mm	Hand held	--	Diesel	--	Compressor	2	---	Air	--	Diesel	--	Type	Nos	Size / Capacity	Make	Motive power	H.P.	Hydraulic Excavator	1	2.9-4.5m ³	--	Diesel	--	Type	Nos	Size / Capacity	Make	Motive power	H.P.	Tipper	4	--	--	Diesel	--
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	<p><i>Whether the dumpers are fitted with exhaust conditioner should be indicated:</i></p> <p>The dumpers not used in this quarry area, hence it's a small B2 category mine.</p>																
b)	Transport from mine head to the destination		Transport from the mine head to customers crusher area.														
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:																
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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.

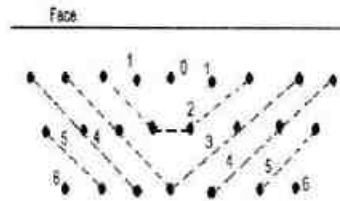
BLASTING:

a) *Broad blasting parameters like charge per hole, blasting pattern, delay, maximum number of holes blasted in a round, manner and sequence of firing, etc.*

Blasting pattern:

The quarrying operation is proposed to be carried by open cast mining in conjunction with conventional method using jack hammer drilling and blasting for shattering effect and loosen the rough stone.

1	Diameter of the hole	32 mm
2	Spacing between hole	1.2m
3	Burden for hole	1.0m
4	Depth of each hole	1.5m
5	Output per hole = Spacing × Burden × depth $1.2 \times 1.0 \times 1.5 = 1.8$	1.8m
6	Output per hole = $1.8 \times 2.8 = 5.04$ T	5.04 T
7	Production per annum $69241m^3 \times 2.8 = 193875$ T	193875T
8	Total handling per day (280 working day)	692T
9	Nos. of holes per day ($692/5.04 = 137$)	137 holes.
10	Meterage required per day ($137 \times 5.5 = 754$)	754meters
11	Charge per hole	0.5kg
12	Powder factor $754 \times 0.5 = 377$	377 kg



Blastholes/Initiation patterns for shot fired to an open face

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



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	:	137holes
Yield	:	692 tons
Total explosive required	:	377kg-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 0.5kg per hole of explosives
d)	Whether secondary blasting is needed, if so describe it briefly	:	Irrespective of the method of primary blasting employed, it may be necessary to re-blast a proportion of the rock on the quarry floor so as to reduce it to a size suitable for handling by the excavators and rock breakers.
e)	Storage of explosives (like capacity and type of explosive magazine)	:	<ol style="list-style-type: none"> 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 63m in summer and 57m in rainy season from the general ground level observed in the adjacent bore well.
----	--	---	--

b)	Workings expected to be _____ m. above / reach below water table by the year _____.	:	Proposed mining depth is 43m from the below ground level. Now, the present Mining lease shall be 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 Lpm 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 next five years: No separate of topsoil or any other wastes are removed in this lease area.		
b).	Land chosen for disposal of waste with proposed justification	:	There is no disposal of waste will be proposed in this lease area.
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 specifications stipulated by buyers	:	Basically, the materials produced at this 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 booth rooms have been provided as per the Metalliferous Mines Regulations, 1961 as a welfare amenity for our quarry laborers.																				
	<p>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.</p> <p>The following man power is proposed for quarrying rough stone during the five years period the same manpower will be utilize for this Mining Plan period to achieve the proposed production and to comply the provisions of the DGMS norms.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="3" style="text-align: center;">1.</td> <td rowspan="3" style="text-align: center;">Highly Skilled</td> <td>IInd class Mines Manager</td> <td style="text-align: center;">1No.</td> </tr> <tr> <td>Mine Geologist</td> <td style="text-align: center;">1No.</td> </tr> <tr> <td>Blaster</td> <td style="text-align: center;">1No.</td> </tr> <tr> <td rowspan="3" style="text-align: center;">2.</td> <td rowspan="3" style="text-align: center;">Unskilled</td> <td>Driver</td> <td style="text-align: center;">4No's</td> </tr> <tr> <td>Hitachi Operator</td> <td style="text-align: center;">3No.</td> </tr> <tr> <td>Musdoor / Labours</td> <td style="text-align: center;">12 No's</td> </tr> <tr> <td colspan="2"></td> <td style="text-align: right;">Total =</td> <td style="text-align: center;">22 No's</td> </tr> </table>		1.	Highly Skilled	IInd class Mines Manager	1No.	Mine Geologist	1No.	Blaster	1No.	2.	Unskilled	Driver	4No's	Hitachi Operator	3No.	Musdoor / Labours	12 No's			Total =	22 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 of the processing	: Excavated rough stone minerals directly will be used by the applicant in his own crusher for required size (i.e 1/4", 1/2", 1/3" and 1") The recovery of rough stone in this quarry																				



		/beneficiation. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.	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 extent of recycling.	:	Drinking is 0.5KLD, utilized water is 1.5KLD, Dust suppression is 1.0KLD and Green Belt is 1.5KLD. Minimum quantity of water 4.5KLD per day. It is proposed to make an own bore well for providing uninterrupted supply of RO drinking water, dust suppression and green belt development. The sewage water to a tune of 0.8KLD 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	Existing 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.																						
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11.2	Water Regime	: Water table in this area is noticed at a depth of 63m in summer and 57m in rainy season from the general ground level and presently the quarrying of rough stone is proposed up to a depth of 45m from the ground level. Hence, it will not affect the ground water depletion of this area. It is made own borewell for providing uninterrupted supply of RO drinking water, dust suppression and 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	<p>Climatic conditions:</p> <p>Rainfall:- Tamilnadu is exposed to both southwest and northeast monsoons. The Western Ghats acting as a barrier deprives full blast of Southwest monsoon winds. However, Southwest monsoon offers nearly 33 % of the rainfall received by the State, which helps cultivation. The State depends mainly the Northeast monsoon rains which are brought by the troughs of low pressures established in south Bay of Bengal between October and December. However, summer showers are also not uncommon. The average annual rainfall for the basin area is 689.04 mm</p> <p>Climatic Conditions: - The rest of the district lies in the rain shadow region of the Western Ghats and experiences salubrious climate most parts of the year. The mean maximum and minimum temperatures for Coimbatore city during summer and winter vary between 35 °C to 18 °C</p>																										
11.6	<p>Human Settlement:</p> <p>The nearest villages are found in the buffer zone with population as per 2011 census.</p>																										
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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
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b) *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)	<p>Land area indicating the area likely to be degraded due to quarrying / pitting, dumping, roads, workshop, processing plant, township etc:</p> <p>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:</p> <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>2.08.80</td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td>0.02.00</td> </tr> <tr> <td>3</td> <td>Roads</td> <td>0.08.00</td> </tr> <tr> <td>4</td> <td>Green belt & Earth Bund</td> <td>0.52.20</td> </tr> <tr> <td>5</td> <td>Un-utilized area</td> <td>1.38.00</td> </tr> <tr> <td colspan="2">Grand Total</td> <td>4.09.00</td> </tr> </tbody> </table>	Sl. No.	Land Use	Area in use during the quarrying period (Hect.)	1.	Area under Mining	2.08.80	2	Infrastructure	0.02.00	3	Roads	0.08.00	4	Green belt & Earth Bund	0.52.20	5	Un-utilized area	1.38.00	Grand Total		4.09.00
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		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 50m 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	:	There is no topsoil shall be removed.
ii).	Yearwise proposal for reclamation of land affected by abandoned quarries and other mining activities during first five 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 45m from the existing 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 SI fencing. No immediate proposals for closure of pit as the rough stone persist still at deeper level.
iii).	<i>Programme of afforestation, Yearwise for the initial five 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.</i> Green Belt Development:		



Safety barrier, school and nearest panchayat roads has been identified and be utilized for Greenbelt appropriate native species of Neem, Pongamia 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	5220	580	80%	@100 Rs Per sapling	58,000/-
Second	Approach road and Nearby Village Road	--	300	80%		30,000/-
Third	Schools	--	300	80%		30,000/-
Total						1,18,000/-

iv).	Stabilization and vegetation of dumps along with waste dump management Year wise for the first five years (and upto conceptual plan period for 'A' category mines).	:	No waste or rejects removed in this lease area.
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 B2 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.
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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 B2 category quarry

12.0 PROGRESSIVE QUARRY CLOSURE PLAN:

12.1	Steps proposed for phased restoration, reclamation of already mined out area.	:	The Ultimate mining is proposed to an average depth of 45m from the 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 580 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 present mining plan is proposed to depth of 45m 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 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 five years mining period the employment potential will be generated, general financial status and socio-economic conditions of approx. 22 labors will be improved.

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

A	Fixed Asset Cost:	
	1. Land Cost (Source: https://tnreginet.gov.in/portal/)	: Rs. 63,83,200/-
	2. Labour Shed	: Rs. 1,50,000/-
	3. Sanitary Facility	: Rs. 1,50,000/-
	4. Fencing	: Rs. 2,50,000/-

	5. Other expenses (Security guard, dust bin, etc)	:	Rs. 4,00,000/-
	Total	:	Rs. 73,33,200/-
B	B. Machinery cost	:	Rs. 25,00,000/- (Hire Basis)
C	Total Expenditure of EMP cost (for five years)		
	1. Drinking Water Facility	:	Rs. 1,50,000/-
	2. Sanitary facility & Maintenance	:	Rs. 2,50,000/-
	3. Permanent water sprinkler	:	Rs. 5,00,000/-
	4. Afforestation and its maintenance	:	Rs. 1,00,000/-
	5. Safety Kits	:	Rs. 1,00,000/-
	6. Provision of tyre washing facility	:	Rs. 1,00,000/-
	7. Blasting materials with blast mat cost	:	Rs. 15,00,000/-
	8. Environment monitoring	:	Rs. 5,00,000/-
	Total	:	Rs. 32,00,000/-
D	Total Project Cost (A+B+C)		Rs. 1,30,33,200/-

13.0 FINANCIAL ASSURANCE:

Not applicable, it is a small B2 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, Coimbatore vide letter **Rc.No. 206/Mines/2023 Dated 25.08.2023.**
- (iv) Total proposed production rough stone is **346204m³** and gravel is **14976m³** up to a depth of 45m from the below ground level (R.L.370m to 325m) for five 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: 15/9/23

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
subject to the conditions / stipulation
& indicated in the Mining Plan Approval
Letter No: R. No. 206/Mines/2023 dt 20/9/23
office of the A.D. Geology & Mining Coimbatore

This Mining Plan is Approved based on the incorporation of the particulars specified in the letter of the commissioner of Geology and Mining, Chennai ref No: 3863/LC/2012 Dated 19.11.2012 and subjected to further fulfillment of the condition laid down under Tamilnadu Minor Mineral Concession Rules 19th

ASSISTANT DIRECTOR
DEPARTMENT OF GEOLOGY & MINING
COIMBATORE DISTRICT.

20/9/23

உதவி இயக்குநர் அலுவலகம்.
புவியியல் மற்றும் கரங்கத்துறை,
மாவட்ட ஆட்சியர் அலுவலக வலம்,
கோயம்புத்தூர் - 18

நாள்: 25.08.2023.

ந.க.எண்.206/கனிமம்/2023

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம் - பணப்பட்டி கிராமம் - புல எண்கள். 405/2-ல் 0.95.0 ஹெக்ட, 406/1A-ல் 0.27.5 ஹெக்ட, 406/1B1A-ல் 0.54.5 ஹெக்ட, 406/1B1B-ல் 1.48.0 ஹெக்ட, 406/1C1-ல் 0.68.0 ஹெக்ட, 406/2A-ல் 0.16.0 ஹெக்டேர் ஆக மொத்தம் 4.09.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க திரு.M.ராஜேஷ் என்பவருக்கு - குவாரி குத்தகை அனுமதி வழங்குவது - தொடர்பாக.

- பார்வை: 1. திரு.M.ராஜேஷ், த/பெ. மோகன்தாஸ், 2/1, டாக்டர் கலைஞர் வீதி, சூளேஸ்வரன் பட்டி, கோயம்புத்தூர் மாவட்டம் என்பவரது விண்ணப்பம் நாள்: 22.02.2023.
2. இவ்வலுவலக கடிதம் இதே எண். நாள்: 23.02.2023
3. சார் ஆட்சியர், பொள்ளாச்சி அவர்களின் கடித ந.க.எண்.869/2023/அ1 நாள்.20.05.2023.
4. உதவி புவியியலாளர், புவியியல் மற்றும் கரங்கத்துறை, கோயம்புத்தூர் தணிக்கை அறிக்கை நாள்: 22.08.2023
5. அரசாணை எண். 169 தொழில் (எம்.எம்.சி.1) துறை நாள்: 04.08.2020.

பார்வை 1-ல் கோயம்புத்தூர் மாவட்டம், 2/1, டாக்டர் கலைஞர் வீதி, சூளேஸ்வரன்பட்டி என்ற முகவரியில் வசிக்கும் திரு.மோகன்தாஸ் என்பவரின் மகன் திரு.M.ராஜேஷ் என்பவர் கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், பணப்பட்டி கிராமம், புல எண்கள். 405/2-ல் 0.95.0 ஹெக்ட, 406/1A-ல் 0.27.5 ஹெக்ட, 406/1B1A-ல் 0.54.5 ஹெக்ட, 406/1B1B-ல் 1.48.0 ஹெக்ட, 406/1C1-ல் 0.68.0 ஹெக்ட, 406/2A-ல் 0.16.0 ஆக மொத்தம் 4.09.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா பூமியில் சாதாரணகற்கள் மற்றும் கிராவல் மண் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் கோரி உரிய ஆவணங்களுடன் விண்ணப்பித்துள்ளார்.

மேற்படி மனு தொடர்பாக, சார் ஆட்சியர், பொள்ளாச்சி மற்றும் கோயம்புத்தூர் புவியியல் மற்றும் கரங்கத்துறை உதவி புவியியலாளர் ஆகியோர் புலத்தணிக்கை மேற்கொண்டு கோயம்புத்தூர் மாவட்டம், 2/1, டாக்டர் கலைஞர் வீதி, சூளேஸ்வரன்பட்டி என்ற முகவரியில் வசிக்கும் திரு.மோகன்தாஸ் என்பவரின் மகன் திரு.M.ராஜேஷ்

என்பவருக்கு கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், பண்பு
எண்கள். 405/2-ல் 0.95.0 ஹெக்ட. 406/1A-ல் 0.275 ஹெக்ட. 406/1B1A-ல் 0.54.5
ஹெக்ட. 406/1B1B-ல் 1.48.0 ஹெக்ட. 406/1C1-ல் 0.68.0 ஹெக்ட. 406/2A-ல் 0.16.0
ஹெக்ட. மொத்தம் 4.09.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா யூனியில் சாதாரண கறிகள் மற்றும்
கிராமல் மண் வெட்டியெடுக்க கிழக்கண்ட நிலத்தானைகளுக்கு பரிந்துரை செய்து



அனுமதி கோரும் புல எண்கள். 405/2, 406/1A, 406/1B1A, 406/1B1B, 406/1C1, 406/2A ஆகியவை பட்டா எண் 2300-ன் படி ராஜேஷ் என்பவரின் பெயரில்
தலிபாட்டளாக கிராம கணக்கில் தாக்கவாகியுள்ளது. எனவே மேற்படி யூனியில் மதுரை
திரு.ம.ராஜேஷ் என்பவர் குவாரி குத்தகை உரிமை பெற தகுதியடையவர் ஆவார்.

எனவே, சார் ஆட்சியர், பொள்ளாச்சி மற்றும் உதவி புவியியலாளர், புவியியல்
மற்றும் கரங்கத்துறை, கோயம்புத்தூர் ஆகியோரின் பரிந்துரைகளின் அடிப்படையில்
கோயம்புத்தூர் மாவட்டம், 2/1, டாக்டர் கலைஞர் வீதி, சூளேஸ்வரன்பட்டி என்ற
முகவரியில் வசிக்கும் திரு.மோகன்தாஸ் என்பவரின் மகன் திரு.ம.ராஜேஷ்
என்பவருக்கு கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், பண்பட்டி கிராமம், புல
எண்கள். 405/2-ல் 0.95.0 ஹெக்ட, 406/1A-ல் 0.27.5 ஹெக்ட, 406/1B1A-ல் 0.54.5
ஹெக்ட, 406/1B1B-ல் 1.48.0 ஹெக்ட, 406/1C1-ல் 0.68.0 ஹெக்ட, 406/2A-ல் 0.16.0
ஆக மொத்தம் 4.09.0 ஹெக்டேர் பரப்பளவுள்ள பட்டா யூனியில் 1959-ஆம் ஆண்டு
தமிழ்நாடு சிறுகணிம சலுகை விதிகளில் விதி 19(1) மற்றும் 20-ன் படி குத்தகை ஒப்பந்த
பத்திரம் நிறைவேற்றும் நாளிலிருந்து 5 (ஐந்து) ஆண்டுகளுக்கு சாதாரண கறிகள்
மற்றும் கிராமல் மண் வெட்டியெடுக்க கிழக்கண்ட நிலத்தானைகளுக்குட்பட்டு குவாரி
குத்தகை வரங்குவதற்குரிய நிலப்பரப்பாக (Precise Area Communication)
கருதப்படுகிறது.

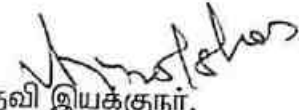
நிபந்தனைகள்

1. அருகிலுள்ள பட்டா நிலங்களுக்கும் மற்றும் பொது மக்களுக்கும், எவ்வித இடைபுறும் இடமின் சாதாரண கல் மற்றும் கிராமல் குவாரி மணி மேற்கொள்ள வேண்டும்.
2. அருகில் உள்ள பட்டா நிலத்திற்கு 7.5 மீட்டர் பாதுகாப்பு இடை வெளி விட்டு குவாரி மணி மேற்கொள்ள வேண்டும்.
3. அனுமதி கோரும் புலங்களின் மேற்கு பகுதியில் அனுமதிக்கப்படாத நிலத்திற்கு 50 மீட்டர் பாதுகாப்பு இடை வெளி விட்டு குவாரி மணி மேற்கொள்ள வேண்டும்.
4. அனுமதி கோரும் புலங்களின் மேற்கு பகுதியில் அனுமதிக்கப்படாத நிலங்களில் எந்தவகைக்கு, எவ்வித இடைபுறும் ஏற்பாடு எண்ணம் குவாரி மணி மேற்கொள்ள வேண்டும்.
5. அனுமதி கோரும் புலத்தை அங்க அங்கீகாரம் பெற்ற நிலவரைத்தளரால் DGPS (Differential Global Positioning System) ன் படி ஆய்வு செய்யப்பட்டு ஒன்பெரு எல்லைத்



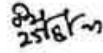
6. தூண்களும் நடப்படவேண்டும்.
மாண்புமிகு உச்ச நீதிமன்றம் W.P.(C)No.144/2012 இடம்படையில்
08.01.2020-ல் வழங்கப்பட்ட தீர்ப்புரையின் அடிப்படையில்
குவாரிகளில் குவாரிப்பணி முடிவுற்ற பின்னர் மேற்படி நிலத்தில்
பாதிக்கப்பட்ட பகுதிகளை மறு சீரமைத்து தாவரங்கள் மற்றும்
புல்வெளிகள் வளர்வதற்கு தகுதியுள்ள நிலமாக மாற்றப்பட
வேண்டும்.
7. குழந்தை தொழிலாளர்களை வேலைக்கு அமர்த்தல் கூடாது.

மேலும், தமிழ்நாடு சிறுகனிம சலுகை விதிகள்-1959 விதி எண். 41 மற்றும் 42-ன்
படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90
தினங்களுக்குள் சமர்ப்பிக்குமாறும், மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு அதிகார
அமைப்பின் அனுமதியினை பெற்று சமர்ப்பிக்கவும் மனுதாரரை கேட்டுக்
கொள்ளப்படுகிறது.


உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை
கோயம்புத்தூர்.

பெறுநர்:

திரு. M.ராஜேஷ்,
த/பெ. மோகன்தாஸ்,
2/1, டாக்டர் கலைஞர் வீதி,
சூளேஸ்வரன் பட்டி,
கோயம்புத்தூர் மாவட்டம்.


25/8/23

STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY - TAMIL NADU

Dr. S. KALYANASUNDARAM, I.F.S. (Retd.)
CHAIRMAN



3rd Floor, Panapatti Village,
No. 1 Jewels Road, Saidapet,
Chennai - 600 032

Phone No. 044-24337771
Fax No. 044-24337771

ENVIRONMENTAL CLEARANCE

Lr. No. SEIAA-TN/F.No.3268/LC/1(a)/2515/2015 dated:01.12.2015

To
Thiru H. Karthik
No 37/32-A, Ganthi Street
Kalapatti Road, Civil Airport
Coimbatore - 641 014

Sir,

- Sub: SEIAA-TN - Proposed Rough Stone & Gravel quarry located at S.F.No 406/1A, 1B1A, 1B1B, 406/1C1, 2A, Panapatti Village, Kinathukadavu Taluk, Coimbatore District - issue of Environmental Clearance - Reg
- Ref: 1. Your Application for Environmental Clearance dt. 17.12.2014
2. Minutes of the 68th SEAC held on 26.10.2015, 27.10.2015 & 28.10.2015
3. Minutes of the SEIAA meeting held on 01.12.2015

Details of Minor Mineral Activity:-

This has reference to your application first cited. The proposal is for obtaining environmental clearance for mining/quarrying of minor minerals based on the particulars furnished in your application as shown below.

1	Name of Project Proponent and address	Thiru H. Karthik No 37/32-A, Ganthi Street Kalapatti Road, Civil Airport Coimbatore - 641 014
2	Location of the Proposed Activity	
	Survey Number	406/1A, 1B1A, 1B1B, 406/1C1, 2A
	Latitude and Longitude	10°51'51.7"N to 10°51'52.5"N 77°04'26.6"E to 77°04'31.9"E
	Village	Panapatti
	Taluk	Kinathukadavu
	District	Coimbatore
3	Proposed Activity	
	i. Minor mineral	Rough Stone & Gravel

For H Karthik Rough Stone & Gravel Quarry

Proprietor

227

CHAIRMAN
SEIAA-TN



ii.	Mining Lease Area	3.140 Ha
iii.	Approved quantity	115198 cu.m of Rough Stone & Gravel
iv.	Depth of Mining	Rough stone 29m & Gravel 15m
v.	Type of mining	Opencast method of Surface Mining
vi.	Category(B1/B2)	B2
vii.	Precise area communication	Rc.No.172/2014/MM-2 Dated 27.11.2014
viii.	Mining plan approval	Deputy Director Rc.No.172/2014/MM-2 Dated 11.12.2014
ix.	Mining lease period	5 Years
4	Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:-	Not attracted. Affidavit furnished
5	Man Power requirement per day:	15 Employees
6	Utilities	
i.	Source of Water	Water canes/open wells
ii.	Quantity of Water Requirement in KLD:	
a.	Domestic	2.0KLD
b.	Industrial	} 6.0KLD
c.	Green Belt & Dust Suppression	
iii.	Power Requirement:	
a.	Domestic Purpose	TNEB
b.	Industrial Purpose	180 Liters of Diesel per Day
7	Cost	
i.	Project Cost	Rs.77.70 Lakhs
ii.	EMP Cost	Rs.3.25 Lakhs
8	Public Consultation:-	Not required as per O.M. dated 24.12.2013 of MoEF, Gol.
9	Date of Appraisal by SEAC:- Agenda No:-	26.10.2015, 27.10.2015 & 28.10.2015 68-11
10	Date of Review/Discussion by SEIAA and the Remarks:-	The proposal was placed before the SEIAA in its 146 Meeting held on 01.12.2015 and the Authority after careful consideration, decided to grant environmental clearance to the said project Mining of Rough Stone & Gravel to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended
11	Validity:	The Environmental Clearance will be coterminous with the mine lease period or limited to a maximum period of 5 Years from the date of issue whichever is earlier.



Conditions to be Complied before commencing mining operations

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
5. A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 15 mts. From any civil structure shall be kept from the periphery of any excavation area.



14. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
15. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
16. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
17. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
18. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
19. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
20. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
21. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, GoI on 16.11.2009.
22. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission
 - ii. water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
23. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.



24. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoEF, Govt of India to reduce noise to the prescribed levels.
25. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
26. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
27. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
28. The following measures are to be adopted to control erosion of dumps:
 - i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
29. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
32. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
33. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that

STATE LEVEL ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY – TAMIL NADU

the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.

34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
35. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
36. It shall be ensured that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 25 hectares within the mining lease period of this application.
37. It shall be ensured that there is no habitation is located within 500 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site.
38. Ground water quality monitoring should be conducted once in 3 Months
39. Transportation of the quarried materials shall not cause any hindrance to the village people/Existing Village road.
40. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
41. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
42. Bunds to be provided at the boundary of the project site.
43. Ground water quality monitoring should be conducted once in 3 Months
44. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
45. At least 10 Neem trees should be planted around the boundary of the quarry site.
46. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
47. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
48. The Project Proponent shall provide solar lighting system to the nearby villages
49. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
50. Rainwater shall be pumped out Via Settling Tank only
51. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
52. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild Life angle including clearance from obtaining committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
53. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
54. Safety equipments to be provided to all the employees
55. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai



General Conditions:

1. EC is given only on the factual records, documents and the commitments furnished on official stamp paper by the proponent.
2. The Proponent shall obtain the Consent for Establishment from the MPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
8. Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
11. All Personnel shall be provided with protective respiratory devices including safety shoes, Masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.



16. The Environmental Clearance does not absolve the applicant/proponent of obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance.
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA,TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
23. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

S. J. JAYARAJ
CHAIRMAN
SEIAA-TN

Copy to:

1. The Secretary, Ministry of Mines, Government of India, ShastriBhawan, New Delhi.
2. The Principal Secretary, Environment and Forests Department, Government of Tamil Nadu, Tamil Nadu.
3. The Additional Chief Secretary, Industries Department, Government of Tamil Nadu, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai - 34.
5. The Chairman, Central Pollution Control Board, PariveshBhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chairman, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-32.
7. The District Collector, Coimbatore District.
8. The Commissioner of Geology and Mines, Guindy, Chennai-32.
9. E1 Division, Ministry of Environment & Forests, ParyavaranBhawan, New Delhi.
10. Spare.

PROCEEDINGS OF THE DISTRICT COLLECTOR, COIMBATORE

Present: Tmt.Archana Patnaik, I.A.S.,



R.C.No.172 / Mines / 2014

Dated 03.03.2016

Sub Mines and Minerals – Minor Mineral – Roughstone & Gravel
 - Quarry lease application – Thiru.H.Karthik – applied in
 S.F.No.406/1A over an extent of 0.27.5 hectares, 406/1B1A
 over an extent of 0.54.5 hectares, 406/1B1B over an extent
 of 1.48.0 hectares, 406/1C1 over an extent of 0.68.0
 hectares and 406/2A over an extent of 0.16.0 hectares
 totally over an extent of 3.14.0 hectares – patta land in –
 Panapatti Village – Kinathukadavu taluk – Coimbatore
 District – Application processed – under rule 19(1) and 20 of
 Tamil Nadu Minor Mineral Concession Rule 1959 – quarry
 lease granted – for a period of 5 (five) years – orders issued
 – regarding.

- Ref: 1. Thiru.H.Karthik, S/o.Hariharan, 37/32A- Gandhi street,
 Kalappatti road, Civil Airport, Coimbatore District quarry
 lease application dated 04.04.2014.
2. This office letter even number dated 09.04.2014 (addressed
 to Sub Collector, Pollachi).
3. Sub Collector, Pollachi letter R.C.No.1683 / 2014 / A2 dated
 28.07.2014 (received in this office on 06.08.2014).
4. Deputy Director (i/c). Geology and Mining, Coimbatore field
 inspection report dated 12.08.2014.
5. This office letter even number dated 27.11.2014 (addressed
 to the applicant in which precise area communicated)
6. This office letter even number dated 11.12.2014 (addressed
 to the applicant in which the mining plan is approved)
7. The Chairman, State Level Environmental Impact
 Assessment Authority Chennai letter.No.SEIAA-
 TN/F.No.3268/ EC/1(a)/2515/2015 dated 01.12.2015
8. District Environmental Engineer, Tamil Nadu Pollution
 Control Board, Coimbatore (South) consent order
 No.F.160514092268, 160524092268 Dated 08.02.2016 and
 Proceedings No.F.0875CBS / RS / DEE / TNPCB / CBS /
 W&A / 2016 Dated 08.02.2016.
9. Thiru.H.Karthik letter dated 15.02.2016 (along with
 the EC advertisement paper cutting, acknowledgement for
 President, Panapatti Village Panchayat and Block
 Development Officer, Kinathukadavu Panchayat union letter
 dated 10.02.2016).

Order :-

In the reference 1st cited above, Thiru.H.Karthik, Thiruvannamalai, Tamil Nadu has applied for Roughstone and Gravel quarry lease in S.F.No.406/1A over an extent of 0.27.5 hect. 406/1B1A over an extent of 0.54.5 hectares, 406/1B1B over an extent of 1.48.0 hectares, 406/1C1 over an extent of 0.68.0 hectares and 406/2A over an extent of 0.16.0 hectares totally over an extent of 3.14.0 hectares patta land in Panapatti Village, Kinathukadavu Taluk, Coimbatore District. The applicant have requested quarry lease for roughstone and gravel for a period of 5 years. The applicant has remitted Rs.1,500/- towards application fees and enclosed the original amount remitted challan along with all the required documents to grant lease in his favour.

2. In order to get land availability report for the above quarry lease applied area, the Sub Collector, Pollachi has been requested to offer land availability report for the area applied for quarry lease vide reference 2nd cited above.

3. In the reference 3rd cited above, the Sub Collector, Pollachi has submitted her land availability report for the area applied for lease. In her report, the Sub Collector, Pollachi has stated that "As per patta no 1060 the Survey No. 406/1A over an extent of 0.27.5 hectares, 406/1B1A over an extent of 0.54.5 hectares, 406/1B1B over an extent of 1.48.0 hectares, 406/1C1 over an extent of 0.68.0 hectares and 406/2A over an extent of 0.16.0 hectares totally over an extent of 3.14.0 hectares in Panapatti Village, Kinathukadavu taluk are registered in the name of Tmt.Velathal,W/o.Krishnasamy. The pattadar has given consent to the applicant Thiru.H.Karthik for quarrying roughstone and gravel for a period of seven years from the date of execution of lease. There is no habitation and layouts withthin 300 meters radius from the area applied for lease. She further stated that in the present applied area had already been granted under lease to Thiru.Rajasekar, S/o.Kalimuthu vide Coimbatore District Collector's Proceedings R.C.No.1226/2007/MM2 dated 28.06.2008 for a period of 5 years from 28.06.2008 to 27.06.2013.



Finally the Sub Collector, Pollachi has recommended for roughstone and Gravel in S.F.No.406/1A over an extent of 0.27.5 hectares, 406/1B1A over an extent of 0.54.5 hectares, 406/1B1B over an extent of 1.48.0 hectares, 406/1C1 over an extent of 0.68.0 hectares and 406/2A over an extent of 0.16.0 hectares totally over an extent of 3.14.0 hectares of Panapatti Village, Kinathukadavu Taluk Coimbatore District as per rule subject to the following conditions,

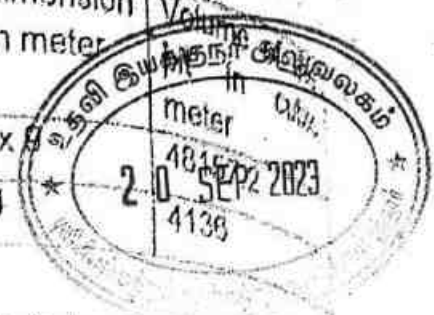
- i. Allowed quantity of explosives only should be used.
- ii. Blasting should be carried out during the particular time limit and to follow the safety measures at the time of blasting.

4. Subsequently the Deputy Director (i/c), Geology and mining has inspected the above field and reported as detailed below.

The applied area in S.F.No.406/1A over an extent of 0.27.5 hectares, 406/1B1A over an extent of 0.54.5 hectares, 406/1B1B over an extent of 1.48.0 hectares, 406/1C1 over an extent of 0.68.0 hectares and 406/2A over an extent of 0.16.0 hectares totally over an extent of 3.14.0 hectares in Panapatti Village, Kinathukadavu Taluk are registered in the name of Tmt.Velathal, W/o.Krishnasamy. The pattadar has given consent to the applicant Thiru.H.Karthik for quarrying roughstone and gravel for a period of seven years. By this way the applicant has got surface right over the applied area. Previously this area was leased out to Thiru.Rajasekar, S/o.Kalimuthu vide Coimbatore District Collector's Proceedings R.C.No.1226/2007/MM2 dated 28.06.2008 for a period of 5 years from 28.06.2008 to 27.06.2013.

The area applied for quarry lease is subsequent grant. The present quarry lease applied area had already been granted under quarry lease for a period of 5 years. During the earlier period of quarry operations the applied are has attained a deep, huge pit. The existing huge pit was measured as two pits each having a dimension as follows:-

Pit No	Location of the pit	Average dimension of the pit in meter	Volume in meter
1	South side Big pit	98 x 54.6 x 9	48155
2	North side small pit	47 x 22 x 4	4138



The area applied for quarry lease is located on a flat terrain in which charnockite rocks was quarried in the earlier lease period. Hence a huge pit was developed by previous period quarry operation. The existing pit has attained an average depth of 9 meters and the same pit is having a length of 145 meters and width of 54.6 meters. As on this day the area is having huge quantity of Roughstone of charnockite for further quarrying. In the quarry lease applied area, no objectionable site such as Temple, School, Bus line etc., are located within 50 meters radius from the boundary corner of the applied area. Some of the nearby land owner who constructed individual (or) tiled house within their land have raised objection that the quarry lease applied area is located within the 300 meters from their unauthorised houses constructed in between land. Originally, these houses constructed areas are not treated as inhabited site as per village record maintained by Revenue Department and the Panchayat record maintained by local Panchayat Administration Department.

Finally, the Deputy Director (i/c), Geology and Mining has recommended for granting of lease for quarrying roughstone and gravel in SF No. 406/1A over an extent of 0.27.5 hectares, 406/1B1A over an extent of 0.54.5 hectares, 406/1B1B over an extent of 1.48.0 hectares, 406/1C1 over an extent of 0.68.0 hectares and 406/2A over an extent of 0.16.0 hectares total over an extent of 3.14.0 hectares patta land in Panapatti Village Kinathukadavu Taluk for a period of five years, under the provisions of rule 19(1) and 20 of Tamil Nadu Minor Mineral Concession Rules 1959 subject to the certain conditions.

5. Based on the above recommendation made by the S.D Collector, Pollachi and Deputy Director (i/c), Geology and Mining, Coimbatore in the reference 3rd and 4th cited above, the applicant has been requested to

prepare mining plan for the above applied area and produce the same to this office for getting approval on the Mining Plan vide reference 5th cited.



6. Accordingly, the applicant has submitted the unapproved mining plan prepared by applicant's authorized RQP to this office for getting approval. Based on the instruction given in the Commissioner, Geology and Mining, Chennai letter No. 3868 / LC / 2012 dated 19.11.2012 after checking the Mining Plan with reference to field fact, the Mining Plan is approved by the Deputy Director (i/c), Geology and Mining, Coimbatore vide reference 6th cited above.

7. After getting approval, for the mining plan prepared by the RQP of the applicant, it has been placed before the SEIAA, Tamil Nadu, Chennai - 15. and the same was verified by the committee of the SEIAA and issued Environmental Clearance certificate for the applicant in reference 7th cited above.

8. Similarly, as insisted in the Environmental Clearance report the applicant has obtained consent letter from District Environmental Engineer, Tamil Nadu Pollution Control Board, Coimbatore (South) and submitted the same in the reference 8th cited above.

9. In order to fulfill the condition imposed in the Environmental Clearance report, the applicant Thiru.H.Karthik has complied the condition stipulated under serial number 1. The Environment Clearance advertised newspaper cutting and acknowledgement for the receipt of Environment Clearance letter by the President Panapatti Village Panchayat and Block Development officer, Kinathukadavu Panchayat union are enclosed with the applicant's request letter cited in the reference 9th cited above.

10. The applicant has submitted the lease deed in the prescribed format, as provided in the Tamil Nadu Minor Mineral Concession Rules, 1959, for execution in non-judicial stamp paper to the value of Rs.55,000/- and remitted the security deposit Rs.5,000/- (Rupees five thousand only) vide chalan No.157, dated 15.02.2016 and also remitted the area assessment of

hectares @ 150-
dated 15.02.2016 through State Bank of Mysore, Tatabad Branch,
Coimbatore District.

In the above said circumstances, Based on the recommendations
of Sub Collector, Pollachi and Deputy Director (i/c), Geology and Mining
Coimbatore and as per the Environmental Clearance issued by the State
Level Environment Impact Assessment Authority, Tamil Nadu, Chennai-22
and the consent letter issued by the District Environmental Engineer, Tamil
Nadu Pollution Control Board, Coimbatore South a quarry lease is hereby
granted to the applicant Thiru.H.Karthik S/o.Hariharan for quarrying
Roughstone and Gravel in Survey No. 406/1A over an extent of 0.275
hectares, 406/1B1A over an extent of 0.54.5 hectares, 406/1B1B over an
extent of 1.48.0 hectares, 406/1C1 over an extent of 0.68.0 hectares and
406/2A over an extent of 0.16.0 hectares totally over an extent of 3.140
hectares patta land in Panapatti Village, Kinathukadavu Taluk, Coimbatore
District for a period of 5 (five) years from 03.03.2016 to 02.03.2021
under rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1955
subject to the following conditions.

1. If lease granted, quarry operation shall be carried out only within the lease granted area.
2. No quarry operation should be carried out in the non-lease hold patta land area and Government poramboke lands.
3. If lease granted, the transport permit obtained for this area should not be used in other areas.
4. Necessary safety distance of 7.5 mts should be left on the inner boundary of all sides of the applied area.
5. To effectually fence off the same demised piece of land from the adjoining lands and to keep the fences in good repairs and condition.
6. Blasting of rock should be done by the shot fire method with less explosives in between 12.00 Noon to 12.30 P.M. after giving proper signal by siren as per the provisions of Indian Explosive Act 1884.



7. While carry out quarry operation, no hindrance should be to the adjoining patta land and cart track.
8. In order to avoid splinters of stone pieces into the air less affective explosives only to be used for breaking the stone by the well experienced certified blaster (or) short firer.
9. While caarrying out blasting, usage of Ammonium Nitrate mixed with soil and diesel and dried in the air (an explosive substance) should be avoided to curtail the stone pieces flown into the air and create trouble to the nearby villagers (or) habitants.
10. Mild explosives, with less blasting sound such as thotta (gelatin stick) and cape (detonator) only to be used for breaking the stones.
11. Propoer safety arrangement should be made by the applicant for the protection of local unauthorized house constructed in Garden (or) cutivable land.
12. At any cost, quarrying should not be carried out in the non lease hold areas like other pata land, Government land such as Kulam, Eri etc.,

GENERAL CONDITIONS:-

- a) The lessee shall, at his own expense, erect boundary marks round the area shown in the plan annexed to the lease or agreement and in which he works minerals and, at all times, maintain and keep such boundary marks in good repair.
- b) The lessee shall maintain a notice board, with descriptions like, name of the lessee, name of the village, survey field number, order in which the lease was granted with lease period and other relevant particulars,
- c) The lessee shall maintain the approach road to his quarry at his own expenses,
- d) To effectually fence off the same demised piece of land from the adjoining lands and to keep the fences in good repairs and condition.
- e) The lessee shall quarry roughstones and shall not produce rough blocks or slabs or any other form of stone, either for export purpose in the form of raw blocks, slab or for using them in cutting and polishing industry,

- f) The lessee shall pay the seigniorage fee prescribed in Appendix I of the Tamilnadu Minor Mineral Concession Rules 1959 for the gravel transported from the quarry and shall not raise any objection for the revision of seigniorage fee as and when announced by the Government.
- g) The lessee shall keep correct accounts showing the quantity and other particulars of gravel quarried and dispatched from the quarry.
- h) The lessee shall allow any officer authorized by the State Government to examine such accounts and furnish them with such information and returns as may be specified by them.
- i) The lessee shall remove or allow removal and transportation of roughstone from the area where quarrying is permitted only after obtaining transport permits in the form prescribed. The lessee shall issue the transport permit to the vehicle used for transportation for the gravel, furnishing the particulars in the transport permits specifically indicating the vehicle no, the quantity of the gravel allowed to be transported by the vehicle mentioning the date and time of issue of transport permit, to the vehicle owner / driver. If any violation is noticed, the vehicle along with the mineral will be seized and the lessee is punishable for the illicit transportation of the mineral, under the provisions of the TNMMCR 1959.
- j) Quarrying shall be carried out without affecting the interest of the adjoining land owners,
- k) Blasting of rock should be done by the shot fire method with less explosives in between 12.00 Noon to 12.30 P.M. after giving proper signal by siren as per the provisions of Indian Explosive Act 1954
- l) The lessee should abide all the conditions imposed by the State Environment Impact Assessment Authority Tamilnadu.
- m) The lessee shall abide by the conditions laid down in the Payment of Wages Act, 1936 (Central Act IV of 1936), the Mines Act 1952 (Central Act XXXV of 1952) and the Indian Explosives Act 1954 (Central Act IV of 1884).
- n) In addition to the above conditions, the lessee shall abide by the conditions specified in TNMMC Rules 1959, and also the conditions stipulated in the lease deed. Any violation of the above conditions will lead to penal action, and also for cancellation of lease.



- o) The condition imposed by the District Environmental Engineer, Tamil Nadu Pollution Control Board, Coimbatore (South) consent order No.160514092268, 160524092268 dated 08.02.2016 and consent proceedings No.F.0875CBS/RS / DEE / TNPCB / CBS / W&A / 2016 dated 08.02.2016 should strictly be followed without any deviation. Further the lessee has to renew the consent order from time to time whenever the consent is expired.



தமிழ்நாடு தமிழ்நாடு TAMILNADU

B 750948

10261
18.02.2016
M. Doraiswamy
Coimbatore.

M. DORAISWAMY
"STAMP VENDOR"
10-A, STATE BANK ROAD,
COIMBATORE - 641 010.
L.No: 7333/B/197/23-3

APPENDIX V

(See rules 19 and 33)

- I. Coimbatore, District Collector's Rc.No.172 / Mines / 2014.
- II. The Chairman, SETAA-TN, Chennai-15, Environment Clearance Letter No. SETAA-TN / F. No. 3268 / EC / 1 (a) / 2515 / 2015 dated 01.12.2015.
- III. District Environmental Engineer, Tamilnadu Pollution Control Board, Coimbatore (South) Proceedings No.F.0875CBS / RS / DEE/ TNPCB / CBS/ W&A / 2016 Dated 08.02.2016.

IV. Stamp Duty Calculation :-

1. Anticipated S. Fee for Roughstone	115198 cbm x 45	: Rs. 51,83,910/-
2. Anticipated S. Fee for Gravel	11775 cbm x 25	: Rs. 2,94,375/-
3. Security Deposit		: Rs. 5,000/-
4. Area Assessment for 5 years		: Rs. 1,570/-
	Total	: Rs. 54,84,855/-

K. Vala-Hal
REGISTERED HOLDER
LESSEE



DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



உதவி இயக்குநர்



R/Kinathukkadavu/Book1/1543/2016 ஆவணம் சம்பந்தப்பட்ட சான்றளிக்கப்பட்ட நகல்

இந்தச் சான்றிட்ட நகல் இணையம் மூலம் வழங்கப்பட்டுள்ளது. இதற்குத் தேவையான முத்திரைத்தீர்வை ரூ. 20 (ரூபாய் இருபது மட்டும்) மின்னணு செலுத்துகை மூலம் CCA/Online/48543966/2022 விண்ணப்ப எண்ணுக்கு 09-10-2022 அன்று செலுத்தப்பட்டுவிட்டது எனச் சான்றளிக்கப்படுகிறது.

Rathukkadavu/Book1/1543/2016 ஆவணம் சம்பந்தப்பட்ட சான்றளிக்கப்பட்ட நகல்



தமிழ்நாடு தமிழ்நாடு TAMILNADU

8 750949

No. 10262

H. Karthik.

Date 18-02-2016

Coimbatore

M. DORAISWAMY
"STAMP VENDOR"
10-A, STATE BANK ROAD,
COIMBATORE - 641 018.
L.No. 7333/B/1978-3

-2-

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

THIS AGREEMENT MADE THE 3rd day of March 2016 between Tmt.Velathal, W/o.Krishnasamy (1) residing at Madukkarai, Madukkarai Taluk, (herein after referred to as "the registered holder" which expression shall where the context so admits include their heirs, executors, administrators, legal representatives and assigns) of the first part and Thiru.H.Karthik, S/o.Hariharan residing at 37/32A, Gandhi street, Kalapatti road, Civil Airport, Coimbatore District (hereinafter referred to as "the lessee" which expression shall where the context so admits shall include her heirs, executors, administrators, legal representatives and assigns) of the second part and the Governor of Tamil Nadu (hereinafter referred to as the Government which expression shall where the context so admits shall include his successors in office and assigns) of the third part.

K. Velathal.
REGISTERED HOLDER

LESSEE



DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



தமிழ்நாடு தமிழ்நாடு TAMILNADU

B 840609

TAMILNADU

H. Kaithik

No. : 10262

Coimbatore.

Date: 18-02-2016.

M. DORAISWAMY
"STAMP VENDOR"
10-A, STATE BANK ROAD,
COIMBATORE - 641 018.
LNo: 7333/B1/97/63-3

-3-

WHEREAS, the registered holders hold the lands described in the schedule hereto and intended to lease out to the lessee of the said lands for the purpose of quarrying Roughstone and Gravel in the said lands and to deposit mining waste in the said lands and has lodged with the Collector the lease and accurate map or sketch of the said lands.

AND WHEREAS, the lessee or tenant of the registered holder has made application to the Collector of the District of Coimbatore (hereinafter referred to as "the Collector") seeking grant of quarrying lease for quarrying Roughstone and Gravel in the said lands and to deposit mining waste in the said lands and has lodged with the Collector an accurate map or sketch of the said lands.

AND WHEREAS, the Collector, acting for and on behalf of the Government has granted a quarrying lease to the lessee or tenant of the registered holder and allowed him to commence quarrying operations for Roughstone and Gravel in the said lands and to deposit mining waste thereon by the lessee or tenant of the registered holder).

K. Valathal
REGISTERED HOLDER

LESSEE



DISTRICT COLLECTOR
COIMBATORE
(LESSOR)

S/1



குடிமகனாகு தமிழ்நாடு TAMILNADU
TAMILNADU

Rs. 5000

R 982352

No. 10264

H. KANTHIK

Date: 18-02-2016

Coimbatore

M. DORAISWAMY
"STAMP VENDOR"
10-A, STATE BANK ROAD,
COIMBATORE 641 010
L No. 73778/187/2013



AND WHEREAS, the Collector is prepared to allow the said registered holder or lessee to commence mining operations and to deposit mining waste in or on the said lands described in the schedule for a term of 5 years from 03-03-2016 to 03-03-2021 upon the registered holder and the lessee entering into the agreement herein contained.

AND WHEREAS, the tenant of the registered holders has deposited with the Collector, the sum of Rs.5,000/- (Rupees Five Thousand Only) Challan No.157 Dated 15.02.2016, State Bank of Mysore, Tatabad Branch, Coimbatore District as security for the due performance of the covenants, agreements and provisos or damage which may be incurred by the Government by reason of any of the said lands described in the Schedule hereto being rendered unfit for cultivation by the mining operations therein or by the deposit of mining waste thereon by either the registered holder or the lessee.

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

K. Volant
REGISTERED HOLDER

LESSEE



DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



-5-

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

1. To carry on mining operations during the said term in a proper and workman like manner and to deposit mining waste on the lands described in the Schedule hereto and to answer and to account at all reasonable times to Government for all acts and defaults committed by any servants, agents or workmen employed by the registered holder or lessee in carrying on such operations or in making such deposits.
2. The Lessee has paid a sum of Rs. 1570/- (Rupees One thousand five hundred and Seventy only) towards land assessment/ Area assessment @ Rs. 100/- per hectares per annum in total Rs. 1570/- (for the lease granted area of 3.14.0 hectares for a period of 5 years) paid in one lumpsum for a whole period of lease (5 years) vide challian No. 158 dated 15.02.2016 @ State Bank of Mysore, Tatabad branch at Coimbatore lessee shall pay to the Collector for and on behalf of the Government in addition to the land assessment for the time being payable in respect of the said lands seigniorage on the minerals mined at the rates specified in Appendix II to the Tamil Nadu Minor Mineral Concession Rules, 1959.
3. To abide by the rules prescribed by the Government from time to time regarding quarrying of minor minerals.
4. To keep correct accounts in such form as the Collector shall from time to time require and direct showing the quantities and other particulars of all minerals obtained by the registered holder or the lessee from the said lands and also the number of persons employed in carrying on the said mining operations therein and to prepare and maintain from time to time when so directed by the said Collector complete and correct plans of all mines and working in the said lands and to allow any officer thereunto authorized by the (Director of Geology and Mining), Tamil Nadu, from time to time and at all times to examine such accounts and any such plans and to supply and furnish when so required all such information and returns regarding all or any of the matters aforesaid as the Government may from time to time required and direct.
5. To allow any officer authorized by the (Director of Geology and mining), Tamil Nadu in that behalf from time to time and at all times to enter upon any part of the said lands where mining operations may be carried on for the purpose of inspecting the same.
6. To forthwith send to the Collector a report of any accident which may occur at or in the said land and also of the discovery therein of any minerals other than Roughstone and Gravel
7. Not to claim any remission of assessment in respect of any of the said lands which shall be rendered unfit for surface cultivation by the carrying on of any mining operations or by the deposit of mining waste unless thirty times of the assessment thereon has been deducted under proviso 2 hereunder:-

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

1. That it shall be lawful for the registered holder or lessee as the case may be at any time to cease mining operations under these presents provided the registered holder or lessee shall pay the Government or the Collector the land assessment, cess and seigniorage payable by the registered holder or the lessee under these presents upto the end of the year in which the registered holder or the lessee shall cease such mining operations and shall restore the said lands fence or fill in a abandoned pits and excavations therein if required by the Collector as next hereinafter provided and upon, the registered holder or the lessee so doing these presents shall cease and determine.

K. V. Sathish
REGISTERED HOLDER
[Signature]
LESSEE



[Signature]
DISTRICT COLLECTOR
COIMBATORE
(LESSOR) 7/16



2. That in case the registered holder shall relinquish the whole or part of the said lands in case of the expiry or sooner determination of this agreement then and in any such case, the registered holder in the case of relinquishment and the registered holder and the lessee in other cases shall restore said lands or the area relinquished or so much thereof as the Collector shall require to be restored to a state fit for cultivation and shall securely and permanently fence or fill in all abandoned pits and excavation therein as the Collector shall require to be so fenced or filled in and in case the registered holder or the lessee shall fail, or neglect any such lands with the registered holder or the lessee be required to restore to a state fit for cultivation or to so fence or fill in any such abandoned pit or excavation which the registered holder or the lessee shall be required to so fence or fill them and in any such case it shall be lawful for the Collector to so restore any such lands or as the case may be so fence or fill in any pit or excavation at the expense of the registered holder or lessee and to apply the said sum of Rs.5,000/- so deposited in or towards the cost of so doing and to deduct from the amount of the said deposit and retain on behalf of the Government a sum equal to thirty times the assessment of the said lands which shall have been rendered unfit for cultivation. If, however the amount of deposit is not sufficient to cover the cost of such restoration or fencing or filling as the case may be or to meet thirty times the assessment of the area rendered uncultivable, it shall be lawful for the Government to recover the balance by resort to Civil Court.

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

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

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

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

7. The registered holder shall abide by the conditions laid down in the Payment of Wages Act, 1936 (Central Act IV of 1936), the Mines Act, 1952 (Central Act XXXV of 1952) and the Indian Explosives Act, 1884 (Central Act IV of 1884) and the rules made there under.

GENERAL CONDITIONS AS STIPULATED IN TNMMCR - 1959:

- a) The lessee shall, at his own expense, erect boundary marks round the area shown in the plan annexed to the lease or agreement and in which he works minerals and, at all times, maintain and keep such boundary marks in good repair.
- b) The lessee shall maintain a notice board, with descriptions like, name of the lessee, name of the village, survey field number, order in which the lease was granted with lease period and other relevant particulars.

K. Velathal
REGISTERED HOLDER

LESSEE



DISTRICT COLLECTOR
COIMBATORE
(LESSOR) 9/16



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- c) The lessee shall maintain the approach road to his quarry at his own expenses,
- d) To effectually fence off the same demised piece of land from the adjoining lands and to keep the fences in good repairs and condition,
- e) The lessee shall quarry rough stones, jelly, size stones and pillar stones and shall not produce rough blocks or slabs or any other form of stone, either for export purpose in the form of raw blocks, slab etc., or for using them in cutting and polishing industry,
- f) The lessee shall pay the seigniorage fee prescribed in Appendix II of Tamilnadu Minor Mineral Concession Rule, 1959, for the rough stone transported from the quarry and shall not raise any objection for the revision of seigniorage fee as and when announced by the Government,
- g) The lessee shall keep correct accounts showing the quantity and other particulars of rough stone quarried and dispatched from the quarry. He shall allow any officer authorized by the State Government to examine such accounts and furnish them with such information and returns as may be specified by them,
- h) The lessee shall remove or allow removal and transportation of rough stone from the area where quarrying is permitted only after obtaining transport permits in the form prescribed. The lessee shall issue the transport permit to the vehicle used for transportation for the rough stone, furnishing the particulars in the transport permits, specifically indicating the vehicle no, the quantity of the rough stone allowed to be transported by the vehicle mentioning the date and time of issue of transport permit, to the vehicle owner / driver. If any violation is noticed, the vehicle along with the mineral will be seized and the lessee is punishable for the illicit transportation of the mineral, under the provisions of the TNMMCR 1959.
- i) Quarrying shall be carried out without affecting the interest of the adjoining land owners,
- j) In addition to the above conditions, the lessee shall abide by the conditions specified in TNMMC Rules 1959, and also the conditions stipulated in the lease deed. Any violation of the above conditions will lead to penal action and also for cancellation of lease

SPECIAL CONDITIONS IMPOSED BY THE DISTRICT COLLECTOR, IN RESPECT OF LEASE GRANTED AREA

1. A safety distance of 7.5 meters should be provided all along the boundaries without any hindrance to the adjacent pattadars.

Conditions imposed by the State Level Environment Impact Assessment Authority - Tamilnadu (SEIAA-TN)

The Member Secretary, State level Environment Impact Assessment Authority Tamilnadu in his Letter No. SEIAA-TN/F.No.3628/EC/1(a)/2515/2015 dated 01.12.2015 has stated that the State level Environment Impact Assessment Authority Tamilnadu accorded Environmental clearance for Roughstone and Gravel in Survey No.406/1A over an extent of 0.27.5 hectares, 406/1B1A over an extent of 0.54.5 hectares, 406/1B1B over an extent of 1.48.0 hectares, 406/1C over an extent of 0.68.0 hectares and 406/2A over an extent of 0.16.0 hectares totally over an extent of 3.14.0 hectares in Panapatti Village, Kinathukadavu Taluk subject to the strict compliance of the following terms and conditions.

K. Velathal
REGISTERED HOLDER

LESSEE



DISTRICT COLLECTOR
COIMBATORE
(LESSOR)

9/16



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Conditions to be complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance letters may also be seen on the website of SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.
3. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 km from the proposed project site.
4. The project proponent shall comply the conditions laid down in the section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
5. A Copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union /Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.
6. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
7. The proponent shall ensure that First Aid Box is available at site.
8. The excavation activity shall not alter the natural drainage pattern of the area.
9. The excavated pit shall be restored by the project proponent for useful purposes.
10. The proponent shall quarry and remove only in the permitted area as per the approved Mining Plan details.
11. The quarrying operation shall be restricted between 7 AM and 5 PM.
12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 15 meters. From any civil structure shall be kept from the periphery of any excavation area.
14. Depth of quarrying shall be 2m above the ground water table/approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
15. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
16. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.

K. Velathal
REGISTERED HOLDER

LESSEE



DISTRICT COLLECTOR
COIMBATORE
(LESSOR)

10/15



17. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
18. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
19. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
20. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
21. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF, Govt on 16.11.2009.
22. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i) Roads shall be graded to mitigate the dust emission.
 - ii) Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
23. The following measures are to be implemented to reduce Noise Pollution
 - i) Proper and regular maintenance of vehicles and other equipment
 - ii) Limiting time exposure of workers to excessive noise.
 - iii) The workers employed shall be provided with protection equipment and earmuffs etc
 - iv) Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
24. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt:11.01.2010 issued by the MoEF, Govt to control noise to the prescribed levels.
25. Suitable conservation measures to augment ground water resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
26. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
27. Topsoil, if any, shall be stocked properly with proper slope with adequate measures and should be used for plantation purpose.
28. The following measures are to be adopted to control erosion of dumps:-
 - i) Retention/toe walls shall be provided at the foot of the dumps.
 - ii) Worked out slopes are to be stabilized by planting appropriate shrub / grass species on the slopes.
29. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
30. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
31. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
32. Rainwater getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.

K. Velathal
 REGISTERED HOLDER
 LESSEE



[Signature]
 DISTRICT COLLECTOR
 COIMBATORE
 (LESSOR)



33. The lessee holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the ground water table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
34. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
35. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated / disposed and method of disposal, involving a reputed academic institution.
36. It shall be ensure that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 25 hectares within the mining lease period of this application.
37. It shall be ensure that there is no habitation is located within 500 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site.
38. Ground water quality monitoring should be conducted once in 3 months.
39. Transportation of the quarried materials shall not cause any hindrance to the village people/Existing village road.
40. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
41. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI..
42. Bunds to be provided at the boundary of the project site.
43. Ground water quality monitoring should be conducted once in 3 Months
44. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
45. At least 10 Neem trees should be planted around the boundary of the quarry site.
46. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mining closure phase.
47. The project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
48. The project Proponent shall provide solar lighting system to the nearby villages.
49. The project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
50. Rainwater shall be pumped out Via Settling Tank only
51. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained

K. Velanthal
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LESSEE



DISTRICT COLLECTOR
COIMBATORE
(LESSOR) 12/10



- 52. As per MoEF&CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild life angle including clearance from obtaining committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
- 53. The quarrying activities shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
- 54. Safety equipments to be provided to all the employees.
- 55. Safety distance of 50m has to be provided in case of railway, reservoir, canal/oda

General Conditions Mentioned IN THE SEIAA EC Report:

- i) EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
- ii) The proponent shall obtain Consent to Establishment from the TNPC Board before commencing the activity.
- iii) No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
- iv) No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
- v) Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
- vi) Effective safeguard shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
- vii) A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
- viii) Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
- ix) Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicle carrying the mineral shall not be overloaded.
- x) Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
- xi) All personnel shall be provided with protective respiratory devices including safety shoes, masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contraction due to exposure to dust and take corrective measures, if needed.
- xii) Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.

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REGISTERED HOLDER

LESSEE



DISTRICT COLLECTOR
COIMBATORE
(LESSOR)



- xviii) Workers / labours shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
- xix) The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
- xx) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forest and its Regional Office located at Chennai.
- xvi) The Environmental Clearance does not absolve the applicant / proponent of this obligation/ requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
- xvii) This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance.
- xviii) The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
- xix) The SEIAA, Tamil Nadu may cancel the environmental clearance granted to this project under the provisions of EIA notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
- xx) Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
- xxi) The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environmental Clearance (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, draft Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006 and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of law relating to the subject matter.
- xxii) Any other conditions stipulated by other Statutory / Government authorities shall be complied.
- xxiii) Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.

The condition imposed by the District Environmental Engineer, Tamil Nadu Pollution Control Board, Coimbatore (South) in his consent order No. 160514092268 & 160524092268 dated 08.02.2016 and consent Proceedings No. 0875CBS / RS / DEE / TNPCB / CBS / W & A / 2016 dated 08.02.2016 should strictly be followed without any deviation. Further the lessee has to renew the consent order from time to time whenever the consent is expired.

For the purpose of calculating stamp duty the anticipated seigniorage fee for quarrying Roughstone and Gravel for five years is estimated as Rs. 54,84,895/- (Rupees Fifty four lakhs eighty four thousand eight hundred and fifty five only).

K. Velashtal.
REGISTERED HOLDER
[Signature]
LESSEE



[Signature]
DISTRICT COLLECTOR
COIMBATORE
(LESSOR) 12/10



-13-

THE SCHEDULE

- | | | |
|-------------------------------------|---|---------------|
| 1) Name of the District | : | Coimbatore |
| 2) Name of the Taluk | : | Kinathukadavu |
| 3) Name of the Village | : | Panapatti |
| 4) Name of the Sub Registrar Office | : | Kinathukadavu |
| 5) Lease Period | : | 5 years |
- From . 03-03-2016 to 03-03-2021

SF No.	Area Assessment per hect per year Rs.	Total Extent Hectrs.	BOUNDARIES			
			NORTH BY S.F.No.	EAST BY SF No.	SOUTH BY SF No.	WEST BY SF No.
406/1A	Rs.4755/- 5 lease years	0.27.5	408	406/2B	406/2A	406/1B1B, 407 & 408
406/1B1A	Rs.4755/- Remitted one challan.	0.54.5	406/1B1B & 407	406/1C1, 406/2A & 406/1A	406/1B2	405
406/1B1B		1.48.0	407	406/1C1, 406/2A & 406/1A	406/1B1A	405
406/1C1		0.68.0	406/2A	406/2B	406/1C2	406/1B1B
406/2A		0.16.0	406/1A	406/2B	406/1C1	406/1B1B
	Total	3.14.0				

IN WITNESS whereof Tmt.Velathai, W/o.Krishnasamy (1) residing at Madukkarai, Madukkarai Taluk the Registered Holder and Thiru.H.Karthik, S/o.Hariharan, residing at 37/32A, Gandhi street, Kalapatti road, Civil Airport, Coimbatore District the lessee and Tmt.Archana Patnaik, I.A.S. District Collector, Coimbatore acting for and on behalf of and by the order and direction of the Governor of Tamil Nadu have hereunto set their hands.

K. Velathai
REGISTERED HOLDER

[Signature]
LESSEE

[Signature]
DISTRICT COLLECTOR
COIMBATORE
(LESSOR) 15/16

Signed by the above named
in the presence of:

1.

2.



Signed by the above named
in the presence of:

1.

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

2.

[Signature]
[Handwritten text in Tamil]



அனுப்பதல்
 திருமதி அர்ச்சனா பட்னாயக், இ.ஆ.ப.,
 மாவட்ட ஆட்சித் தலைவர்,
 கோயம்புத்தூர் - 18.

பெறுதல்
 சார்பதிவாளர்,
 கிணத்துக்கடவு.

ந.ச.172/2014 / சலிமம் தான் 03.03.2016.

அம்மல.

மொழன் கலியமும் - களங்கமும் - கோயம்புத்தூர் மாவட்டம் - கிறிஸ்தியர்கள் கிணத்துக்கடவு வட்டம் - பண்பட்டி கிராமம் - ச.ச.406/1ஏ (0.27.5 ஹெக்டேர்), 406/பி1ஏ (0.54.5 ஹெக்டேர்), 406/பி1பி (1.48.0 ஹெக்டேர்), 406/பி1 (0.68.0 ஹெக்டேர்) மற்றும் 406/2ஏ (0.16.0 ஹெக்டேர்) ஆக மொத்தம் 3.14.0 ஹெக்டேர் பரப்பில் உள்ள பட்டா நிலத்தில் சாதாரணக்கற்கள் மற்றும் கிராவல் வெட்டிபெடுக்க திரு. H.மார்த்திம் என்பவருக்கு ஐந்து ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்கப்பட்டது - குத்தகை ஒப்பந்த பத்திரத்தை சம்பந்தப்பட்ட சார்பதிவாளர் அலுவலகத்தில் பதிவு செய்து வழங்க வேண்டுகிறேன்.

மார்த்திம் கோயம்புத்தூர் மாவட்ட ஆட்சியர் அலுவலகின் செயல்முறை ஆணை ந.ச.172/2014/சலிமம் தான் 03.03.2016.

கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், பண்பட்டி கிராமம், ச.ச.406/1ஏ (0.27.5 ஹெக்டேர்), 406/பி1ஏ (0.54.5 ஹெக்டேர்), 406/பி1பி (1.48.0 ஹெக்டேர்), 406/பி1 (0.68.0 ஹெக்டேர்) மற்றும் 406/2ஏ (0.16.0 ஹெக்டேர்) ஆக மொத்தம் 3.14.0 ஹெக்டேர் பரப்பில் உள்ள பட்டா நிலத்தில் சாதாரணக்கற்கள் மற்றும் கிராவல் வெட்டிபெடுக்க குத்தகை உரிமம் திரு. H.மார்த்திம் என்பவருக்கு வழங்கப்பட்டு அதற்கான குத்தகை ஒப்பந்தப்பத்திரம் 03.03.2016 அன்று நிறைவேற்றப்பட்டு குத்தகை காலம் 03.03.2016 முதல் 02.03.2021 வரை ஐந்து ஆண்டுகளுக்கு வழங்கப்பட்டுள்ளது. இந்த ஒப்பந்தப் பத்திரத்தை சம்பந்தப்பட்ட சார்பதிவாளர் அலுவலகத்தில் குத்தகைதாரர் மூன்று சொந்த செலவில் பதிவு செய்து திருப்ப இல்லதுவகத்தில் ஒப்படைக்க வேண்டும். முத்திரைத்தான் மதிப்பு ரிபீக்கண்டவாறு நிர்ணயம் செய்யப்பட்டுள்ளது.

- | | |
|--|-----------------|
| 1. ஐந்து ஆண்டுகளுக்கு செலுத்தப்படும் உத்தேச சீலியரேஜ் தொகை | ரூ. 54,78,285/- |
| 2. சாப்டயூதி தொகை | ரூ. 5,000/- |
| 3. பண்ட வரி | ரூ. 1,570/- |

மொத்தம்

ரூ. 54,84,855/-





குத்தகைதாரர் ரூ.55,000/- மதிப்பில் முத்திரைத்தாள் பெற்று
சமர்ப்பித்து குத்தகை ஒப்பந்தப்பத்திரம் நிறைவேற்றப்பட்டது.

இந்திய பதிவுச்சட்டம் (விதி) பிரிவு 86 (1) - ன் படி குத்தகை
ஒப்பந்தப்பத்திரம் பொழுது மாவட்ட ஆட்சியர் அலுவலக விழிவிவக்கு அளிக்கப்பட்டுள்ளது.

எனவே மேற்படி குத்தகை ஒப்பந்தப்பத்திரத்தை குத்தகைதாரர் பதிவு
செய்ய சமர்ப்பிக்கவும் படச்செய்தில் அதனை பதிவு செய்து இவ்வலுவலகத்திற்கு திருப்பி
அனுப்பிவைக்குமாறு கேட்டுக்கொள்கிறேன்.

15.08.2023/315/2016
மாவட்ட ஆட்சியருக்காக,
மேயம்புத்தூர்.

10/11/23

தகவல்
திரு. H. சாந்திக்,
து/பெறுபிழைகள்,
37/32 ஏ, சாந்தி வீதி,
மாளப்பட்டி,
சிவில் விவான நிலையம்,
மேயம்புத்தூர் மாவட்டம்.

மேற்படி குத்தகை ஒப்பந்தப்பத்திரத்தை ஒப்பந்தப்பட்ட சான்பதிவாளர் அலுவலகத்தில்
உடனடியாக பதிவு செய்து விட சமர்ப்பிக்கவேண்டுகிறது.






1643/2016/BK1

கிடைத்தல் கட்டி சார்பதிவாளர் அலுவலகத்தில் 07/03/2016 அன்று மணிகுருக்கிளையில் தாக்கம் செய்து கட்டணம் ரூ. 20255 செலுத்தியவர் 1.41 - 1.42

1 இடது பெரு விரல்




K. Velathal

மேல் விரலும் ஆவண வாசகம்

எழுதும் மொழித்தொகுப்பு ஒப்புக்கொண்டவர்

1 இடது பெரு விரல்



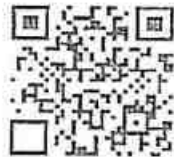
K. Velathal

மேல் விரலும் ஆவண வாசகம்



DISTRICT COLLECTOR (COIMBATORE)

இவ்வலுவலகத்தை எழுதும் மொழித்தொகுப்பு / சான்றிதழ் திருப்பாய்வு பத்திரத்திட்டம் பிரிவு 08 (1)-ல் 1643/2016/BK1 ஆவணத்தின் மூலம் விவரம் கீழ்க்கண்டபடி சார்பதிவாளர் என மனநிலைப்படிந்து சான்றிதழ்க்கிடைத்தார்.

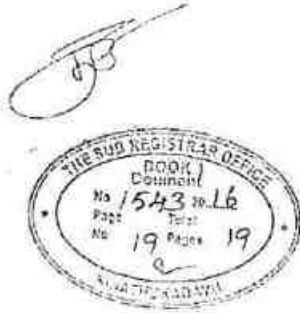
[Signature]
 பதிவு அலுவலர்
 ID. சார்பதிவாளர்
 சார்பதிவாளர்





<p>ELECTION COMMISSION OF INDIA IDENTITY CARD இந்திய தேர்தல் ஆணையம் உறுதிப்படுத்தப்பட்ட அட்டை JBB730738</p>  <p>Elector's Name: Vellathal வேலத்தல் Husband's Name: Krishnasamy கிருஷ்ணசாமி Sex: Female Age as on 1.1.2006: 53</p>	<p>JBB730738</p> <p>Address: 320 WARD NO 12 MADUKKARI MARKET Madukkari MADUKKARI SPL PANE COIMBATORE - 64105</p> <p>Place: COIMBATORE District: Coimbatore Date: 27/04/2025</p> <p>Facsimile Signature of Electoral Registration Officer For 107 - Poller Assembly Constituency 107 - Coimbatore</p>
<p>India Driving Licence (Tamil Nadu)</p> <p>172-120680344711 KARTHIGAI KARTHIGAI V</p> 	<p>Handwritten signature and stamp area.</p>

ic Velathal

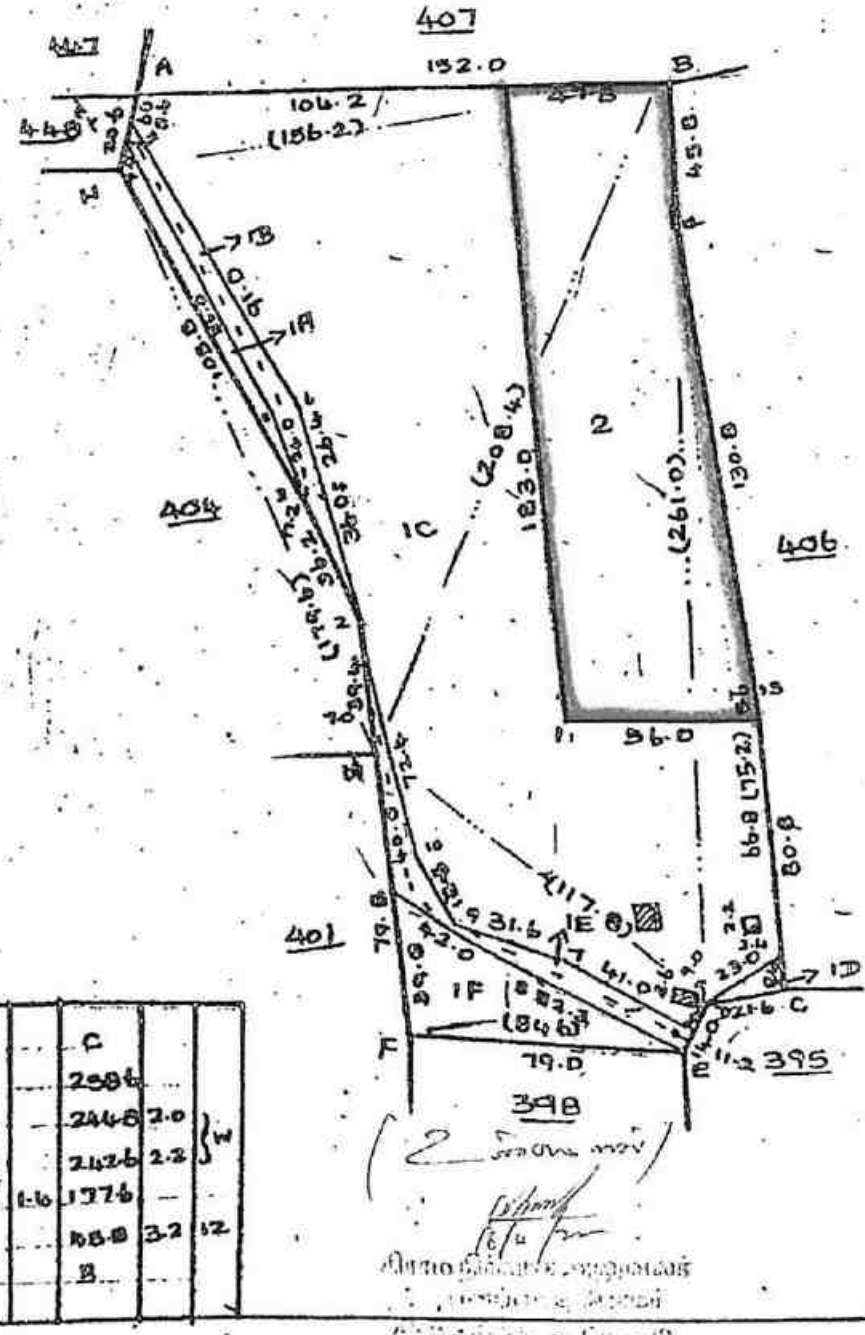


புலவர். சிவசுப்பிரமணியன்
 புலவர். சிவசுப்பிரமணியன்
 புலவர். 410 5

அமைப்புப்படி. எண். 2
 எண். 2 இயக்குநர் அலுவலகம்
 பெயர். 2.0. SEP 2023
 எண். 23.5
 மறுபரிசீலனை செய்யப்பட்டுள்ள பரப்பளவு கட்டுப்பாட்டு அலுவலகம்

	N		
	152.7		
	150.4	196	A
	B		
	140		
	9.0	30	11
	79.8		
12	66	33.0	U
		F	
	84.6		
	69.2	30	9
	51.2	14.2	8
	40.8	17.0	7
	80	20	
	1.6	1.7	H
	1796		
	100.0	80	6
	100.0	124	d4
	100.0	11.0	5
	74.4	13.0	4
	74.4	100	3
	38.2	9.8	2
	U		
	117.8		
F	370	260	D
		B	
	261.0		
	34	25.6	C
	D		
	B		
	200.6	1.6	13
	28.0	460	1
	U		

	C		
	2586		
	2448	2.0	
	2426	2.2	
	1376		
	85.8	3.2	12
	B		



புலவர் சிவசுப்பிரமணியன்
 7.10.23

அளவு. 1: 2000

சுப்பிரமணியன்
 சி. இலக்ஷ்மணன்
 19. 10. 23

LEASE APPLICATION 264

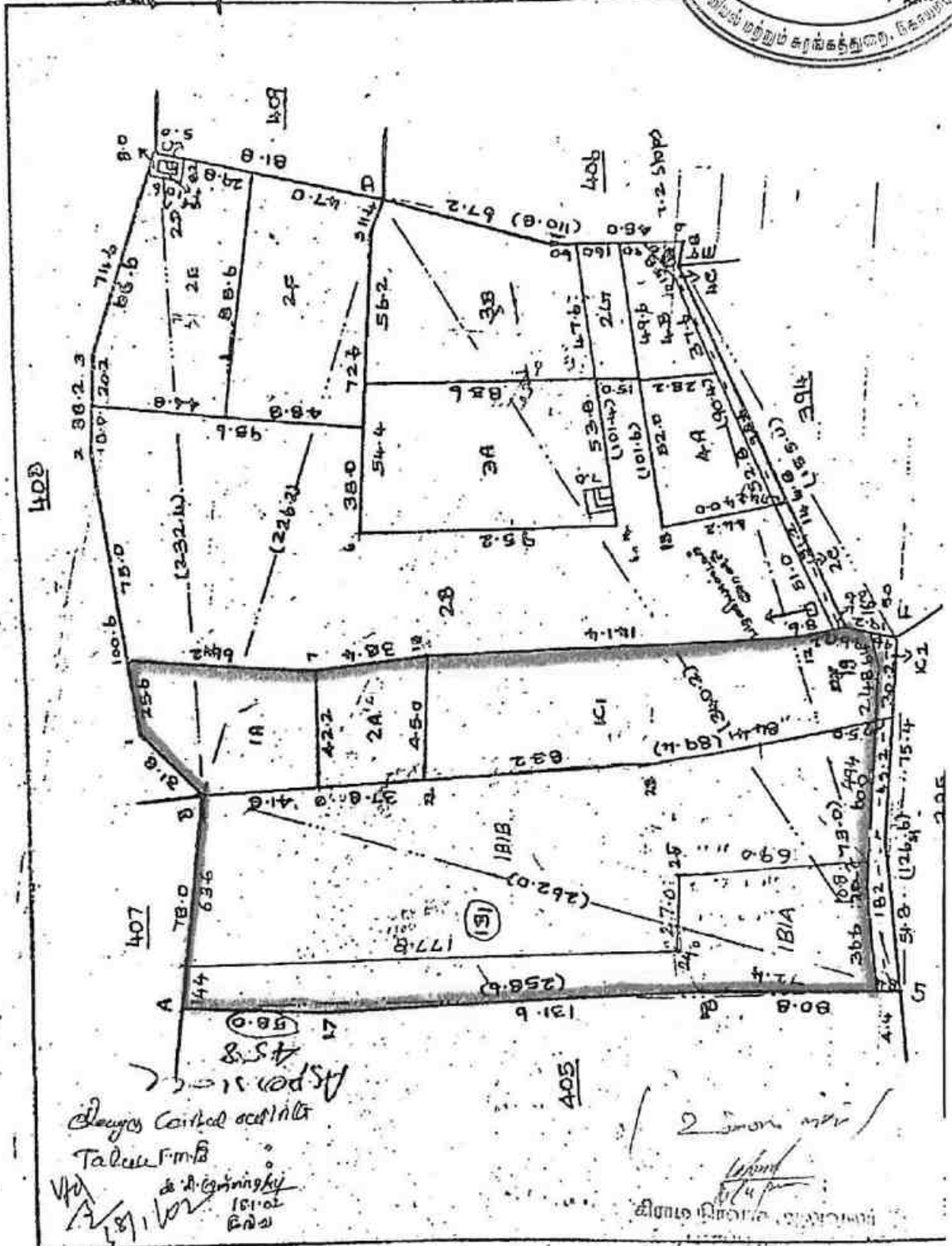
மல்டி. கோயத்தூர்

சிராமம்

வட்டம். பொன்னாச்சி

புலண. 406

பரப்பு: ஹெக்டேர்



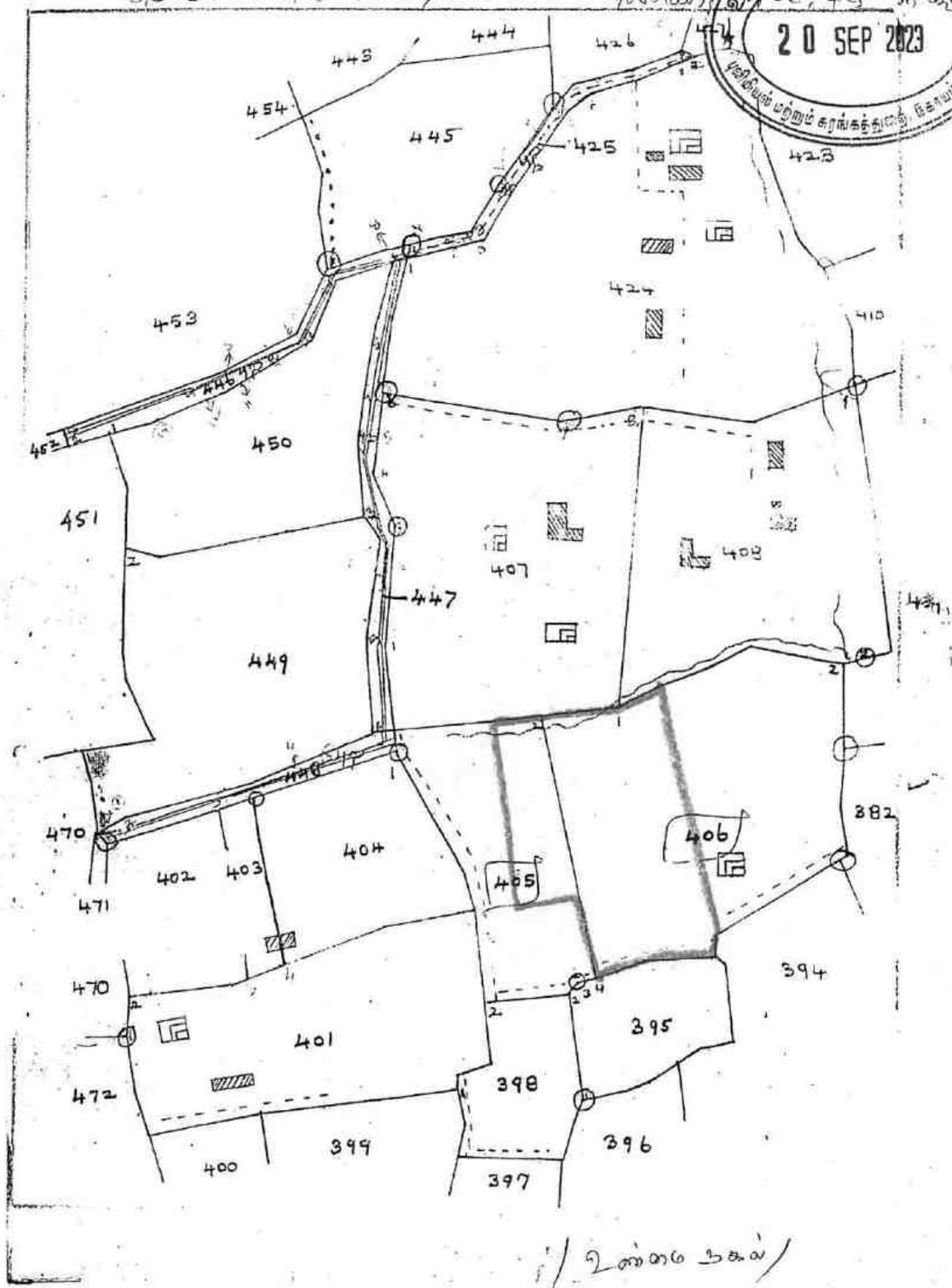
Aspernic
Tamil Nadu
சுமார் 23

2 Acres
சுமார் 23

சுமார் 23
1:2000
19.10.83

பகுதி : காவிரியூர்

பகுதி : 7-மாப்பலி 32



LEASE APPLIED AREA 

266

கிராம நிர்வாக அலுவலர்
பண்பட்டி கிராமம்
கிணத்துக்கடவு வட்டம்

அ-பதிவேடு விவரங்கள்



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : கிணத்துக்கடவு

கிராமம் : பணப்பட்டி

1. புல எண்	405	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	2	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	-2	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 95.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	2.63
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	2300
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ராஜேஷ்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை
தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40325 என்ற குறிப்பு எண்ணை
உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்



பாவட்டம் : கோயம்புத்தூர்

வட்டம் : கிணத்துக்கடவு

கிராமம் : பணப்பட்டி

1. புல எண்	406	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	1A	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	406-1A	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 27.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.76
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	2300
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ராஜேஷ்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை
தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40325 என்ற குறிப்பு எண்ணை
உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்



மரவட்டம் : கோயம்புத்தூர்
வட்டம் : கிணத்துக்கடவு
கிராமம் : பணப்பட்டி

1. புல எண்	406	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	1B1A	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	-1B1P	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 54.50
5. அரக / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.50
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	2300
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
இரு போகமா	-	16. பெயர்	1.ராஜேஷ்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை
தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40325 என்ற குறிப்பு எண்ணை
உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்



புவட்டம் : கோயம்புத்தூர்

வட்டம் : கிணத்துக்கடவு

கிராமம் : பணப்பட்டி

1. புல எண்	406	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	1B1B	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	-1B1P	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	1 - 48.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	4.11
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	2300
7. பாசன ஆதாரம்	-	15. குறிப்பு	.
8. இரு போகமா	-	16. பெயர்	1.ராஜேஷ்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை
தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40325 என்ற குறிப்பு எண்ணை
உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்



மாவட்டம் : கோயம்புத்தூர்
 வட்டம் : கிணத்துக்கடவு
 கிராமம் : பணப்பட்டி

1. புல எண்	406	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	1C1	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	-1CP	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 68.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	1.88
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	2300
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகமா	-	16. பெயர்	1.ராஜேஷ்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை
 தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40325 என்ற குறிப்பு எண்ணை
 உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.

அ-பதிவேடு விவரங்கள்



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : கிணத்துக்கடவு

கிராமம் : பணப்பட்டி

1. புல எண்	406	9. மண் வயனமும் ரகமும்	8 - 2
2. உட்பிரிவு எண்	2A	10. மண் தரம்	4
பழைய புல உட்பிரிவு எண்	-2P	11. தீர்வை (ரூ - ஹெ)	2.77
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 16.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பை)	0.44
6. நிலத்தின் வகை	பஞ்சை	14. பட்டா எண்	2300
பாசன ஆதாரம்	-	15. குறிப்பு	-
இரு போகமா	-	16. பெயர்	1.ராஜேஷ்

குறிப்பு 1:



1.

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை
தாங்கள் <http://eservices.tn.gov.in> என்ற இணைய தளத்தில் 40325 என்ற குறிப்பு எண்ணை
உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.



தமிழக அரசு

வருவாய்த் துறை

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



மாவட்டம் : கோயம்புத்தூர்

வட்டம் : கிணத்துக்கடவு

வருவாய் கிராமம் : பணப்பட்டி

பட்டா எண் : 2300

உரிமையாளர்கள் பெயர்

மோகன்தாஸ்		மகன்		ராஜேஷ்				
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	
405	2	0 - 95.00.	2.63	-	-	-	-	2023/0103/12/444956- -- 21-02-2023
406	1A	0 - 27.50	0.76	-	-	-	-	2023/0103/12/444956- -- 21-02-2023
406	1B1A	0 - 54.50	1.50	-	-	-	-	2023/0103/12/444956- -- 21-02-2023
406	1B1B	1 - 48.00	4.11	-	-	-	-	2023/0103/12/444956- -- 21-02-2023
406	1B2	0 - 6.00	0.17	-	-	-	-	2023/0103/12/444956- -- 21-02-2023
406	1C1	0 - 68.00	1.88	-	-	-	-	2023/0103/12/444956- -- 21-02-2023
406	1C2	0 - 2.50	0.07	-	-	-	-	2023/0103/12/444956- -- 21-02-2023
406	2A	0 - 16.00	0.44	-	-	-	-	2023/0103/12/444956- -- 21-02-2023
		4 - 17.50	11.56					

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 12/12/003/02300/20325 என்ற குறிப்பு எண்ணை உள்ளிடு செய்து உறுதி செய்துகொள்ளவும்.

2. இத் தகவல்கள் 21-02-2023 அன்று 08:00:10 PM நேரத்தில் அச்சடிக்கப்பட்டது.

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

பக்கம் 2
 கிராமத்தில் வருவாய் பணியில் ஈடுபட்டிருக்கிறவர்களைப் பற்றிய விவரம்

பக்கம் 2
 கிராமத்தில் வருவாய் பணியில் ஈடுபட்டிருக்கிறவர்களைப் பற்றிய விவரம்

வா. நெ. எண்	பெயர்	வயது	பாலினம்	சமூக வகுப்பு	படிப்பறிவு	பணியில் ஈடுபட்டிருக்கிறவர்களைப் பற்றிய விவரம்					மொத்தம்
						முதல் பருவம்	இரண்டாம் பருவம்	மூன்றாம் பருவம்	நான்காம் பருவம்	ஐந்தாம் பருவம்	
105	சுப்பிரமணியன்	50	பு	சமூக வகுப்பு	படிப்பறிவு	முதல் பருவம்	இரண்டாம் பருவம்	மூன்றாம் பருவம்	நான்காம் பருவம்	ஐந்தாம் பருவம்	105
106	சுப்பிரமணியன்	51	பு	சமூக வகுப்பு	படிப்பறிவு	முதல் பருவம்	இரண்டாம் பருவம்	மூன்றாம் பருவம்	நான்காம் பருவம்	ஐந்தாம் பருவம்	106
107	சுப்பிரமணியன்	52	பு	சமூக வகுப்பு	படிப்பறிவு	முதல் பருவம்	இரண்டாம் பருவம்	மூன்றாம் பருவம்	நான்காம் பருவம்	ஐந்தாம் பருவம்	107
108	சுப்பிரமணியன்	53	பு	சமூக வகுப்பு	படிப்பறிவு	முதல் பருவம்	இரண்டாம் பருவம்	மூன்றாம் பருவம்	நான்காம் பருவம்	ஐந்தாம் பருவம்	108
109	சுப்பிரமணியன்	54	பு	சமூக வகுப்பு	படிப்பறிவு	முதல் பருவம்	இரண்டாம் பருவம்	மூன்றாம் பருவம்	நான்காம் பருவம்	ஐந்தாம் பருவம்	109
110	சுப்பிரமணியன்	55	பு	சமூக வகுப்பு	படிப்பறிவு	முதல் பருவம்	இரண்டாம் பருவம்	மூன்றாம் பருவம்	நான்காம் பருவம்	ஐந்தாம் பருவம்	110



PHOTOCOPY OF THE APPLIED LEASE AREA

Site photos in respect of rough stone and gravel quarry lease in S.F.No's: 405/2 (0.95.0Hect), 406/1A (0.27.5Hect), 406/1B1A (0.54.5Hect), 406/1B1B (0.48.0Hect), 406/1C1 (0.68.0Hect) & 406/2A (0.16.0Hect) - Patta land - over an extent of 4.09.0 hectares - Panapatti Village – Kinathukkadavu Taluk – Coimbatore District, Tamil Nadu State in belongs to Mr.M.Rajesh.




இந்திய அரசாங்கம்
Government of India



ராஜேஷ் மோகந்தாஸ்
Rajesh Mohandas

பிறப்பு தேதி: DOB: 10/10/1977
 பாலினம் / Male



7441 1706 6517

ஆதார் - சாதாரண மனிதனின் அதிகாரம்


கிழவன் தனியார் அமைதி
Unique Identification Authority of India


கிழவன் தனியார் அமைதி
கிழவன் தனியார் அமைதி

முகவரி: S/O. Mohandas,
 NO. 2/1, DOCTOR
 KALAINAR STREET
 SULEESWARANPATTI,
 Suleeswaranpatti,
 Suleeswaranpatti,
 Coimbatore, Tamil Nadu,
 642005


21 SEP 2023


7441 1706 6517

1547 1800 503 1547 help@uidai.gov.in www.uidai.gov.in

आयकर विभाग  **भारत सरकार**
INCOME TAX DEPARTMENT **GOVT. OF INDIA**

RAJESH M
MOHANDASS
10/10/1977
 Permanent Account Number
AEIPR7325B


 Signature



18092016



[Handwritten 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. करुपण्ण, मॉगनीकाडू, मुत्तमपट्टी पोस्ट, बोम्मीडी वर्यो, ओमलूर तालुक, सेलम डीस्टीक्ट, तमिलनाडू - 635 301, जिनका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिनहोंने अपनी अर्हता और अनुभव का संतोष जनक साक्ष्य 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.

277
माननियंत्रक / Regional Controller of Mines
भारतीय खानब्यूरो/ Indian Bureau of Mines
चेन्नई क्षेत्र / Chennai Region

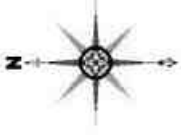


PLATE NO-I

APPLICANT:






Mr.M.RAJESH,
S/o. MOHANDASS,
2/1, DOCTOR KALAINAR STREET,
SULEESWARANPATTI,
COIMBATORE DISTRICT - 642006.

LEASE APPLIED AREA:

S.F.NO : 405/2.406/LA.406/1B1A.406/1B1B,
406/1C1 & 406/2A

EXTENT : 4.09.0Hect
VILLAGE : PANAPATTI
TALUK : KINATHUKKADAVU
DISTRICT : COIMBATORE

INDEX

- MINE LEASE AREA 
- APPROACH ROAD 
- MDR ROAD 
- VILLAGE ROAD 
- SH-163 ROAD 

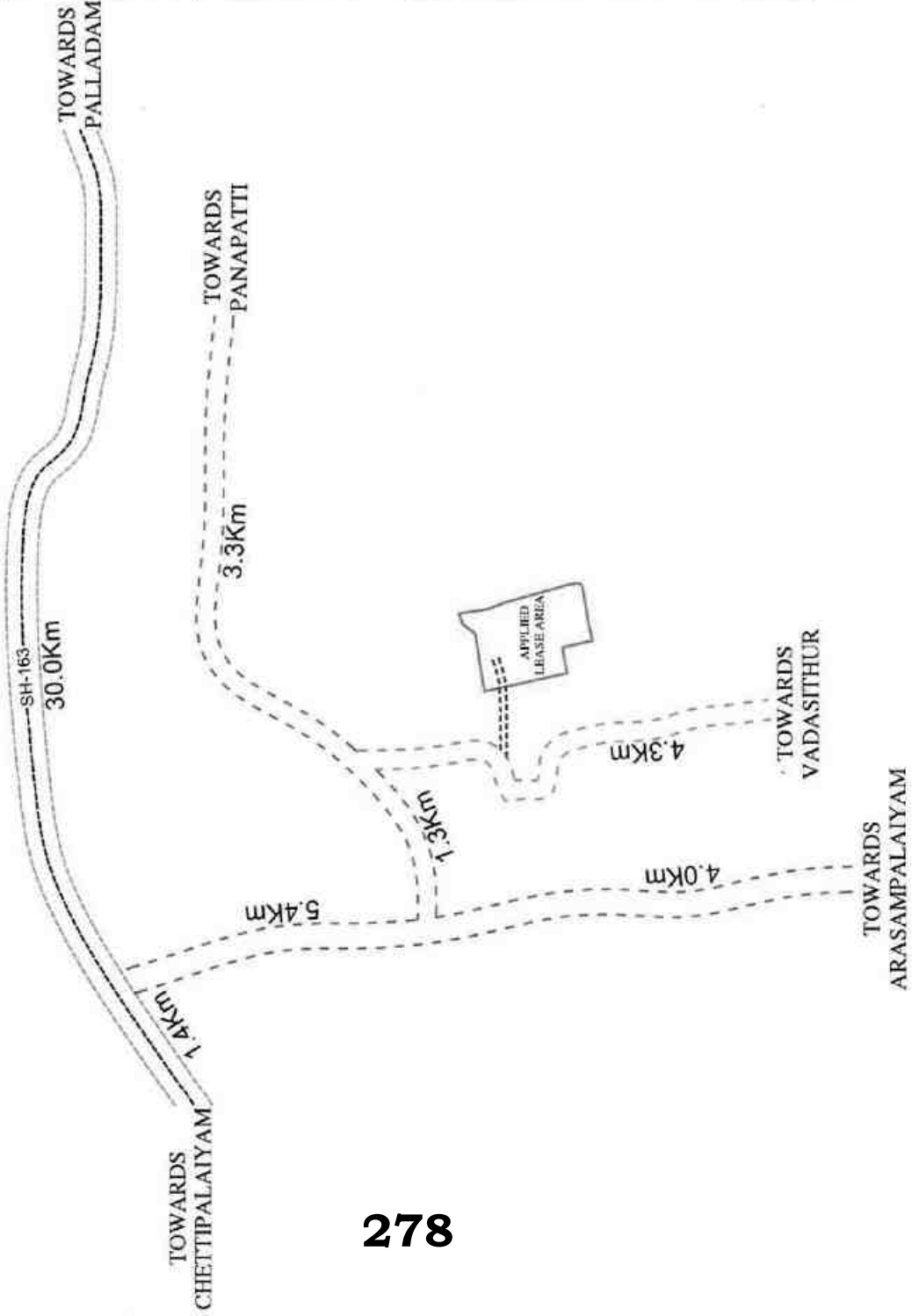
KEY MAP

Not to Scale

Prepared By:

I DO HEREBY CERTIFY THAT THIS PLATE
HAS BEEN CHECKED BY ME AND IS CORRECT
TO THE BEST OF MY KNOWLEDGE 2023

Dr.S.KARUPPANNAN,M.Sc.,M.O.C.
RECOGNIZED QUALIFIED PERSON
ROP/MAS/263/2014/A



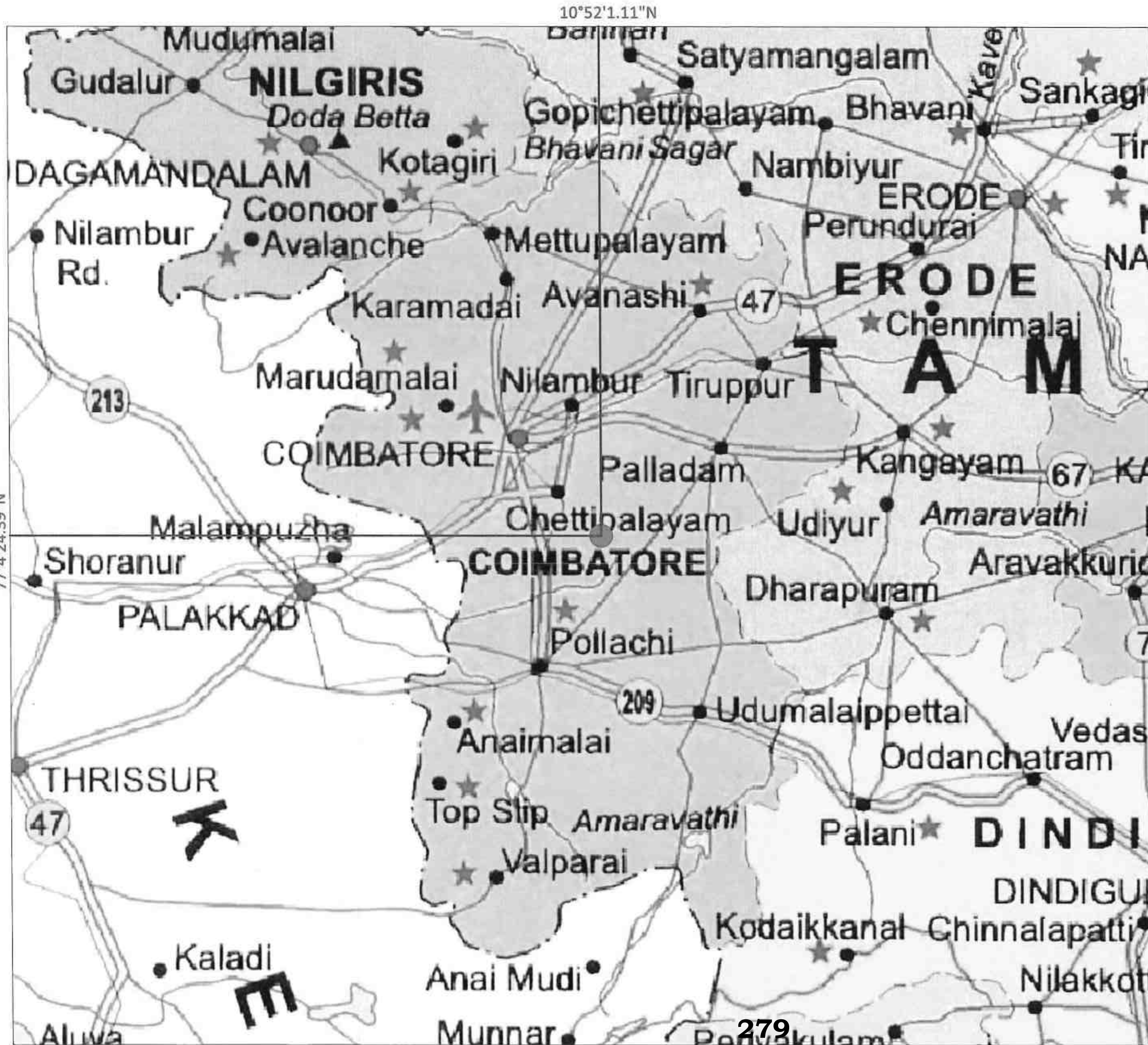


PLATE NO-IA

APPLICANT:

Mr.M.RAJESH,
S/o. MOHANDASS,
2/1, DOCTOR KALAINAR STREET,
SULEESWARANPATTI,
COIMBATORE DISTRICT - 642006.

LEASE APPLIED AREA:

S.F.NO : 405/2,406/1A,406/1B1A,406/1B1B,
406/1C1 & 406/2A
EXTENT : 4.09.0Hect
VILLAGE : PANAPATTI
TALUK : KINATHUKKADAVU
DISTRICT : COIMBATORE

INDEX

MINE LEASE AREA : ●

TOPO SHEET NO : 58-F/01

LATITUDE :10°51'51.73"N to 10°52'1.11"N

LONGITUDE:77°4'24.39"E to 77°4'31.99"E

LOCATION PLAN

NOT TO SCALE

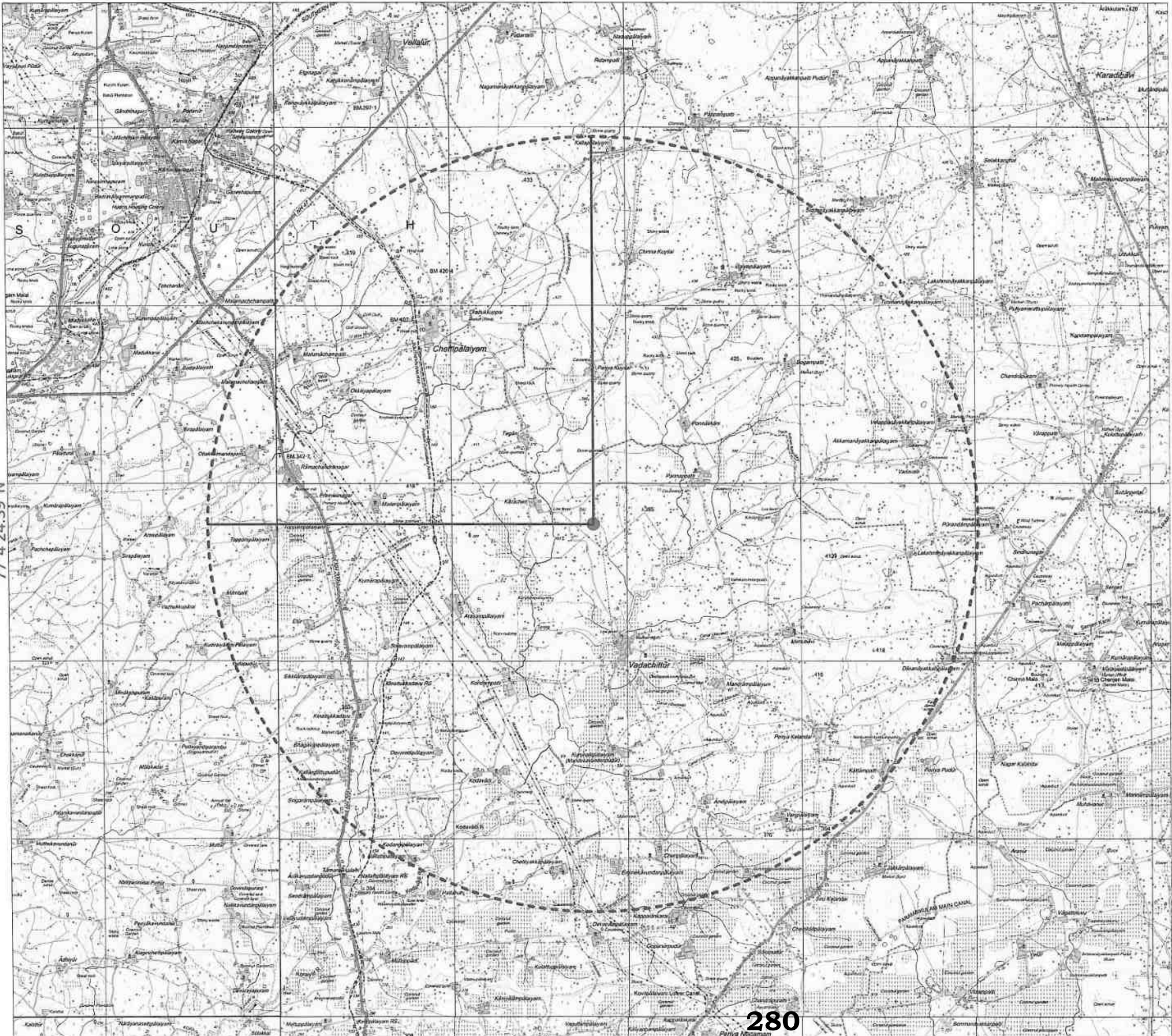
Prepared By:

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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

10°52'1.11"N

N



77°4'24.39"E


PLATE NO-IB

APPLICANT
Mr.M. RAJESH
 S/o. MOHANDASS
 2/1, DOCTOR KALIAION STREET,
 SULEESWARANPATTI,
 COIMBATORE DISTRICT - 642006



LEASE APPLIED AREA
 S.F.NO : 405/2,406/1A,406/1B1A,406/1B1B,
 406/1C1 & 406/2A
 EXTENT : 4.09.0Hect
 VILLAGE : PANAPATTI
 TALUK : KINATHUKKADAVU
 DISTRICT : COIMBATORE

TOPO SHEET NO : 58-F/01
 LATITUDE :10°51'51.73"N to 10°52'1.11"N
 LONGITUDE:77°4'24.39"E to 77°4'31.99"E

MINE LEASE AREA 
10KM RADIUS 

CONVENTIONAL SYMBOLS

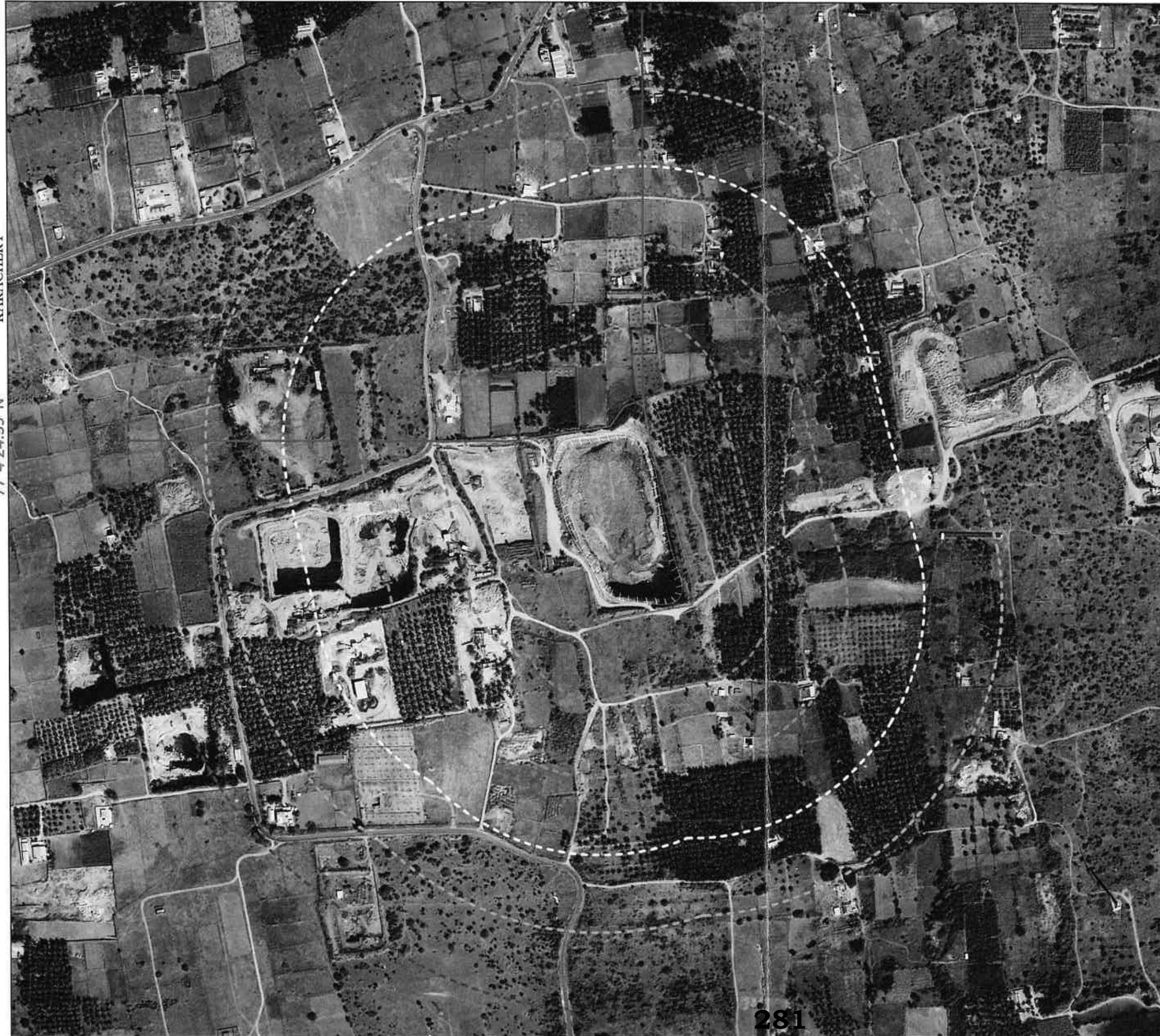
Express highway with 4L with bridge with distance scale	
Roads, metalled according to importance	
Roads, unmetalled according to importance	
Unmetalled road, Cart-track, Pack-track with pass, Foot-path	
Stream with bank in best undisturbed condition	
Dam, masonry or rock-filled, with lock	
River, dry with water channel with island & rock, Tidal river	
Submerged rocks, Shoal, Sandbar, Reefs	
Wells, lined, unlined, Tube-well, Spring, Tanks, perennial, dry	
Embankments, road or rail, bank, broken ground	
Railways, broad gauge, double, single with station, under construction	
Highways, other gauges, double, single with distance scale, do	
Man-made line of railway, km, cutting with tunnel	
Contours with sub-elevations, Rocky slope, Cliff	
Soil features (1 Met. (39 inch) hill-slopes) (Contours) (1 Met. (39 inch))	
Towns or Villages, inhabited, deserted, Fort	
Huts, permanent, temporary, Tower, Telegraph	
Temples, Chattri, Church, Mosque, Igloo, Tank, Graves	
Lighthouse, Lightship, Buoy, lighted, unlighted, Anchorage	
Mine, Shaft, shaft, Goss, Shaft	
Pillar, survey, other, Pylon, Cable, Bamboo, Other trees	
Area cultivated, wooded, Surveyed tree	
Boundary, international	
State demarcated, undemarcated	
Boundary, international, solid or dashed, forest	
Boundary, state, surveyed, uncoloured	
Height, triangulated station, spot, approximate	
Bench-mark, geodetic, historic, case	
Post office, Telegraph office, Overhead tank	
Rail house or inspection building, Control house, Police station	
Camping ground, Forest, reserved, protected	
Speed names, administrative, locality or place	
Hospital, Dispensary, Veterinary, Hospital, Dispensary	
Aerodrome, Height, tower, etc	
Power line, with pylons surveyed, with poles unsurveyed	

TOPOSHEET MAP
 SCALE- 1:1,00,000

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

TOWARDS
PANAPATTI 10°52'1.11"N



JW RE
KARACHERY

77°4'24.39"N

TOWARDS
VADASITHUR

281

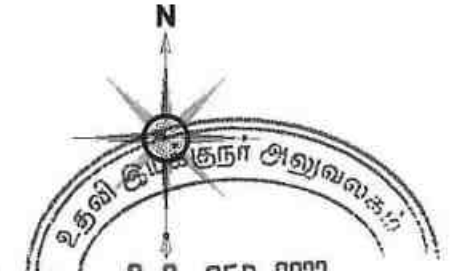


PLATE NO-IC

20 SEP 2023

APPLICANT

Mr.M.RAJESH,
S/o. MOHANDASS,
2/1, DOCTOR KALAINAR STREET,
SULEESWARANPATTI,
COIMBATORE DISTRICT - 642006.

LEASE APPLIED AREA:

S.F.NO : 405/2,406/1A,406/1B1A,406/1B1B,
406/1C1 & 406/2A
EXTENT : 4.09.0Hect
VILLAGE : PANAPATTI
TALUK : KINATHUKKADAVU
DISTRICT : COIMBATORE

INDEX

MINE LEASE AREA	
MDR522 ROAD	
VILLAGE ROAD	
APPROACH ROAD	
100m RADIUS	
200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
EXISTING PIT	

TOPO SHEET NO : 58-F/01

LATITUDE :10°51'51.73"N to 10°52'1.11"N

LONGITUDE:77°4'24.39"E to 77°4'31.99"E

SATELLITE IMAGERY MAP

SCALE- 1:5000

Prepared By:

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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-ID



APPLICANT:

Mr.M.RAJESH,
S/o. MOHANDASS
2/1, DOCTOR KALANIGNAR STREET
SULEESWARAPATTI,
COIMBATORE DISTRICT - 642006.

LEASE APPLIED AREA:

S.F.NO : 406/2, 406/1A, 406/1B1A, 406/1B1B,
406/1C1 & 406/2A

EXTENT : 4.09.0 Hect

VILLAGE : PANAPATTI

TALUK : KINATHUKKADAVU

DISTRICT : COIMBATORE

INDEX

MINE LEASE AREA	
SAFETY DISTANCE	
MDR522 ROAD	
VILLAGE ROAD	
APPROACH ROAD	
100m RADIUS	
200m RADIUS	
300m RADIUS	
400m RADIUS	
500m RADIUS	
SHRUBS AND TREES	
EXISTING PIT	
HABITATIONS	
WIND DIRECTION	

TOPO SHEET NO : 58-F/01

LATITUDE : 10°51'51.73"N to 10°52'1.11"N

LONGITUDE: 77°4'24.39"E to 77°4'31.99"E

ENVIRONMENTAL PLAN

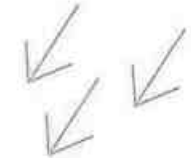
SCALE- 1:5000

Prepared By:

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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

OCTOBER TO DECEMBER

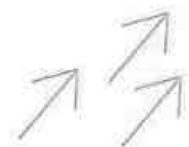


TOWARDS PANAPATTI
10°52'1.11"N

TOWARDS KARACHERY

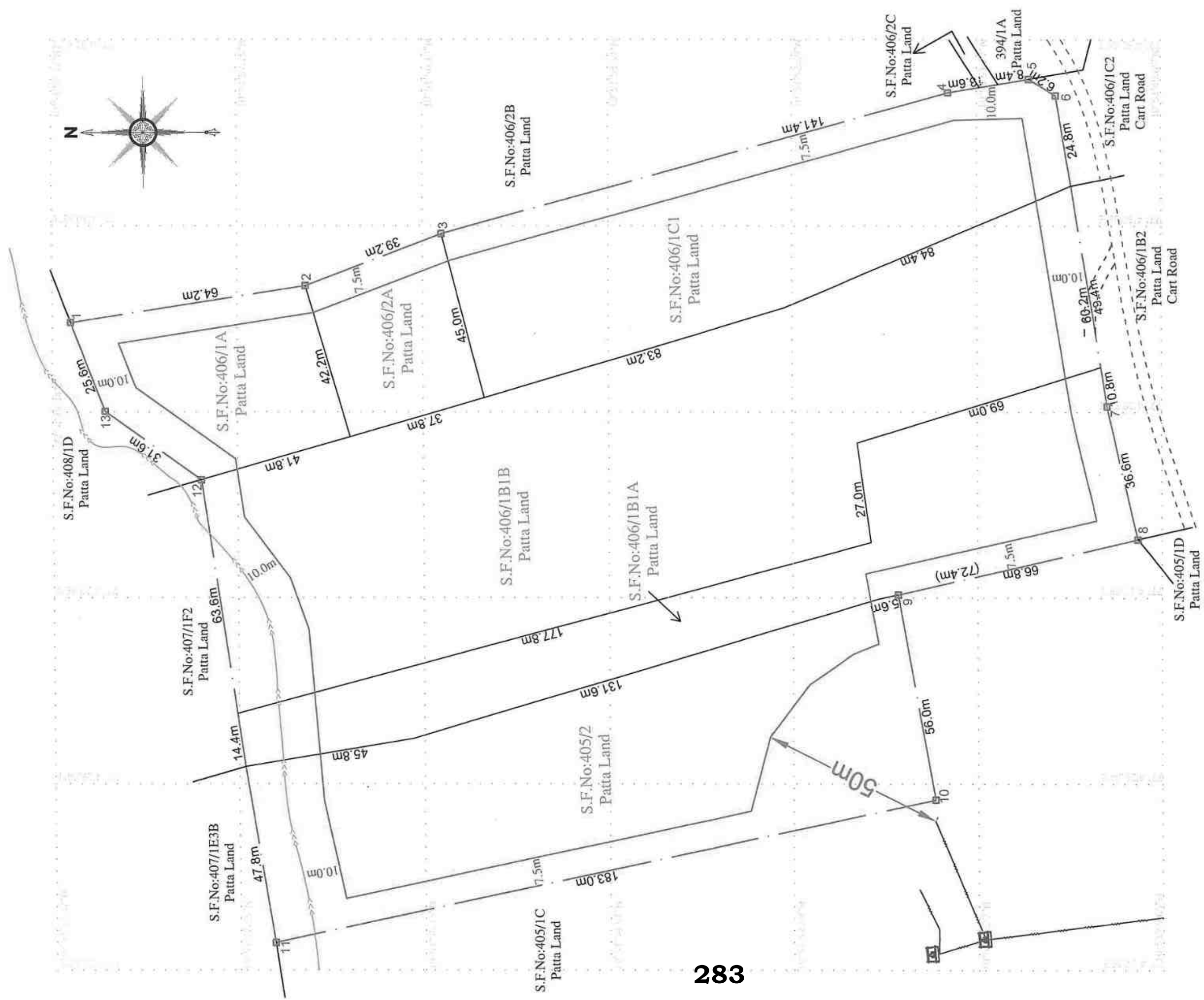
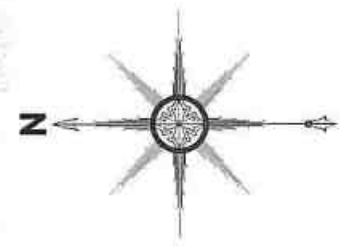
77°4'24.39"N

JULY TO SEPTEMBER



TOWARDS VADASITHUR

282



283

PLATE No-II

Pillar No	Latitude	Longitude	Pillar No	Latitude	Longitude
1	10°52'11.11"N	77°42'29.89"E	8	10°51'51.73"N	77°42'27.91"E
2	10°51'59.04"N	77°43'0.20"E	9	10°51'53.86"N	77°42'7.43"E
3	10°51'57.85"N	77°43'0.65"E	10	10°51'53.54"N	77°42'5.67"E
4	10°51'53.38"N	77°43'1.87"E	11	10°51'53.82"N	77°42'5.56"E
5	10°51'52.67"N	77°43'1.99"E	12	10°51'53.82"N	77°42'5.56"E
6	10°51'52.43"N	77°43'1.84"E	13	10°51'59.37"N	77°42'4.39"E
7	10°51'52.00"N	77°42'29.08"E			

APPLICANT:
Mr.M.RAJESH,
 S/o. MOHANDASS,
 2/1, DOCTOR KALAINAR STREET,
 SULEESWARANPATTI,
 COIMBATORE DISTRICT - 642006.

LEASE APPLIED AREA:
 S.F.No : 405/2,406/1A,406/1B1A,
 406/1B1B,406/1C1 & 406/2A
 EXTENT : 4.09.0Hect
 VILLAGE : PANAPATTI
 TALUK : KINATHUKKADAVU
 DISTRICT : COIMBATORE

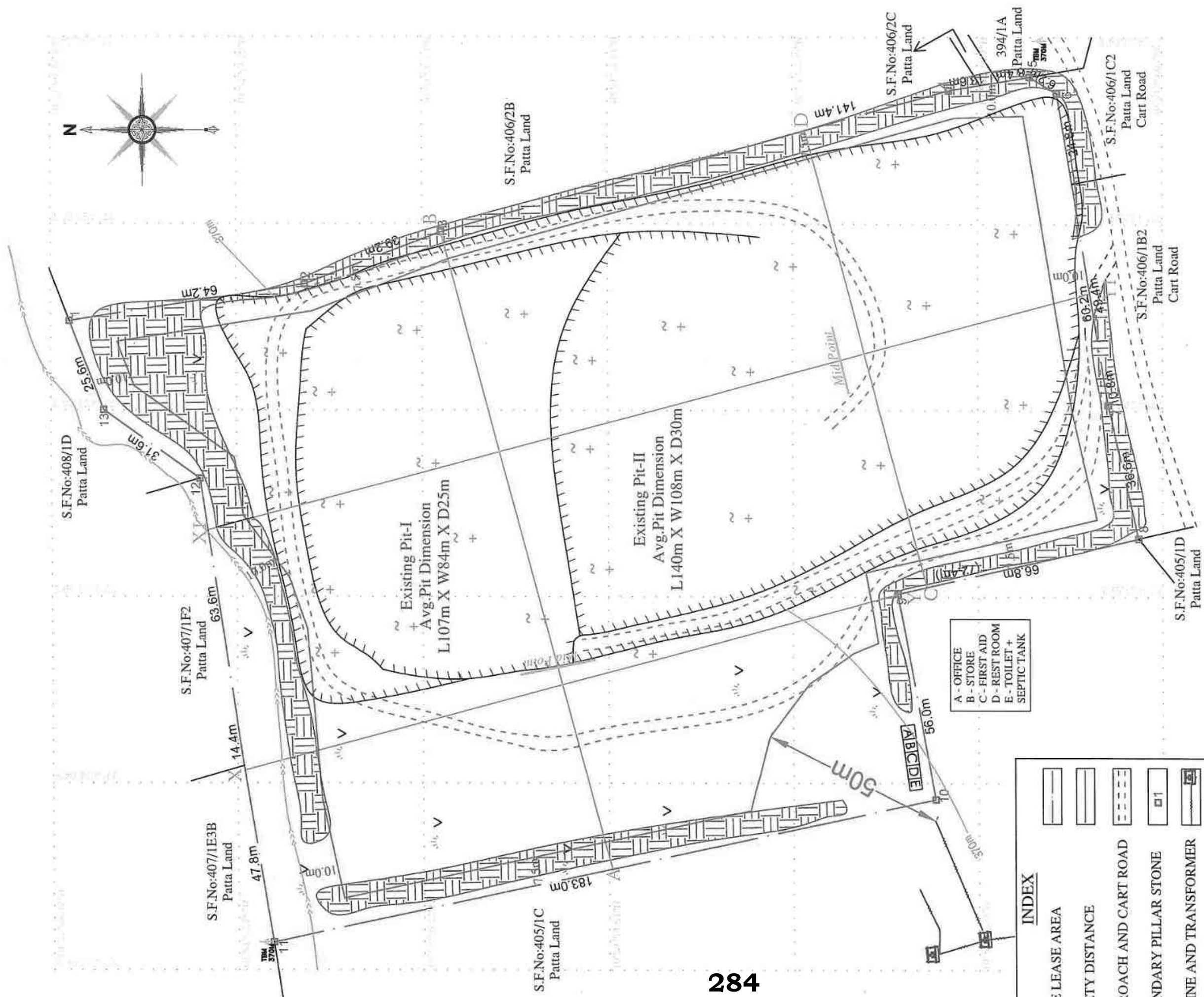
INDEX

- MINE LEASE AREA
- SAFETY DISTANCE
- APPROACH AND CART ROAD
- BOUNDARY PILLAR STONE
- EB LINE AND TRANSFORMER
- ODAI

MINE LEASE PLAN
 SCALE 1:5000

Prepared By: *[Signature]*
 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



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MINE LEASE AREA	
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ODAI	
TEMPORARY BENCH MARK	
CONTOUR LINE	
SCRUBS	
EXISTING PIT	
GRAVEL	
ROUGH STONE	
EARTH BUND	

- A - OFFICE
- B - STORE
- C - FIRST AID
- D - REST ROOM
- E - TOILET + SEPTIC TANK

PLATE No-III
20

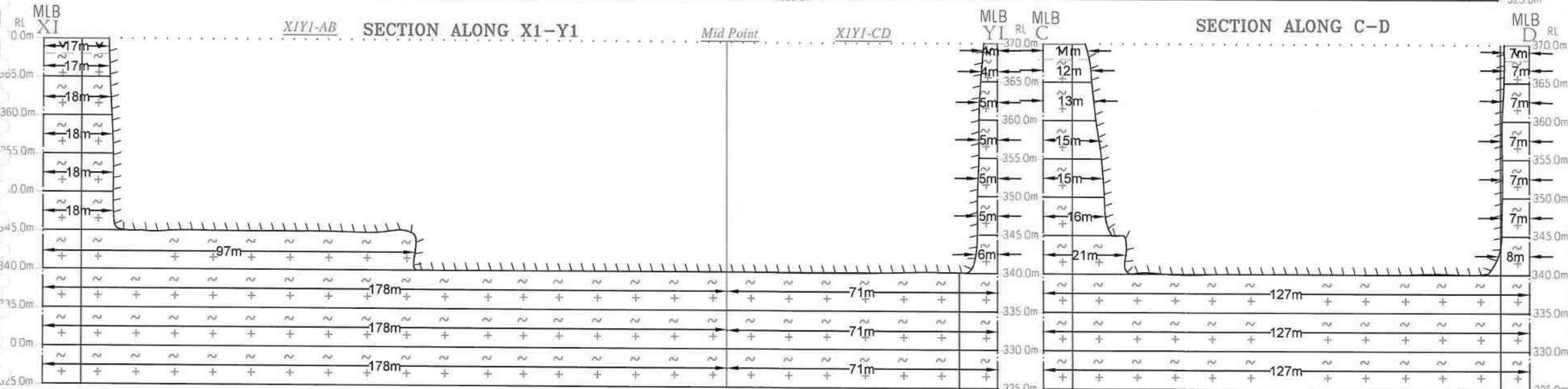
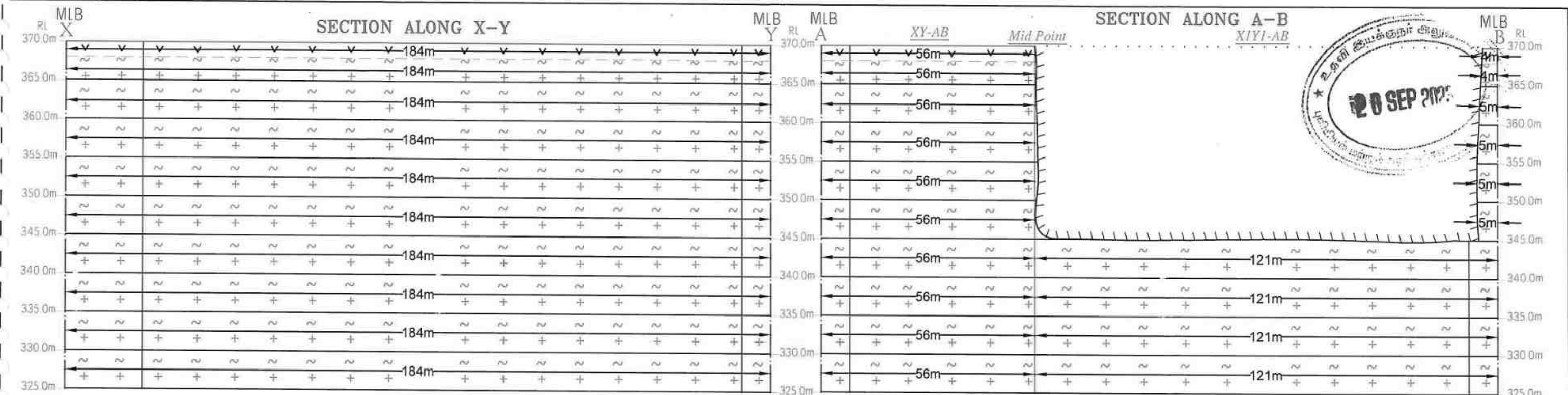
Prepared By:
I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

Dr.S.KARUPPANNAN,M.Sc.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

SURFACE & GEOLOGICAL PLAN
SCALE 1 : 1000

LEASE APPLIED AREA:
S.F.NO : 405/2,406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A
EXTENT : 4.09.0Hect
VILLAGE : PANAPATTI
TALUK : KINATHUKKADAVU
DISTRICT : COIMBATORE

APPLICANT:
Mr.M.RAJESH,
S/o. MOHANDASS,
2/1, DOCTOR KALAINAR STREET,
SULEESWARANPATTI,
COIMBATORE DISTRICT - 642006.



GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Gravel in M ³	
XY-AB	I	184	56	2	20608	20608	
	II	184	56	3	30912	30912	
	III	184	56	5	51520	51520	
	IV	184	56	5	51520	51520	
	V	184	56	5	51520	51520	
	VI	184	56	5	51520	51520	
	VII	184	56	5	51520	51520	
	VIII	184	56	5	51520	51520	
	IX	184	56	5	51520	51520	
TOTAL					463680	443072	20608
X1Y1-AB	I	17	4	2	136	136	
	II	17	4	3	204	204	
	III	18	5	5	450	450	
	IV	18	5	5	450	450	
	V	18	5	5	450	450	
	VI	97	121	5	58685	58685	
	VII	178	121	5	107690	107690	
	VIII	178	121	5	107690	107690	
	IX	178	121	5	107690	107690	
TOTAL					383895	383759	136

GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume In M ³	Gravel in M ³	
X1Y1-CD	I	4	18	2	144	144	
	II	5	20	3	228	228	
	III	5	22	5	550	550	
	IV	5	22	5	550	550	
	V	5	23	5	575	575	
	VI	6	29	5	870	870	
	VII	71	127	5	45085	45085	
	VIII	71	127	5	45085	45085	
	IX	71	127	5	45085	45085	
TOTAL					138672	138528	144
GRAND TOTAL(XY-AB,X1Y1-AB&CD)					986247	965359	20888

GEOLOGICAL SECTIONS
SECTION HOR 1 : 1000 & VER 1 : 500

APPLICANT:
Mr.M. RAJESH,
S/o. MOHANDASS,
2/1, DOCTOR KALAINAR STREET,
SULEESWARANPATTI,
COIMBATORE DISTRICT - 642000.

LEASE APPLIED AREA:
S.F.NO : 405/2,406/1A,
406/1B1A, 406/1B1B,
406/1C1 & 406/2A

EXTENT : 4.09.0Hect
VILLAGE : PANAPATTI
TALUK : KINATHUKKADAVU
DISTRICT : COIMBATORE

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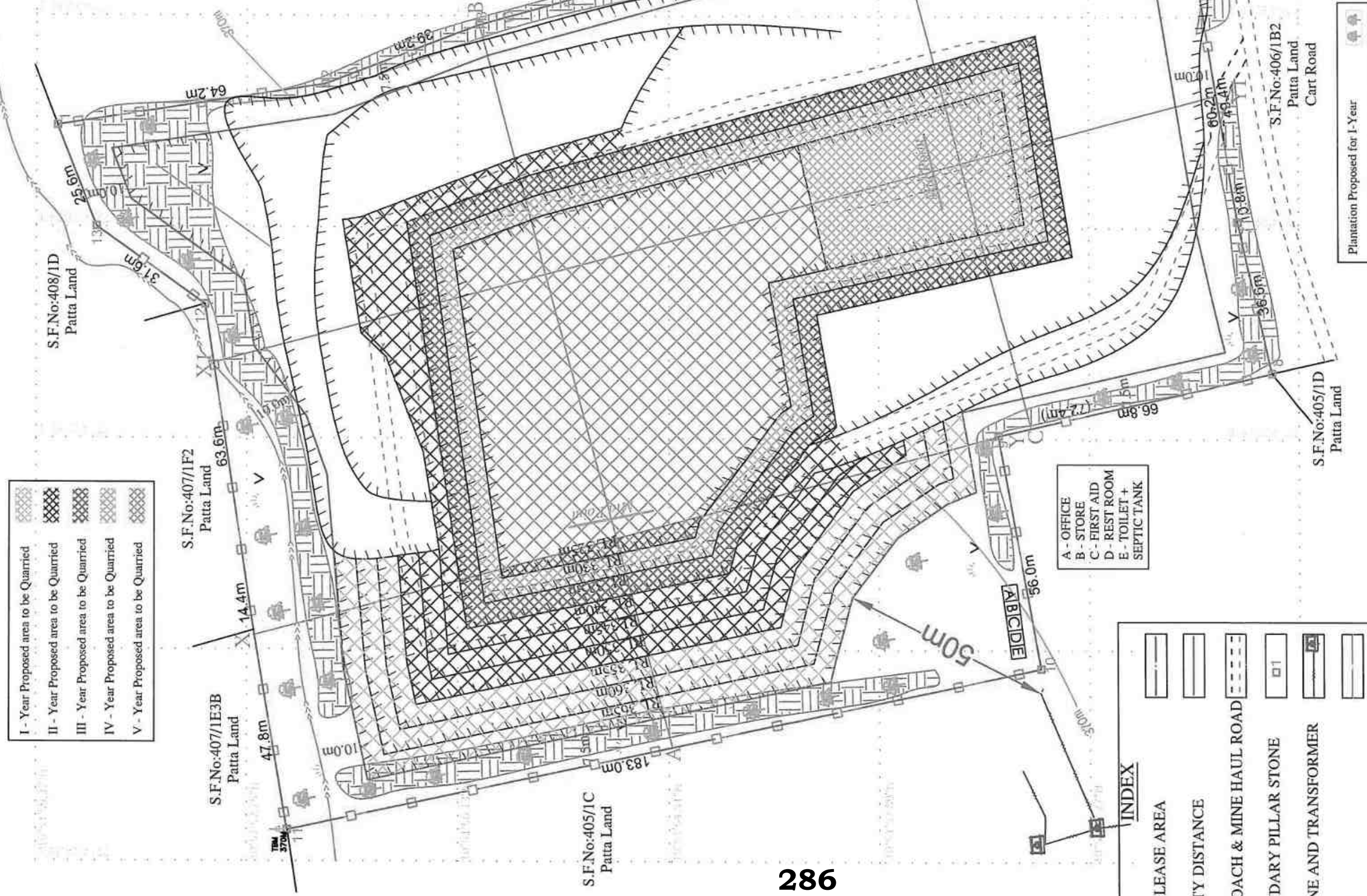
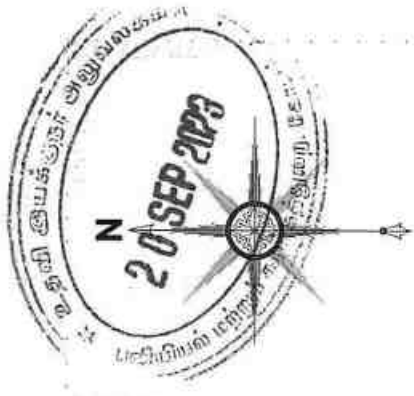
MINE LEASE AREA	
SAFETY DISTANCE	
EXISTING PIT	
GRAVEL	
ROUGH STONE	

PLATE No-III A

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
ROP/MAS/263/2014/A



- 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

- A - OFFICE
- B - STORE
- C - FIRST AID
- D - REST ROOM
- E - TOILET + SEPTIC TANK

INDEX	
MINE LEASE AREA	[Symbol]
SAFETY DISTANCE	[Symbol]
APPROACH & MINE HAUL ROAD	[Symbol]
BOUNDARY PILLAR STONE	[Symbol]
EB LINE AND TRANSFORMER	[Symbol]
ODAI	[Symbol]
TEMPORARY BENCH MARK	[Symbol]
CONTOUR LINE	[Symbol]
SCRUBS	[Symbol]
EXISTING PIT	[Symbol]
GRAVEL	[Symbol]
FENCING	[Symbol]
EARTH BUND	[Symbol]
PROPOSED BENCH	[Symbol]

YEARWISE DEVELOPMENT & PRODUCTION PLAN
SCALE 1 : 1000

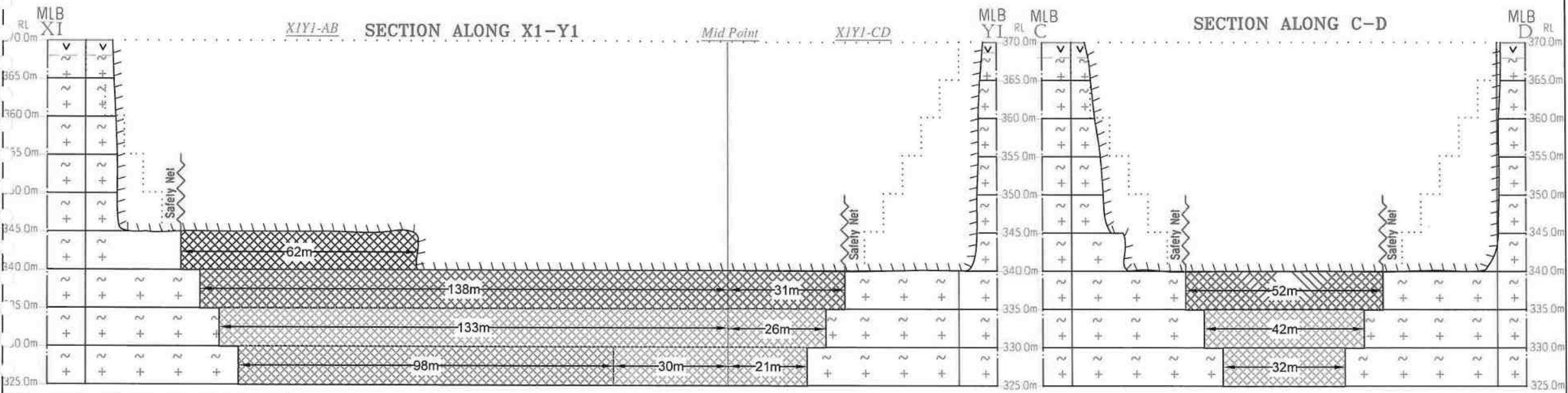
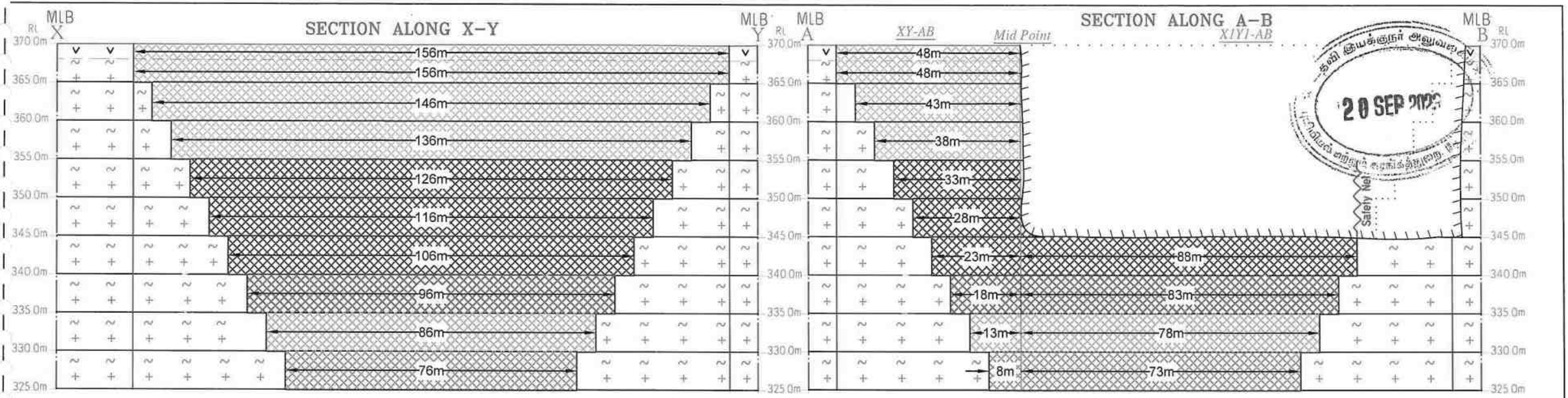
APPLICANT:
Mr.M.RAJESH,
S/o. MOHANDASS,
2/1, DOCTOR KALAINAR STREET,
SULEESWARANPATTI,
COIMBATORE DISTRICT - 642006.

LEASE APPLIED AREA:
S.F.NO : 405/2,406/1A,
406/1B1A, 406/1B1B,
406/1C1 & 406/2A
EXTENT : 4.09.0Hect
VILLAGE : PANAPATTI
TALUK : KINATHUKKADAVU
DISTRICT : COIMBATORE

PLATE No-IV

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
ROP/MAS/263/2014/A



YEARWISE PRODUCTIONS								
Section	Year	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-YEAR	I	156	48	2	14976	14976	.....
		II	146	43	5	31390	31390	.....
		III	136	38	5	25840	25840	.....
		TOTAL				94670	79694	14976
XY-AB	II-YEAR	IV	126	33	5	20790	20790	.....
		V	116	28	5	16240	16240	.....
		VI	106	23	5	12190	12190	.....
		TOTAL				76500	76500	0
XY-AB	III-YEAR	VII	31	52	5	8060	8060	.....
		VIII	78	133	5	51870	51870	.....
		IX	21	32	5	3360	3360	.....
		TOTAL				73970	73970	0
XY-AB	IV-YEAR	X	86	13	5	5590	5590	.....
		XI	78	133	5	51870	51870	.....
		XII	26	42	5	5460	5460	.....
		TOTAL				72330	72330	0
XY-AB	V-YEAR	XIII	98	73	5	35770	35770	.....
		XIV	76	8	5	3040	3040	.....
		TOTAL				38810	38810	0
		GRAND TOTAL				361180	346204	14976

- 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

YEARWISE PRODUCTION SECTIONS
SECTION HOR 1 : 1000 & VER 1 : 500

APPLICANT:
Mr.M.RAJESH,
S/o. MOHANDASS,
2/1, DOCTOR KALAINAR STREET,
SULEESWARANPATTI,
COIMBATORE DISTRICT - 642008

LEASE APPLIED AREA:
S.F.NO : 405/2,406/1A,
406/1B1A, 406/1B1B,
406/1C1 & 406/2A

EXTENT : 4.09.0Hect
VILLAGE : PANAPATTI
TALUK : KINATHUKKADAVU
DISTRICT : COIMBATORE

INDEX	
MINE LEASE AREA	
SAFETY DISTANCE	
EXISTING PIT	
GRAVEL	
ROUGH STONE	
PROPOSED BENCH	

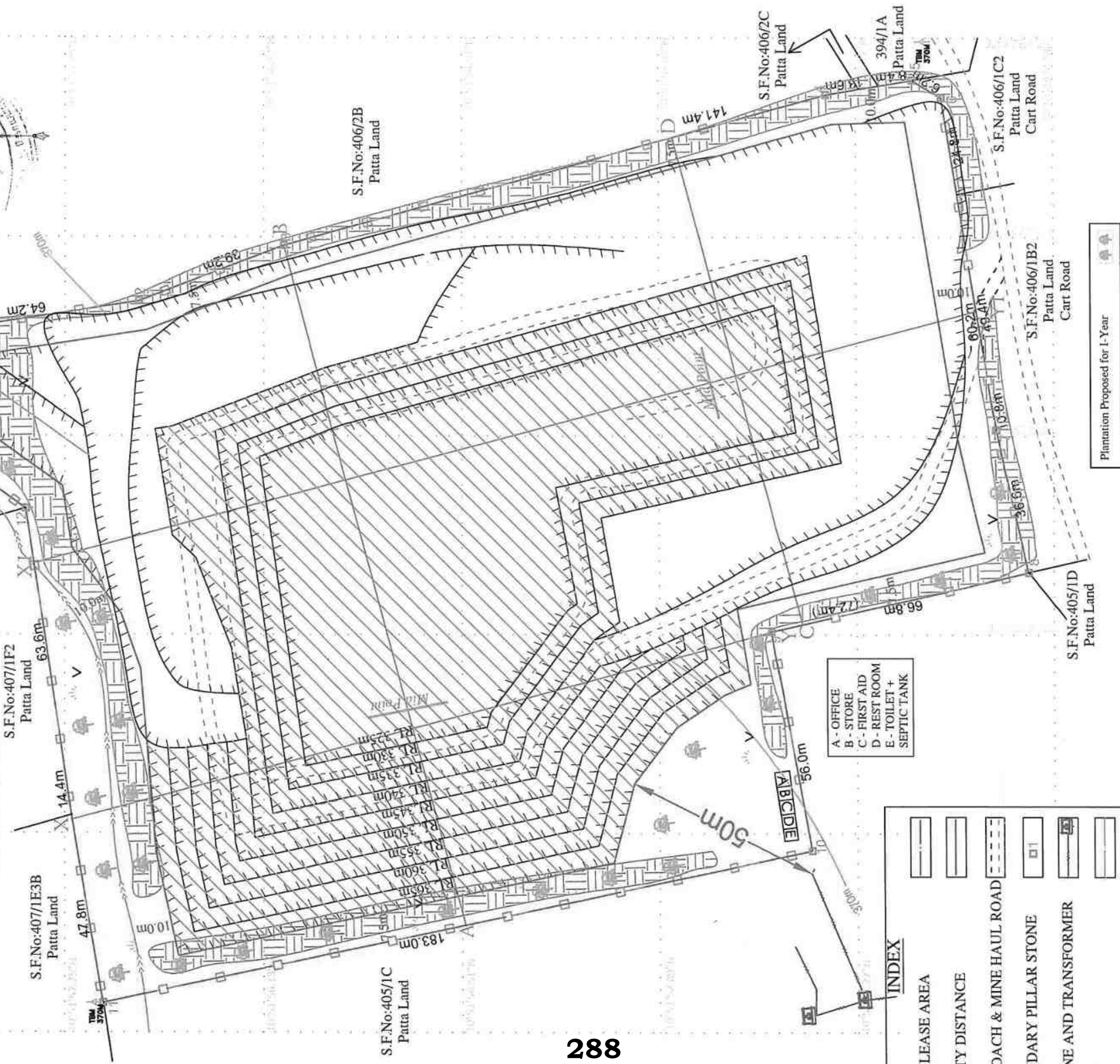
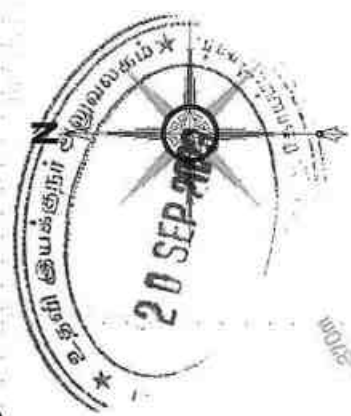
PLATE No-IVA

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.KARUPANNAN, M.Sc., Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/263/2014/A

DESCRIPTION	PRESENT AREA (Hect)	AREA IN USE DURING THE QUARRYING PERIOD(Hect)	COLOR CODE
AREA UNDER QUARRYING	2.52.45	2.08.80	
INFRASTRUCTURE	0.02.00	0.02.00	
ROADS	0.03.00	0.08.00	
UN-UTILIZED AREA	0.99.35	1.38.00	
GREEN BELT & EARTH BUND	0.52.20	0.52.20	
GRAND TOTAL	4.09.00	4.09.00	



- A - OFFICE
- B - STORE
- C - FIRST AID
- D - REST ROOM
- E - TOILET + SEPTIC TANK

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MINE LEASE AREA
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APPROACH & MINE HAUL ROAD
BOUNDARY PILLAR STONE
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ODAI
TEMPORARY BENCH MARK
CONTOUR LINE
SCRUBS
EXISTING PIT
GRAVEL
FENCING
EARTH BUND
PROPOSED BENCH

MINE LAYOUT PLAN AND LAND USE PATTERN
SCALE 1 : 1000

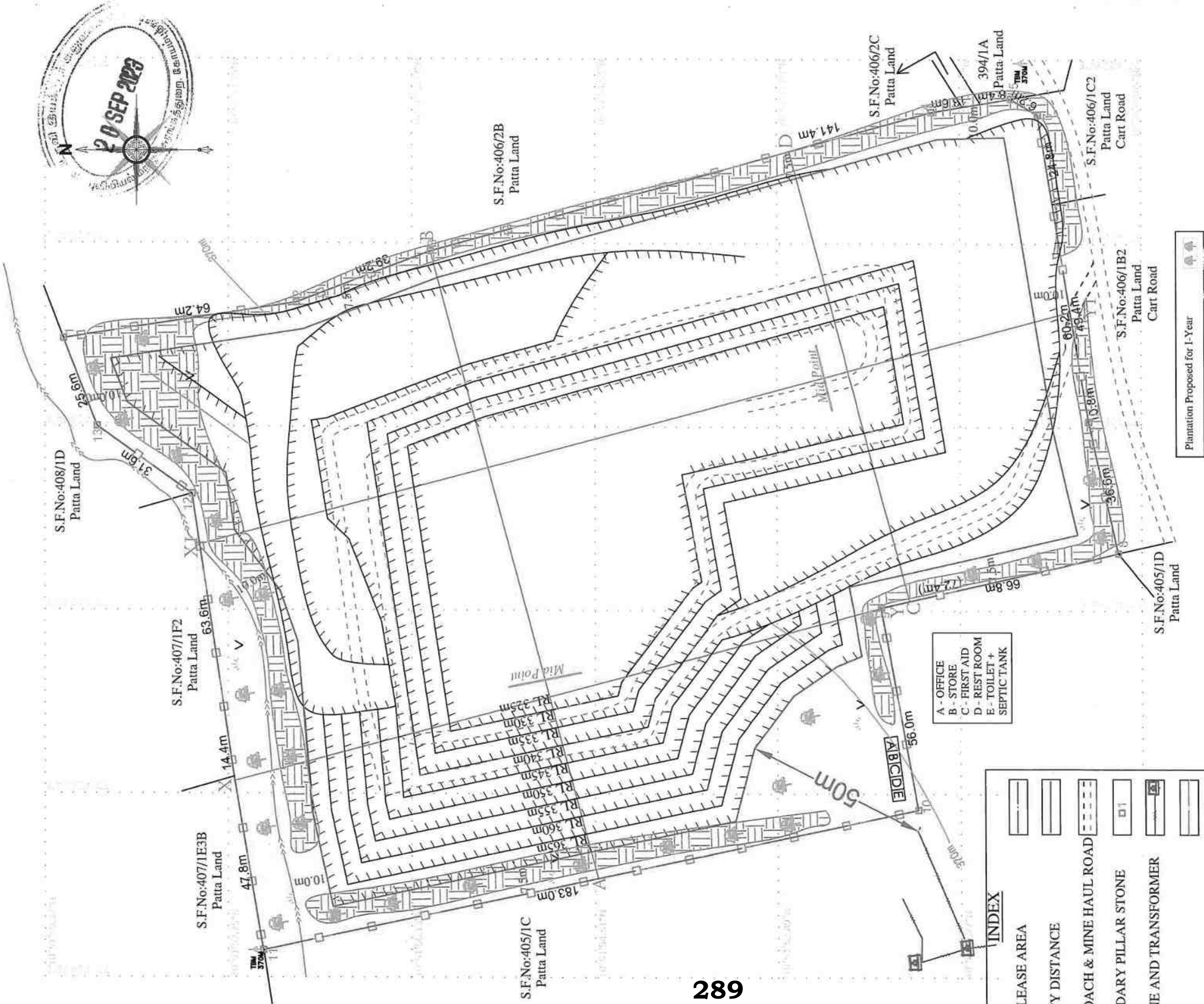
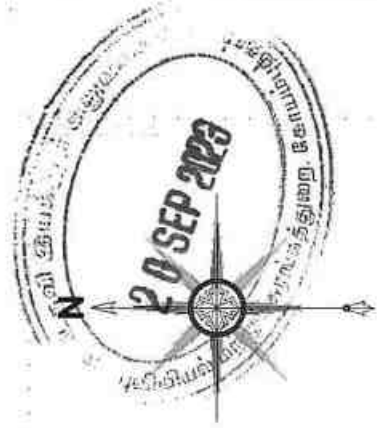
PLATE No-V

APPLICANT:
Mr.M.RAJESH,
S/o. MOHANDASS,
2/1, DOCTOR KALAIIGNAR STREET,
SULEESWARANPATTI,
COIMBATORE DISTRICT - 642006.

LEASE APPLIED AREA:
S.F.NO : 405/2,406/1A,
406/1B1A, 406/1B1B,
406/1C1 & 406/2A
EXTENT : 4.09.0Hect
VILLAGE : PANAPATTI
TALUK : KINATHUKKADAVU
DISTRICT : COIMBATORE

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
ROP/MAS/263/2014/A



Plantation Proposed for 1-Year

- A - OFFICE
- B - STORE
- C - FIRST AID
- D - REST ROOM
- E - TOILET + SEPTIC TANK

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MINE LEASE AREA	
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ODAI	
TEMPORARY BENCH MARK	
CONTOUR LINE	
SCRUBS	
EXISTING PIT	
GRAVEL	
FENCING	
EARTH BUND	
ULTIMATE BENCH	

CONCEPTUAL PLAN
SCALE 1 : 1000

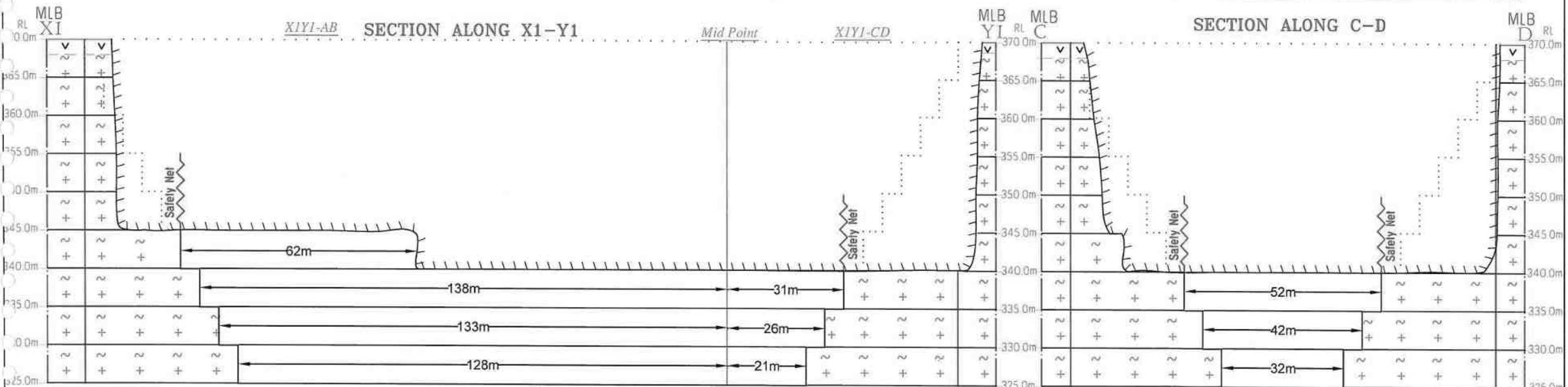
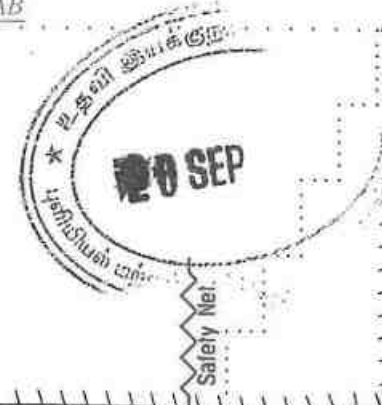
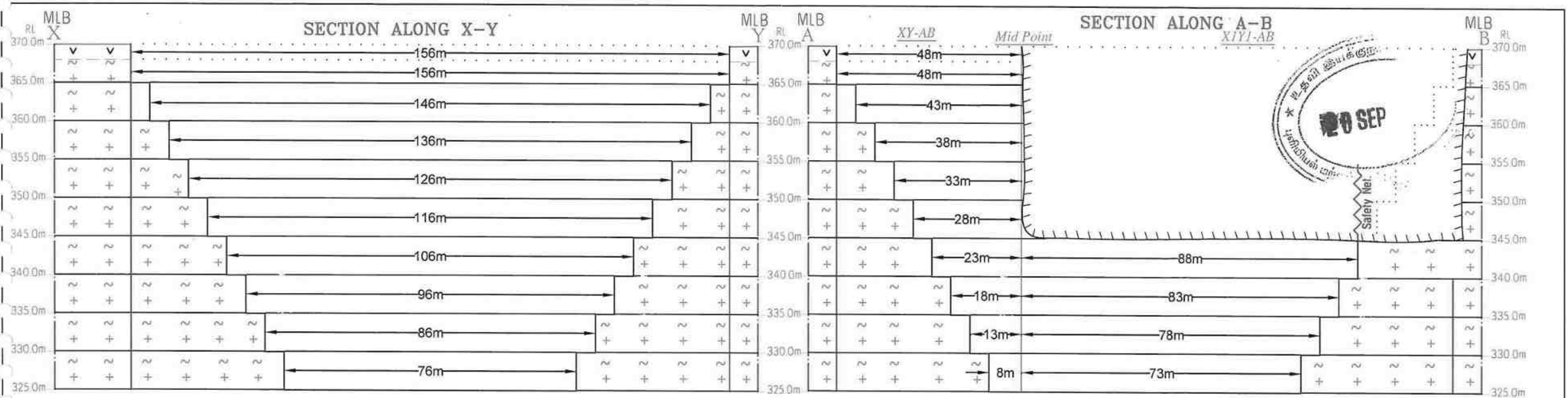
PLATE No-VI

APPLICANT:
Mr.M.RAJESH,
S/o. MOHANDASS,
2/1, DOCTOR KALAINAR STREET,
SULEESWARANPATTI,
COIMBATORE DISTRICT - 642006.

LEASE APPLIED AREA:
S.F.NO : 405/2,406/1A,
406/1B1A, 406/1B1B,
406/1C1 & 406/2A
EXTENT : 4.09.0Hect
VILLAGE : PANAPATTI
TALUK : KINATHUKKADAVU
DISTRICT : COIMBATORE

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	156	48	2	14976	.....	14976
	II	146	43	5	31390	31390	.....
	III	136	38	5	25840	25840	.....
	IV	126	33	5	20790	20790	.....
	V	116	28	5	16240	16240	.....
	VI	106	23	5	12190	12190	.....
	VII	96	18	5	8640	8640	.....
	VIII	86	13	5	5590	5590	.....
	IX	76	8	5	3040	3040	.....
TOTAL					161160	146184	14976
X1Y1-AB	VI	62	88	5	27280	27280	.....
	VII	138	83	5	57270	57270	.....
	VIII	133	78	5	51870	51870	.....
	IX	128	73	5	46720	46720	.....
TOTAL					183140	183140	0
X1Y1-CD	VII	31	52	5	8060	8060	.....
	VIII	26	42	5	5460	5460	.....
	IX	21	32	5	3360	3360	.....
TOTAL					16880	16880	0
GRAND TOTAL					361180	346204	14976

CONCEPTUAL SECTIONS
SECTION HOR 1 : 1000 & VER 1 : 500

APPLICANT: Mr.M.RAJESH, S/o. MOHANDASS, 2/1, DOCTOR KALAINAR STREET, SULEESWARANPATTI, COIMBATORE DISTRICT - 642006.	LEASE APPLIED AREA: S.F.NO : 405/2,406/1A, 406/1B1A, 406/1B1B, 406/1C1 & 406/2A EXTENT : 4.09 Hect VILLAGE : KALAI PATTI TALUK : KINATHUKKADAVU DISTRICT : COIMBATORE
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INDEX	
MINE LEASE AREA	
SAFETY DISTANCE	
EXISTING PIT	
GRAVEL	
ROUGH STONE	
ULTIMATE BENCH	

PLATE NO-VIA

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

From	To
K.Ramesh, M.Sc., Deputy Director, Dept. of Geology and Mining, Coimbatore.	Thiru.M.Rajesh S/o. Mohandass, 2/1, Doctor Kalaignar Street, Suleeswaran patti, Coimbatore

Rc.No.206/Mines/2023 **Dated: 17.03.2023**

Sir,

Sub: Mines & Minerals – Minor Mineral – Coimbatore District – Kinathukadavu Taluk – Panappatti Village – Survey Nos.405/2 (0.95.0 hectares), 406/1A (0.27.5 hectares), 406/1B1A (0.54.5 hectares), 406/1B1B (1.48.0 hectares), 406/1C1 (0.68.0 hectares), 406/2A (0.16.0 hectares) - over an extent of 4.09.0 hectares of patta land - Application preferred by Thiru. M.Rajesh for quarrying Rough stone and gravel – mining plan approved – Additional details requested by the applicant for obtaining TOR from SEIAA-TN – details - furnished- reg.

- Ref. 1. Quarry lease application dated.22.02.2023 preferred by Thiru. M. Rajesh, Coimbatore.
- 2 Assistant Director, Dept. of Geology and Mining, Coimbatore Letter Rc.No.206/Mines/2023, Dated: 25.08.2023.
3. Mining Plan submitted by Thiru. M. Rajesh dated: 15.09.2023.
4. This office letter of even no. dt. 20.09.2023
5. Representation received from Thiru. M. Rajesh letter dt. 28.02.2024.

Kind attention is invited to the references cited.

2. Thiru. M. Rajesh vide reference 1st cited, has applied for grant of Rough stone and Gravel quarry lease, over an extent of 4.09.0 hectares comprised in patta lands in Survey Nos.405/2 (0.95.0 hectares), 406/1A (0.27.5 hectares), 406/1B1A (0.54.5 hectares), 406/1B1B (1.48.0 hectares), 406/1C1 (0.68.0 hectares), 406/2A (0.16.0 hectares) of Panappatti Village, Kinathukadavu Taluk, Coimbatore District.

3. Based on the recommendations of the authorities concerned, precise area was communicated to the applicant vide reference 2nd cited with the direction to submit mining plan. As directed, the mining plan was submitted by the applicant vide reference 3rd cited

and the same was approved by the Assistant Director of Geology and Mining, Coimbatore vide reference 4th cited.

4. At this juncture, the applicant vide reference 5th cited, made a representation by enclosing the remarks made by the SEAC-TN and requested to provide the particulars as called for therein.

5. In this regard the details requested by SEAC are detailed below.

i. Original pit dimension of the existing quarry

Average existing pit dimensions as per approved mining plan			
Level	Length (m)	Width (m)	Depth (m)
I	107	84	25
II	140	108	30

ii. Quantity achieved V/s. EC approved quantity

The approved quantity as per previous approved mining plan and quantity transported during the previous lease period are furnished below.

Approved Quantity	115198 cbm - Rough stone 11775 cbm - Gravel
Permit obtained quantity	71172 cbm - Rough stone 540 cbm - Gravel

iii. Balance quantity as per Mineable Reserve calculated:

As per the mining plan approved on 20.09.2023 after deducting previous pit dimension, the mineable reserve (at the rate of 100% recovery) calculated for rough stone and gravel are 346204 cbm and 14976 cbm, respectively.

iv. Mined out Depth as on date Vs EC Permitted Depth:

Existing depth	: 28m-32m
Depth permitted as per earlier Environmental Clearance	: 34m (Rough stone-29m +Gravel-5m)

v. Details of the Illegal / Illicit Mining carried out, if any.

- NIL -

vi. Non-compliance/Violation in the quarry during the past working.

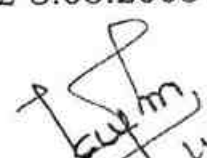
- NIL -

vii. Quantity of material mined out outside the mine lease area (or) in the adjacent quarry land.

- NIL -

viii. Existing condition of safety zone / benches.

Quarry pit is having one bench. Further, pit is noticed in safety zone on the South, East and on the Western side. Lands in S.F.Nos. 406/1A, 406/1B1A, 406/1B1B, 406/1C1, 406/2A, over an extent of 3.14.0 hectares previously held under quarrying lease in two spells for the period from 28.06.2008 to 27.06.2013 and 03.03.2016 to 02.03.2021.


Deputy Director
Geology and Mining
Coimbatore

Copy to
The Chairman
Tamil Nadu - State Environment
Impact Assessment Authority
3rd Floor, Panagal Maaligai
No.1, Jenis Road, Saidapet
Chennai- 600 015.


14/3/24

சான்று

கோயம்புத்தூர் மாவட்டம், கிணத்துக்கடவு வட்டம், பணப்பட்டி கிராமம், புல எண் 405/2 (0.95.0), 406/1A (0.27.5), 406/1B1A (0.54.5), 406/1B1B (1.48.0), 406/1C1 (0.68.0), 406/2A (0.16.0) என மொத்தம் 4.09.0 ஹெக்டேர் நிலம், பட்டா எண் 2300 படி மோகன்தாஸ் மகன் M.ராஜேஷ் என்பவருக்கு சொந்தமாக உள்ளது. இந்நிலத்தில் மேற்படி நபர் சாதாரண கற்கள் வெட்டி எடுக்க குத்தகை உரிமம் கேட்டு விண்ணப்பித்துள்ளார். மேற்படி நிலத்தை சுற்றிலும் 50 மீட்டர் சுற்றளவில் நீர்நிலைகள், வழிபாட்டு தலங்கள், கல்வி நிலையங்கள், நிரந்தர அமைப்புகள் மற்றும் வரலாற்று புராதான சின்னங்கள் ஏதுமில்லை. மேலும் 300 மீட்டர் சுற்றளவில் குடியிருப்புகள், உயர்மின் கோபுரங்கள் ஏதுமில்லை என்று சான்று வழங்கப்படுகிறது.

21/9/23
கிராமநிர்வாக அலுவலர்
பணப்பட்டி கிராமம்
கிணத்துக்கடவு 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.

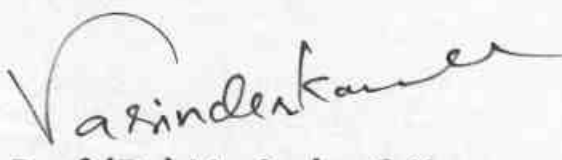
Issue Date
Feb 19, 2024

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)