

**DRAFT OF 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 = 8.13.5 hectares

ROUGHSTONE QUARRY

At

Kalapanahalli Village, Karimangalam Taluk, Dharmapuri District,

Tamil Nadu State

ToR Letter No. SEIAA-TN/F.No.10028/SEAC/ToR-1502/2023 Dated:19.07.2023.

NAME AND ADDRESS OF THE PROPOSED PROJECT PROPONENT

Name and Address	Extent & S.F.No.
Tmt.M.Malliga W/o. P.Manickam, No.5/20, Kairukaran Kottai, Kerakodahalli Post, Karimangalam Taluk, Dharmapuri – 635 305	3.70.0 Ha & S.F.No. 401 (Part)

ENVIRONMENTAL CONSULTANT

GEO TECHNICAL MINING SOLUTIONS

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NABET ACC. NO: NABET/EIA/2124/SA 0184

Valid till: April 02, 2024



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.10028/SEAC/ToR-1502/2023

Dated:19.07.2023 for Tmt.M.Malliga Rough stone Quarry

1	The PP shall submit photographs of fencing. Greenbelt and garland drain.	Photographs of Greenbelt, fencing will be submitted in the final EIA report.
2	The PP shall submit the Modified Mining Plan duly approved by the concerned AD (Mines), Dept. of Geology & Mining in regard to the provision of the bench height of 5m / 6 m each instead of 7m shown as proposed bench height in the AMP submitted.	The modified mining plan with the bench height of 5m / 6m is shown in the mining plan book in the Annexure III.
3	The PP shall submit the letter obtained from the concerned AD (Mines) showing details on the date of lease executed. date of last working day, Mining Plan approved quantity, and Achieved quantity (year wise).	The letter obtained from the concerned AD (Mines) showing the details will be submitted in the final EIA report.
4	The study on impact of the dust & other environmental impacts due to proposed quarrying operations on the Rose flowers being cultivated through greenhouse nearby.	There are no any rose flowers being cultivated through greenhouse nearby project lease area. The details of agriculture have been discussed in Sections 3.5 under Chapter III, pp.71-94.
5	The revised and corrected version of the Production & Development Plan shall be produced with showing the safety berm width of 2m is maintained for the bench height of not exceeding 1.5 m distinctly in the gravel formation and it shall be duly signed by the concerned QP & approved by the concerned AD (Geology & Mining), Dept. of Geology & Mining.	It is only rough stone quarry and the condition is not not applicable. The details regarding the production and development of plan are shown in the Annexure III.
6	Since the quarry is existing with a depth	The details regarding approved mining plan

	<p>of excavation varies from 6 m to 19 m without benches of appropriate dimension (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall carry out a 'Slope Stability Assessment Studies' for the existing conditions of the quarry wall by involving anyone of these reputed Research and Academic institutions - CSIR-Central Institute of Mining & Fuel Research (CIMFR) / Dhanbad, NIRM - Bengaluru. IIT-Madras" NIT Surathka - Dept of Mining Engg, and Anna University Chennai – Dept of Mining Engg. The above studies shall spell out a 'Slope Stability Action Plan' for the proposed quarry covering the existing condition of the quarry wall including the overall pit slope angle and it shall cover the aspects of stability of quarry walls including the access ramp keeping the benches intact.</p>	<p>with the necessity conditions is shown in the Annexure III.</p>
7	<p>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.</p>	<p>A detailed EMP is provided in Table 10.10 & 10.11 under Chapter X, pp.170-175 and the sworn affidavit stating the EMP for the entire life will be submitted during final EIA report.</p>
ANNEXURE - I		
1	<p>The PP shall furnish the letter obtained from the AD (Mines) indicating the existing pit dimensions and pit conditions showing the details on mine having worked during the earlier lease period.</p>	<p>The letter regarding existing pit dimensions from the AD will be submitted in the final EIA report.</p>

2	The PP shall furnish DFO letter stating that the proximity distance of Reserve Forests. Protected Areas. Sanctuaries. Tiger reserve etc., up to a radius of 25km from the proposed site.	DFO letter will be submitted in the Annexure III.
3	The PP shall provide individual notice regarding the Public Hearing to the nearby house owners located in the vicinity of the project site.	Photograph showing distribution of individual notice of public hearing to the nearby public will be provided in the final EIA report.
4	The Proponent shall justify the selection of the site for carrying out the stone quarrying with the total volume arrived for the excavation & production adequate details such as lithology of the deposit, reserve estimation. Place for waste dump/mined mineral storage. end-use of mined materials. Identified potential customers/end-users and travel path.	The selected site for the project is the only site which has the required minerals carrying out for stone quarrying. The minerals produced in the quarry is used for the manufacture of m-sand and aggregates. No waste is produced in the quarry.
5	The PP shall also justify the selection of mining methodology (Conventional or non-conventional) adopting blasting technique/non-explosive techniques with proper ground reality & laboratory testing.	Justification for the selection of mining methodology has been given in Section 2.6 under Chapter II, pp.21-29.
6	The proponent shall submit the "Blast Design Parameters for controlling the vibration and fly rock from the quarry blasting- considering the existence of sensitive structures including habitations within 500m from the lease boundary.	Blast design parameters for controlling the vibration and fly rock is discussed in the Section 2.6 under Chapter II, pp.21-29.
7	The PP in the shall justify the estimation of HEMM population for excavation and	The estimation of HEMM population for excavation and transportation is discussed in

	Transportation proposed quarries with proper calculation methodology adopted.	the Section 2.6 under Chapter II, pp.21-29.
8	The PP shall enumerate the environmental settings situated within a radial distance of 1km such rivers/water Bodies/reserve forest/grazing land/existence of the hospitals and educational institutions/structures.	The details regarding environmental settings situated within distance of 1km such as rivers/water bodies/reserve forest/grazing land is discussed in the Table 3.43 under Chapter III, pp.102.
9	The PP shall provide the details of the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	The anticipated impacts of the mining operations on the surrounding environment and the remedial measures are discussed in the Chapter IV, pp.105 – 133.
10	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50m. (ii)100 m, (iii) 200 m and (iv) 300m (v)500m with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.	The details of survey on the structures within the given radius will be submitted in the final EIA report.
11	The PP shall submit a 'Slope Stability Action Plan' for the proposed quarry where the proposed depth exceeds 30m and it shall cover the aspects of stability of quarry walls including the access ramp keeping the benches intact.	Slope Stability Action Plan will be submitted in the final EIA report.
12	If the blasting operation is to be carried out, the PP shall present a conceptual	The conceptual design of blasting operation is discussed in the Section 2.6 under Chapter

	design for carrying out the NONEL initiation based controlled blasting operation including the line drilling & muffle blasting techniques and a Simulation Model indicating the anticipated Blast-induced Ground Vibration levels in the proposed quarry as stipulated by the DCMS Circular No.7 of 1997, during the EIA Proposal.	II, pp.21-29.
13	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry carried out by the statutory competent person as per the MMR 1961 such as blaster, Mining mate, mine foreman. II/I Class mines manager appointed by the proponent.	The affidavit for blasting has been enclosed in the Annexure III.
14	The PP shall give an affidavit stating that no contractual persons provided by the explosive suppliers will be employed for carrying out the blasting operations in the proposed quarries.	The affidavit for no contractual persons provided by the explosive suppliers will be employed for carrying out the blasting operations will be submitted in the final EIA report.
15	The PP shall also give an affidavit that no highly sensitive structure such as fire cracker manufacturing units, Gas down /explosive Magazine, LPG Bottling Units, etc are located within a radial distance of 300 m from the lease boundary of the proposed quarry.	The affidavit stating that no highly sensitive structure such as fire cracker manufacturing units, Gas down /explosive Magazine, LPG Bottling Units, etc are located within a radial distance of 300 m from the lease will be submitted in the final EIA report.
16	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	A conceptual design of blasting has been given in Section 2.6 under Chapter II, pp.21-29.

	vibrations are controlled as well as no fly rock travel beyond 20 m from the blast site.	
17	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	The document containing video and photographic evidences will be submitted in the final EIA report.
18	The PP shall provide the environmental mitigation measures implemented for the crusher(s) located within the mining lease.	The metal sheet is provided around the crusher to prevent the dust in the air. Advanced machineries are used to reduce the noise level within the mining lease.
19.	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines.	
a.	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	The quarrying operation was started on 12.02.2018 and ended on 11.02.2028, as shown in the approved mining plan in Annexure III.
b.	Quantity of minerals mined out.	During the last mining plan period, 482236 m ³ of rough stone were quarried out, as shown in the approved mining plan report in Annexure III.
c.	Highest production achieved in any one year	Highest production was achieved in the 1 st year and the production was 96559 m ³ of rough stone as per the approved plan for the period of 2022-2023.
d.	Detail of approved depth of mining.	The approved depth of mining is 32 m BGL as per the approved plan for the period of 2017-2022.
e.	Actual depth of the mining	The actual depth of mining achieved earlier

	achieved earlier.	was 54 m BGL as per the existing pit details provided in the approved mining plan report in Annexure III.
	f. Name of the person already mined in that leases area.	Tmt.M.Malliga was the registered lease holder of the lease area during 2017-2022 as per the lease deed enclosed in the approved mining plan report in Annexure III.
	g. If EC and CTO already obtained, the copy of the same shall be submitted.	A copy of CTO is submitted in the Annexure III.
	h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	The mining has been carried out with stipulated benches as per the approved mining plan in Annexure III.
20	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. Chenna (or) the concerned DEE/TNPCB.	CCR will be submitted in the final EIA report.
21	All corner coordinates of the mine lease area. superimposed on a High-Resolution Imagery/Toposheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as shown in Figure 2.4, under Chapter II, p-14.

22	The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	Drone video coverage will be submitted in the final EIA report.
23.	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 of the project will be submitted in the final EIA report.
24	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.	Employment details of the proposed project are provided in Table 2.14 under Chapter II, p.30.
25	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	Detailed hydrogeological study was carried out. The results have been discussed Section 3.2 under Chapter III, pp.42-55.

	working will intersect groundwater. Necessary data and documentation in this regard may be provided.	
26	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data were collected for the environmental components including land, soil, water, air, noise, biology, socio-economy, and traffic and the results have been discussed under Chapter III, pp.31-104.
27	The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	Results of cumulative impact study due to mining operations are given in Section 7.4 under Chapter VII, pp.147-152.
28	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Details regarding rain water harvesting management is submitted in the Annexure IV.
29	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	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, pp.32-41. The details of surrounding sensitive

	prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	ecological features are provided in Table 3.43 under Chapter III, p.102.Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.8 under Chapter II, p.24.
30	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease. such as extent of land area, distance from mine lease' its land use, R&R issues. If any, should be provided.	Not Applicable. No dumps have been proposed outside the lease area.
31	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.	Details regarding rain water harvesting management is submitted in the Annexure IV.
32	If the Village Road/State highway/National highway are located within a radial distance of 500 m from the lease boundary of the quarry proposal. the PP shall carry out traffic studies to indicate impact on local transport infrastructure due to the Project and mitigation measures.	The details on the study on traffic is discussed in the Section 3.7 under Chapter III, pp.99 – 101.
33	A tree survey study shall be carried out (nos., name of the species, age, diameter etc.) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	A detailed tree survey was carried out within 300 m radius and the results have been discussed in Section 3.5 under Chapter III, pp.71-94.
34	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-	A progressive mine closure plan has been attached with the approved mining plan report in Annexure III. The budget details

	specific.	for the progressive mine closure plan are shown in Table 2.9 under Chapter II, p.24.
35	Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF & CC accordingly.	The comments made in public hearing meeting will be updated in the final EIA report after public hearing meeting.
36	The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.	Details of advertisement will be updated in the final EIA report.
37	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.	The Tamil version of EIA report, executive summary and other related information will be incorporated in this report.
38	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.
39	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	A detailed Greenbelt Development Plan dealing with carbon sequestration has been provided in Section 4.6 under Chapter IV, pp.123-129.

	consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.	
40	Taller/one year old saplings raised in appropriate size of bags; preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner	The FAE of ecology and biodiversity has advised the project proponent that saplings of one year old raised in the eco-friendly bags should be purchased and planted with the spacing of 3 m between each plant around the proposed project area as per the advice of local forest authorities/botanist. Saplings used for greenbelt development have been shown in Section 4.6 under Chapter IV, pp.123-129.
41	A Disaster management plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	The details about disaster management Plan have been provided in Section 7.3 under Chapter VII, pp.143-146.
42	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.	The details about risk assessment and management plan have been provided in Section 7.2 under Chapter VII, pp.140-142.
43	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement	Occupational health impacts of the project and preventive measures have been discussed in detail in Section 4.8 under Chapter IV, pp.130 & 131.

	<p>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.</p>	
44	<p>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.</p>	<p>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, pp.156 & 157.</p>
45	<p>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.</p>	<p>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 20 people directly and 11 people indirectly as discussed in Section 8.1 and 8.2 under Chapter VIII, p.155.</p>
46	<p>Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.</p>	<p>No litigation is pending in any court against this project.</p>
47	<p>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.</p>	<p>Benefits of the project details have been given under Chapter VIII, pp.155-157.</p>

48	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 during appraisal of final EIA.
49	The PP shall prepare the EMP for entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	A detailed EMP is provided in Table 10.10 & 10.11 under Chapter X, pp.170-176.
50	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.
Discussion by SEIAA and the Remarks:		
The proposal was placed in the 640th Authority meeting held on 19.07.2023. The authority noted that this proposal was placed for appraisal in 390 th SEAC meeting held on 07.07.2023. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the conditions in 'Annexure B' of this minute.		
Annexure 'B'		
Cluster Management Committee		
1	Cluster Management Committee shall be	A cluster management committee including

	framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry.	all the proponents of the rough stone quarrying projects within the cluster of 500 m radius will be constituted for the effective implementation of green belt development plan, water sprinkling, blasting, etc.
2	The members must coordinate among themselves for the effective implementation of EMP as committed including Green Belt Development Water sprinkling, tree plantation, blasting etc.,	The members of the cluster management committee will be instructed to carry out EMP in coordination.
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	The list of members of the committee formed will be submitted to AD/Mines before the execution of mining lease.
4	Detailed Operational Plan must be submitted which must include the blasting frequency with respect to the nearby quarry situated in the cluster, the usage of haul roads by the individual quarry in the form of route map and network.	All the information has been discussed in Section 2.6 & 2.7 under Chapter II, pp.21-29.
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	The cluster management will be advised to practice sustainable mining in a scientific and systematic manner in accordance with

	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.	the law. The role played by the committee in implementing the environmental policy devised will be given in detail.
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	A proper action plan regarding the restoration will be followed by the committee.
8	The committee shall 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 7.3 under Chapter VII, pp.143-146.
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, pp.32-41 & pp.71-94.

	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, pp.55-67.
	c)	Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local People.	The information about CO ₂ emission has been added to Section 4.6 under Chapter IV, pp.123-129.
	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, pp.107 & 108 The impact on aquatic species has been discussed in Section 4.6 under Chapter IV, pp.123-129.
	e)	Agriculture, Forestry, & Traditional practices.	Sorghum, 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 54 m below the local ground level, the temperature will increase by 2.5 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.	Stream sediments geo chemistry has been included in Table 3.4 under Chapter III, p.41.
Agriculture & Agro-Biodiversity			
13		Impact on surrounding agricultural fields around the proposed mining area.	As the proposed lease area is dominantly surrounded by mining land, barren land, and fallow land, the impact on the surrounding agricultural fields if present will be low.

		With proper mitigation measures, the project will be carried out to reduce the impact further to the level of negligence.
14	Impact on soil flora & vegetation around the project site.	Impact of the project on the ecology and biodiversity has been discussed in Section 4.2 and Section 4.6 under Chapter IV, pp.106-107 and pp.123 – 129.
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, pp.71-94. Details about transplantation of plants have been provided in Section 4.6 under Chapter IV, pp.123-129.
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, pp.71-94 and measures have been provided in Section 4.6 under Chapter IV, pp. 123-129.
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The FAE of ecology and biodiversity has advised the project proponent that replantation work, particularly for the project area where plants of 4 years old exist should be carried out in the vacant areas available.
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, pp.105 & 106.
Forests		
19	The project proponent shall study on	The impacts of the proposed project on the

	impact of mining on Reserve forests free ranging wildlife.	surrounding environment have discussed in Chapter IV, pp.105-133.
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, pp.123-129.
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, pp.123-129.
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National parks, corridors and wildlife pathways, near project site.	There are no protected areas, National Parks, Corridors and Wildlife pathways near project site. The list of environmentally sensitive areas within 10 km radius has been provided in Table 3.43 under Chapter III, p.102.
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.	A detailed hydrogeological study was carried out. The results have been discussed in Section 3.2 under Chapter III, pp.42-55.
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, pp.107 & 108.
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.	A detailed study was carried out regarding the impact of mining on the environment. The results have been included in Chapter IV, pp.105-133.
26	The project proponent shall study impact on fish habitats and the food WEB/food chain in the water body and Reservoir.	As there are no permanent water bodies near to the proposed project site during study period, the details about the is discussed in Section 3.5 under Chapter III, pp.71-94.
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, pp. 105-133.
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, pp.123-129.
29.	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	The impact of mining on soil environment has been discussed in Section 4.2 under Chapter IV, pp.106-107.
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, pp.107 & 108.
Energy		
31	The measures taken to control Noise,	The measures taken to control Noise, Air,

	Air, water, Dust control and steps adopted to efficiently utilise the Energy shall be furnished.	water, and dust have been given under Chapter IV, pp.105-133.
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.	Greenbelt development plan as discussed in Section 4.6 under Chapter IV, pp.123 – 129. has been designed to reduce the impact of carbon emission on the environment.
33	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	The information about the study on climate change, temperature rise, pollution above soil and below soil carbon is discussed in the Chapter IV, pp.123-129.
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 mine closure are shown in Table 2.9 under Chapter II, p.24.
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, pp.170-176.

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.	A detailed Environment Management plan has been given in Tables 10.10 & 10.11 under Chapter X, pp.170-176.
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, pp.140-142.
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.	A detailed Environment Management Plan has been given under Chapter X, pp.159-176.
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 will be submitted in final EIA report.

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 response to comments will be given in 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, pp.152 – 153.
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 patta land. A copy of the ownership document 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 following will approve mine plan, EIA and public hearing will be submitted in the final

	the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	EIA report.
4.	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	All corner coordinates of the mine lease area have been superimposed on a high-resolution Google Earth Image, as shown in Figure 2.4, under Chapter II, p-14.
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.	The baseline data sampling locations for all the environmental components are shown in Survey of India Toposheet under 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 applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
7.	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with	The proponent has framed Environmental Policy and the same has been discussed in Section 10.1 under Chapter X, pp.159 & 160.

	<p>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.</p>	
8.	<p>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.</p>	<p>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 90⁰ bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.</p>
9.	<p>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.</p>	<p>All the data contained in the EIA report such as waste generation etc., is for the life of the mine / lease period.</p>

10.	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use of the study area 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, pp.32-41. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Table 2.8 under Chapter II, p.24.
11.	Details of the land for any over burden dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.	Not Applicable. There is no waste anticipated during this quarry operation. The entire quarried out rough stone will be transported to the need customers. Hence, no dumps are proposed outside the lease area.
12.	Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	Not Applicable. There is no forest land involved within the proposed project area and the proposed project area is a patta land.

13.	Status of forestry clearance for the broken-up area and virgin forestland involved in the Project including deposition of net present value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	Not Applicable. There are neither forests nor forest dwellers/forest dependent communities in the mine lease area. There is no forest impacted families (PF) or people (PP). Thus, the rights of Traditional Forest Dwellers will not be compromised on account of the project.
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.	Details about forest vegetation have been provided in Section 3.5 under chapter-III, pp.71-94.
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.	A study was done on wildlife within the study area, as shown in Section 3.5 under Chapter-III, pp. 71-94. The impact on wild life has been discussed in Section 4.6 under Chapter IV, pp.123-129.
17.	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed),	Information regarding the same has been given in Table 3.43 under Chapter III, p.102.

	<p>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</p>	
18.	<p>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.</p>	<p>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, pp.71-94. 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.</p>
19.	<p>Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli Range', (attracting court restrictions for</p>	<p>Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.</p>

	<p>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.</p>	
20.	<p>Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL. HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).</p>	<p>Not Applicable The project doesn't attract the C.R.Z. Notification, 2018.</p>
21.	<p>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</p>	<p>Not Applicable. There are no approved habitations within a radius of 300 meters. Therefore, R&R plan / compensation details for the Project Affected People (PAP) is not anticipated.</p>

	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 predominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Baseline data were collected for the period of October–December 2023, as per CPCB notification and MoEF & CC Guidelines. Primary baseline data and the results have been included in Sections 3.1-3.7 under Chapter III, pp. 32-101.
23.	Air quality modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for	Air quality modelling for prediction of incremental GLCs of pollutants was carried out using AERMOD view. The model results have been given in Section 4.4 under the Chapter IV, pp.109-118.

	<p>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>	
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, p.28.</p>
25.	<p>Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the project should be provided.</p>	<p>Not Applicable. Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis. Drinking water will be sourced from the approved water vendors.</p>
26.	<p>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.</p>	<p>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 will be prepared for converting the excavated pit into rain water harvesting structure and serve as water reservoir for the project village during draught season.</p>

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 were conducted and the results have been discussed in Section 4.3, under the Chapter IV, pp. 107 & 108.
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.	Not Applicable. The ground water table is found at the depth of 80 m below ground level. The ultimate depth of quarry is 54 m BGL. Therefore, the mining activity will not intersect the ground water table. Data regarding the occurrence of groundwater table have been provided in Section 3.2 under Chapter III, pp.42-55.
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 480 m AMSL. Ultimate depth of the mine is 54 m BGL. Depth to the water level in the area is 80 m BGL.
31.	A time bound Progressive Greenbelt Development Plan shall be prepared in a	A detailed Greenbelt Development Plan has been provided in Tables 4.14 and 4.15 in

	<p>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.</p>	<p>Section 4.6 under Chapter IV, pp.125.</p>
32.	<p>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.</p>	<p>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, pp.99-101.</p>
33.	<p>Details of the onsite shelter and facilities to be provided to the mine workers</p>	<p>Infrastructure & other facilities will be provided to the mine workers after the grant</p>

	should be included in the EIA Report.	of quarry lease and the same has been discussed in Section 2.6.6 under Chapter II, p.28.
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 under Chapter II, pp.21-29.
35.	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impacts of the project and preventive measures have been explained in detail in Section 4.8 under Chapter IV, pp.130 & 131.
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, pp.156 & 157.
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 20 people directly and 11 people indirectly, as discussed in Section 8.1 under Chapter VIII, p.155.
38.	Detailed environmental management plan (EMP) to mitigate the	Detailed environment management plan for the project to mitigate the anticipated

	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.	impacts has been provided under Chapter X, pp.159-176.
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 details will be updated in the final EIA report after public hearing meeting.
40.	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this project.
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost is Rs. 1,56,07,100/- In order to implement the environmental protection measures, an amount of Rs.9444320 as capital cost and recurring cost as Rs.3396144 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.28335959, as shown in Tables 10.10 &10.11 under Chapter X, pp.170-176.
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	The details have been provided in Section 7.3 under Chapter VII, pp.143-146.
43.	Benefits of the Project if the Project is implemented should be spelt out. The	Benefits of the project have been discussed under Chapter VIII, pp.155-157.

	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	Executive summary has been enclosed as a separate booklet.
b)	All documents to be properly referenced with index and continuous page numbering.	All the documents have been properly referenced with index and continuous page numbering.
c)	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	List of tables and source of the data collected have been mentioned.
d)	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project	Original Baseline monitoring reports will be submitted in the final EIA report during appraisal.
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 enclosed along with final EIA/EMP report.
g)	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	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 conducting the PH again with the revised documentation.	No changes are made in the basic scope and the project parameters.
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.	The certified compliance report will be provided 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 related to mining have been included along with the approved mining plan report in Annexure.

TABLE OF CONTENTS

CHAPTER NO.	TITLE		PAGE No.
I	Introduction		1-7
	1.0	Preamble	1
	1.1	Purpose of the report	2
	1.2	Environmental clearance	2
	1.3	Terms of reference (ToR)	5
	1.4	Post environment clearance monitoring	5
	1.5	Transferability of environmental clearance	5
	1.6	Generic structure of EIA document	5
	1.7	Identification of the project proponent	6
	1.8	Brief description of the project	6
	1.9	Scope of the study	7
	1.10	References	8
II	PROJECT DESCRIPTION		9-30
	2.0	General introduction	9
	2.1	Description of the project	9
	2.2	Location and accessibility	10
	2.3	Leasehold area	13
	2.3.1	Corner Coordinates	13
	2.4	Geology	13
	2.5	Quantity of reserves	18
	2.6	Mining method	21
	2.6.1	Magnitude of operation	23
	2.6.2	Extent of mechanization	23
	2.6.3	Progressive quarry closure plan	24
	2.6.4	Progressive quarry closure budget	24
	2.6.5	Conceptual mining plan	28
	2.6.6	Infrastructures	28
	2.6.6.1	Other Infrastructure Requirement	28
	2.6.7	Water requirement	28
	2.6.8	Energy requirement	28
	2.6.9	Capital requirement	29
	2.7	Manpower requirement	30
	2.8	Project Implementation Schedule	30

III	DESCRIPTION OF THE ENVIRONMENT		31-104
	3.0	General	31
	3.1	Land environment	32
	3.1.1	Geology and Geomorphology	32
	3.1.2	Land Use/Land Cover	35
	3.1.3	Topography	35
	3.1.4	Drainage pattern	35
	3.1.5	Seismic sensitivity	35
	3.1.6	Soil	38
	3.2	Water Environment	42
	3.2.1	Surface Water Resources and Quality	42
	3.2.2	Ground water Resources and Quality	42
	3.2.3	Hydrogeological Studies	43
		3.2.3.1 Groundwater level and flow direction	43
		3.2.3.2 Electrical resistivity investigation	54
	3.3	Air Environment	55
	3.3.1	Meteorology	55
		3.3.1.1 Climatic Variables	55
		3.3.1.2 Wind Pattern	57
	3.3.2	Ambient Air Quality Study	61
	3.4	Noise Environment	67
	3.5	Biological Environment	71
	3.5.1	Flora	72
	3.5.2	Fauna	90
	3.6	Socio-Economic environment	94
	3.6.1	Objectives of the Study	95
	3.6.2	Scope of work	95
	3.6.3	Socio-Economic status of Study area	95
	3.6.4	Recommendation and Suggestion	99
	3.6.5	Summary & Conclusion	99
	3.7	Traffic density	99
	3.8	Site Specific Features	102
IV	ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES		105-133
	4.0	General	105
	4.1	Land Environment	105

	4.1.1	Anticipated Impact	105
	4.1.2	Common Mitigation Measures from Proposed Project	106
4.2	Soil Environment		106
	4.2.1	Anticipated Impact on Soil Environment	106
	4.2.2	Common Mitigation Measures from Proposed Project	107
4.3	Water Environment		107
	4.3.1	Anticipated Impact	107
	4.3.2	Common Mitigation Measures from Proposed Project	108
4.4	Air Environment		109
	4.4.1	Anticipated impact from Proposed Project	109
	4.4.2	Emission Estimation	109
	4.4.2.1	Frame work of Computation and Model Details	110
	4.4.2.2	Modelling of Incremental Concentration	110
	4.4.2.3	Model Results	111
	4.4.3	Common Mitigation Measures	117
4.5	Noise Environment		118
	4.5.1	Anticipated Impact	119
	4.5.2	Common Mitigation Measures	120
	4.5.3	Ground Vibrations	121
	4.5.3.1	Common Mitigation Measures	122
4.6	Ecology And Biodiversity		123
	4.6.1	Impact on Ecology and Biodiversity	123
	4.6.2	Mitigation Measures on Flora	123
	4.6.3	Anticipated Impact on Fauna	126
	4.6.4	Measures for Protection and Conservation of Wildlife Species	126
4.7	Socio Economic Environment		129
	4.7.1	Anticipated Impact from Proposed and Existing Projects	129
	4.7.2	Common Mitigation Measures for Proposed Project	129
4.8	Occupational Health and Safety		130
	4.8.1	Respiratory Hazards	130
	4.8.2	Noise	130

		4.8.3	Physical Hazards	131
		4.8.4	Occupational Health Survey	131
	4.9	Mine Waste Management		131
	4.10	Mine Closure		131
		4.10.1	Mine Closure Criteria	132
			4.10.1.1 Physical Stability	132
			4.10.1.2 Chemical Stability	132
			4.10.1.3 Biological Stability	132
V		ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)		134
	5.0	Introduction		134
	5.1	Factors behind the Selection of Project Site		134
	5.2	Analysis of Alternative Site		134
	5.3	Factors behind Selection of Proposed Technology		134
	5.4	Analysis of Alternative Technology		134
VI		ENVIRONMENTAL MONITORING PROGRAM		135-139
	6.0	General		135
	6.1	Methodology of Monitoring Mechanism		135
	6.2	Implementation Schedule of Mitigation Measures		137
	6.3	Monitoring Schedule and Frequency		137
	6.4	Budgetary provision for Environment Monitoring Program		139
	6.5	Reporting schedules of monitored data		139
VII		ADDITIONAL STUDIES		140-154
	7.0	General		140
	7.1	Public Consultation for Proposed Project		140
	7.2	Risk Assessment for Proposed Project		140
	7.3	Disaster Management Plan for Proposed Project		143
		7.3.1	Roles and Responsibilities of Emergency Team	144
		7.3.2	Emergency Control Procedure	145
		7.3.3	Proposed Fire Extinguishers	146
		7.3.4	Alarm System	146
	7.4	Cumulative Impact Study		147
		7.4.1	Air Environment	149
			7.4.1.1 Cumulative Impact of Air Pollutants	149
		7.4.2	Noise Environment	150
		7.4.3	Socio Economic Environment	151

	7.4.4	Ecological Environment	151
	7.5	Plastic Waste management Plan for Proposed Project	152
	7.5.1	Objective	152
	7.6	Post Covid health management Plan for Proposed Project	153
	7.6.1	Post-Covid follow-up Protocol	153
VIII		PROJECTS BENEFITS	155-157
	8.0	General	155
	8.1	Employment Potential	155
	8.2	Socio-Economic Welfare Measures Proposed	155
	8.3	Improvement in Physical Infrastructure	155
	8.4	Improvement in Social Infrastructure	156
	8.5	Other Tangible Benefits	156
	8.6	Corporate Social Responsibility	156
	8.7	Corporate Environment Responsibility	157
	8.8	Summary of project benefits	157
IX		ENVIRONMENTAL COST BENEFIT ANALYSIS	158
X		ENVIRONMENTAL MANAGEMENT PLAN	159-176
	10.0	General	159
	10.1	Environmental Policy	159
	10.1.1	Description of the Administration and Technical setup	159
	10.2	Land Environment Management	160
	10.3	Soil Management	161
	10.4	Water Management	161
	10.5	Air Quality Management	162
	10.6	Noise Pollution Control	162
	10.7	Ground Vibration and Fly rock control	163
	10.8	Biological Environment Management	164
	10.8.1	Green Belt Development Plan	164
	10.9	Occupational Safety & Health Management	165
	10.9.1	Medical Surveillance and Examinations	165
	10.9.2	Proposed Occupational Health and Safety Measures	166
	10.9.3	Health and Safety Training Program	168
	10.9.4	Budgetary Provision for Environmental Management	169
	10.10	Conclusion	176

XI	SUMMARY AND CONCLUSION		177-189
	11.0	Introduction	177
	11.1	Project Description	177
	11.2	Description of the Environment	178
	11.2.1	Land Environment	178
	11.2.2	Soil Characteristics	178
	11.2.3	Water Environment	178
	11.3	Air Environment	179
	11.4	Noise Environment	180
	11.5	Biological Environment	180
	11.6	Socio-Economic Environment	180
	11.7	Anticipated Environmental Impacts and Mitigation Measures for Proposed Project	181
	11.8	Analysis of Alternatives	186
	11.9	Environmental Monitoring Program	186
	11.10	Additional Studies	187
	11.11	Project Benefits for Proposed Project	188
	11.12	Environment Management Plan	188
	11.13	Conclusion	189

LIST OF TABLES

TABLE No.	CONTENTS	PAGE No.
1.1	Details of Quarries within the cluster area of 500 m radius	2
1.2	Details of project proponent	6
1.3	Salient Features of the Proposed Project	6
2.1	Site connectivity to the project area	13
2.2	Corner coordinates of proposed project	13
2.3	Estimated resources and reserves of the project	18
2.4	Year-wise production details	18
2.5	Conceptual Blasting Design	22
2.6	Operational details for proposed project	23
2.7	Machinery details	23
2.8	Land use data at present, during scheme of mining, and at the end of mine life	24

2.9	Mine closure budget	24
2.10	Ultimate pit dimension	28
2.11	Water requirement for the project	28
2.12	Fuel requirement details	29
2.13	Capital requirement details	29
2.14	Employment potential for the proposed project	30
2.15	Expected time schedule	30
3.1	Monitoring attributes and frequency of monitoring	31
3.2	LULC statistics of the study area	35
3.3	Soil sampling locations	38
3.4	Soil quality of the study area	41
3.5	Water sampling locations	42
3.6	Ground Water Quality Result	45
3.7	Surface Water Quality Result	46
3.8	Pre-monsoon water level of Open wells within 2 km radius	48
3.9	Post-monsoon water level of Open wells within 2 km radius	48
3.10	Pre-monsoon water level of bore wells within 2 km radius	49
3.11	Post-monsoon water level of bore wells within 2 km radius	49
3.12	Vertical electrical sounding data	54
3.13	Onsite Meteorological Data	56
3.14	Methodology and Instrument used for AAQ analysis	61
3.15	National ambient air quality standards	61
3.16	Ambient air quality (AAQ) monitoring locations	62
3.17	Summary of AAQ result	64
3.18	Noise Monitoring Locations	67
3.19	Ambient Noise Quality Result	68
3.20	Calculation of density, frequency (%), dominance, relative density, relative frequency, relative dominance & important value index	72
3.21	Calculation of Species Diversity by Shannon – Wiener Index, Evenness and Richness	72
3.22	Flora in mine lease area	73

3.23	Flora in 300 m Radius	75
3.24	Calculation of Species Diversity in 300-meter radius	76
3.25	Species Richness (Index) in 300-meter radius	77
3.26	Flora in Buffer Zone	78
3.27	Calculation of Species Diversity in buffer Zone	82
3.28	Species Richness (Index) in Buffer Zone	84
3.29	Aquatic Vegetation	87
3.30	Major Crops in Dharmapuri District	88
3.31	Major Field Crops & Horticulture in Dharmapuri District	89
3.32	Methodology applied during survey of fauna	90
3.33	Fauna in Core Zone	91
3.34	Fauna in buffer zone	92
3.35	Kalappanahalli Village Population Facts	95
3.36	Population and literacy data of study area	96
3.37	Educational Facilities & Water & Drainage Facilities Data of Study Area	97
3.38	Workers Profile in the Study Area	98
3.39	Traffic survey locations	100
3.40	Existing traffic volume	100
3.41	Rough stone transportation requirement	100
3.42	Summary of traffic volume	100
3.43	Details of environmentally sensitive ecological features in the study area	102
4.1	Empirical formula for emission rate from overall mine	109
4.2	Estimated emission rate	110
4.3	Incremental & Resultant GLC of PM _{2.5}	111
4.4	Incremental & Resultant GLC of PM ₁₀	111
4.5	Incremental & resultant GLC of SO ₂	116
4.6	Incremental & resultant GLC of NO _x	116
4.7	Activity and noise level produced by machinery	119
4.8	Predicted noise incremental values	119
4.9	Predicted PPV Values due to Blasting	121

4.10	Predicted PPV Values due to Blasting at 100-500 radius	122
4.11	Carbon Released During Five Years of Rough Stone and Gravel Production	123
4.12	CO ₂ Sequestration	124
4.13	Recommended Species for Greenbelt Development Plan	124
4.14	Greenbelt development plan	125
4.15	Budget for greenbelt development plan	125
4.16	Ecological Impact Assessments	126
4.17	Anticipated Impact of Ecology and Biodiversity	128
6.1	Implementation schedule for proposed project	137
6.2	Proposed monitoring schedule post EC for the proposed quarry	138
6.3	Environment monitoring budget	139
7.1	Risk assessment & control measures for proposed project	141
7.2	Proposed teams for emergency situation	144
7.3	Proposed fire extinguishers at different locations in (P1)	146
7.4	Salient Features of Proposed Projects Site (P2)	147
7.5	Salient Features of Proposed Projects Site (P3)	148
7.6	Cumulative Production Load of Rough Stone	149
7.7	Cumulative Production Load of Gravel	149
7.8	Cumulative Impact Results from 3 proposed project	149
7.9	Cumulative Impact of Noise from 3 Proposed Quarries on Kuppangari Habitation	150
7.10	Cumulative Effect of Ground Vibrations Resulting from 3 Mines on Habitation of Kuppangari	150
7.11	Socio Economic Benefits from 3 Mines	151
7.12	Employment Benefits from 3 Mines	151
7.13	Greenbelt Development Benefits from Mine	151
7.14	Action Plan to Manage Plastic Waste	152
8.1	CER – action plan	157
8.2	Project Benefits to the state Government	157
10.1	Proposed controls for land environment	160
10.2	Proposed Controls for Soil Management	161

10.3	Proposed controls for water environment	161
10.4	Proposed controls for air environment	162
10.5	Proposed controls for noise environment	162
10.6	Proposed controls for ground vibrations & fly rock	163
10.7	Proposed greenbelt development plan	165
10.8	Medical examination schedule	166
10.9	List of periodical trainings proposed for employees	168
10.10	EMP budget for proposed project	170-175
10.11	Estimation of Overall EMP Budget after Adjusting 5% Annual Inflation	176
11.1	Anticipated impacts & mitigation measures	181-186

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE NO.
1.1	Location of the proposed and existing rough stone quarries in the cluster of 500m radius	4
2.1	Overall view of proposed project site	10
2.2	Key map showing location of the project site	11
2.3	Site connectivity to the Lease Area	12
2.4	Google earth image showing lease area with pillars	14
2.5	Mine Lease Plan	15
2.6	Surface and Geological Plan	16
2.6a	Geological Sections	17
2.7	Year wise Development and Production Plan	19
2.7a	Year wise Development and Production Section	20
2.8	Mine layout plan and land use pattern	25
2.9	Conceptual Plan	26
2.9a	Conceptual Sections	27
3.1	Geology Map of the Proposed Project Site	33
3.2	Geomorphology Map of the Proposed Project Site	34
3.3	LULC map of 5km radius from the proposed project site	36
3.4	Drainage map of 5 km radius from the proposed project site showing a portion of dendritic pattern	37

3.5	Map showing soil sampling location within 5 km radius around the proposed project site	39
3.6	Soil Erosion map within 5 km Radius around the Proposed Project Site	40
3.7	Map showing water sampling locations within 5 km radius around the proposed project site	44
3.8	Open well static groundwater elevation map showing the direction of groundwater flow during per-monsoon season	50
3.9	Open well static groundwater elevation map showing the direction of groundwater flow during post-monsoon season	51
3.10	Borewell static groundwater elevation map showing the direction of groundwater flow during pre-monsoon season	52
3.11	Borewell static groundwater elevation map showing the direction of groundwater flow during post-monsoon season	53
3.12	Graph showing occurrence of water bearing fracture zones at the depth range of 60 m below ground level in proposed project	55
3.13	Long-term monthly average rainfall vs monthly rainfall	57
3.14	Windrose Diagram for 2019 and 2020 (March to May)	58
3.14a	Windrose Diagram for 2021 and 2022 (March to May)	59
3.15	Onsite Wind Rose Diagram	60
3.16	Map showing ambient air quality monitoring station locations around 5 km radius from the proposed project site	63
3.17	Bar chart showing maximum, minimum, and the average concentrations of PM _{2.5} measured from the nine air quality monitoring stations within 5 km radius	65
3.18	Bar chart showing maximum, minimum, and the average concentrations of PM ₁₀ measured from the nine air quality monitoring stations within 5km radius	65
3.19	Bar chart showing maximum, minimum, and the average concentrations of SO ₂ measured from the nine air quality monitoring stations within 5 km radius	66
3.20	Bar chart showing maximum, minimum, and the average concentrations of NO ₂ measured from the nine air quality monitoring stations within 5km radius	66
3.21	Bar chart showing maximum, minimum, and the average concentrations of pollutants in the atmosphere within 5km radius	67

3.22	Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones	69
3.23	Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones	69
3.24	Map showing Noise Level Monitoring Station Location Around 5 Km Radius from the Proposed Project Site	70
3.25	Quadrates sampling methods of flora	71
3.26	Floral diversity species Richness (Index) in 300m radius	77
3.27	Floral diversity species Richness (Index) in 10m radius	84
3.28	Flora in Core and Buffer Area	87
3.29	Agricultural land in the study area	89
3.30	Traffic Density Map	101
3.31	Field study & Socio- Economic Study Photographs	104
4.1	Predicted incremental concentration of PM _{2.5}	112
4.2	Predicted incremental concentration of PM ₁₀	113
4.3	Predicted incremental concentration of SO ₂	114
4.4	Predicted incremental concentration of NO _x	115
6.1	Proposed environmental monitoring chart	136
7.1	Disaster management team layout for proposed project	143
10.1	Personal protective equipment to the mine workers	167

LIST OF ANNEXURES

Annexure No.	Contents	Page No.
I	Copy of ToR letter	195 - 218
II	Copy of 500 m radius letter	219 - 223
III	Approved mining plan along with mining plan AD/DD letter/original mining plan plates / modified plates	224 - 351
IV	Rain water harvesting structure Design Report	352 - 351
V	NABET certificate of EIA consultant	366

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.10028/SEAC/ToR-1502/2023 Dated:19.07.2023, this EIA report has been prepared for the project proponent, Tmt.M.Malliga applied for rough stone quarry lease in the Government land falling in S.F.No.401(Part) over an extent of 3.70.0 ha in Kalappanahalli Village, Karimangalam Taluk, Dharmapuri 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 three proposed projects known as P1, P2 and P3. 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 8.13.5 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 Quarry					
Code	Name of the Owner	S.F. No	Village	Extent (ha)	Status
P1	M.Malliga	401 (Part)	Kalappanahalli	3.70.0	Proposed Area
P2	Thiru.A.Sasimohan	389(Part)	Kalappanahalli	2.02.5	Applied Area
P3	M.G.Sekar	387/3, 387/4	Kalappanahalli	2.41.0	Applied Area
Existing Quarry					

Expired Quarries					

Total Cluster Extent				8.13.5	

Source:

AD Letter - Rc.No.307/2022(Mines) Dated:20.12.2022.

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/ 428374/2023, dated 08.05.2023) 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) on 12.05.2023.

Scoping

The proposal was placed in the 390th meeting of SEAC on 07.07.2023. 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.

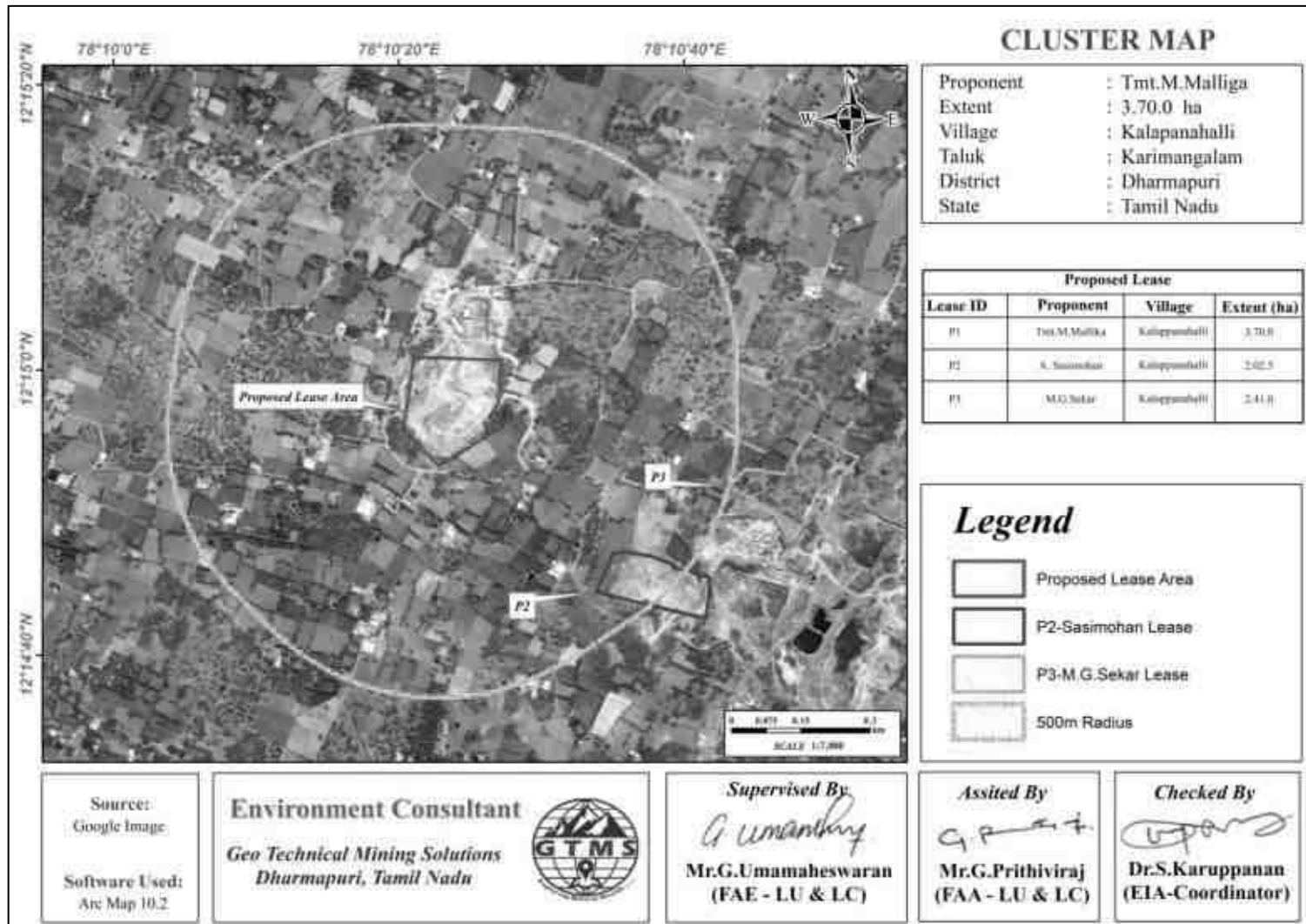


Figure 1.1 Location of the proposed and existing rough stone quarries in the cluster of 500 m radius

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.10028/SEAC/ToR-1502/2023** **Dated:19.07.2023.**

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, 20).

1.6 GENERIC STRUCTURE OF EIA DOCUMENT

The overall contents of the EIA report follow the list of contents prescribed in the EIA Notification 2006 and the “Environmental Impact Assessment Guidance Manual for Mining of Minerals” published by MoEF & CC. The generic structure of the EIA document should be as under:

- ❖ Introduction
- ❖ Project Description
- ❖ Description of the Environment
- ❖ Anticipated Environmental Impact & Mitigation Measures
- ❖ Analysis of Alternatives (Technology & Site)
- ❖ Environmental Monitoring Program
- ❖ Additional Studies
- ❖ Project Benefits
- ❖ Environmental Cost Benefit Analysis
- ❖ Environmental Management Plan (EMP)

- ❖ Summary & Conclusion
- ❖ Disclosure of Consultants engaged.

1.7 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	Tmt.M.Malliga
Address	W/o. P.Manickam, No.5/20, Kairukaran Kottai, Kerakodahalli Post, Karimangalam Taluk, Dharmapuri – 635 305
Status	Proprietor

1.8 BRIEF DESCRIPTION OF THE PROJECT

The proposed project deals with excavation of rough stone which is primarily used in construction projects. The method adopted for rough stone 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 Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District, and Tamilnadu 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	Tmt.M.Malliga Rough Stone Quarry			
Type of Land	Government Land			
Extent	3.70.0 Ha			
S.F.No	401 (Part)			
Toposheet No	57 L/03 & 57 L/04			
Location of Project Site	12°14'53.30500"N to 12°15'00.92683"N 78°10'20.33495"E to 78°10'27.16153"E			
Highest Elevation	480 m AMSL			
Existing Pit Dimensions	Pit Level	Length (m)	Width (m)	Depth (m)
	I	64	75	4 AGL

	II	55	35	1 AGL
	III	130	120	3 BGL
	IV	45	45	5 BGL
Ultimate depth of Mining	54 m BGL			
Geological Resources	Rough Stone in m ³			
	1730944			
Mineable Reserves	Rough Stone in m ³			
	755480			
Proposed reserves for five years	Rough Stone in m ³			
	755480			
Method of Mining	Open-Cast Semi Mechanized mining			
Topography	Flat Topography			
Machinery proposed	Jack Hammer			3
	Compressor			1
	Tipper			6
	Excavator			1
Blasting Method	The quarrying operation is proposed to carried out by open cost, using jack hammer drilling followed by manual breaking will be adopted to release the rough stone and nonel blasting is proposed in this lease area.			
Proposed Manpower Deployment	20 Nos			
Project Cost	Rs.1,56,07,100			
CER Cost @ 2% of Project Cost	Rs.5,00,000			
Proposed Water Requirement	3 KLD			

1.9 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.

1.10 REFERENCES

The report has been prepared using the following references:

- ❖ Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, February, 2010
- ❖ EIA Notification, 14th September, 2006
- ❖ Terms of Reference (ToR) issued by SEIAA.
- ❖ Approved Mining Plan of this Project.
- ❖ 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, **Tmt.M.Malliga** 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. Therefore, the proponent had applied for quarry lease on 27.07.2017 to extract rough stone. The precise area communication letter was issued by Department of Geology and Mining, Dharmapuri vide Rc.No.157/2017 (Mines) dated:07.08.2017. Based on the precise area communication letter, mining plan was prepared. The mining plan thus prepared was approved by Assistant Director Department of Geology and Mining, Dharmapuri Roc.No.307/2022 (Mines) dated:24.11.2022. The overall view of the project site is shown in Figure 2.1.



Figure 2.1 The overall view of the project site

2.2 LOCATION AND ACCESSIBILITY

The proposed quarry project is located in Kalappannahalli Village, Karimangalam Taluk, Dharmapuri District, as shown in Figure 2.2 & 2.3. The area lies between Latitudes from $12^{\circ}14'53.30500''\text{N}$ to $12^{\circ}15'00.92683''\text{N}$ and Longitudes from $78^{\circ}10'20.33795''\text{E}$ to $78^{\circ}10'27.16153''\text{E}$. The maximum altitude of the project area is 480 m AMSL. Accessibility details to the proposed project site have been given in Table 2.1.

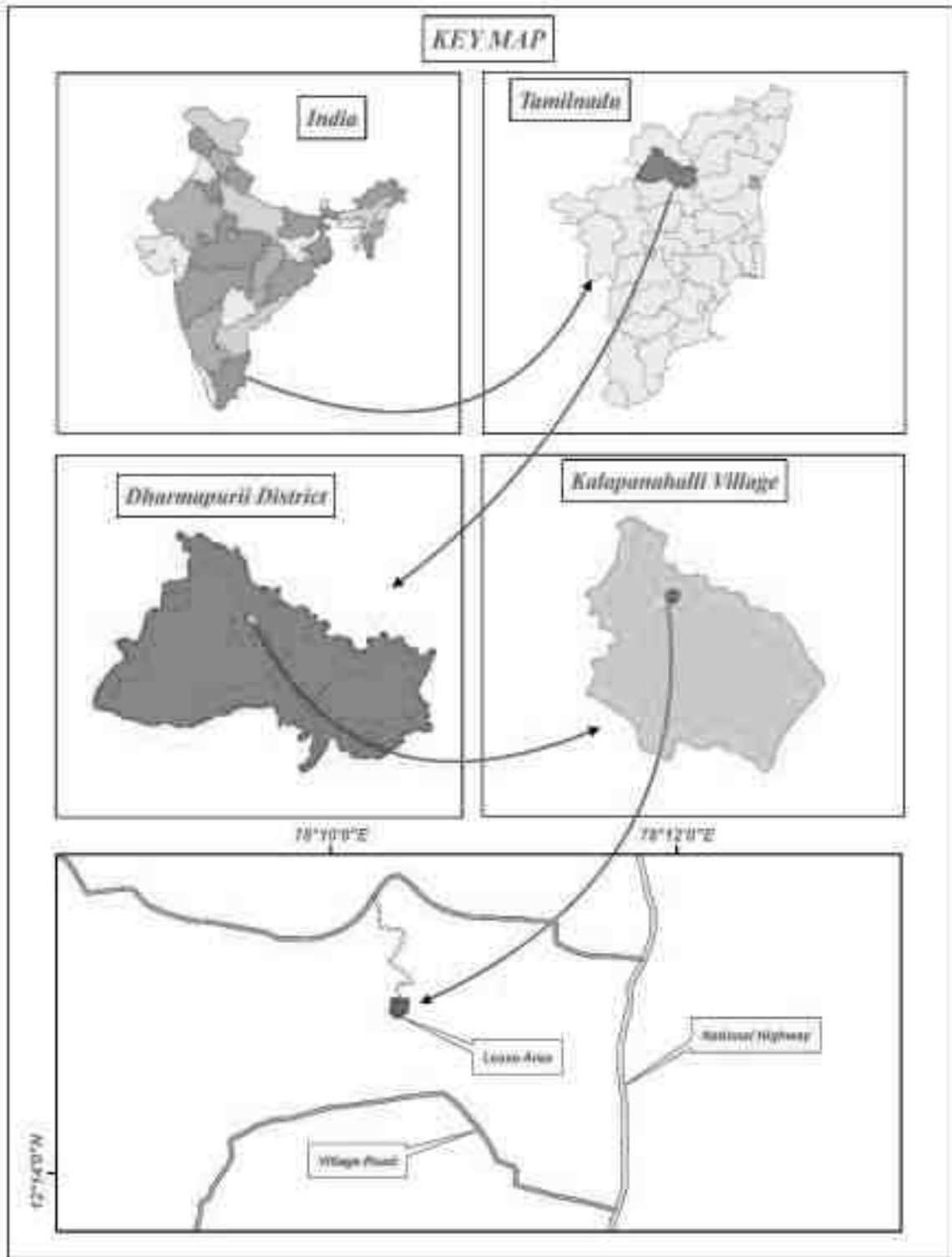


Figure 2.2 Key Map Showing Location of the Project Site

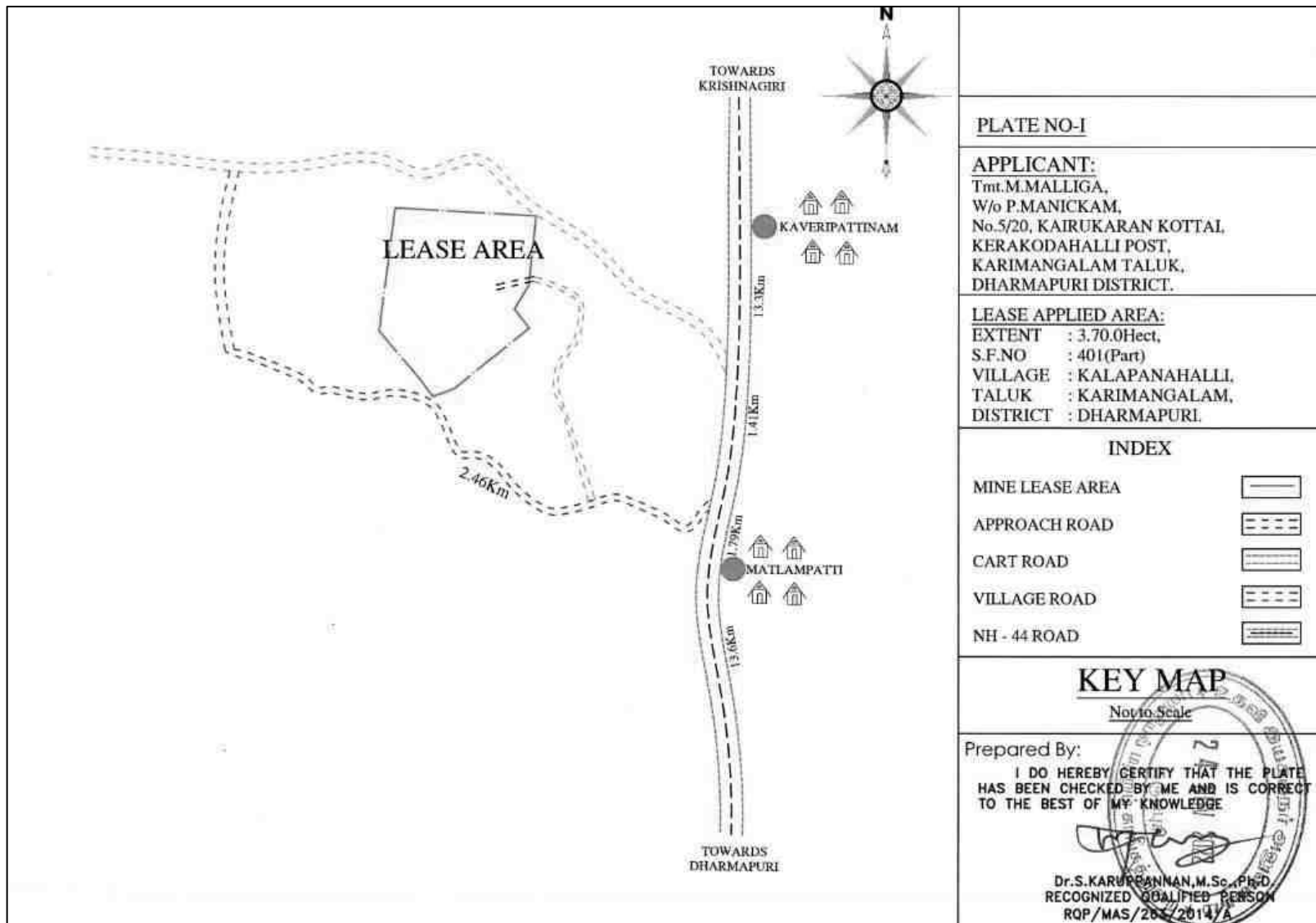


Figure 2.3 Site Connectivity to the Project Area

Table 2.1 Site Connectivity to the Project Area

Nearest Roadways	NH – 44 Dharmapuri - Krishnagiri	2.49 km E
Nearest Town	Karimangalam	6.85 km N
Nearest Railway Station	Dharmapuri	13.5 km S
Nearest Airport	Salem	52.8 km S
Nearest Seaport	Chennai	247 km NE
Nearest Villages	Periyannahalli	1.68 km N
	Kuppangari	0.90 km S
	Periyampatti	2.64 km E
	Begarahalli	4.10 km W

2.3 LEASEHOLD AREA

- ❖ The extent of the proposed project site is 3.70.0 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 & 2.5.

Table 2.2 Corner Coordinates of Proposed Project

Pillar ID	Latitude	Longitude	Pillar ID	Latitude	Longitude
1	12°15'00.69794"N	78° 10' 27.13232" E	11	12° 14' 54.99741" N	78° 10' 21.09641" E
2	12°14'59.07374"N	78° 10' 27.05652" E	12	12° 14' 55.73831" N	78° 10' 20.33495" E
3	12°14'57.69642"N	78° 10' 26.99237" E	13	12° 14' 57.34931" N,	78° 10' 20.55794" E
4	12°14'56.71644"N	78° 10' 26.35347" E	14	12° 14' 58.96036" N	78° 10' 20.78100" E
5	12°14'56.05501"N	78° 10' 27.16153" E	15	12° 15' 00.57132" N	78° 10' 21.00400" E
6	12°14'55.14825"N	78° 10' 25.78942" E	16	12° 15' 00.92683" N	78° 10' 21.05321" E
7	12°14'54.24142"N	78° 10' 24.41731" E	17	12° 15' 00.86462" N,	78° 10' 22.70512" E
8	12°14'53.75173"N	78° 10' 23.67632" E	18	12° 15' 00.80242" N	78° 10' 24.35713" E
9	12°14'53.30500"N	78° 10' 22.81693" E	19	12° 15' 00.74024" N,	78° 10' 26.00900" E
10	12°14'53.85400"N	78° 10' 22.27172" E	--	--	--

2.4 GEOLOGY

The lease area geologically occurs on Acid to Intermediate Charnockite. The Charnockite, commercially called as fireclay occurs within the migmatite rock. Also, the lease area geomorphologically occurs pediment pediplain complex.

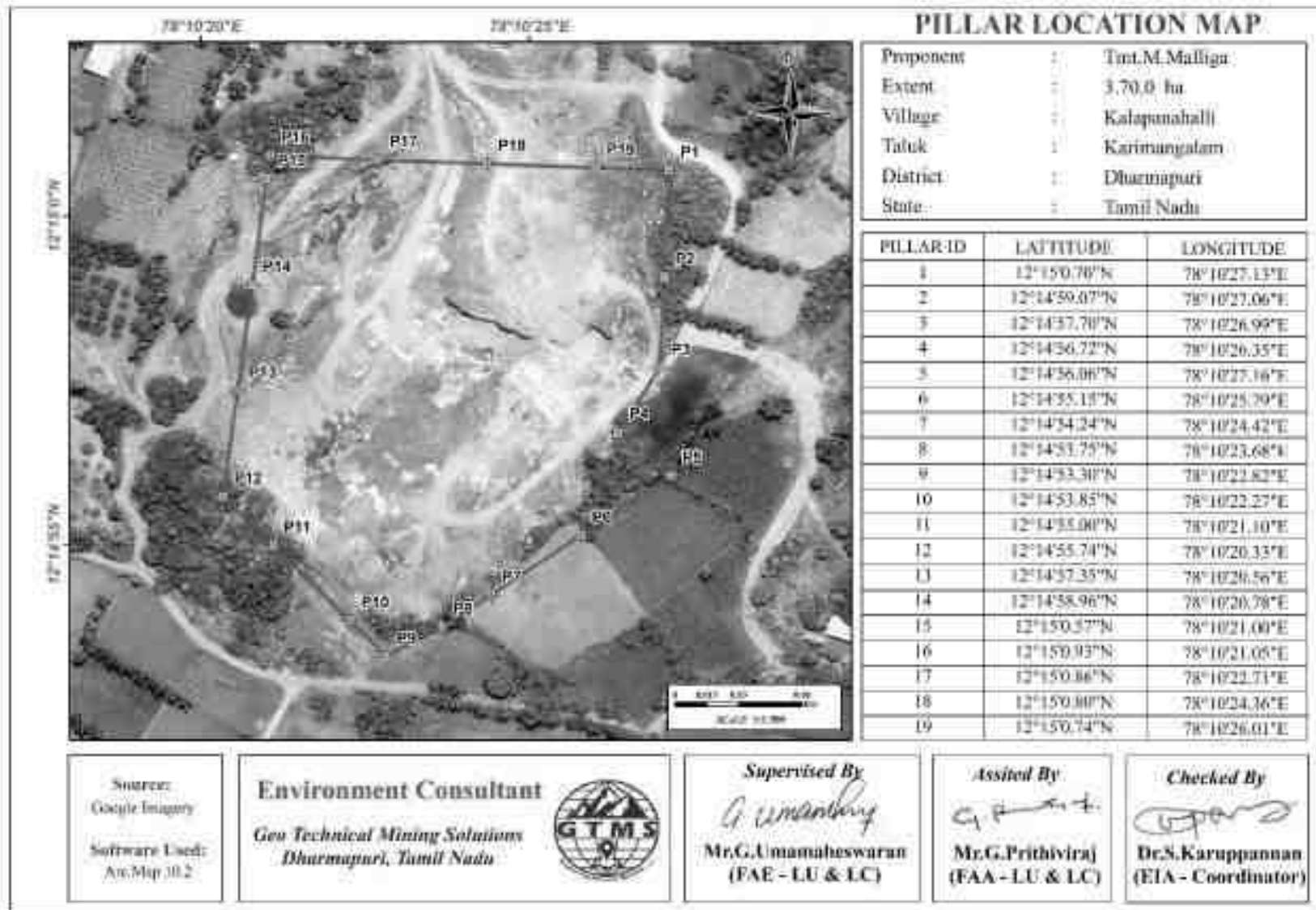


Figure 2.4 Google Earth Image Showing Lease Area with Pillars

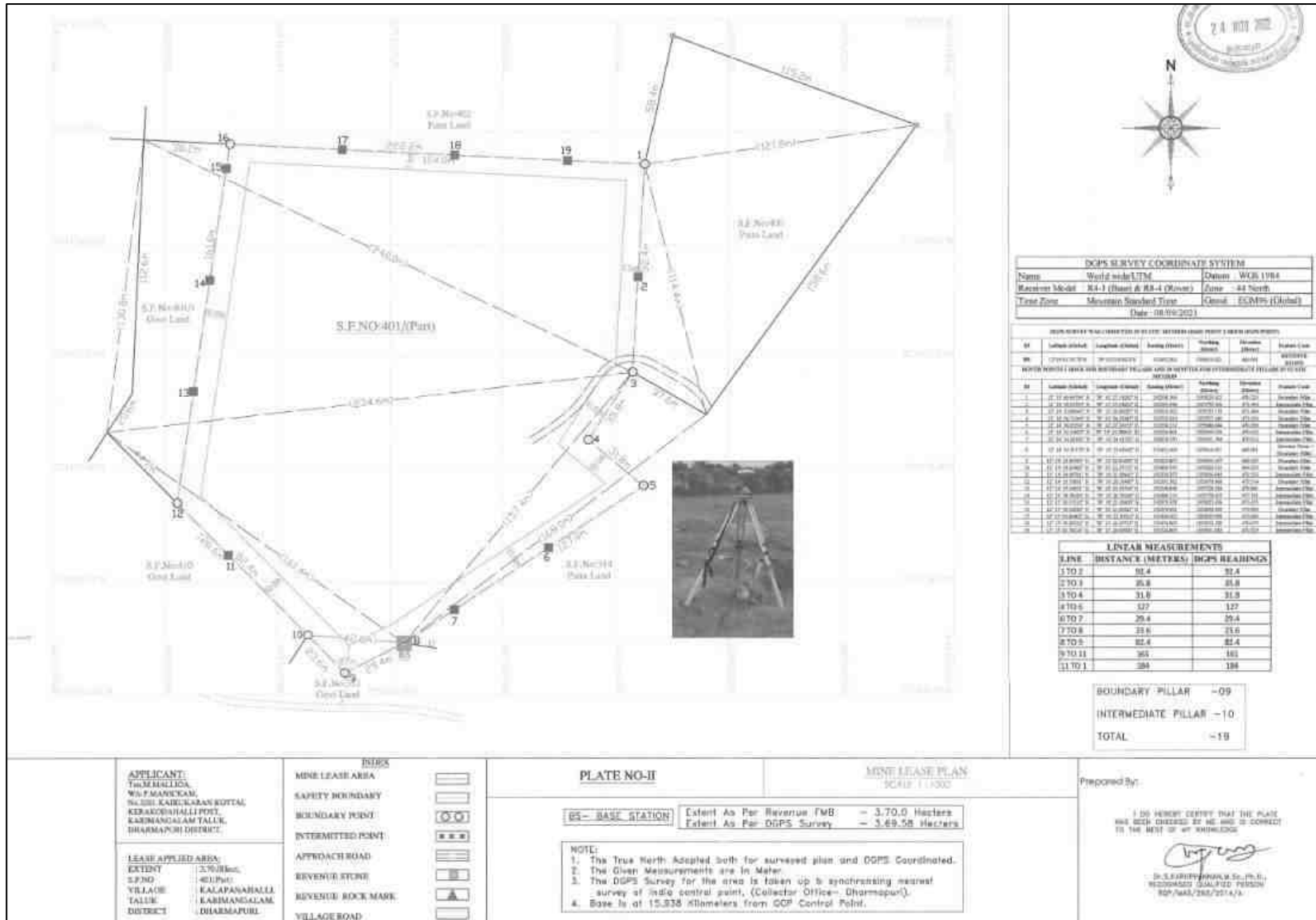


Figure 2.5 Mine Lease Plan



Figure 2.6 Surface and Geological Plan

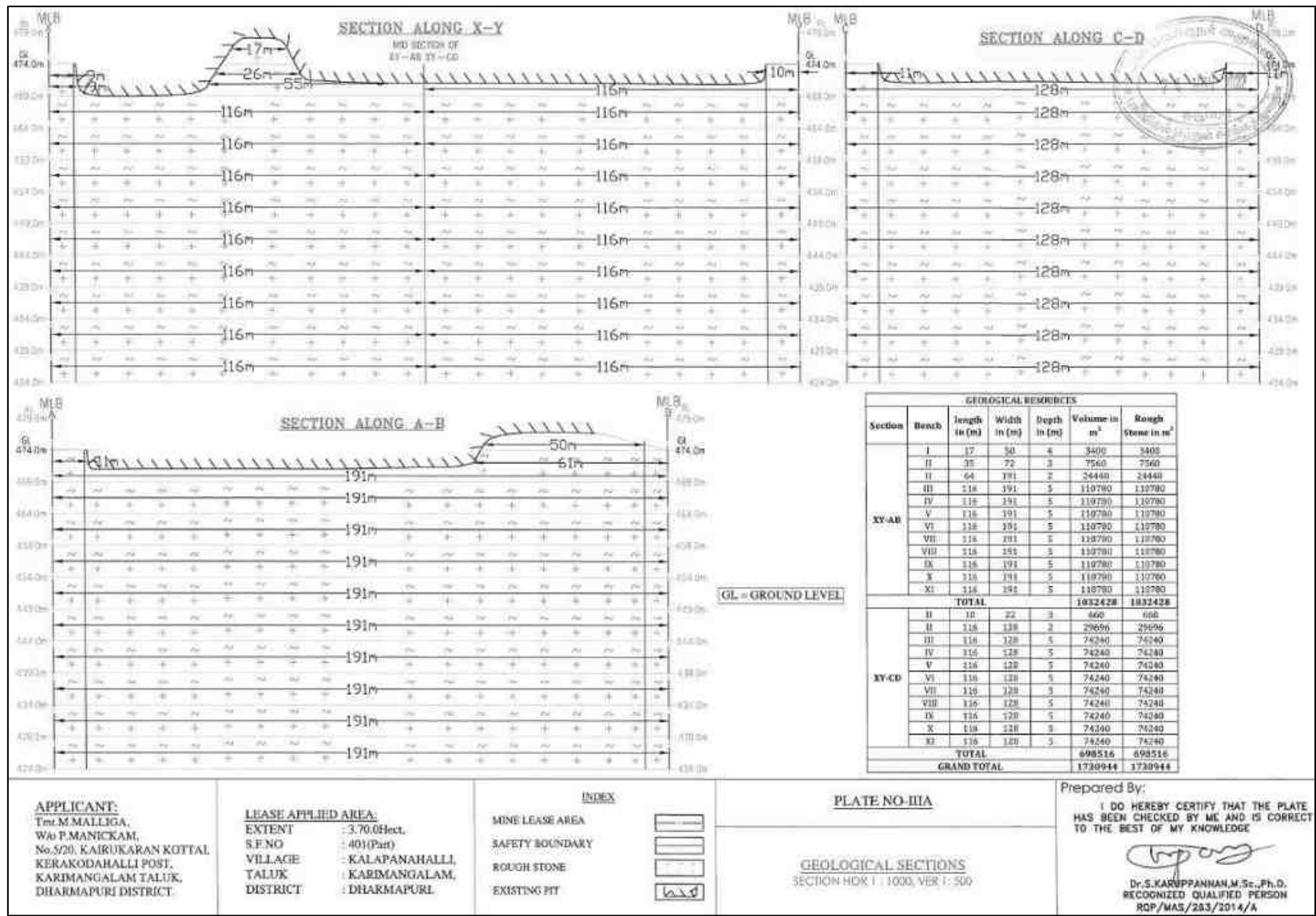


Figure 2.6a Geological Sections

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 7.5m and 10m safety distance as per precise area communication letter and deducting the locked-up reserves during bench formation (also called as Bench Loss). The mineable reserves are calculated up to the depth of 54 m 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 2.6,2.6a and 2.6b 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 m³
Geological Resource in m ³	1730944
Mineable Reserves in m ³	755480
Proposed production for 5 years m ³	755480

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 and Figure 2.7a.

Table 2.4 Year-Wise Production Details

Year	Rough Stone in (m³)
I	135960
II	156020
III	155240
IV	153800
V	154460
Total	755480

Source: Approved Mining Plan & Tord

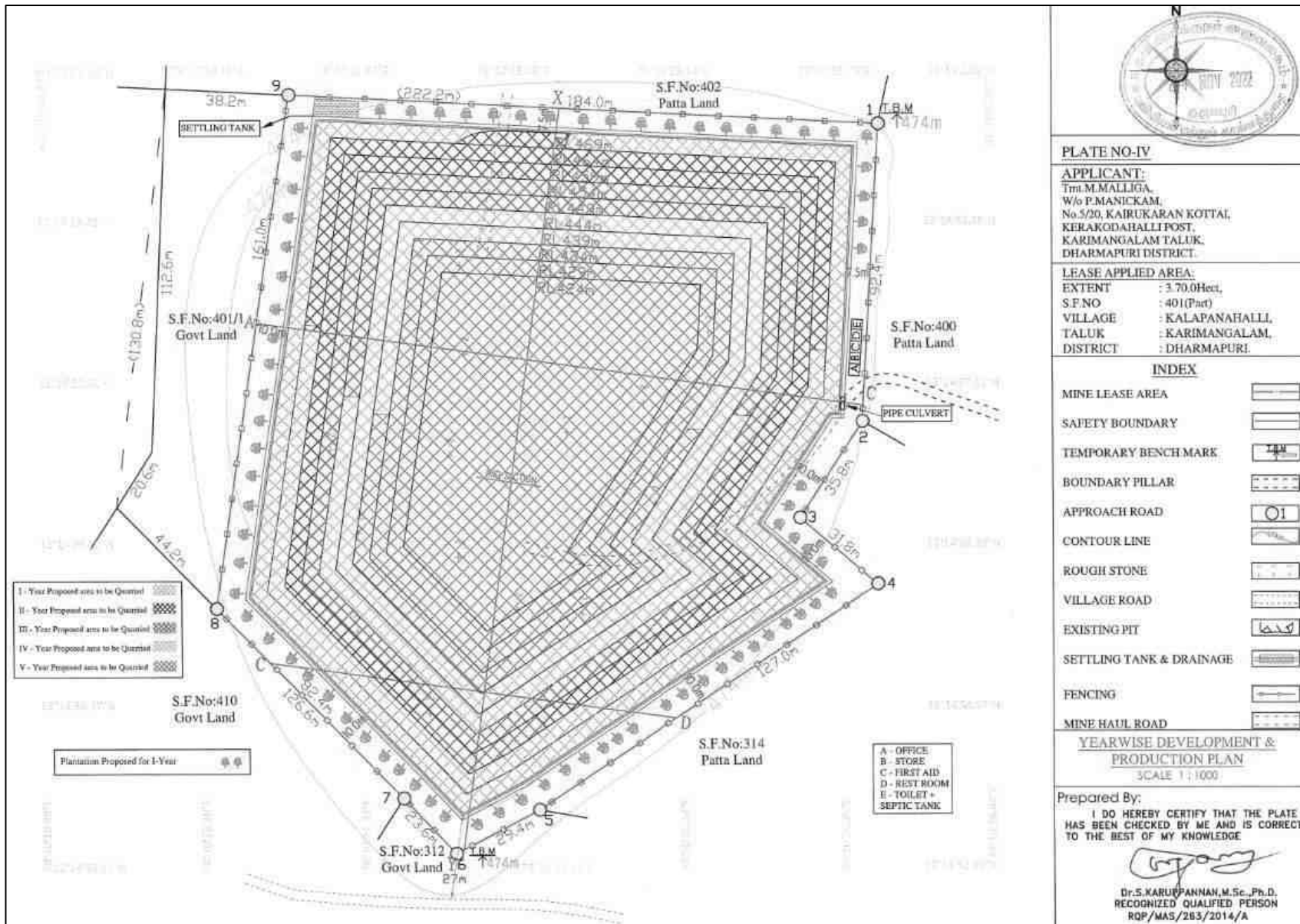


Figure 2.7 Yearwise Development & Production Plan

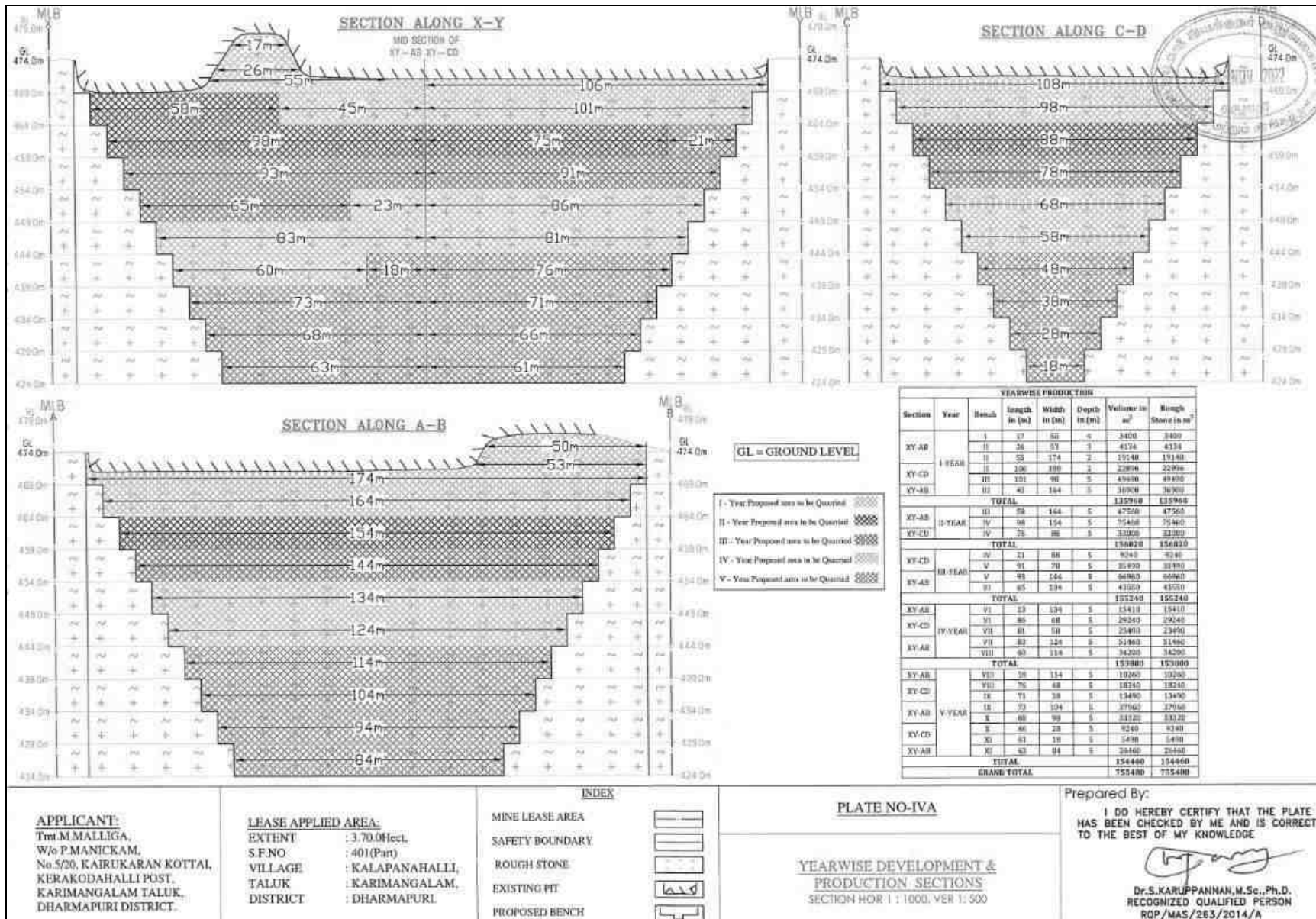


Figure 2.7a Year wise Production Sections

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. 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.

The open cast mining method offers several benefits to the proponent when compared to the more complex underground mining methods. The most important benefits include relatively smaller capital and operating costs, lesser safety hazards, ease of use for mass production, small closure costs, no restrictions on the use of heavy machinery if required, and easy drainage of subsurface water. Moreover, it provides a reasonable return on investments to the proponent and contributes to the growth of the local economy.

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	560
Number of blastholes/day	135
Blasthole pattern	Staggered / Rectangular
Mass of explosive /day in kg	53.8
Powder factor in kg/m ³	0.10
Loading density	0.63
Type of explosives	Slurry
Diameter of packaging in mm	25
Initiation system	NONEL
Fly rock distance in m	19

2.6.1 Magnitude of Operation

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

Table 2.6 Operational Details for Proposed Project

	Rough Stone in m³
Proposed production for 5 years	755480
Number of Working Days /Annum	270
Production of /Day (m ³)	560
No. of Lorry Loads	93

2.6.2 Extent of Mechanization

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

Table 2.7 Machinery Details

S. No.	Type	No of Unit	Size /Capacity	Motive Power
1	Jack Hammers	3	32mm	Diesel Drive
2	Compressor	1	750 CFM	Diesel Drive
3	Hydraulic Excavator	1	20m ³ /hr	Diesel Drive
4	Tipper	6	6 m ³ /trip	Diesel Drive

2.6.3 Progressive Quarry Closure Plan

The progressive quarry closure plan (Figure 2.8) of the proposed project shows past, present, and future land use statistics. According to the land use results, as shown in Table 2.8 At Present about 2.47.27 ha of land is used for quarrying, 1.19.73ha of land is unutilized, Whereas, at the end of the mine life, about 0.17.35 ha of land is unutilized; about 0.35.02 ha of land is used for green belt and 0.05.0 will be used for roads and 0.03.0 is used for infrastructure.

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	2.47.27	3.01.90
Infrastructure	Nil	0.03.00
Roads	0.03.00	0.05.00
Green Belt & Dump	Nil	0.35.02
Drainage & Settling Tank	Nil	0.07.73
Unutilized area	1.19.73	0.17.35
Total	3.70.00	3.70.00

2.6.4 Progressive Quarry Closure Budget

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

Table 2.9 Mine Closure Budget

Activity	Capital Cost	Recurring Cost/Annum
740 plants inside the lease area	148000	22200
1110 plants outside the lease area	333000	33300
Wire Fencing (3.70.0 ha)	740000	37000
Renovation of Garland Drain (3.70.0 ha)	37000	18500
Total	12,58,000	1,11,000

Source: Environment Management Plan

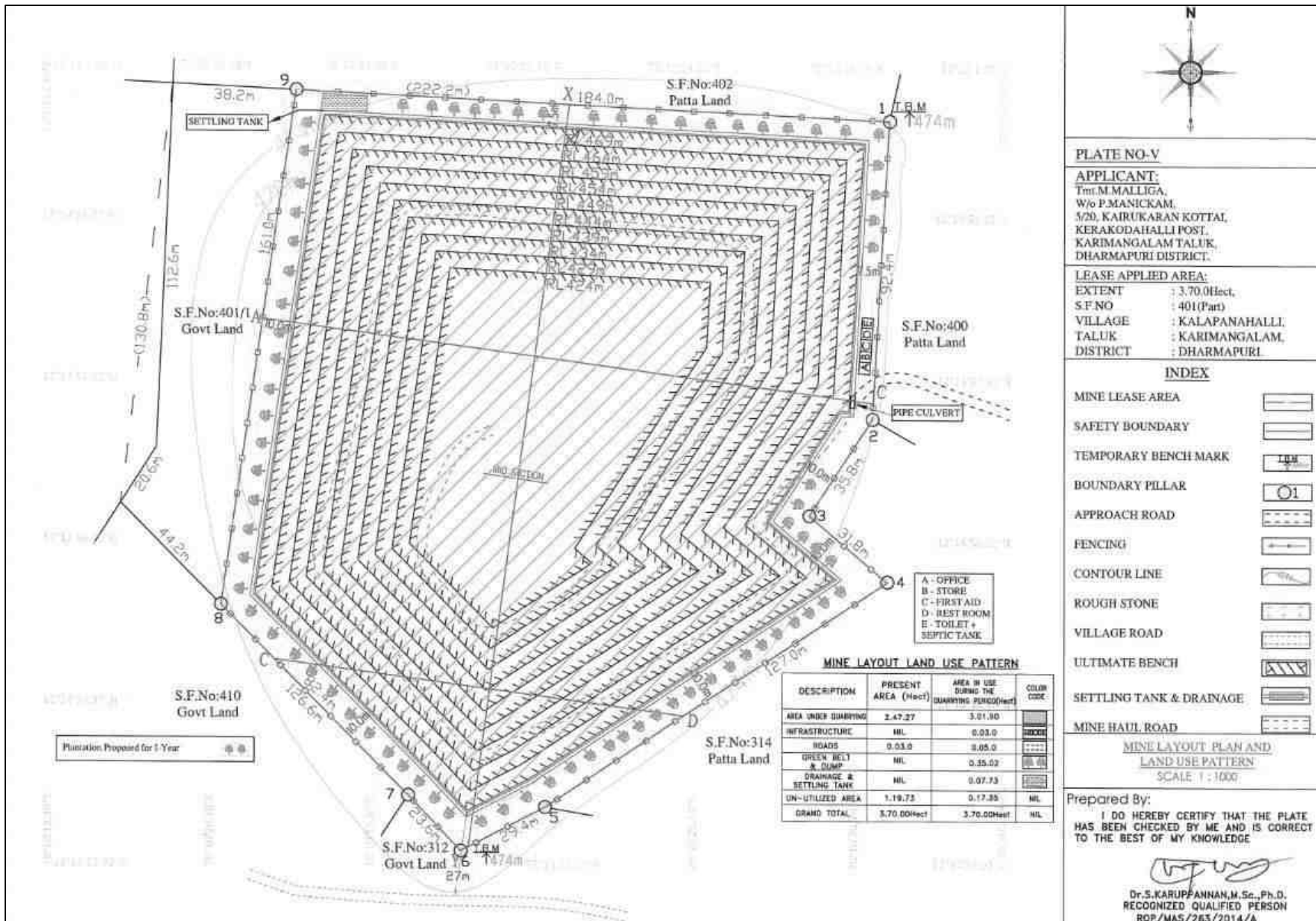


Figure 2.8 Mine Layout Plan and Land Use Pattern

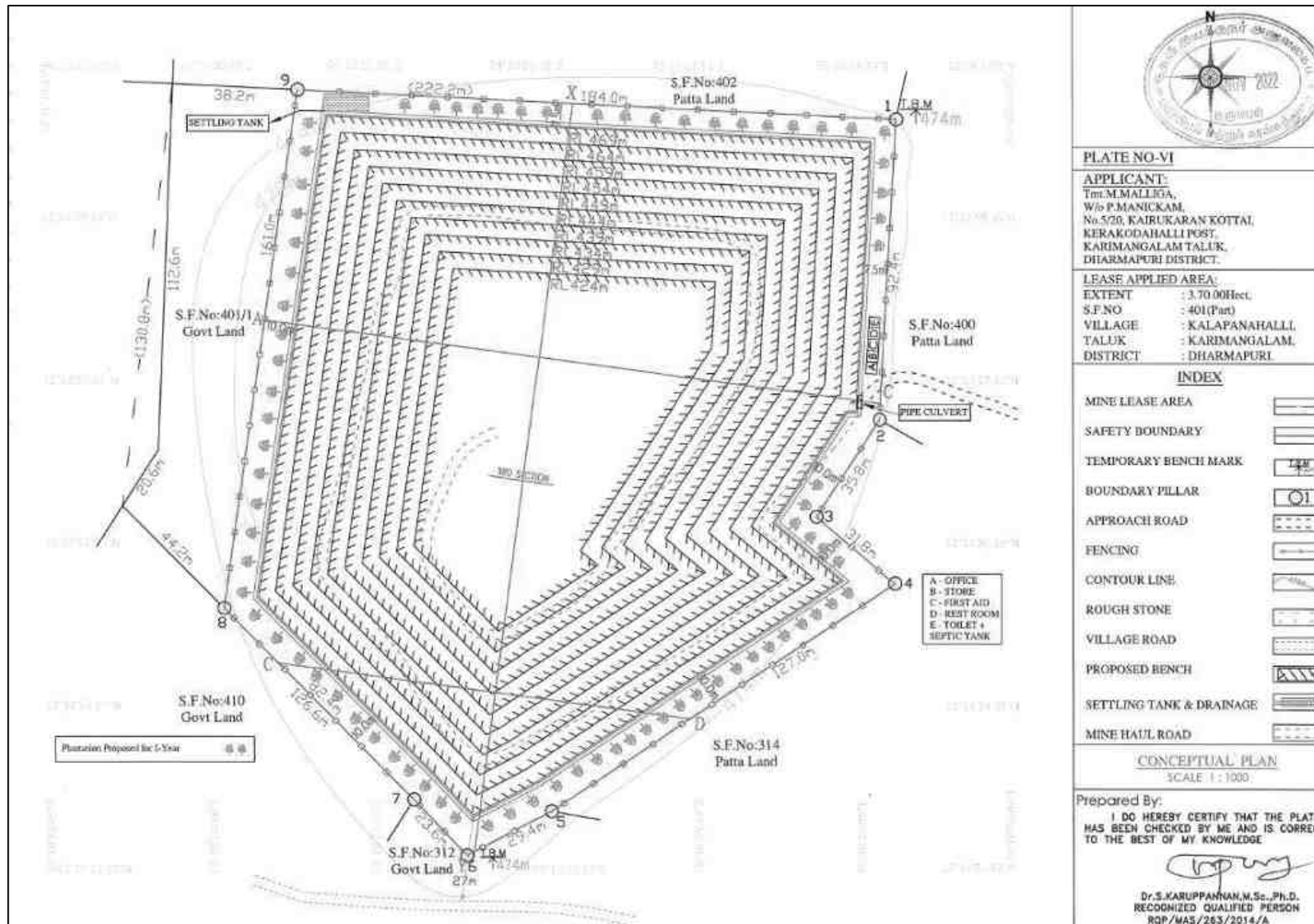


Figure 2.9 Conceptual Plan

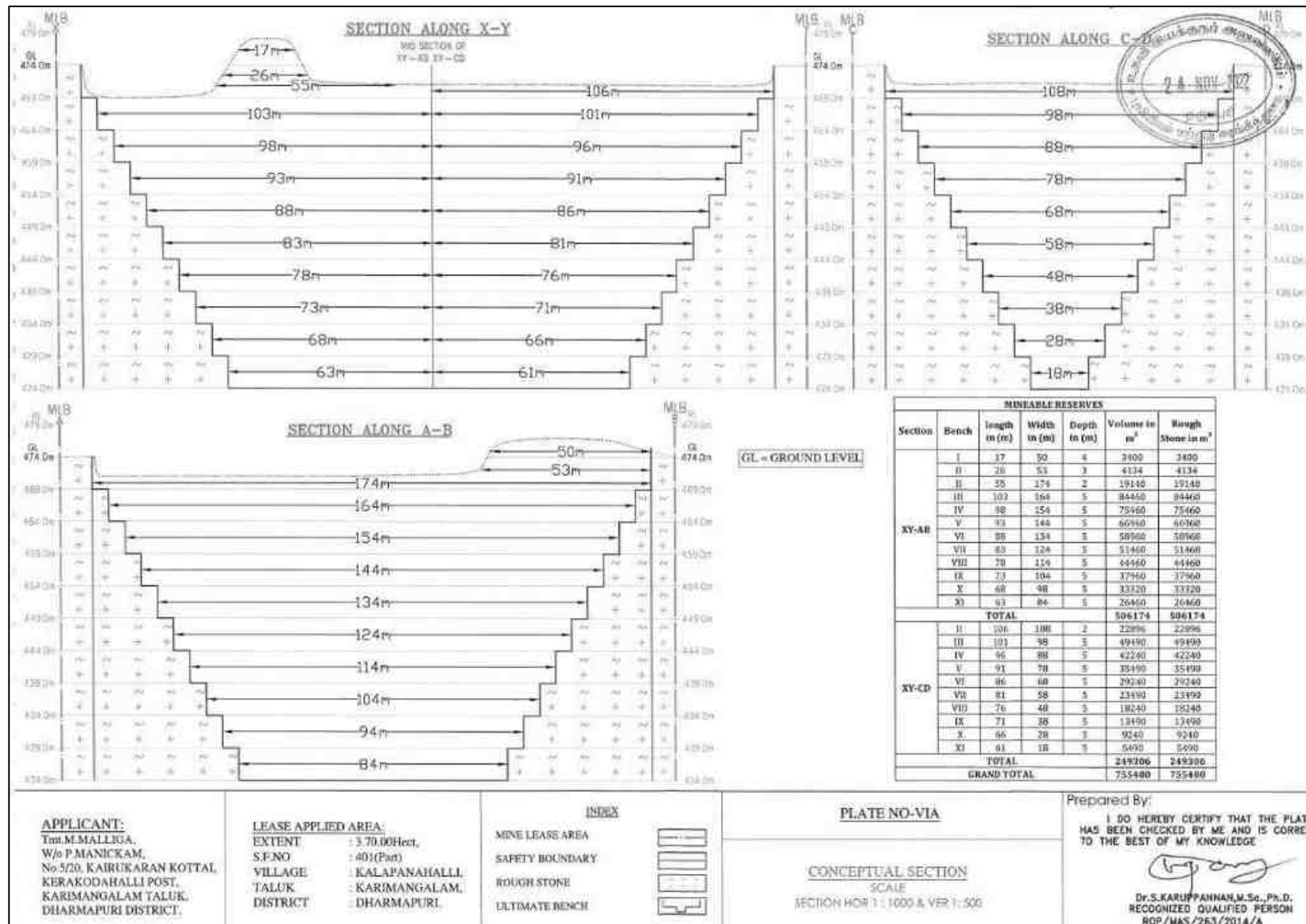


Figure 2.9a Conceptual Sections

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, Figure 2.9 & 2.9a.

Table 2.10 Ultimate Pit Dimension

Pit	Length (m)	Width (m) (Max)	Depth (m)
I	103	174	54

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 KLD is given in Table 2.11.

Table 2.11 Water Requirement for the Project

Purpose	Quantity	Source
Dust Suppression	1.0 KLD	Existing bore wells nearby the lease area
Green Belt development	1.0 KLD	Existing bore wells nearby the lease area
Drinking & Domestic	1.0 KLD	Existing bore wells and approved water vendors
Total	3.0 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 3195551 litres of HSD will be used for rough stone 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 (755480 m³)	Total Diesel (litre)
Average Rate of Fuel Consumption (l/hr)	16	---
Working Capacity (m ³ /hr)	20	---
Time Required (hours)	37774	---
Total Diesel Consumption for 5 years (litre)	604384	604384
Fuel Requirement for Compressor		
Average Rate of Fuel Consumption/hole (litre)	0.4	---
Number of Drillholes/day	135	---
Total Diesel Consumption for 5 years (litre)	72900	72900
Fuel Requirement for Tipper		
Average Rate of Fuel Consumption/Trip (litre)	20	---
Carrying Capacity in m ³	6	---
Number of Trips / days	93	---
Number of Trips / 5 years	125913	---
Total Diesel Consumption for 5 years (litre)	2518267	2518267
Total Diesel Consumption by Excavator, Compressor and Tipper		3195551

* Number of truck loads for gravel has been normalized for 5 years.

2.6.9 Capital Requirement

The project proponent will invest **Rs.1,56,07,100/-** 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	84,04,000/-
2	Machinery cost	30,00,000/-
3	EMP Cost	42,03,100/-
Total Project Cost		1,56,07,100/-

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	Quarry manager	1
		Mine Foreman	---
		Mechanical Engineer / Geologist	1
		Account cum & admin	1
2.	Skilled	Earth moving Operator	---
		Driver	2
		Mechanic	---
		Blaster / Mat	---
3	Semi - Skilled	Helpers, Greaser's	1
4	Unskilled	Musdoor / Labours	13
		Cleaners	---
		Attendant's	1
Total			20

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 **Oct to Dec, 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	8 (1 in core & 7 in buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi

*Water Quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	8 3 surface water & 5 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	9 (1 core & 8 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient noise	Hourly observation for 24 hours per location	9 (1 core & 8 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 to intermediate charnockite and Hornblende biotite genesis, as shown in Figure 3.1. The lease area occurs in charnockite 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 shallow weathered/buried pediplain terrain.

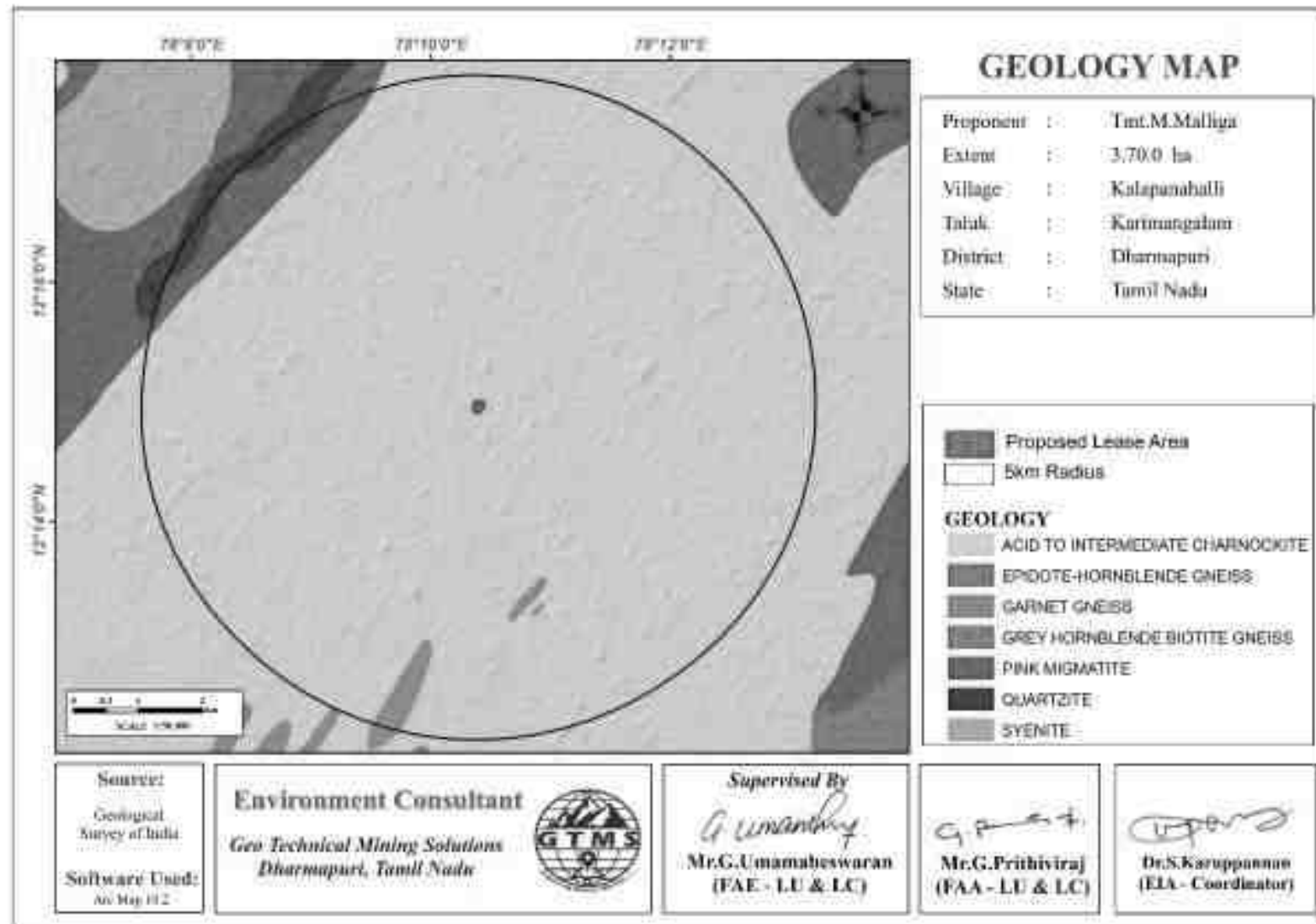


Figure 3.1 Geology Map of 5 km Radius from Proposed Project Site

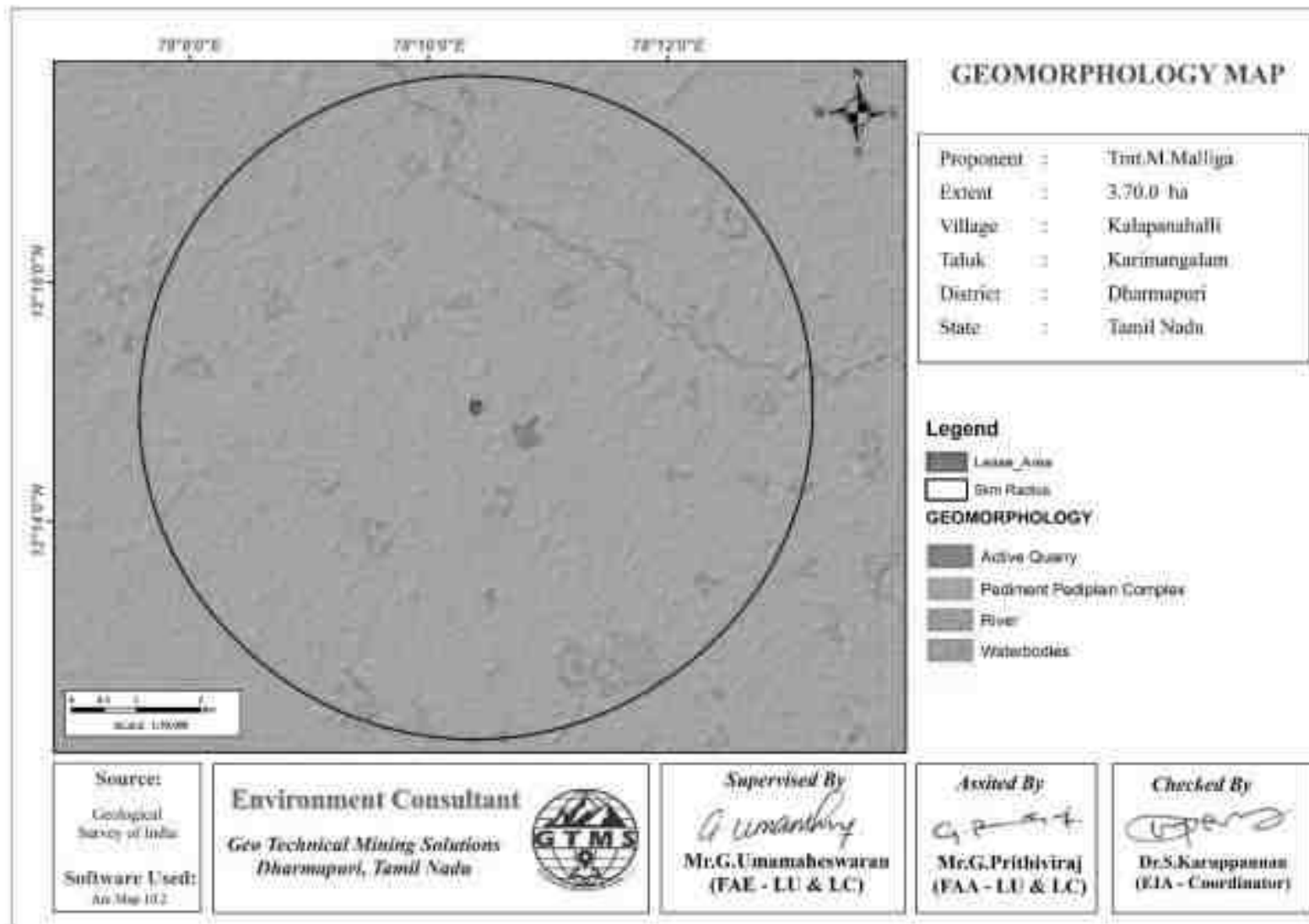


Figure 3.2 Geomorphology Map of 5 km Radius from Proposed Project Site

3.1.2 Land Use/ Land Cover

Land Use and Land Cover (LULC) map, as shown in Figure 3.3 was prepared using Sentinel II image for the study area of 5 km radius to provide a baseline status of the study area covering 5 km radius around the proposed mine site. Totally, 7 LULCs were mapped. The areal extent of each LULC is provided in Table 3.2. Of the total area, mining area covers only 35.93 ha accounting for 0.47 %, of which lease area of 3.70.0 ha contributes only about 0.048%. This small percentage of mining activities shall not have any significant impact on the land environment.

Table 3.2 LULC Statistics of the Study Area

S. No.	Classification	Area (ha)	Area (%)
1	Barren Rocky/stone waste	121.50	1.58
2	Crop Land	5572.84	72.58
3	Dense Forest	135.20	1.76
4	Fallow Land	1304.07	16.98
5	Mining/ Industrial lands	35.93	0.47
6	Land affected by salinity	30.68	0.40
7	Land with or Without Scrub	478.51	6.23
Total		7678.72	100.0

Source: Sentinel II Satellite Imagery

3.1.3 Topography

The proposed lease area is located in a flat terrain with an altitude range of 478-484 m AMSL, showing relief of 6 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 dendritic drainage pattern indicating uniform lithology beneath the surface, as shown in Figure 3.4.

3.1.5 Seismic Sensitivity

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

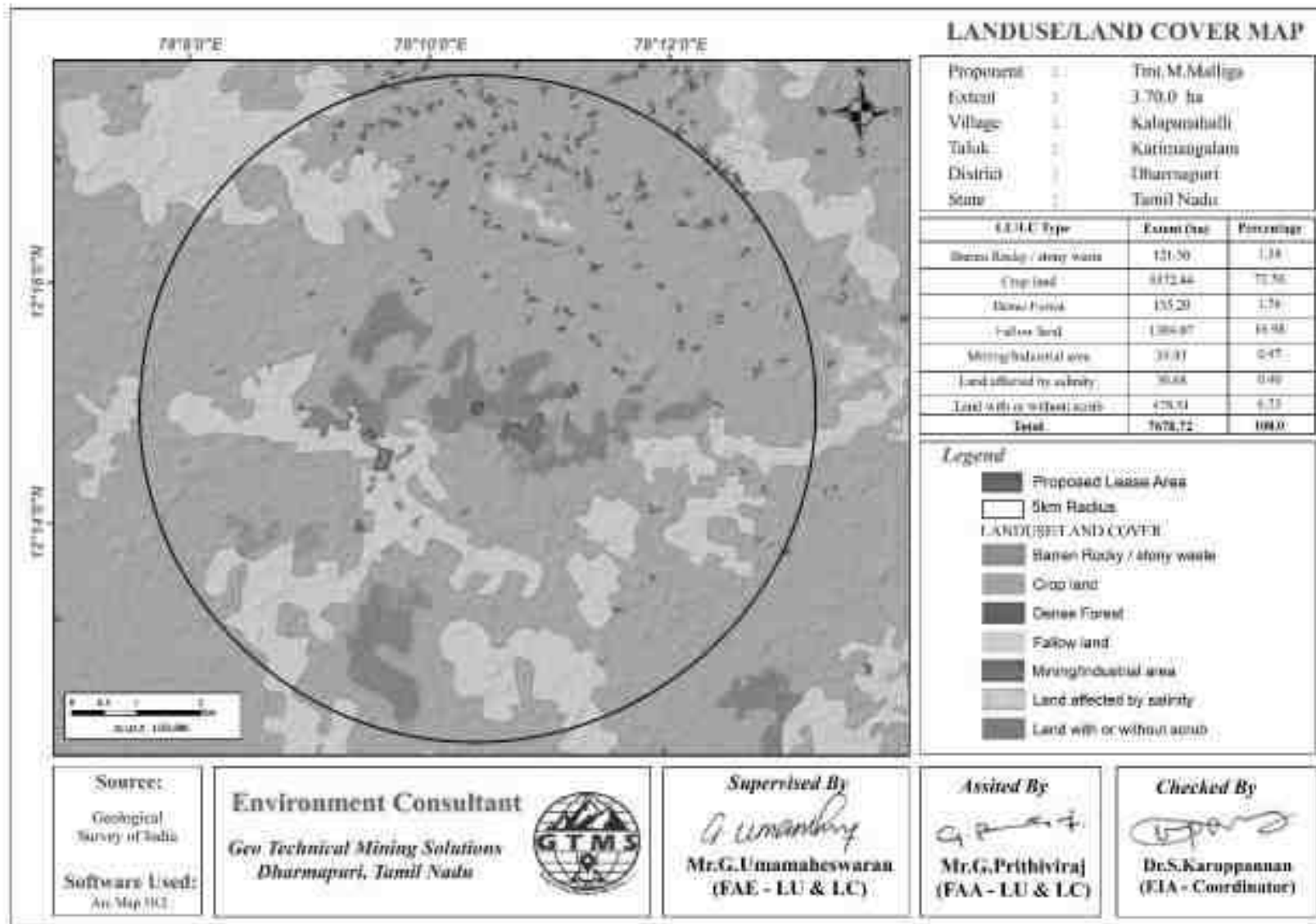


Figure 3.3 LULC Map of 5 km Radius from Proposed Project Site

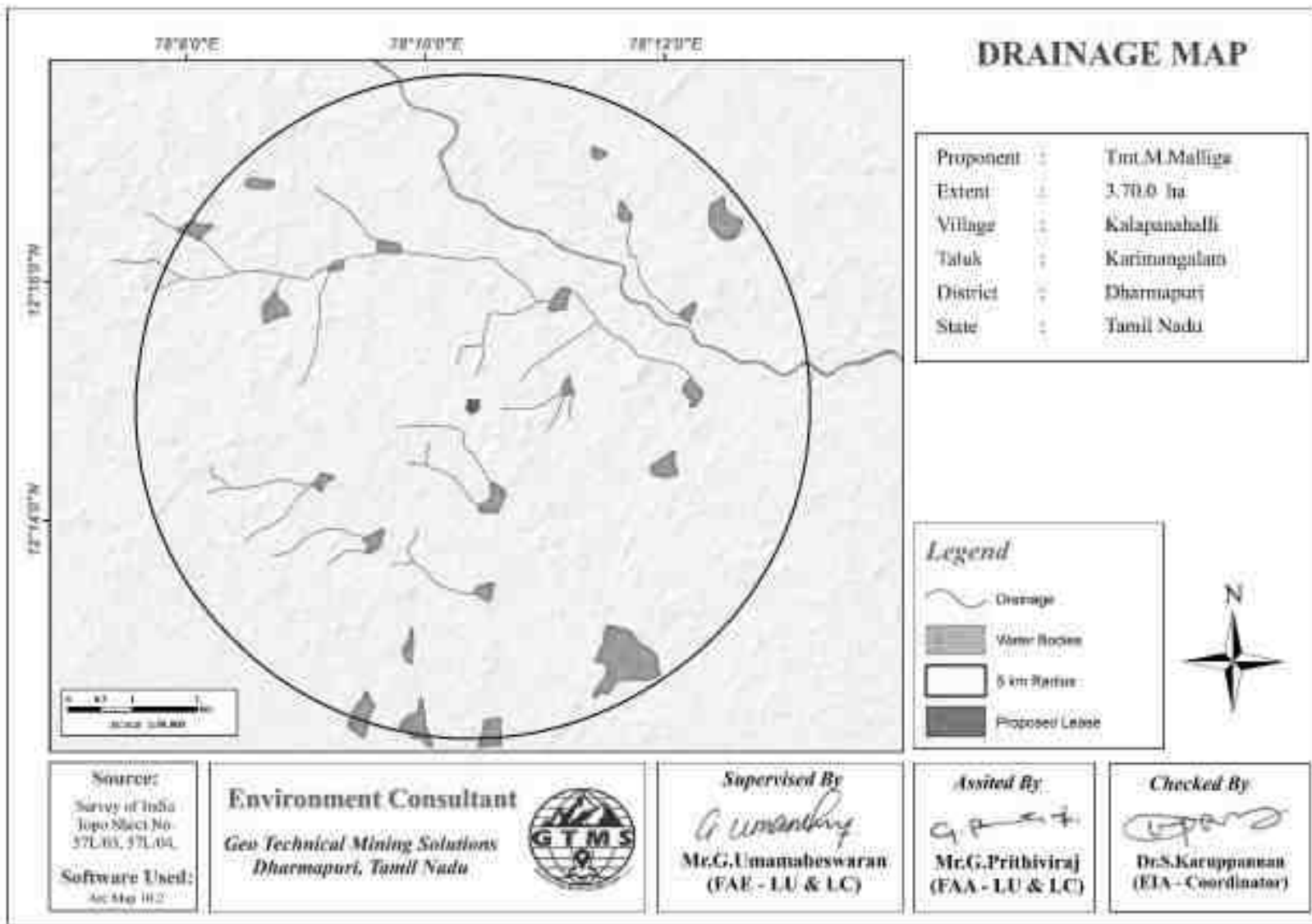


Figure 3.4 Drainage Map of 5 km Radius from Proposed Project Site

3.1.6 Soil

Composite soil samples were collected from 8 locations of the study area to determine the baseline soil characteristics of the soil. The locations were selected for soil sampling based on soil types, vegetative cover, and industrial & residential activities including infrastructure facilities. Soil samples were collected up to 90 cm depth, filled in polythene bags, coded and sent to laboratory for analysis. The locations of the sampling sites are shown in Table 3.3 and Figure 3.5. The samples thus collected were analysed for physical and chemical characteristics. The physical and chemical characteristic results of soil samples are provided in Table 3.4.

Table 3.3 Soil Sampling Locations

S. No.	Sample ID	Location	Distance (km)	Direction	Coordinates
1	S01	Malliga lease	----	----	12°14'53.49"N 78°10'22.92"E
2	S02	Sasimohan lease	0.43	SE	12°14'46.69"N 78°10'35.29"E
3	S03	Kuppangari	0.96	SSE	12°14'24.68"N 78°10'36.42"E
4	S04	Ramiyampatti	4.53	SSW	12°12'28.07"N 78° 9'55.80"E
5	S05	Bathalahalli	3.91	W	12°14'59.92"N 78° 8'10.93"E
6	S06	Kottumaranahalli	3.54	NNW	12°16'48.98"N 78° 9'40.35"E
7	S07	Poonathanahalli	3.52	E	12°15'10.75"N 78°12'22.86"E
8	S08	Chinnamatlampatti	4.01	SE	12°13'38.54"N 78°12'12.32"E

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

Physical Characteristics & Chemical Characteristics

The soil samples in the study area show loamy textures varying between silty clay loam, silty loam and sandy loam. pH of the soil varies from 6.3 to 7.8 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 100 to 803 $\mu\text{s}/\text{cm}$. Organic Matter ranges between 4.2 to 16 g/cm^3 . Nitrogen ranges between 0.8 to 1.9 %. Phosphate ranges between 0.05 to 0.13 %. Potassium ranges between 0.02 to 0.05 %. Sodium ranges between 0.013 and 0.023. The physical and chemical characteristic results of soil samples are provided in Table 3.4.

Soil Erosion

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

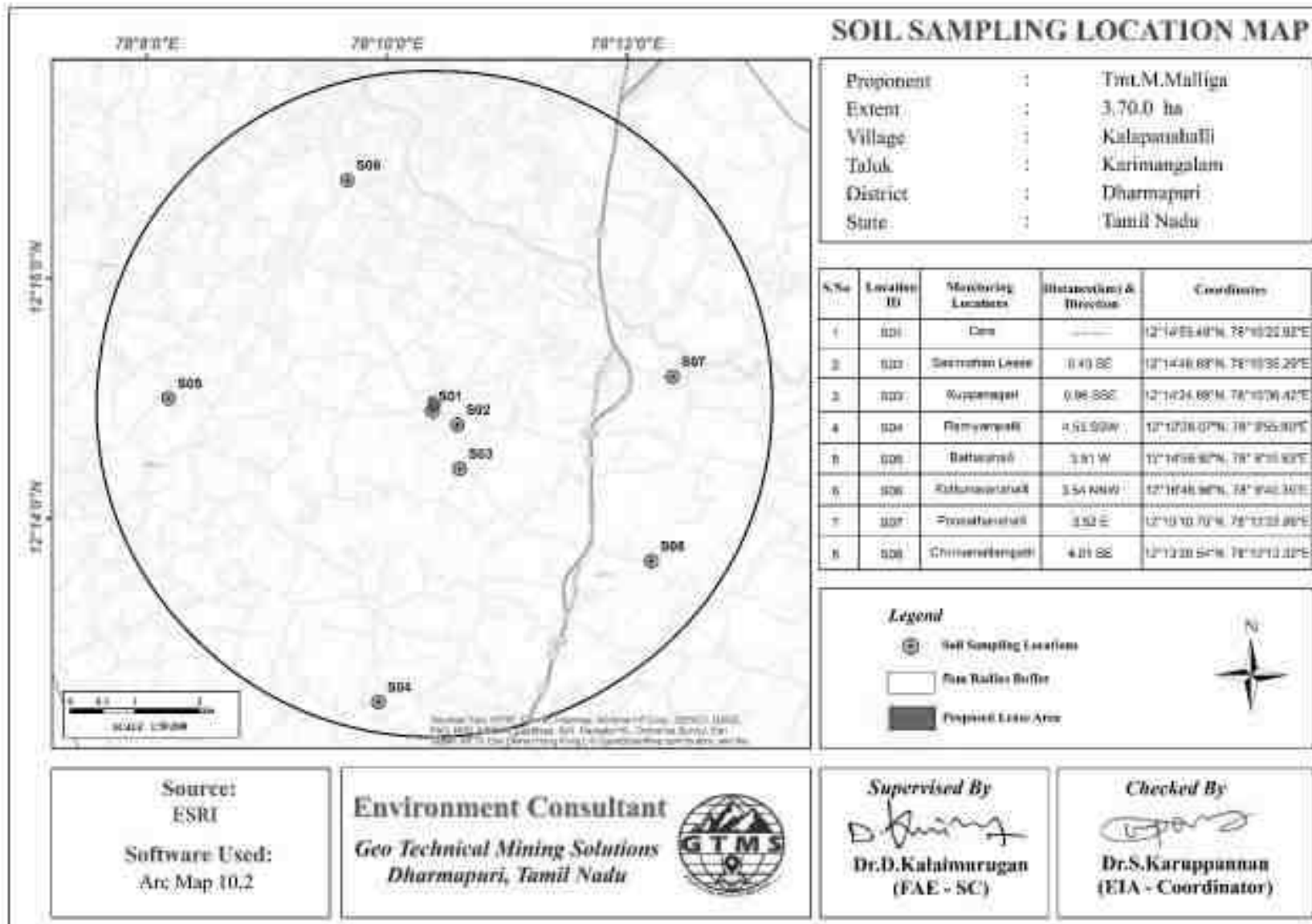


Figure 3.5 Map Showing Soil Sampling Locations within 5 km Radius around Proposed Project Site

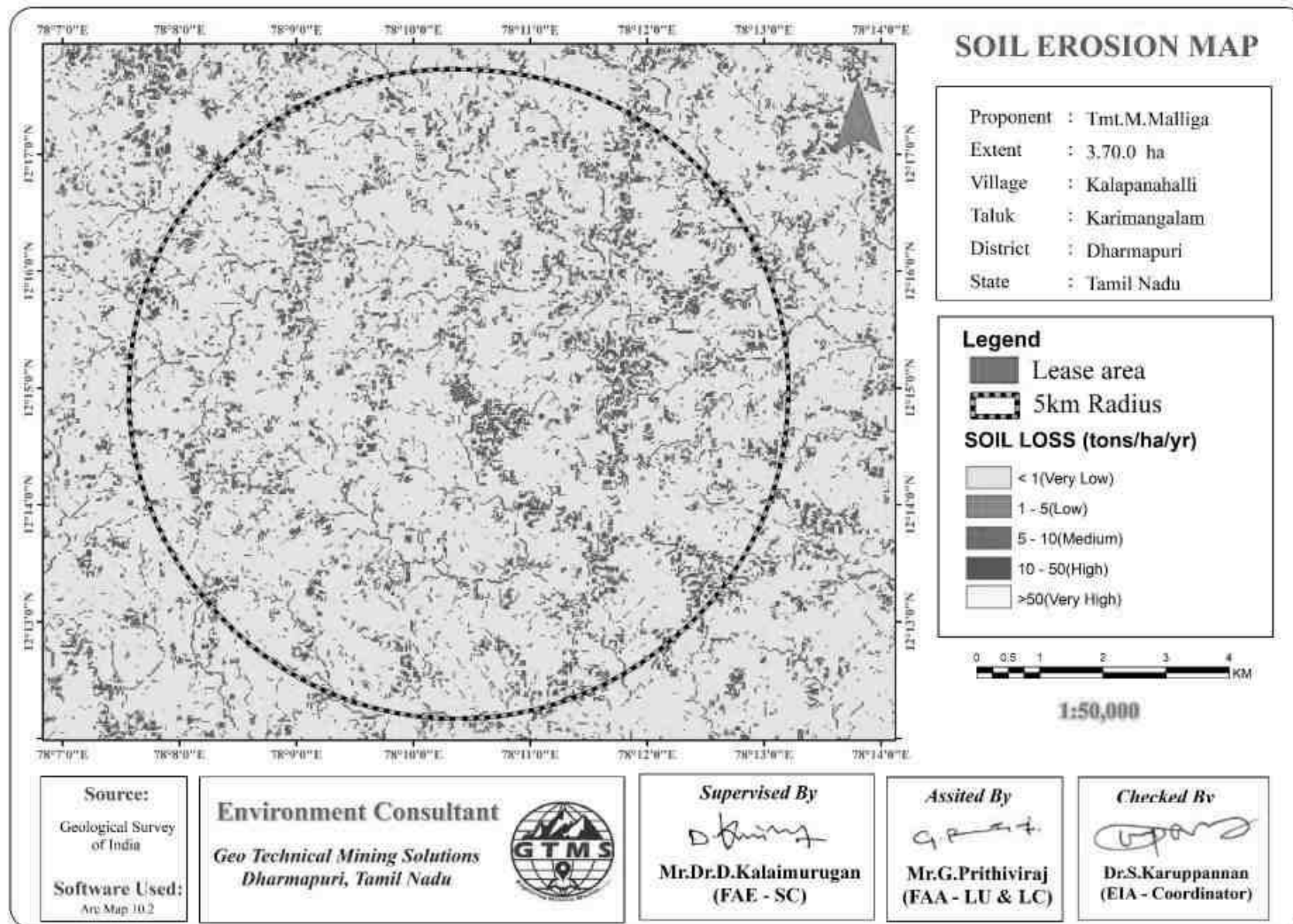


Figure 3.6 Soil Erosion Map within 5 km Radius around Proposed Project Site

Table 3.4 Soil Quality of the Study Area

S. No	Name of the Test	Units	S1 Malliga Core	Minimum	Maximum	Average
1	Arsenic	mg/Kg	<0.1	<0.1	<0.1	<0.1
2	Cadmium (as Cd)	mg/Kg	<1.0	<1.0	<1.0	<1.0
3	Cation Exchange Capacity	meq%	0.24	0.1	0.76	0.3875
4	Chromium (as Cr)	mg/Kg	42	34	74	52.66
5	Copper (as Cu)	mg/Kg	27	3.2	61	23.14
6	Lead (as Pb)	mg/Kg	<1.0	<1.0	<1.0	<1.0
7	Manganese. (as Mn)	mg/Kg	115	100	194	148.22
8	Nickel (asNi)	mg/Kg	<1.0	17	23	20
9	Nitrogen (as N)	%	1.3	0.8	1.9	1.3
10	Organic Matter @ 155°C	%	3.8	4.2	16	9.87
11	pH value @ 25°C	---	6.0	6.3	7.8	7.13
12	Phosphate (as P)	%	0.06	0.05	0.13	0.08
13	Potassium (as K)	%	0.038	0.02	0.055	0.03
14	Sodium (as Na)	---	0.012	0.013	0.023	0.01
15	Specific Electrical Conductivity@25°C	µS/Cm	175	100	803	424
16	Water Content @110°C	%	3.1	3.2	11.4	7.26
17	Zinc (as Zn)	mg/Kg	81	40	139	75.44
18	Texture*	---	Sandy Clay Loam	Clay Loam		
19	Sand	%	65.20	12.70	63.70	41.93
20	Clay	%	27.50	12.90	42.00	26.30
21	Silt	%	7.30	6.00	53.60	30.76

Source: Sampling Results by *Excellence Laboratory*, in association with *GTMS*

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 3.5 Water Sampling Locations

S. No.	Sampling ID	Location	Distance (km)	Direction	Coordinates
1	SW1	Kupangarai lake	1.28	SE	12°14'14.14"N 78°10'37.95"E
2	SW2	Baisuhalli Lake	4.26	SE	12°12'51.27"N 78°11'31.46"E
3	SW3	Periyapoolapatti Thumbala Halli Lake	2.70	NNE	12°16'18.82"N 78°11'7.48"E
4	BW1	Kuppangari	0.65	SE	12°14'34.15"N 78°10'33.27"E
5	BW2	Begarahalli	3.91	W	12°15'6.07"N 78° 8'11.55"E
6	BW3	Puthur	3.73	E	12°14'49.98"N 78°12'30.39"E
7	OW1	Jollampatty	0.20	NW	12°15'4.27"N 78°10'15.23"E
8	OW2	Kottumaranahalli	3.19	NW	12°16'29.05"N 78° 9'25.35"E

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

3.2.1 Surface Water Resources and Quality

Kupangarai Lake, Baisuhalli Lake and Periyapoolapatti Thumbala Halli Lake are three prominent surface water resources present in the study area. These are ephemeral in nature, which convey water only after rainfall events. The proposed project area is located 1.28 km SE of Kupangarai Lake 4.26 km SE of Baisuhalli Lake and 2.70 km NNE of Periyapoolapatti Thumbala Halli Lake, as shown in Table 3.5 and Figure 3.7. Three surface water samples, known as SW1, SW2 and SW3 were collected from the three surface water bodies to assess the baseline water quality. Table 3.7 summarizes surface water quality data of the three samples.

Result for surface water sample 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.

3.2.2 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. Dug wells and bore wells are the most common ground water abstraction structures in the area. However, in dry season, people in the study area heavily rely on bore wells for their domestic and agriculture purpose.

Five groundwater samples, known as BW1, BW2, BW3, OW1 and OW2 collected from bore wells and open wells were 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 3.5 and the spatial occurrence of water sampling locations is shown in Figure 3.7. Table 3.6 summarizes ground water quality data of the five samples.

Results for ground water samples in the Table 3.6 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 Groundwater Levels and Flow Direction

Data regarding depth to groundwater levels are essential to infer the direction of groundwater movement within the study area. Knowledge of groundwater flow direction is must in choosing location for background groundwater quality monitoring well and in locating recharge and discharge areas. Therefore, data regarding groundwater elevations were collected from 9 open wells and 9 bore wells at various locations within 2 km radius around the proposed project sites for the period from March through May 2023 (Pre-Monsoon Season) and from October through December, 2022 (Post Monsoon Season).

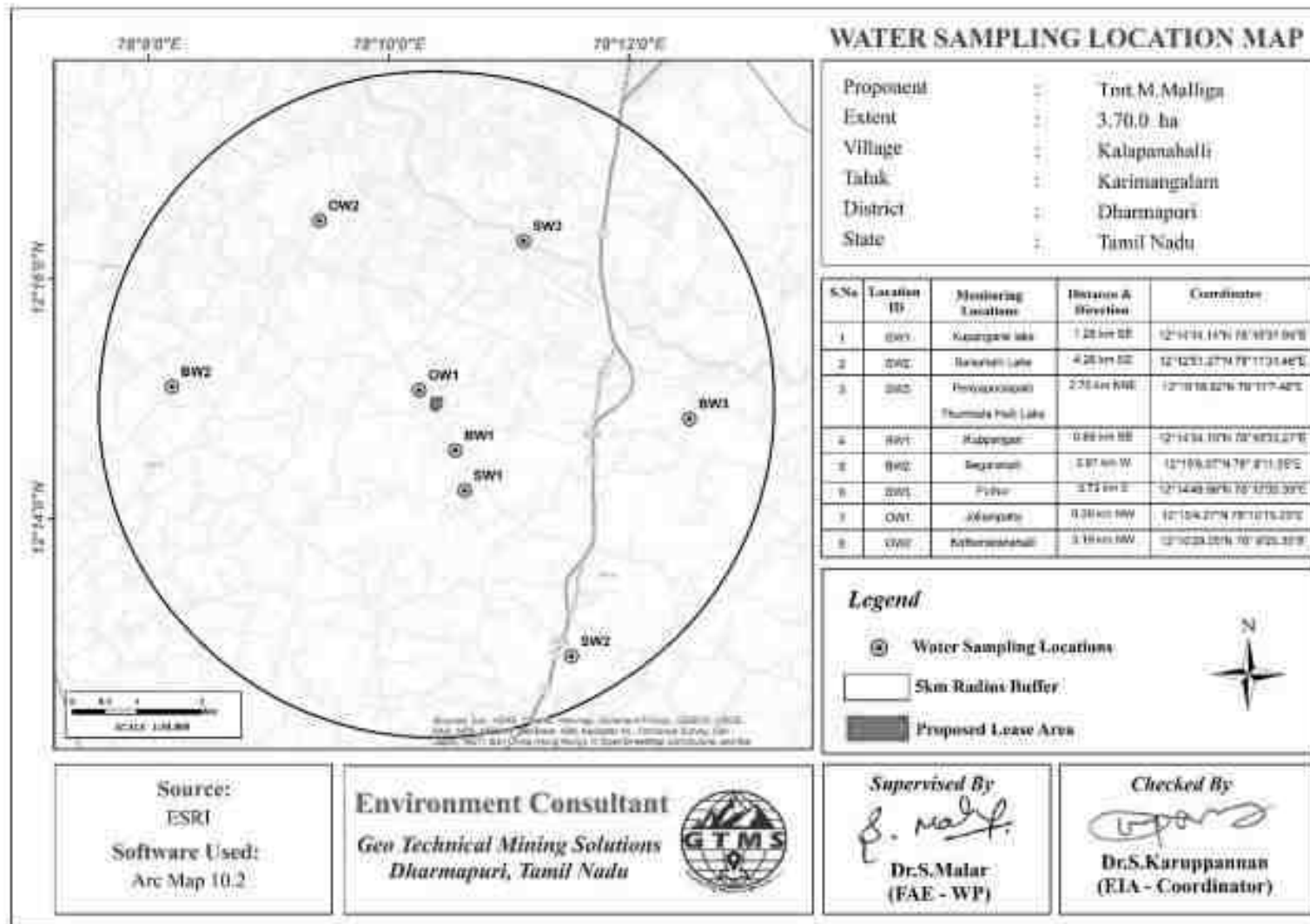


Figure 3.7 Map Showing Water Sampling Locations within 5 km Radius around Proposed Project Site

Table 3.6 Ground Water Quality Result

S.No.	Parameters	Units	Result			10500:2012 (Acceptable)	10500:2012 (Permissible)
			Minimum	Maximum	Average		
1	Barium (Ba)	mg /l	<0.1	<0.1	<0.1	0.5	0.7
2	Boron (B)	mg /l	<0.1	<0.1	<0.1	0.5	1.0
3	Calcium (Ca)	mg /l	128	192	161.5	75	200
4	Chloride (Cl)	mg /l	65	209	128.5	250	1000
5	Colour	CU	<1.0	<1.0	<1.0	5	15
6	Copper (Cu)	mg/l	<0.02	<0.02	<0.02	0.05	1.5
7	Fluoride (F)	mg/l	0.92	1.3	1.17	1.0	1.5
8	Free Residual Chlorine (RFC)	mg/l	<0.1	<0.1	<0.1	0.2	1.0
9	Iron (Fe)	mg/l	<0.05	<0.05	<0.05	0.3	No relaxation
10	Lead (Pb)	mg/l	<0.01	<0.01	<0.01	0.01	No relaxation
11	Magnesium (Mg)	mg/l	3.2	38	18.05	30	100
12	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	0.001	No relaxation
13	Nitrate (NO ₃)	mg/l	4	19	5.35	11.8	No relaxation
14	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
15	pH value @ 25°C	--	6.8	7.9	7.25	6.5-8.5	No relaxation
16	Phenolic Compounds	mg/l	<0.001	<0.001	<0.001	0.001	0.002
17	EC @ 25°C	mg/l	1124	2220	1608.71	-	-
18	Sulphates (SO ₄)	mg/l	23	102	55	200	400
19	Total Alkalinity	mg/l	161	466	331	200	600

20	Arsenic (As)	mg/l	<0.005	<0.005	<0.005	0.01	0.05
21	Chromium (Cr)	mg/l	<0.05	<0.05	<0.05	0.05	No relaxation
22	TDS	mg/l	773	1650	1182.14	500	2000
23	TH (CaCO ₃)	mg/l	433	529	493	200	600
24	Total Silica (SiO ₂)	mg/l	10	25	18.28	-	1
25	Turbidity	NTU	<0.1	<0.1	<0.1	5	15
26	Zinc (Zn)	mg/l	<0.01	<0.01	<0.01	0.1	0.3
27	Coliforms Bacteria	MPN	Absent	Absent	Absent	Shall not be detectable in any 100 ml sample	Shall not be detectable in any 100 ml sample
28	E. Coli	MPN	Absent	Absent	Absent	Shall not be detectable in any 100 ml sample	Shall not be detectable in any 100 ml sample

Source: Sampling Results *Excellence Laboratory*, in association with GTMS

Table 3.7 Surface Water Quality Result

S.No.	Parameters	Units	Result			10500:2012 (Acceptable)	IS:2296-1982 Standards For Class A
			Minimum	Maximum	Average		
1	Barium (Ba)	mg /l	<0.1	<0.1	<0.1	0.5	1
2	Boron (B)	mg /l	<0.1	<0.1	<0.1	0.5	-
3	Calcium (Ca)	mg /l	55	110	81.4	75	80.10
4	Chloride (Cl)	mg /l	60	115	92	250	250
5	Colour	CU	1	5	3	5	10
6	Copper (Cu)	mg/l	<0.02	<0.02	<0.02	0.05	1.5
7	Fluoride (F)	mg/l	<0.1	<0.1	<0.1	1.0	1.5
8	Free Residual Chlorine (RFC)	mg/l	<0.1	<0.1	<0.1	0.2	-

9	Iron (Fe)	mg/l	<0.05	<0.05	<0.05	0.3	0.3
10	Lead (Pb)	mg/l	<0.01	<0.01	<0.01	0.01	0.1
11	Magnesium (Mg)	mg/l	11	33	20.4	30	24.28
12	Mercury (Hg)	mg/l	<0.001	<0.001	<0.001	0.001	0.001
13	Nitrate (NO ₃)	mg/l	3.8	5.1	4.46	45	20
14	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Unobjectionable
15	pH value @ 25°C	--	6.5	7.6	7.04	6.5-8.5	6.5-8.5
16	Phenolic Compounds	mg/l	<0.001	<0.001	<0.001	0.001	0.002
17	EC @ 25°C	mg/l	878	1871	1278.6	-	-
18	Sulphates (SO ₄)	mg/l	33	43	37.6	200	400
19	Total Alkalinity	mg/l	137	235	185.4	200	
20	Arsenic (As)	mg/l	<0.005	<0.005	<0.005	0.01	0.05
21	Chromium (Cr)	mg/l	<0.05	<0.05	<0.05	0.05	0.05
22	TDS	mg/l	571	1215	836.6	500	500
23	TH (CaCO ₃)	mg/l	182	251	326.4	200	300
24	Total Silica (SiO ₂)	mg/l	5.7	11	8.02	1	5
25	Turbidity	NTU	0.5	1	0.8	5	15
26	Zinc (Zn)	mg/l	0.5	0.07	0.065	0.1	0.5
27	Coliforms Bacteria	MPN	Present	Present	Present	Shall not be detectable in any 100 ml sample	50
28	E.Coli	MPN	Absent	Absent	Absent	Shall not be detectable in any 100 ml sample	-

Source: Sampling Results *Excellence Laboratory*, in association with GTMS

From the maps of open well groundwater flow direction shown in Figures 3.8-3.9, it is understood that most of the open well groundwater for the post- and pre-monsoon seasons flows towards the open well number 3 located in southwestern direction and the open well number 8 located in southeast direction of the proposed project site. The groundwater flow maps in Figures 3.10-3.11 show that most of the bore well groundwater for the post- and pre-monsoon seasons flow towards the bore well number 3 and 8. It is located in north and northeast direction of the proposed project site. On the basis of the groundwater flow information, both open wells and bore wells mentioned above can be chosen for water quality monitoring purpose as the wells may get easily affected by the contaminants resulting from the mining activities of the sites in future.

Table 3.8 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		
DW01	15	16	18	16.30	12° 15.072'N	78° 10.255'E
DW02	16	17	20	17.70	12° 15.104'N	78° 10.858'E
DW03	17	18	19	18.00	12° 14.546'N	78° 10.423'E
DW04	15	17	19	17.00	12° 14.877'N	78° 10.123'E
DW05	16	17	18	17.00	12° 15.194'N	78° 9.717'E
DW06	18	19	20	19.00	12° 15.845'N	78° 10.110'E
DW07	17	19	21	19.00	12° 15.744'N	78° 10.972'E
DW08	18	20	22	20.00	12° 14.500'N	78° 11.134'E
DW09	20	21	23	21.30	12° 14.113'N	78° 9.766'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		
DW01	13	15	16	14.70	12° 15.072'N	78° 10.255'E
DW02	12	13	15	13.30	12° 15.104'N	78° 10.858'E
DW03	14	16	17	15.70	12° 14.546'N	78° 10.423'E
DW04	11	13	15	13.00	12° 14.877'N	78° 10.123'E
DW05	10	12	14	12.00	12° 15.194'N	78° 9.717'E
DW06	13	14	16	14.30	12° 15.845'N	78° 10.110'E
DW07	12	14	15	13.70	12° 15.744'N	78° 10.972'E
DW08	14	15	16	15.00	12° 14.500'N	78° 11.134'E
DW09	11	13	15	13.00	12° 14.113'N	78° 9.766'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	57	58	60	58.30	12° 14.987'N	78° 9.706'E
BW02	58	60	61	59.60	12° 15.284'N	78° 9.696'E
BW03	59	60	61	60.00	12° 15.219'N	78° 10.700'E
BW04	58	59	60	59.00	12° 14.441'N	78° 10.633'E
BW05	56	59	61	58.60	12° 14.262'N	78° 9.964'E
BW06	56	57	59	57.30	12° 15.943'N	78° 9.934'E
BW07	57	59	61	59.00	12° 15.699'N	78° 10.419'E
BW08	59	60	61	60.00	12° 15.408'N	78° 11.358'E
BW09	56	57	58	57.00	12° 14.614'N	78° 11.269'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	47	49	50	48.7	12° 14.987'N	78° 9.706'E
BW02	48	50	51	49.7	12° 15.284'N	78° 9.696'E
BW03	50	51	53	51.3	12° 15.219'N	78° 10.700'E
BW04	52	53	54	53	12° 14.441'N	78° 10.633'E
BW05	51	52	53	52	12° 14.262'N	78° 9.964'E
BW06	49	51	52	50	12° 15.943'N	78° 9.934'E
BW07	48	49	51	49.3	12° 15.699'N	78° 10.419'E
BW08	53	54	55	54	12° 15.408'N	78° 11.358'E
BW09	55	56	56	55.7	12° 14.614'N	78° 11.269'E

Source: Onsite monitoring data

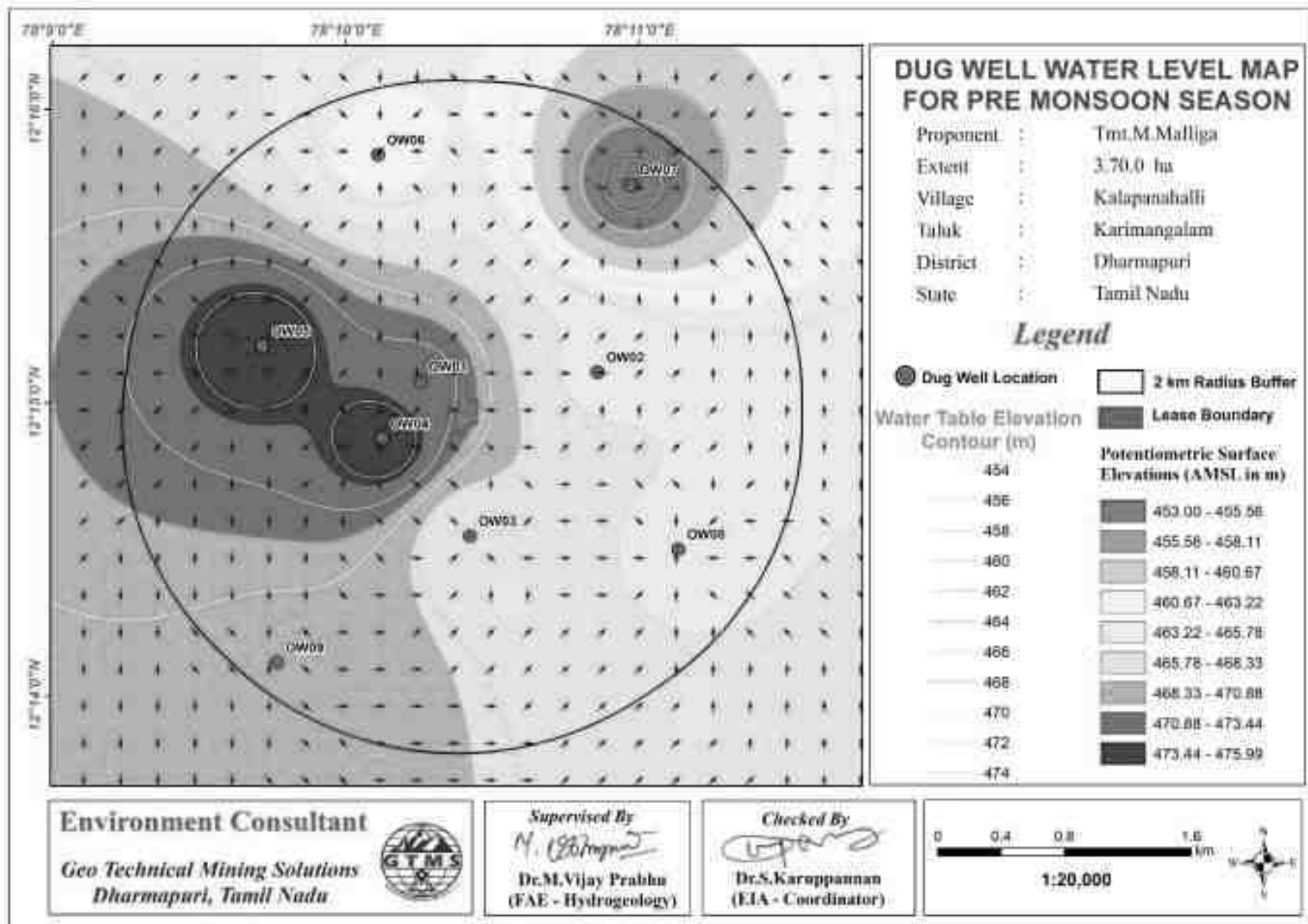


Figure 3.8 Open Well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

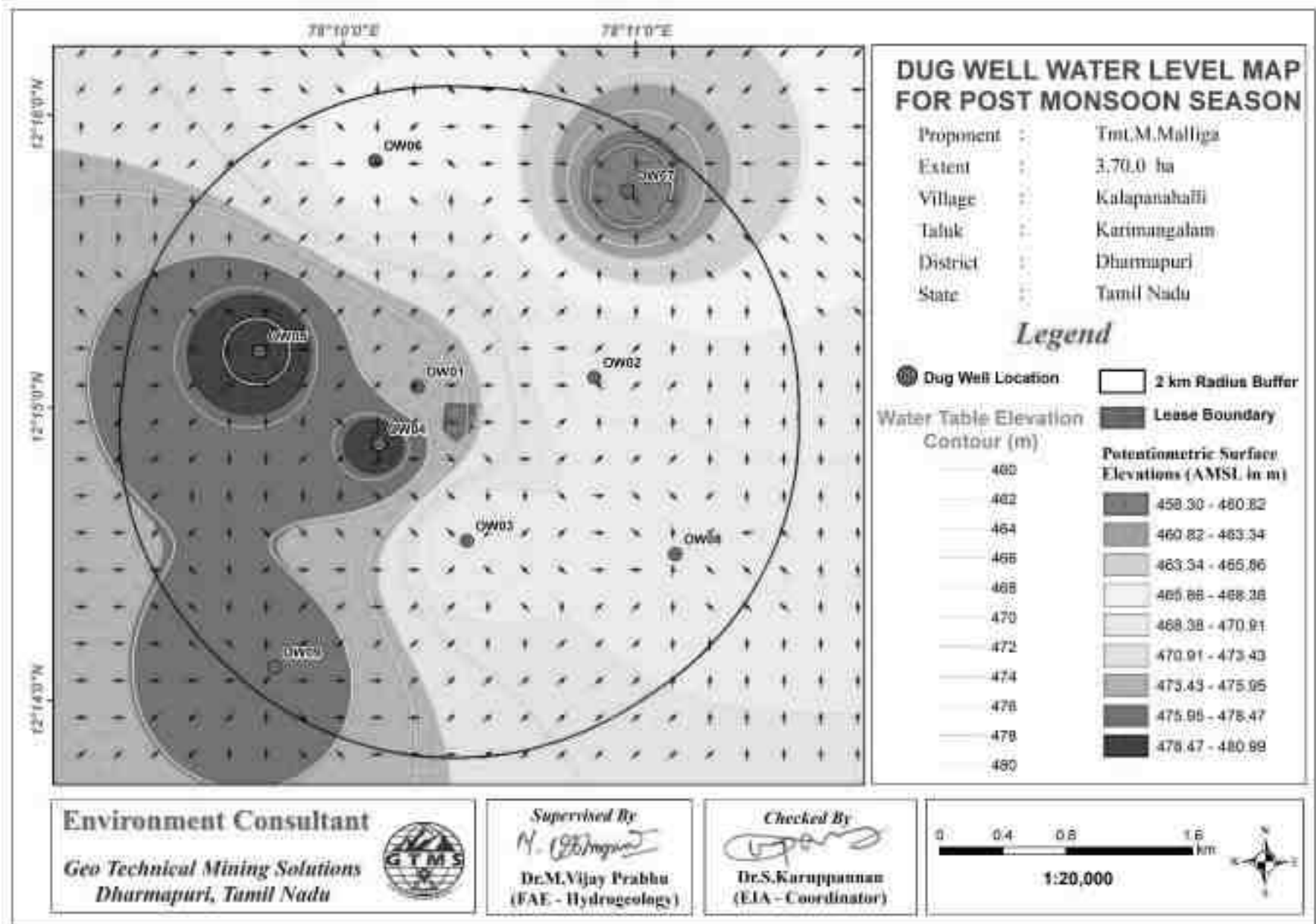


Figure 3.9 Open Well Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

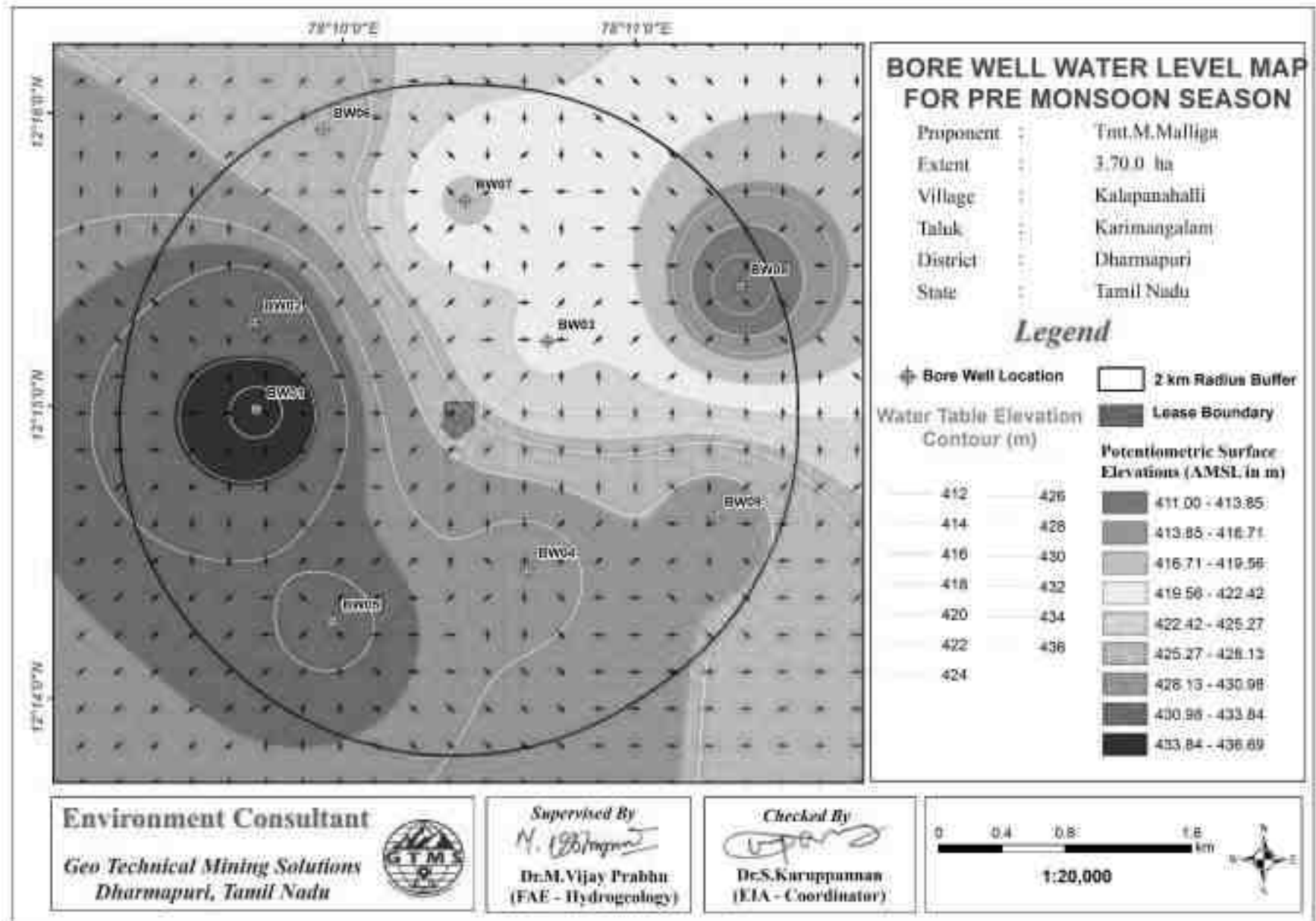


Figure 3.10 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Pre-Monsoon Season

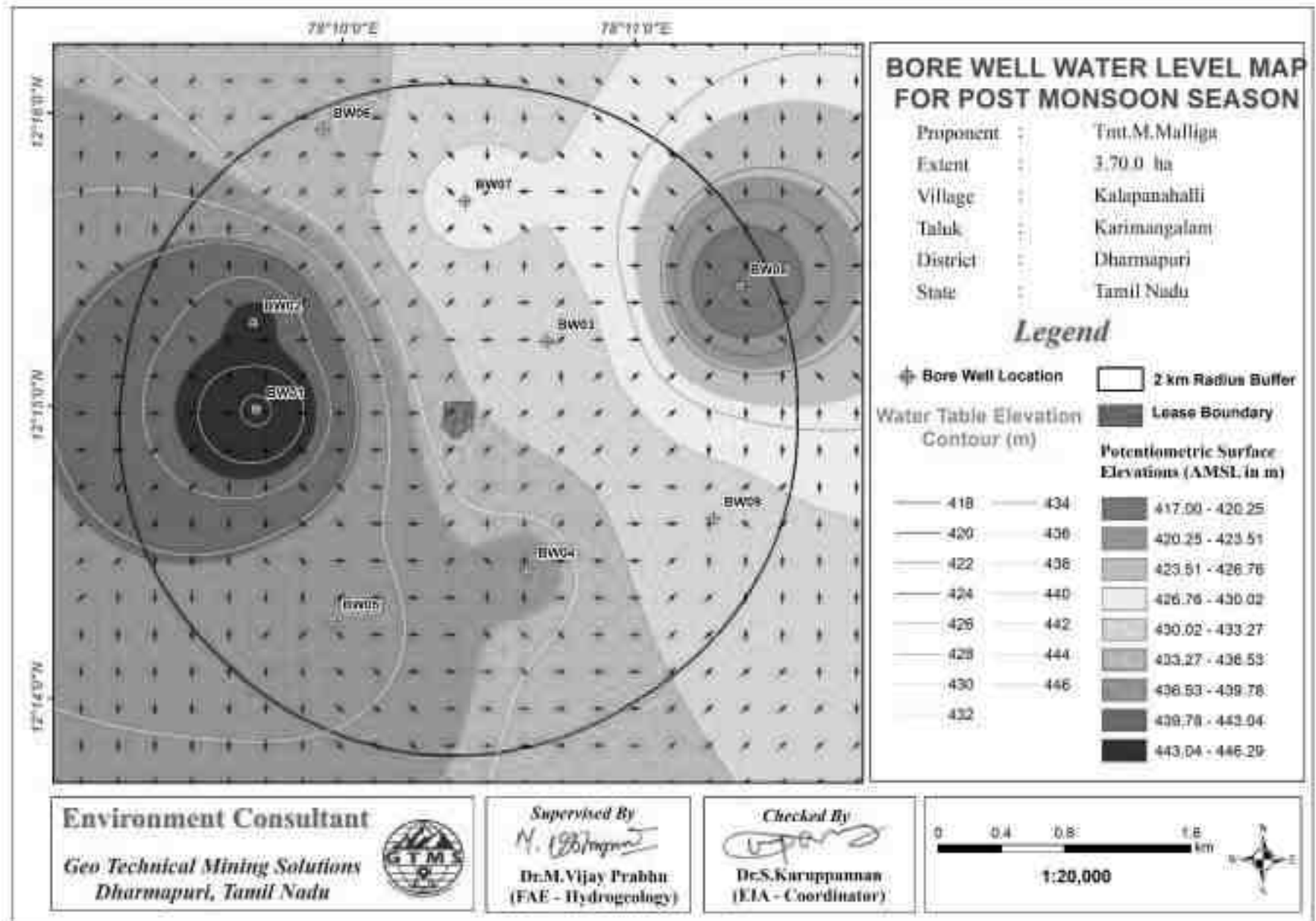


Figure 3.11 Borewell Static Groundwater Elevation Map Showing Direction of Groundwater Flow during Post-Monsoon Season

3.2.3.2 Electrical Resistivity Investigation

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

Result

The Geophysical VES data obtained from the project site have been shown in Table 3.12. 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 3.11.

Table 3.12 Vertical Electrical Sounding Data

Location Coordinates - 10° 4'53.27"N 78° 0'40.92"E					
S. No.	AB/2 (m)	MN/2 (m)	Geometrical Factor (G)	Resistance in Ω	Apparent Resistivity in Ωm
1	5	2	4.71	26.55	125.05
2	10	2	23.55	7.13	167.91
3	15	5	54.95	5.25	288.48
4	20	5	98.91	4.24	369.37
5	25	5	155.45	3.44	496.74
6	25	10	23.55	18.33	490.67
7	30	10	62.8	7.68	582.3
8	35	10	117.75	6.1	718.27
9	40	10	274.75	3.19	876.45
10	45	10	494.55	2.17	1073.17
11	50	20	777.15	0.92	1189.65
12	60	20	1122.55	0.95	1227.42
13	70	20	1530.75	0.81	1289.9
14	80	20	2001.75	0.64	786.42
15	90	20	2535.55	0.61	1546.68
16	100	20	3132.15	0.57	1785.32

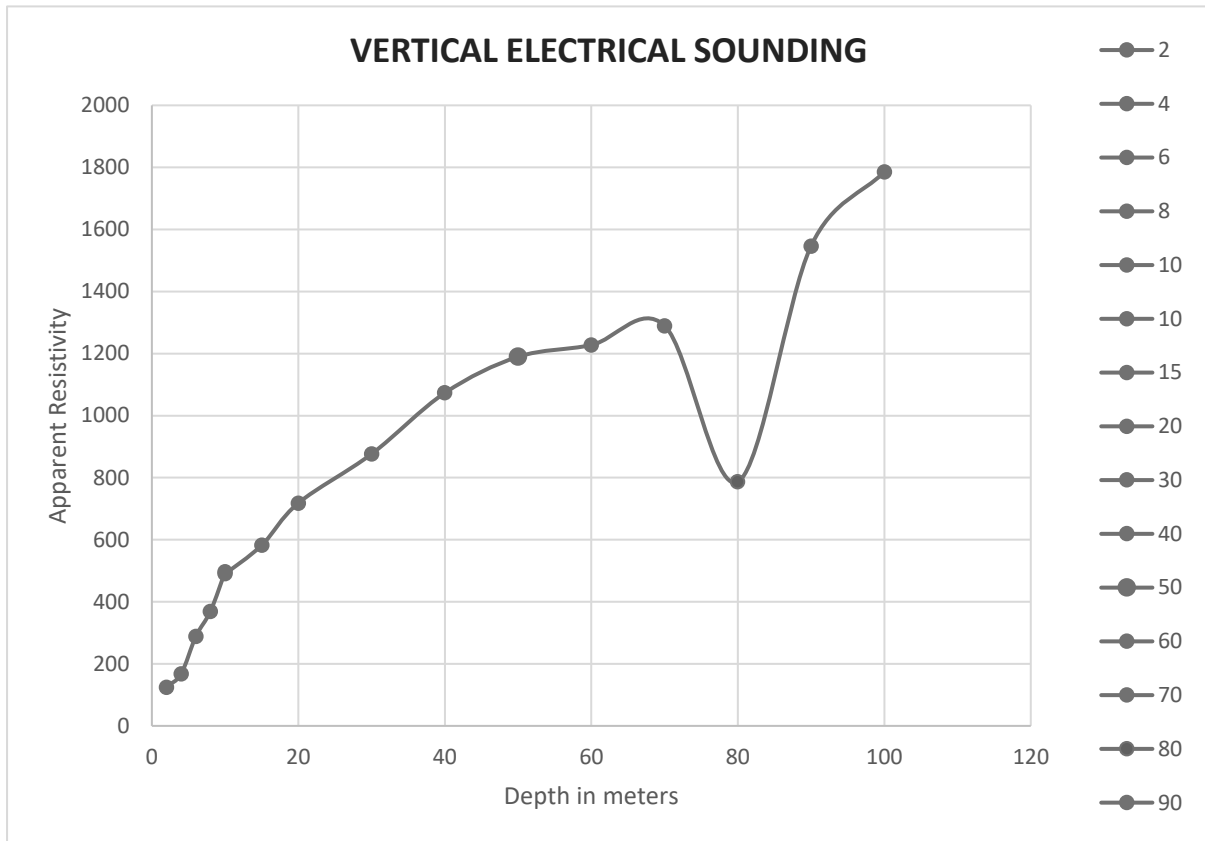


Figure 3.12 Graph Showing Occurrence of Water Bearing Fracture Zones at the Depth of 80 m below Ground Level in Proposed Project

The rock formation of low resistivity values indicates occurrence of water at the depth of about 80 m below ground level. The maximum depth proposed for the proposed project is 54 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 15.36 to 30.46⁰ C with the average of 24.04⁰ C; in November, 2023 from 13.61 to 29.0⁰ C with the average of 22.45⁰ C; and in December, 2023 from 15.15 to 29.12⁰ C with the average of 22.16⁰C. In October, 2023, relative humidity ranged from 47.06 to 100 % with the average of 84.21%; in November, 2023, from 49.19 to 100% with the average of 85.67 %; and in December, 2023, from 39.88 to 100 % with the average of 84.18 %. The wind speed in October, 2023 varied from 0.13 to 6.09 m/s with the average of 2.30 m/s; in November, 2023 from 0.72 to 6.03 m/s with the average of 2.72 m/s; and in December, 2023 from 0.56 to 7.13 m/s with the average of 3.08 m/s. In October,2023, wind direction varied from 1.06 to 357.75⁰ with the average of 172.33⁰; in November, 2023, from 0.17 to 359.27⁰ with the average of 80.56⁰; and in December, 2023, from 0.00 to 359.48⁰ with the average of 88.23⁰. In October,2023, surface pressure varied from 94.97 to 95.99 kPa with the average of 95.51 kPa; in November, 2023, from 95.28 to 96.09kPa with the average of 95.69 kPa; and in December, 2023, from 94.68 to 96.45 kPa with the average of 95.66 kPa.

Table 3.13 Onsite Meteorological Data

S. No.	Parameters		Oct, 2023	Nov,2023	Dec,2023
1	Temperature (⁰ C)	Min	15.36	13.61	15.15
		Max	30.46	29.00	29.12
		Avg	24.06	22.45	22.16
2	Relative Humidity (%)	Min	47.06	49.19	39.88
		Max	100.00	100.00	100.00
		Avg	84.21	85.67	84.18
3	Wind Speed (m/s)	Min	0.13	0.72	0.56
		Max	6.09	6.03	7.13
		Avg	2.30	2.72	3.08
4	Wind Direction (degree)	Min	1.06	0.17	0.00
		Max	357.75	359.27	359.48
		Avg	172.33	80.56	88.23
5	Surface Pressure(kPa)	Min	94.97	95.28	94.68
		Max	95.99	96.09	96.45
		Avg	95.51	95.69	95.66

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

Rainfall

Rainfall data for the study area were collected for the period of 1981-2022 (POWER | Data Access Viewer (nasa.gov)). Long term monthly average rainfall was estimated from the data of 1981-2022 and compared with the monthly rainfall for the year 2022, shown in Figure 3.13. The Figure 3.13 shows that rainfall is generally high in the months of August through November in every year. Particularly, rainfall in May and August through November of 2022 is higher than the previous years.

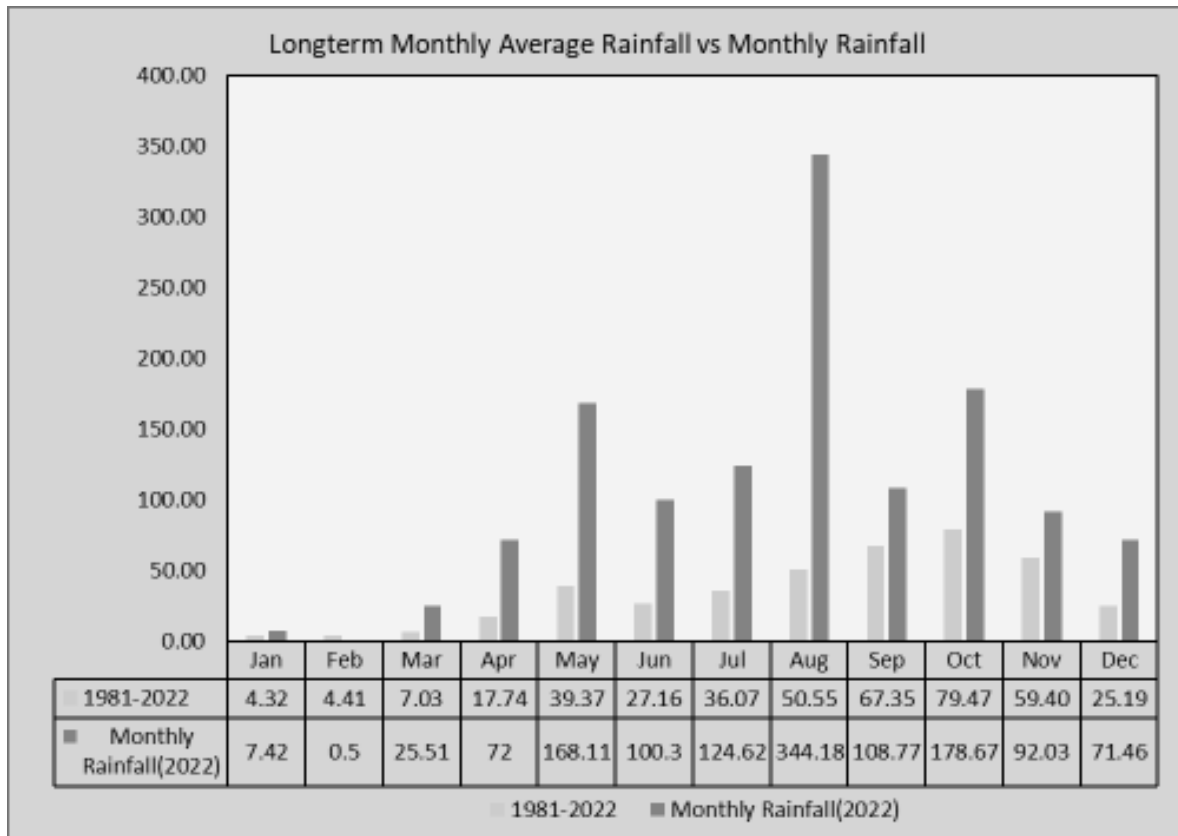


Figure 3.13 Long-Term Monthly Average Rainfall Vs Monthly Rainfall

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 from 2019 to 2022 and the seasonal wind rose for the study period of October through December 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 2.74 m/s.
- ❖ Predominant wind was dominant in the directions ranging from northeast to southwest.

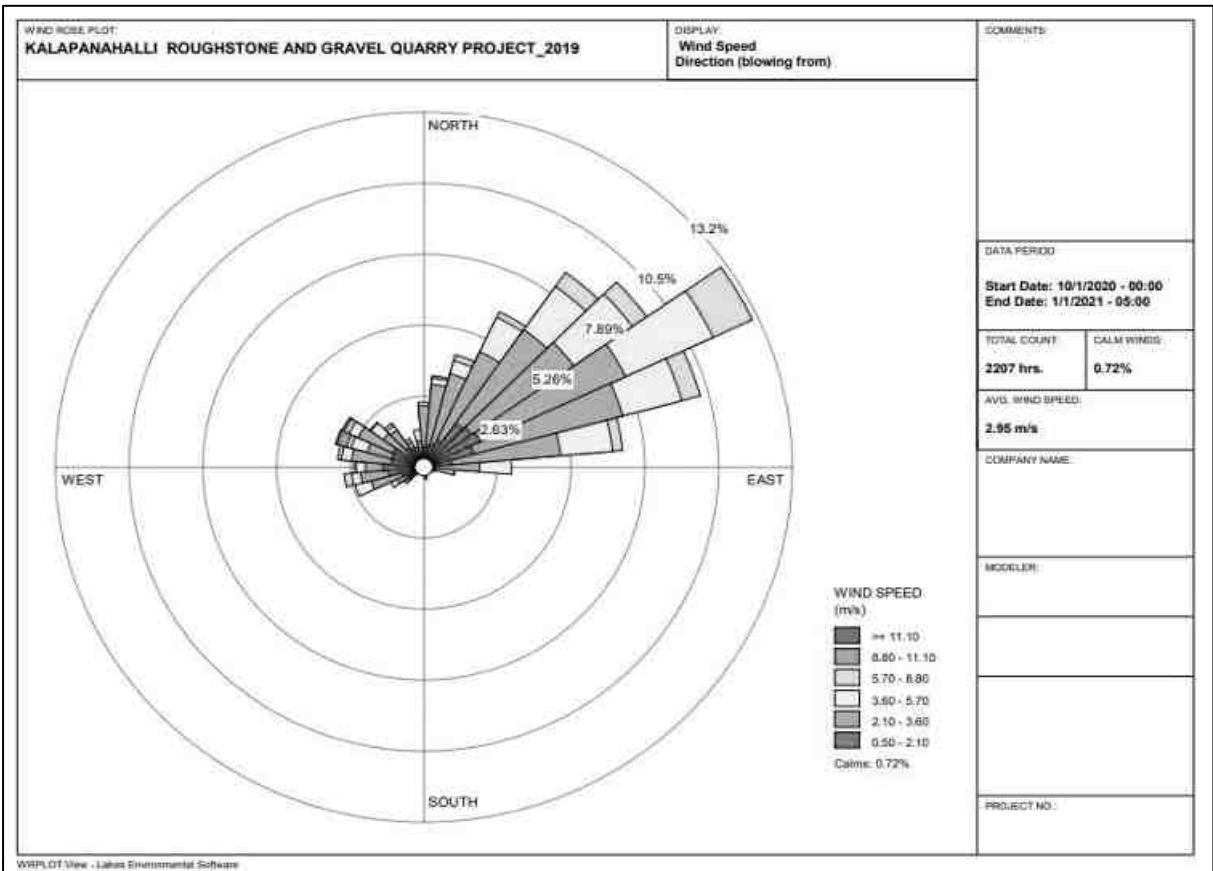
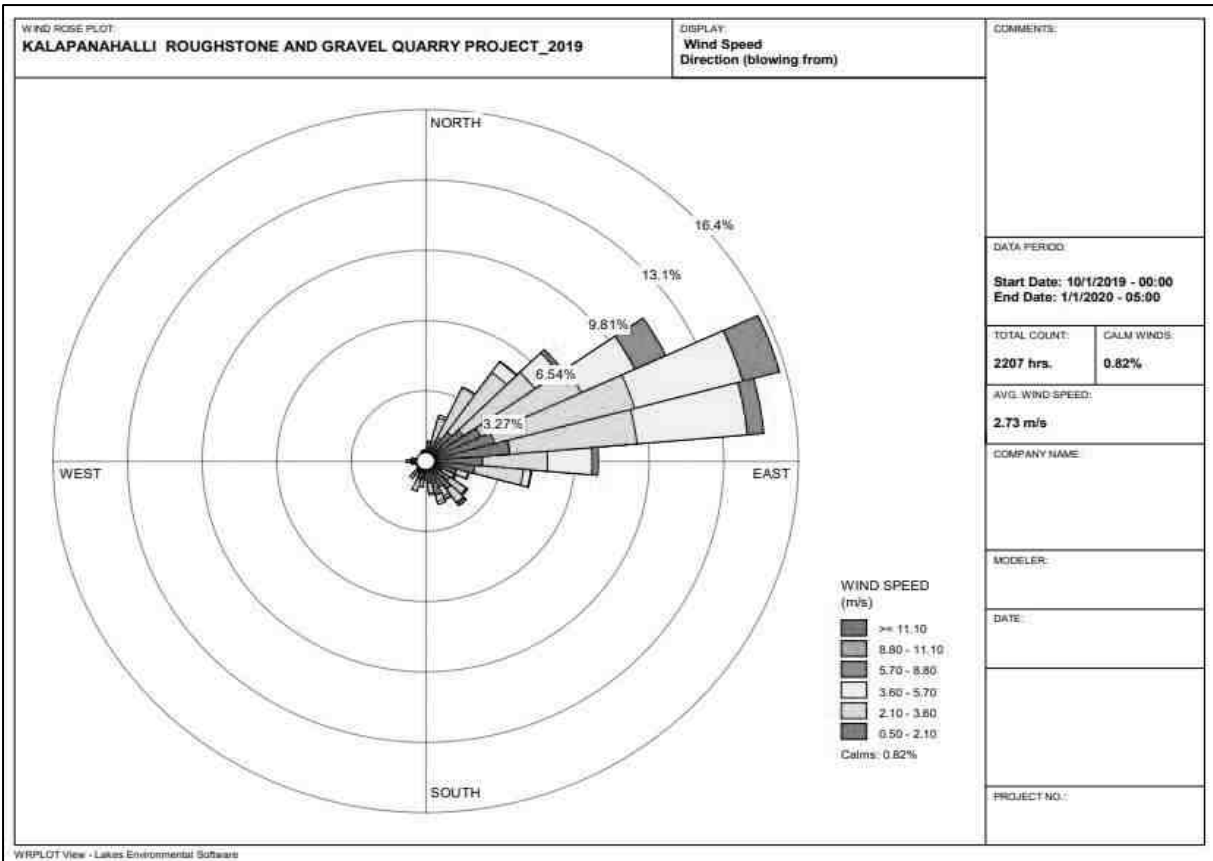


Figure 3.14 Windrose Diagram for 2019 and 2020 (October to December)

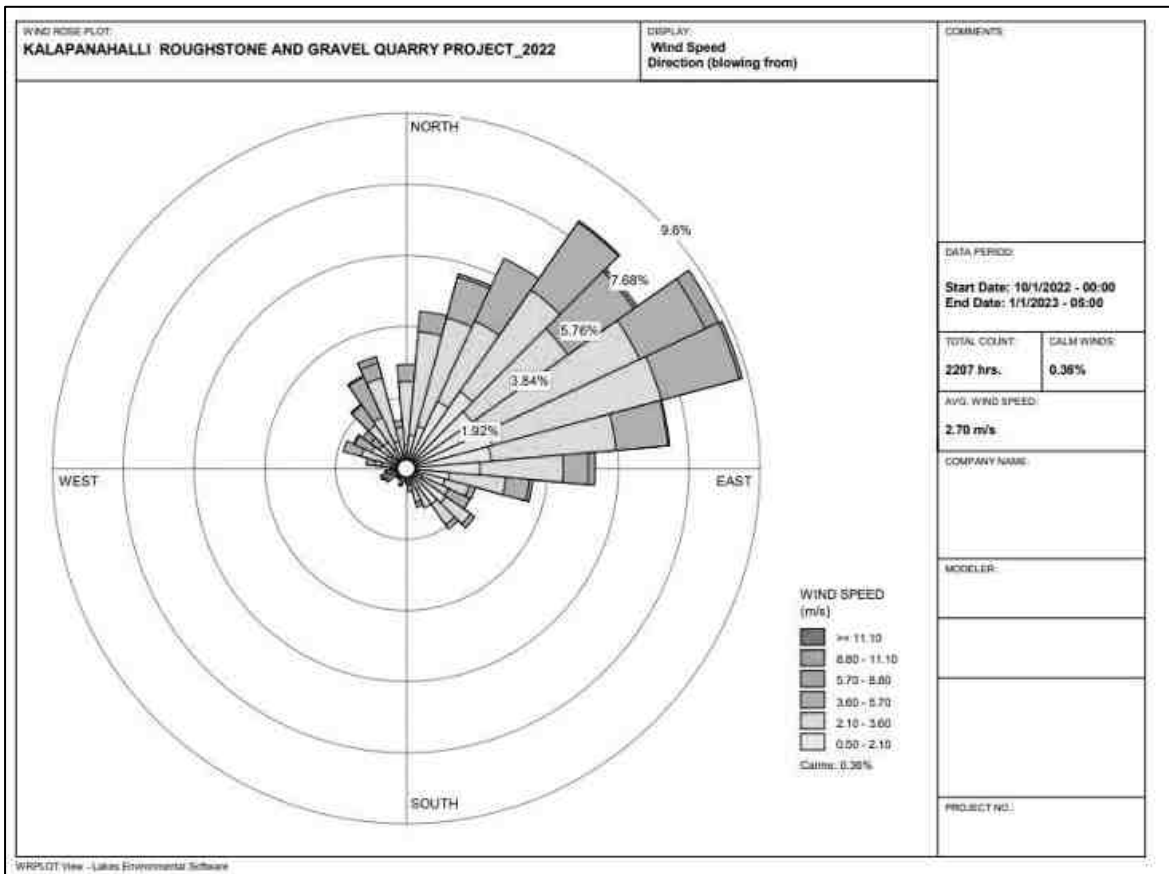
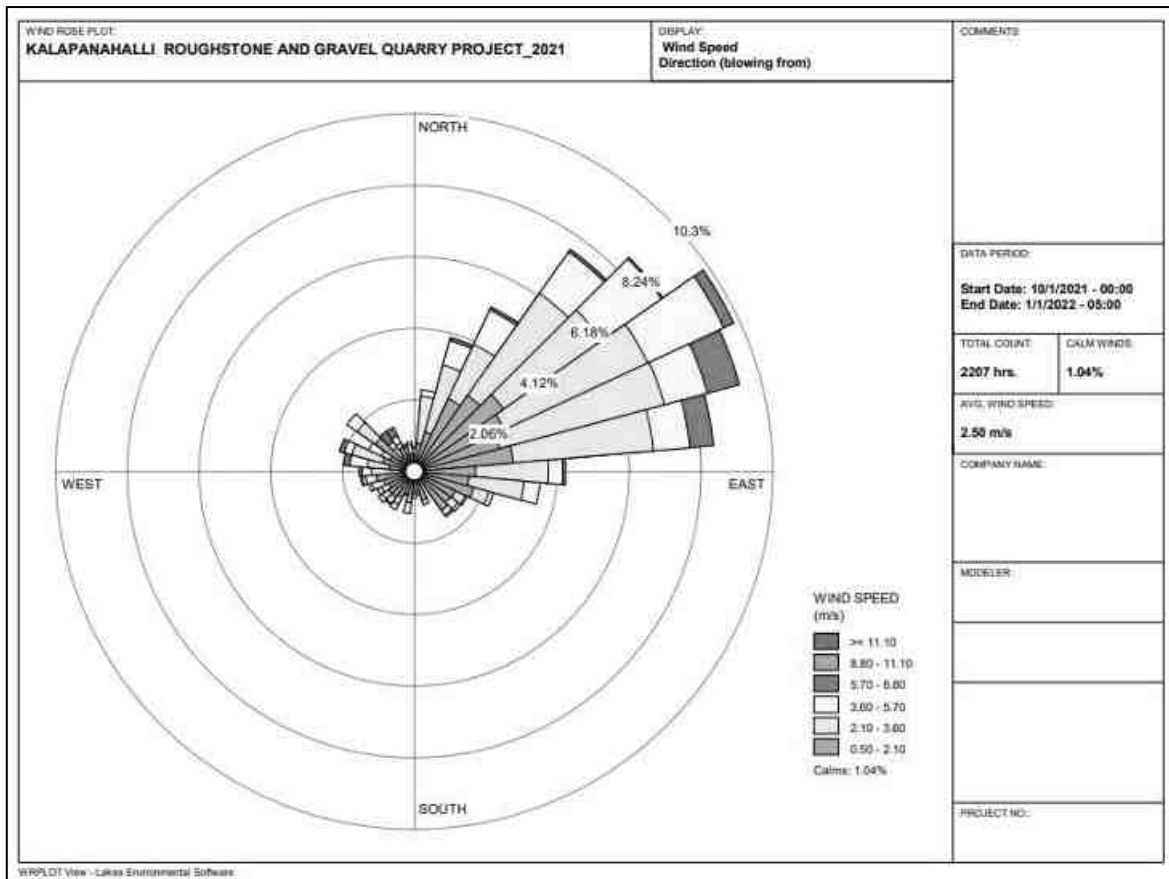


Figure 3.14a Windrose Diagram for 2021 and 2022 (October to December)

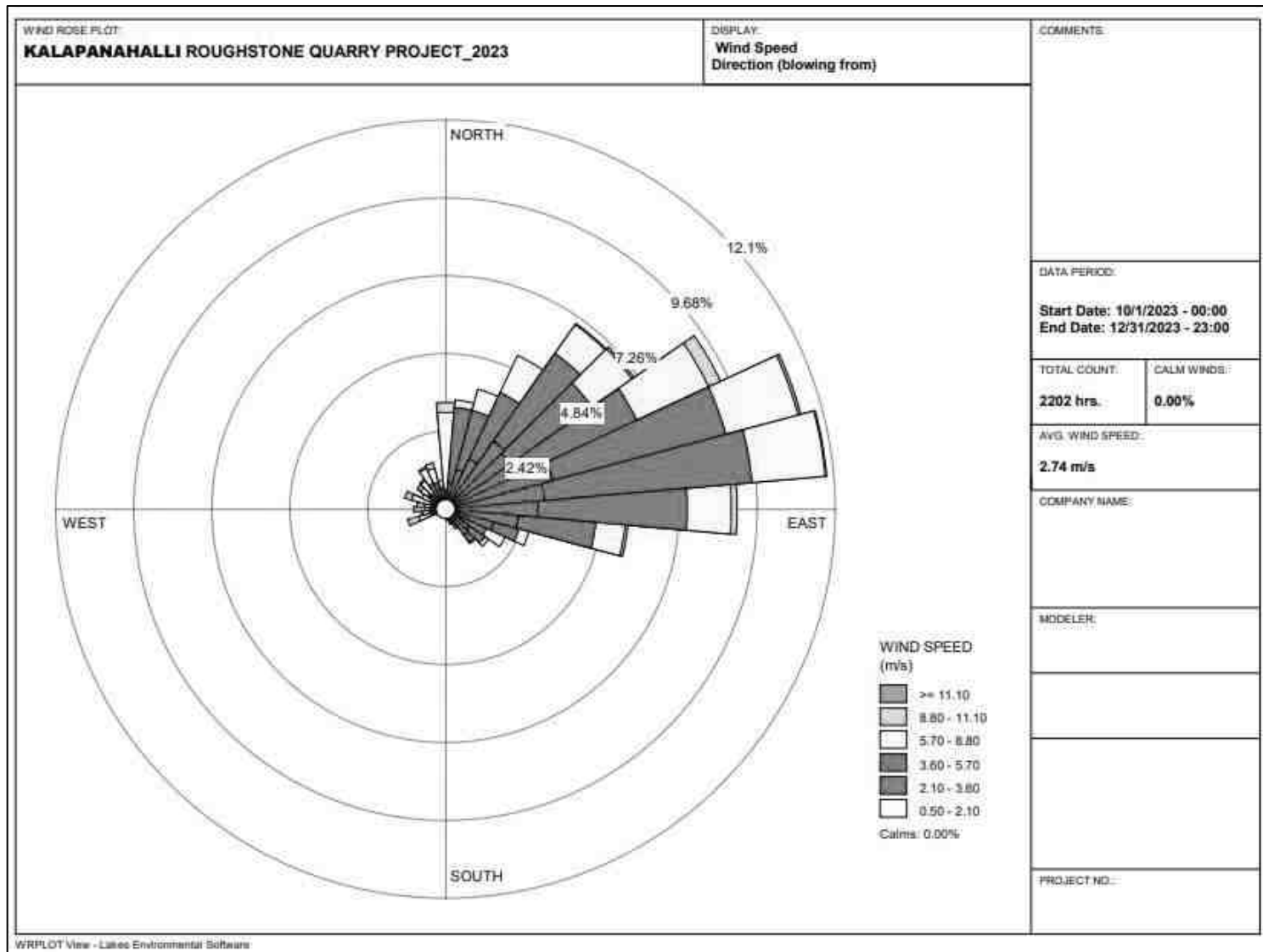


Figure 3.15 Onsite Wind Rose Diagram

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
PM ₁₀	Gravimetric method Beta attenuation method	Respirable Dust Sampler
SO ₂	IS-5182 Part II (Improved west & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NO _x	IS-5182 Part II (Jacob & Hoch heiser modified method)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology based 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.*	50.0	20.0
		24 hours**	80.0	80.0
2	NO _x (µg/m ³)	Annual Avg.	40.0	30.0
		24 hours	80.0	80.0
3	PM ₁₀ (µg/m ³)	Annual Avg.	60.0	60.0
		24 hours	100.0	100.0
4	PM _{2.5} (µg/m ³)	Annual Avg.	40.0	40.0
		24 hours	60.0	60.0

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

Methodology

Ambient air quality monitoring was carried out with a frequency of two samples per week at Nine (9) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period March-May, 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 $\text{PM}_{2.5}$, PM_{10} , 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 and are shown in Figures 3.17-3.21.

Table 3.16 Ambient Air Quality (AAQ) Monitoring Locations

S. No.	Location Code	Monitoring Locations	Distance (km)	Direction	Coordinates	
					Lat	Long
1	AAQ1	Mallika Core	--	--	12°15'0.39"N	78°10'20.94"E
2	AAQ2	Sasimohan core	0.58	SE	12°14'43.02"N	78°10'39.65"E
3	AAQ3	Kuppangari	0.81	SSE	12°14'29.65"N	78°10'36.06"E
4	AAQ4	Sunnampatti	3.11	SW	12°14'24.27"N	78° 8'44.04"E
5	AAQ5	Kunthiamman Kovilur	4.54	SW	12°13'21.87"N	78° 8'24.31"E
6	AAQ6	Matlampatti	3.62	SE	12°13'23.07"N	78°11'40.44"E
7	AAQ7	Periyampatti	2.51	NE	12°15'20.82"N	78°11'47.41"E
8	AAQ8	Kottumaranahalli	3.60	NNW	12°16'51.35"N	78° 9'42.11"E
9	AAQ9	Naganampatti	4.12	NNE	12°17'5.20"N	78°11'18.56"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 $15.6 \mu\text{g}/\text{m}^3$ to $20.5 \mu\text{g}/\text{m}^3$; PM_{10} from $33.7 \mu\text{g}/\text{m}^3$ to $39.0 \mu\text{g}/\text{m}^3$; SO_2 from $6.6 \mu\text{g}/\text{m}^3$ to $9.5 \mu\text{g}/\text{m}^3$; NO_x from $12.3 \mu\text{g}/\text{m}^3$ to $17.9 \mu\text{g}/\text{m}^3$. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

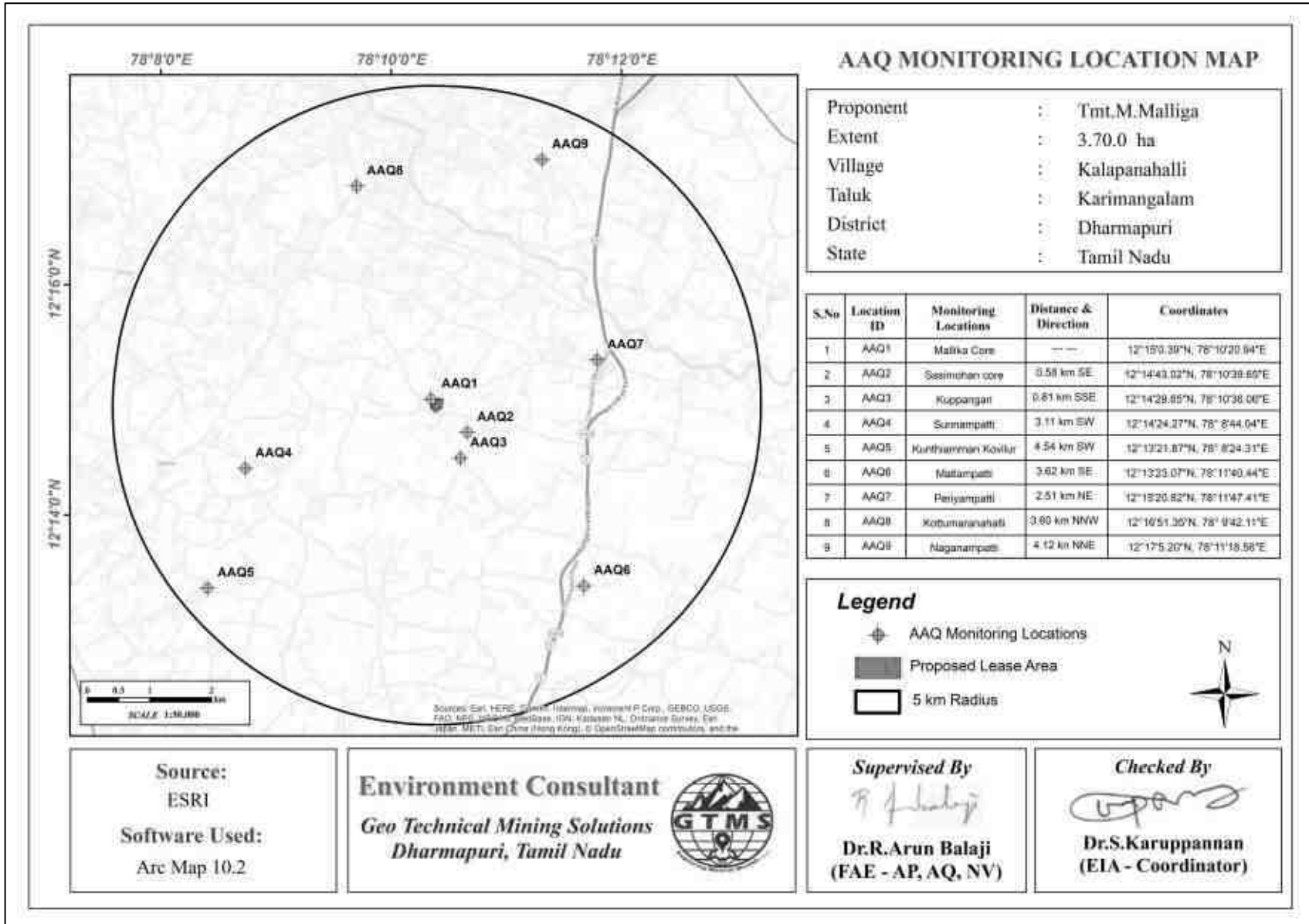


Figure 3.16 Map Showing Ambient Air Quality Monitoring Station Locations Around 5 km Radius from Proposed Project Site

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	23.0	19.0	21.1	23.0	41.6	37.8	39.7	41.6
AAQ2	24.2	18.6	20.9	24.2	43.7	35.9	39.2	43.7
AAQ3	21.0	17.0	19.1	21.0	39.5	35.7	37.6	39.5
AAQ4	17.9	11.1	14.8	17.9	36.3	31.1	33.8	36.3
AAQ5	19.7	12.1	14.9	19.7	37.6	30.2	33.3	37.6
AAQ6	18.7	14.5	16.9	18.7	38.5	32.0	35.8	38.5
AAQ7	22.2	17.4	20.3	22.2	40.9	34.8	37.6	40.9
AAQ8	17.2	14.6	15.8	17.2	35.2	32.5	34.1	35.2
AAQ9	20.9	15.7	17.4	20.9	37.5	33.7	35.6	37.5
SO ₂					NO _x			
AAQ1	11.4	8.6	10.1	11.4	21.9	15.4		21.5
AAQ2	10.8	7.6	9.1	10.8	22.0	14.9	18.1	22.0
AAQ3	9.7	6.9	8.4	9.3	18.9	12.4	15.5	18.5
AAQ4	8.4	4.0	5.8	8.2	15.1	8.6	11.0	14.4
AAQ5	9.0	3.9	6.2	8.8	14.5	8.4	10.7	13.6
AAQ6	10.7	7.6	8.8	10.4	17.0	12.5	14.3	17.0
AAQ7	9.8	8.3	9.1	9.8	19.3	15.2	16.5	17.2
AAQ8	7.8	6.3	7.1	7.8	14.9	12.6	13.9	14.9
AAQ9	8.1	6.1	7.3	8.1	17.9	10.8	14.0	17.9

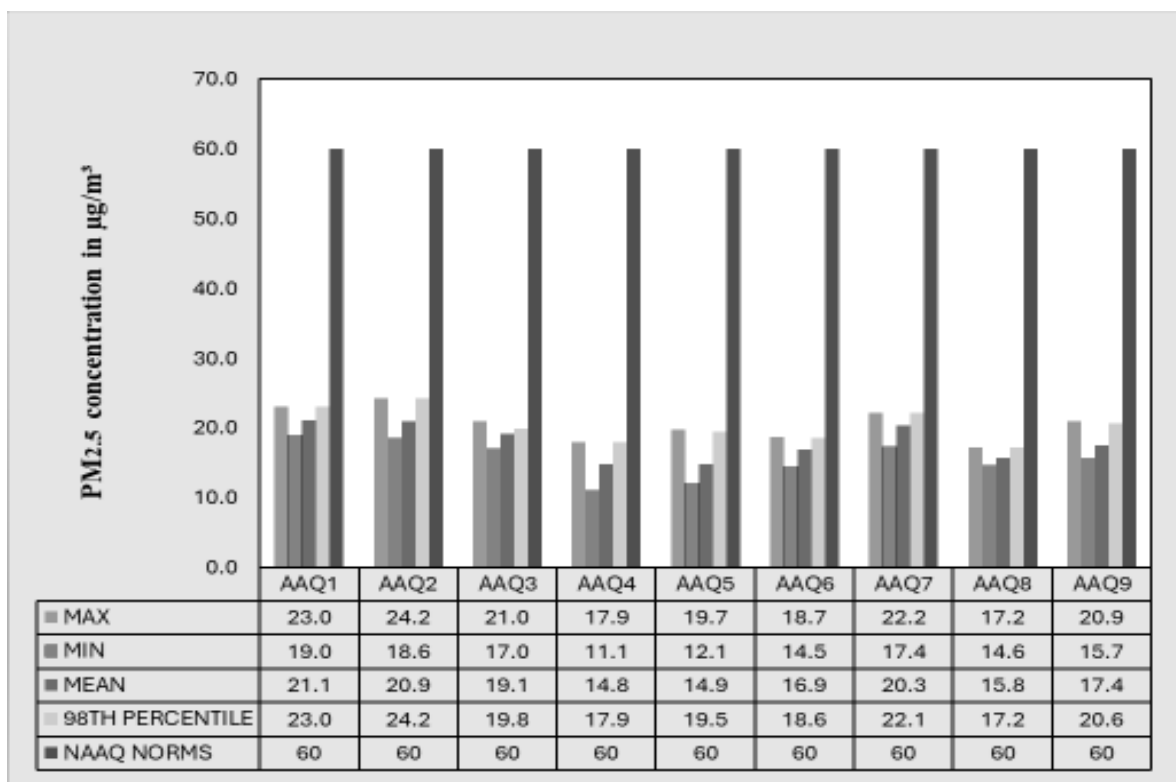


Figure 3.17 Bar Chart Showing Maximum, Minimum, and Average Concentrations of PM_{2.5} Measured from 9 Air Quality Monitoring Stations within 5 km Radius

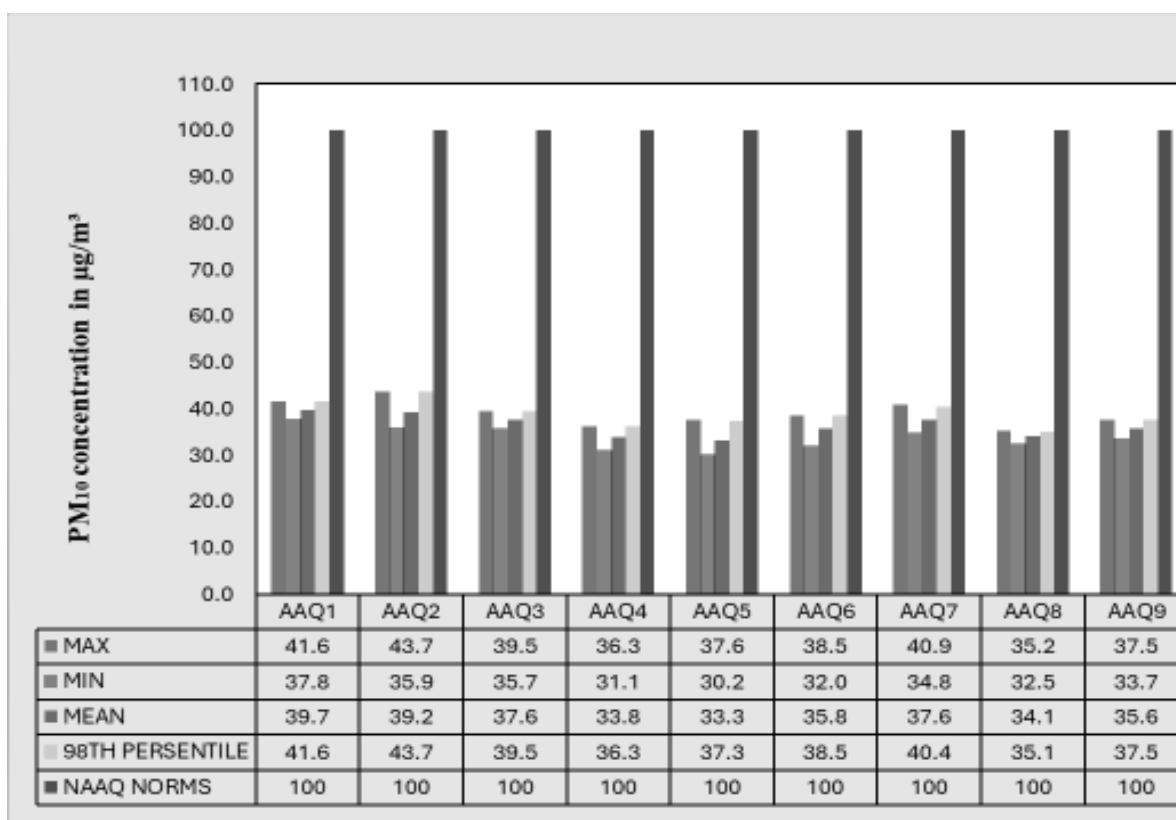


Figure 3.18 Bar Chart Showing Maximum, Minimum and Average Concentrations of PM₁₀ Measured from 9 Air Quality Monitoring Stations within 5 km Radius

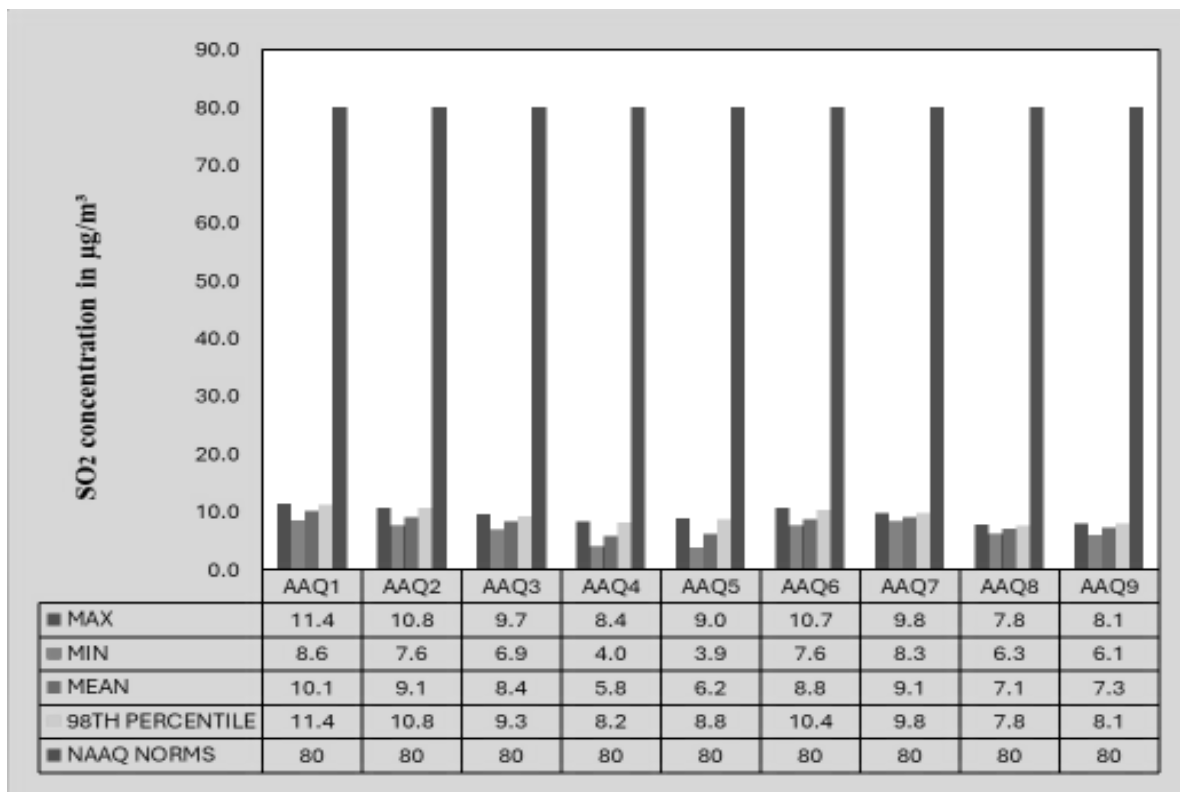


Figure 3.19 Bar Chart Showing Maximum, Minimum, and Average Concentrations of SO₂ Measured from 9 Air Quality Monitoring Stations within 5 km Radius

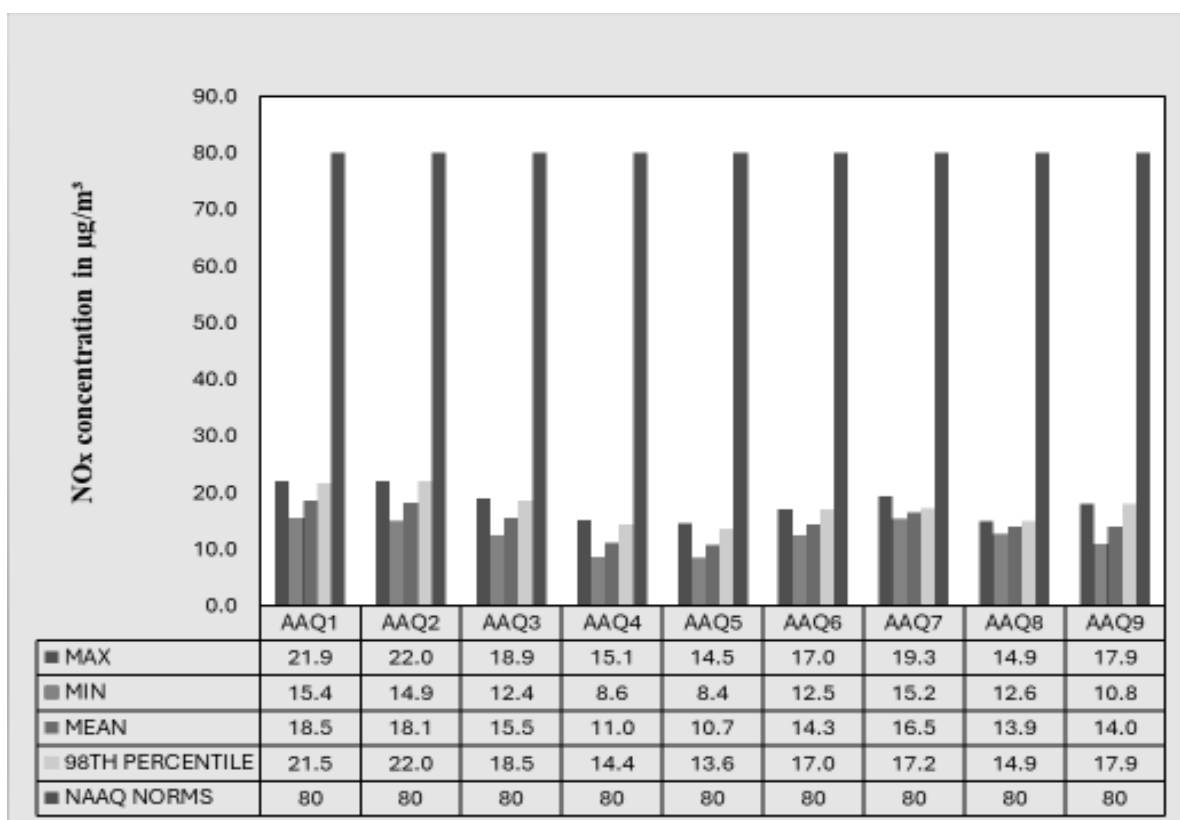


Figure 3.20 Bar Chart Showing Maximum, Minimum and Average Concentrations of NO_x Measured from 9 Air Quality Monitoring Stations within 5km Radius

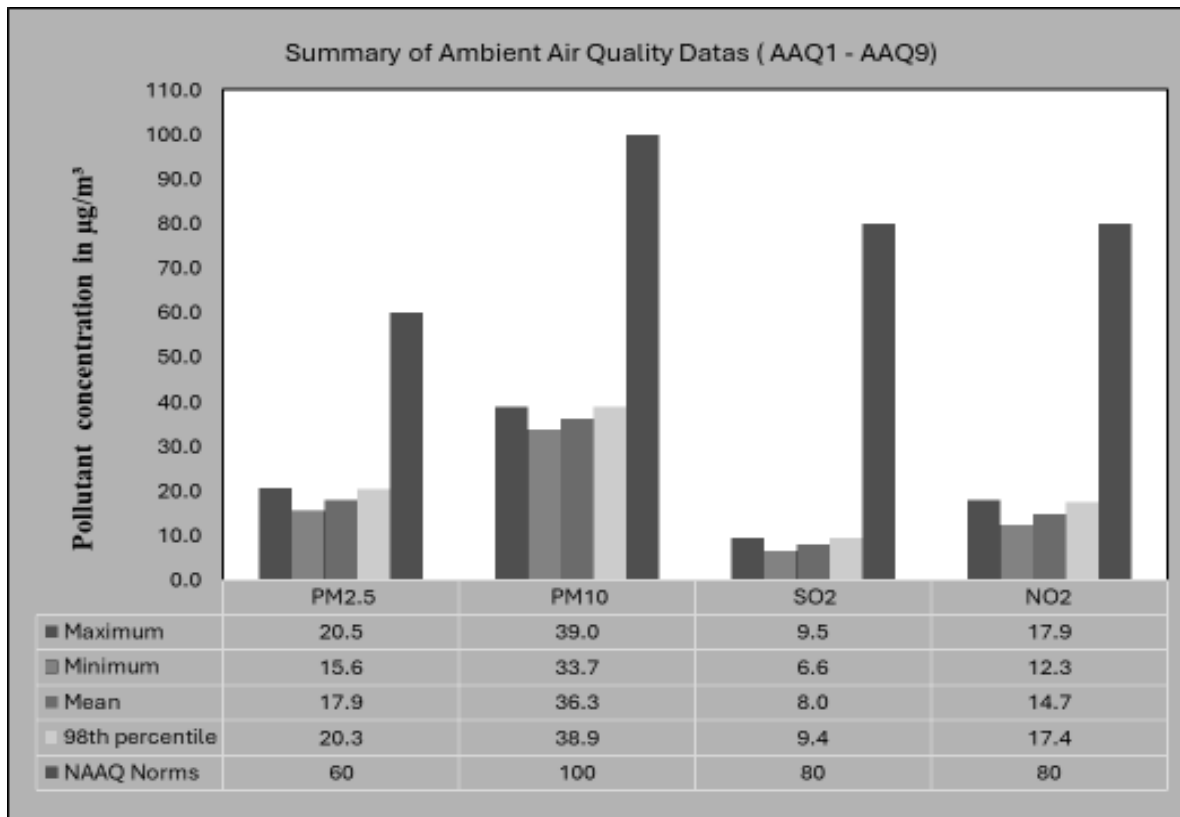


Figure 3.21 Bar Chart Showing Maximum, Minimum and Average Concentrations of Pollutants in Atmosphere within 5 km Radius

3.4 NOISE ENVIRONMENT

The vehicular movement on road and mining activities is the major sources of noise in the study area. The main objective of noise monitoring in the study area is to establish the baseline noise level, which will in turn be used to assess the impact of the total noise expected to be generated during the project operations around the project site. In order to assess the ambient noise levels within the study area, noise monitoring was carried out at nine (9) 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	
					Latitude	Longitude
1	N1	Mallika Core	--	--	12°15'0.05"N	78°10'25.65"E
2	N2	Sasimohan core	0.43	SE	12°14'46.27"N	78°10'37.13"E
3	N3	Kuppangari	0.77	SSE	12°14'31.93"N	78°10'36.35"E
4	N4	Sunnampatti	3.04	SW	12°14'24.53"N	78° 8'44.83"E

5	N5	Kunthiamman Kovilur	4.58	SW	12°13'18.71"N	78° 8'25.07"E
6	N6	Matlampatti	3.50	SSE	12°13'23.58"N	78°11'34.41"E
7	N7	Periyampatti	2.47	SE	12°15'15.45"N	78°11'47.48"E
8	N8	Kottumaranahalli	3.56	NNW	12°16'50.14"N	78° 9'41.89"E
9	N9	Naganampatti	4.07	NNE	12°17'3.36"N	78°11'18.20"E

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 (Leq in dB (A))	
N1	Mallika Core	Industrial Area	45.8	37.3	75	70
N2	Sasimohan core		45.6	38.4	75	70
N3	Kuppangari	Residential Area	45.8	37.1	55	45
N4	Sunnampatti		40.2	39.3	55	45
N5	Kunthiamman Kovilur		40.3	38.4	55	45
N6	Matlampatti		49.8	43.3	55	45
N7	Periyampatti		51.6	45.3	55	45
N8	Kottumaranahalli		39.8	36.2	55	45
N9	Naganampatti		40.6	38.5	55	45

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

The Table 3.18 shows that noise level in core zone was 45.8 dB (A) Leq during day time and 37.3 dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 39.8 to 51.6dB (A) Leq and during night time from 36.2 to 45.3 dB (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.

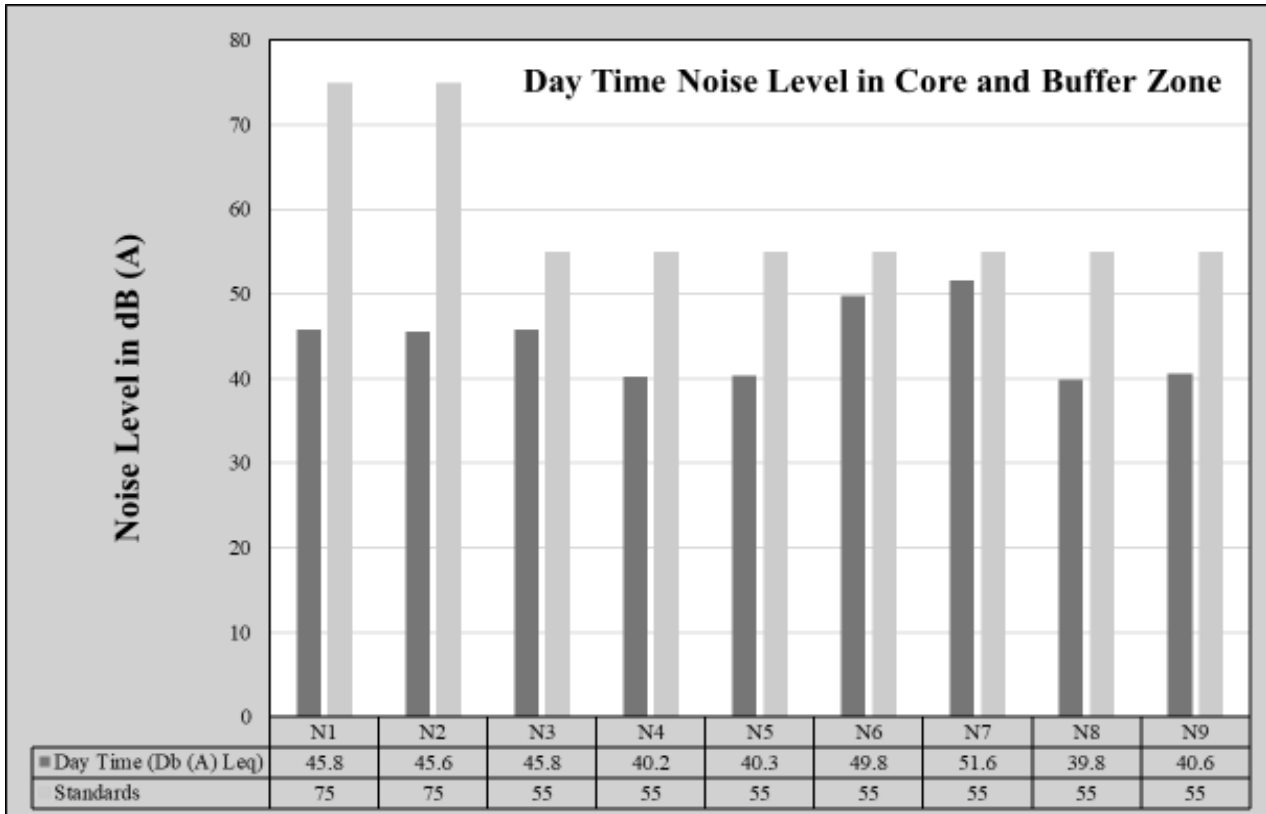


Figure 3.22 Bar Chart Showing Day Time Noise Levels Measured in Core and Buffer Zones

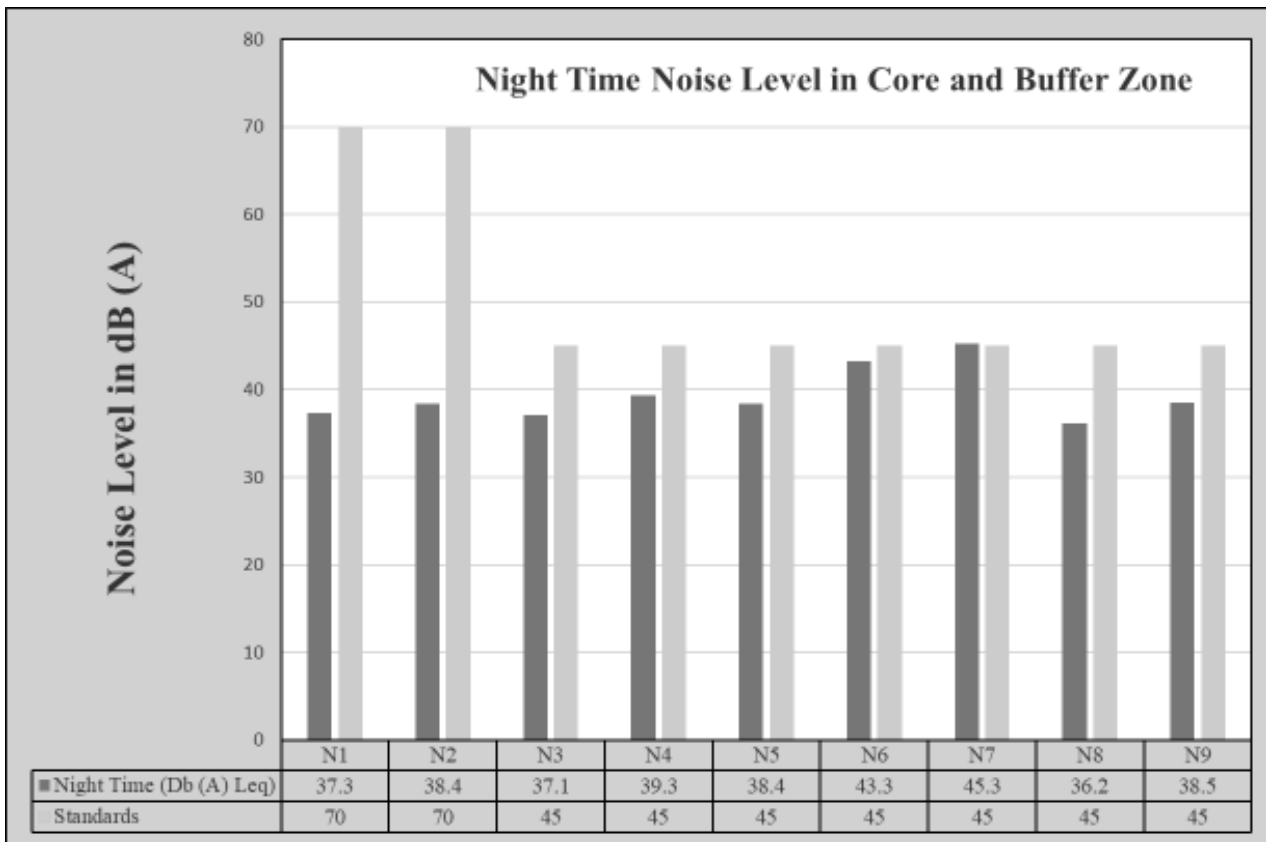


Figure 3.23 Bar Chart Showing Night Time Noise Levels Measured in Core and Buffer Zones

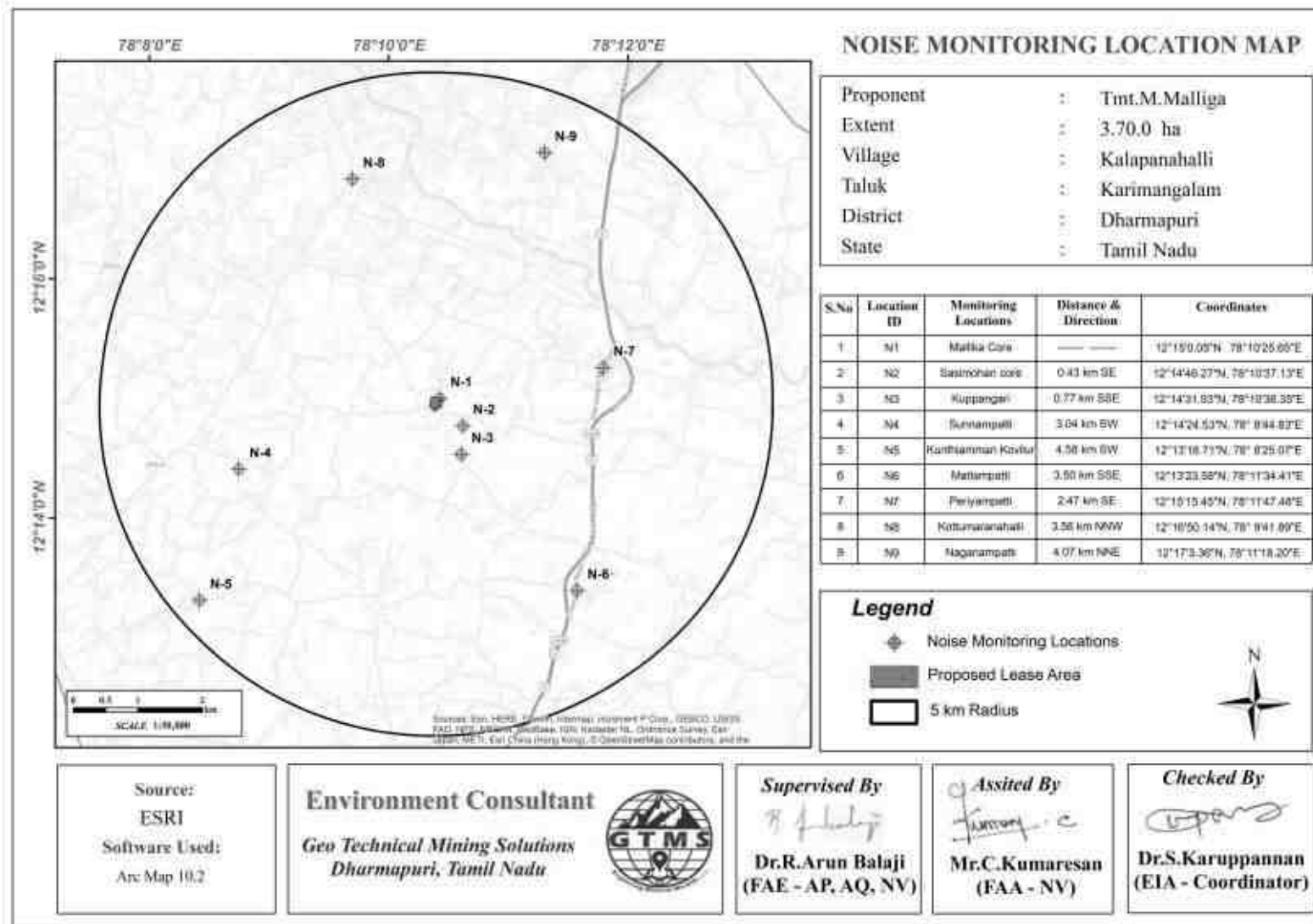


Figure 3.24 Map Showing Noise Level Monitoring Station Locations around 5 km Radius from Proposed Project Site

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, as shown in Figure 3.25.



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	$H = \sum [(p_i) * \ln(p_i)]$ Where p_i : Proportion of total sample represented by species i: number of individuals of species i/ total number samples
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. Photographs showing various species are provided in Figure 3.28.

Flora in mine lease area (core zone)

There are no plants species in center zone of the mine lease area. The 7.5-meter safety zone of mine lease area contains total of 10 species belonging to 7 families have been recorded from the mine lease area. 4 shrubs, 6 herbs were identified. There are weeds. There are no endangered species in mine lease area. Details of vegetation with scientific name indicated in Table 3.22.

Table 3.22 Flora in mine lease area

S.no	Local name	Scientific name	Family name	No of plants
Shrubs				
1	Avaram chadi	<i>Senna auriculata</i>	Fabaceae	3
2	Earuku	<i>Calotropis gigantea</i>	Apocynaceae	5
3	communist pacha	<i>Chromolaena odorata</i>	Asteraceae	6
4	Unnichadi	<i>Lantana camara</i>	Verbenaceae	7
Herbs /Climber				
1	Thathapondu	<i>Tridax procumbens</i>	Asteraceae	8
2	Kolunji chadi	<i>Tephrosia purpurea</i>	Fabaceae	10
3	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	12
4	Nearunji mull	<i>Tribulus zeyheri</i> Sond	Zygophyllaceae	14
5	Pill	<i>Cenchrus ciliaris</i>	Poaceae	15
6	Pulapoo	<i>Aerva lanata</i>	Amaranthaceae	19

Flora within 300 m radius buffer zone

There is no agricultural land nearby lease area. It contains a total of 36 species belonging to 20 families have been recorded from the buffer zone. 11 Trees, 8 Shrubs and 17 Herbs and Climbers were identified. Details of flora with the scientific name details and of diversity species Richness index were mentioned in Table 3.23-3.25 and Figure 3.26. There is no threat to the Flora species in 300 m radius.

Flora within 10 km radius buffer zone

Similar type of environment also in buffer area but with more flora diversity compare than core zone area. It contains a total of species belonging to 43 families have been recorded from the buffer zone. The floral (82) varieties among them 35 Trees, 15 Shrubs, Herbs and Climbers, Creeper, Grass & Cactus, 32 were identified. Details of flora with the scientific name details of diversity species rich ness index were mentioned in Table 3.26-3.28 and Figure 3.27.

Table 3.23 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	7	4	5	1.4	0.0	0.1	3.6	29.3	32.9	Not Listed
2	Palm tree	<i>Borassus flabellifer</i>	Fabaceae	2	2	5	0.4	40.0	1.0	4.9	7.1	12.0	Not Listed
3	Vembu	<i>Azadirachta indica</i>	Meliaceae	8	3	5	1.6	60.0	2.7	19.5	10.7	30.2	Not Listed
4	Vealli vealan	<i>Vachellia leucophloea</i>	Babesiae	2	2	5	0.4	40.0	1.0	4.9	7.1	12.0	LC
5	Unjai maram	<i>Albizia amara</i>	Fabaceae	4	3	5	0.8	60.0	1.3	9.8	10.7	20.5	Not Listed
6	Vetpalai	<i>Wrightia tinctoria</i>	Apocynaceae	4	3	5	0.8	60.0	1.3	9.8	10.7	20.5	Not Listed
7	Teke	<i>Tectona grandis</i>	Verbenaceae	2	2	5	0.4	40.0	1.0	4.9	7.1	12.0	Not Listed
8	Pungamaram	<i>Pongamia pinnata</i>	Fabaceae	4	3	5	0.8	60.0	1.3	9.8	10.7	20.5	Not Listed
9	Piliyamaram	<i>Tamarindus indica</i>	Fabaceae	3	2	5	0.6	40.0	1.5	7.3	7.1	14.5	Not Listed
10	Theannaimaram	<i>Cocos nucifera</i>	Arecaceae	4	3	5	0.8	60.0	1.3	9.8	10.7	20.5	Not Listed
11	Mungil maram	<i>Bambusa</i>	Poaceae	1	1	5	0.2	20.0	1.0	2.4	3.6	6.0	Not Listed
Shrubs													
1	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	9	6	10	0.9	0.1	0.2	2.8	54.4	57.2	Not Listed
2	Uumaththai	<i>Datura metel</i>	Solanaceae	7	5	10	0.7	50.0	1.4	14.3	13.9	28.2	Not Listed
3	Thuthi	<i>Abutilon indicum</i>	Meliaceae	6	4	10	0.6	40.0	1.5	12.2	11.1	23.4	Not Listed

4	Avarai	<i>Senna auriculata</i>	Fabaceae	7	4	10	0.7	40.0	1.8	14.3	11.1	25.4	Not Listed
5	Unichadi	<i>Lantana camara</i>	Verbenaceae	10	8	10	1.0	80.0	1.3	20.4	22.2	42.6	Not Listed
6	Suraimullu	<i>Zizyphus Oenoplia</i>	Rhamnaceae	3	3	10	0.3	30.0	1.0	6.1	8.3	14.5	Not Listed
7	Nochi	<i>Vitex negundo</i>	Lamiaceae	5	4	10	0.5	40.0	1.3	10.2	11.1	21.3	Not Listed
8	Veralichadi	<i>Dodonaea viscosa</i>	Sapindaceae	2	2	10	0.2	20.0	1.0	4.1	5.6	9.6	LC
Herbs/Climbers													
1	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	12	8	15	0.8	0.1	0.1	0.7	231.3	23.0	Not Listed
2	Nearunji mull	<i>Tribulus zeyheri</i> Sond	Zygophyllaceae	16	12	15	1.1	80.0	1.3	8.6	8.6	17.3	
3	Pill	<i>Cenchrus ciliaris</i>	Poaceae	15	13	15	1.0	86.7	1.2	8.1	9.4	17.5	Not Listed
4	Pulapoo	<i>Aerva lanata</i>	Amaranthaceae	9	8	15	0.6	53.3	1.1	4.9	5.8	10.6	Not Listed
5	Kapok bush	<i>Aerva javani</i>	Amaranthaceae	6	5	15	0.4	33.3	1.2	3.2	3.6	6.8	Not Listed
6	Rail poondu	<i>Croton bonplandianus</i>	Euphorbiaceae	22	11	15	1.5	73.3	2.0	11.9	7.9	19.8	Not Listed
7	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	8	8	15	0.5	53.3	1.0	4.3	5.8	10.1	Not Listed
8	Thumbai chadi	<i>Leucas aspera</i>	Lamiaceae	14	7	15	0.9	46.7	2.0	7.6	5.0	12.6	Not Listed
9	Umathai	<i>Datura metel</i>	Solanaceae	11	9	15	0.7	60.0	1.2	5.9	6.5	12.4	Not Listed
10	Sethamutti	<i>Sida cordata</i>	Malvaceae	13	12	15	0.9	80.0	1.1	7.0	8.6	15.7	Not Listed
11	unankodi	<i>Ipomoea Staphylina</i>	Asteraceae	2	2	15	0.1	13.3	1.0	1.1	1.4	2.5	Not Listed
12	Kolunji	<i>Tephrosia purpurea</i>	Fabaceae	18	12	15	1.2	80.0	1.5	9.7	8.6	18.4	Not Listed
13	vealiparuthi	<i>Pergularia daemia</i>	Apocynaceae	2	2	15	0.1	13.3	1.0	1.1	1.4	2.5	Not Listed
14	Seppu nerinji	<i>Indigofera linnaei</i> Ali	Fabaceae	3	3	15	0.2	20.0	1.0	1.6	2.2	3.8	Not Listed
15	Sapathikalli	<i>Opuntia ficus-indica</i>	Cactaceae	16	10	15	1.1	66.7	1.6	8.6	7.2	15.8	Not Listed
16	Katralai	<i>Aloe vera</i>	Asphodelaceae	4	4	15	0.3	26.7	1.0	2.2	2.9	5.0	Not Listed
17	Seammulli	<i>Barleria prionitis</i>	Acanthaceae	11	10	15	0.7	66.7	1.1	5.9	7.2	13.1	Not Listed

Table 3.24 Calculation of Species Diversity in 300 m Radius

S.No.	Common name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
Trees						
1	Karuvealan	<i>Prosopis juliflora</i>	7	0.17	-1.77	-0.30
2	Palm tree	<i>Borassus flabellifer</i>	2	0.05	-3.02	-0.15
3	Vembu	<i>Azadirachta indica</i>	8	0.20	-1.63	-0.32
4	Vealli vealan	<i>Vachellia leucophloea</i>	2	0.05	-3.02	-0.15
5	Unjai maram	<i>Albizia amara</i>	4	0.10	-2.33	-0.23
6	Vetpalai	<i>Wrightia tinctoria</i>	4	0.10	-2.33	-0.23
7	Teke	<i>Tectona grandis</i>	2	0.05	-3.02	-0.15
8	Pungamaram	<i>Pongamia pinnata</i>	4	0.10	-2.33	-0.23
9	Piliyamaram	<i>Tamarindus indica</i>	3	0.07	-2.61	-0.19
10	Theannaimaram	<i>Cocos nucifera</i>	4	0.10	-2.33	-0.23
11	Mungil maram	<i>Bambusa</i>	1	0.02	-3.71	-0.09
H (Shannon Diversity Index) =2.25						
Shrubs						
1	Erukku	<i>Calotropis gigantea</i>	9	0.18	-1.69	-0.31
2	Uumaththai	<i>Datura metel</i>	7	0.14	-1.95	-0.28
3	Thuthi	<i>Abutilon indicum</i>	6	0.12	-2.10	-0.26
4	Avarai	<i>Senna auriculata</i>	7	0.14	-1.95	-0.28
5	Unichadi	<i>Lantana camara</i>	10	0.20	-1.59	-0.32
6	Suraimullu	<i>Zizyphus Oenoplia</i>	3	0.06	-2.79	-0.17
7	Nochi	<i>Vitex negundo</i>	5	0.10	-2.28	-0.23
8	Veralichadi	<i>Dodonaea viscosa</i>	2	0.04	-3.20	-0.13
H (Shannon Diversity Index) =1.98						
Herbs						
1	Nayuruvi	<i>Achyranthes aspera</i>	12	0.06	-2.80	-0.17
2	Nearunji mull	<i>Tribulus zeyheri</i> Sond	16	0.08	-2.51	-0.20
3	Pill	<i>Cenchrus ciliaris</i>	15	0.08	-2.58	-0.20
4	Pulapoo	<i>Aerva lanata</i>	9	0.05	-3.09	-0.14

5	Kapok Bush	<i>Aerva javani</i>	6	0.03	-3.49	-0.11
6	Rail poondu	<i>Croton bonplandianus</i>	22	0.11	-2.19	-0.24
7	Perandai	<i>Cissus quadrangularis</i>	8	0.04	-3.20	-0.13
8	Thumbai chadi	<i>Leucas aspera</i>	14	0.07	-2.64	-0.19
9	Umathai	<i>Datura metel</i>	11	0.06	-2.89	-0.16
10	Sethamutti	<i>Hyptis suaveolens</i>	13	0.07	-2.72	-0.18
11	unankodi	<i>Ipomoea Staphylina</i>	2	0.01	-4.59	-0.05
12	Kolunji	<i>Tephrosia purpurea</i>	18	0.09	-2.39	-0.22
13	Vealiparuthi	<i>Pergularia daemia</i>	2	0.01	-4.59	-0.05
14	Seppu neringi	<i>Indigofera linnaei Ali</i>	3	0.02	-4.18	-0.06
15	Sapathikalli	<i>Opuntia ficus-indica</i>	16	0.08	-2.51	-0.20
16	Katralai	<i>Aloe vera</i>	4	0.02	-3.90	-0.08
17	Seammulli	<i>Barleria prionitis</i>	11	0.06	-2.89	-0.16
H (Shannon Diversity Index) =2.77						

Table 3.25 Species Richness (Index) in 300-meter radius

Details	H	H max	Evenness	Species Richness
Trees	2.25	2.40	0.94	2.69
Shrubs	1.98	2.08	0.95	1.80
Herbs	2.77	2.94	0.94	3.41

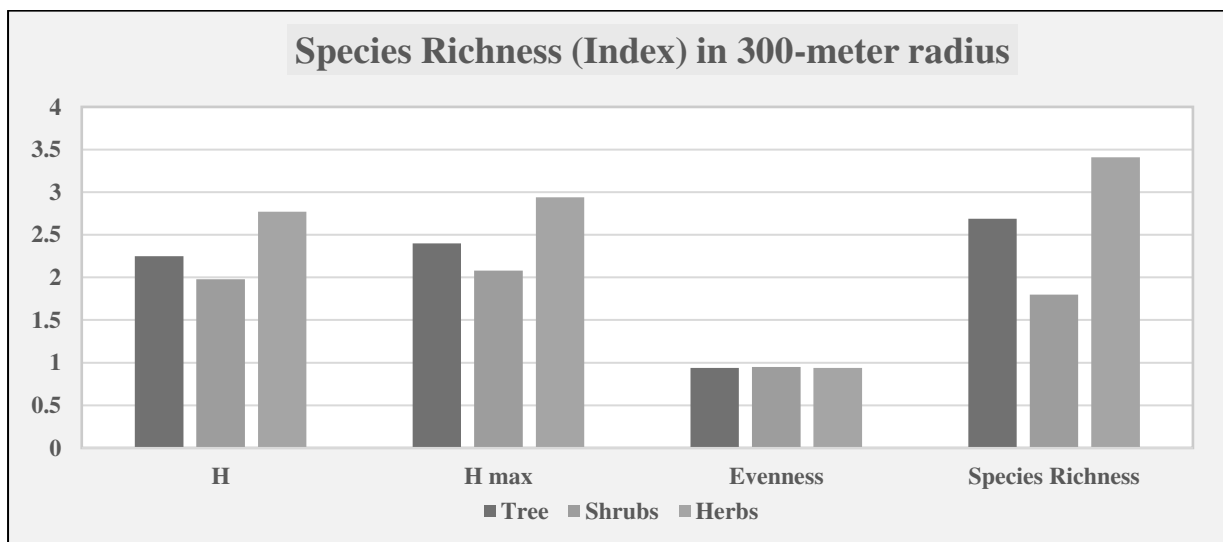


Figure. 3.26 Species Richness (Index) in 300-meter radius

Table 3.26 Flora in 10 km Radius Buffer zone

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	Vembu	<i>Azadirachta indica</i>	Meliaceae	10	6	8	1.3	75.0	1.7	2.9	2.5	5.4	Not Listed
2	Unjai maram	<i>Albizia amara</i>	Fabaceae	9	7	8	1.1	87.5	1.3	2.6	3.0	5.5	Not Listed
3	Vetpalai	<i>Wrightia tinctoria</i>	Apocynaceae	8	5	8	1.0	62.5	1.6	2.3	2.1	4.4	Not Listed
4	Thekku	<i>Tectona grandis</i>	Verbenaceae	9	6	8	1.1	75.0	1.5	2.6	2.5	5.1	Not Listed
5	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	10	8	8	1.3	100.0	1.3	2.9	3.4	6.3	Not Listed
6	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	8	5	8	1.0	62.5	1.6	2.3	2.1	4.4	Not Listed
7	Manga	<i>Mangifera indica</i>	Anacardiaceae	11	8	8	1.4	100.0	1.4	3.2	3.4	6.5	Not Listed
8	Puliyamaram	<i>Tamarindus indica</i>	Legumes	7	5	8	0.9	62.5	1.4	2.0	2.1	4.1	Not Listed
9	Vadanarayani	<i>Delonix elata</i>	Fabaceae	8	6	8	1.0	75.0	1.3	2.3	2.5	4.8	Not Listed
10	Thenpazham	<i>Muntingia calabura</i>	Tiliaceae	9	8	8	1.1	100.0	1.1	2.6	3.4	6.0	Not Listed
11	Punnai	<i>Calophyllum inophyllum</i>	Calophyllaceae	10	7	8	1.3	87.5	1.4	2.9	3.0	5.8	Not Listed
12	Athi	<i>Ficus recemosa</i>	Moraceae	8	5	8	1.0	62.5	1.6	2.3	2.1	4.4	Not Listed
13	Ilanthai	<i>Ziziphus jujubha</i>	Rhamnaceae	10	8	8	1.3	100.0	1.3	2.9	3.4	6.3	Not Listed
14	Nattu Karuvelam	<i>Acacia nilotica</i>	Mimosaceae	11	6	8	1.4	75.0	1.8	3.2	2.5	5.7	Not Listed
15	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	9	5	8	1.1	62.5	1.8	2.6	2.1	4.7	Not Listed
16	Perumungil	<i>Bambusa bamboos</i>	Poaceae	10	7	8	1.3	87.5	1.4	2.9	3.0	5.8	Not Listed
17	Arai nelli	<i>Phyllanthus acidus</i>	Euphorbiaceae	8	5	8	1.0	62.5	1.6	2.3	2.1	4.4	Not Listed

18	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	10	6	8	1.3	75.0	1.7	2.9	2.5	5.4	Not Listed
19	Sapota	<i>Manilkara zapota</i>	Sapotaceae	11	8	8	1.4	100.0	1.4	3.2	3.4	6.5	Not Listed
20	Navalmaram	<i>Sygygium cumini</i>	Myrtaceae	12	10	8	1.5	125.0	1.2	3.5	4.2	7.7	Not Listed
21	Ezhumuchamaram	<i>Citrus lemon</i>	Rutaceae	11	8	8	1.4	100.0	1.4	3.2	3.4	6.5	Not Listed
22	Alamaram	<i>Ficus benghalensis</i>	Moraceae	9	6	8	1.1	75.0	1.5	2.6	2.5	5.1	Not Listed
23	Vazhaimaram	<i>Musa</i>	Musaceae	8	5	8	1.0	62.5	1.6	2.3	2.1	4.4	Not Listed
24	Nelli	<i>Emblica officinalis</i>	Phyllanthaceae	10	7	8	1.3	87.5	1.4	2.9	3.0	5.8	Not Listed
25	Thailamaram	<i>Eucalyptus globules</i>	Myrtaceae	11	8	8	1.4	100.0	1.4	3.2	3.4	6.5	Not Listed
26	Maramalli	<i>Millingtonia hortensis</i>	Bignoniaceae	9	6	8	1.1	75.0	1.5	2.6	2.5	5.1	Not Listed
27	Palamaram	<i>Artocarpus heterophyllus</i>	Moraceae	13	9	8	1.6	112.5	1.4	3.7	3.8	7.5	Not Listed
28	Kuduka puli	<i>Pithecellobium dulce</i>	Mimosaceae	11	7	8	1.4	87.5	1.6	3.2	3.0	6.1	Not Listed
29	Karimurungai	<i>Moringa olefera</i>	Moraginaceae	12	9	8	1.5	112.5	1.3	3.5	3.8	7.3	Not Listed
30	Pappali maram	<i>Carica papaya L</i>	Caricaceae	13	8	8	1.6	100.0	1.6	3.7	3.4	7.1	Not Listed
31	Poovarasu	<i>Thespesia populnea</i>	Malvaceae	8	6	8	1.0	75.0	1.3	2.3	2.5	4.8	Not Listed
32	Arasanmaram	<i>Ficus religiosa</i>	Moraceae	9	5	8	1.1	62.5	1.8	2.6	2.1	4.7	Not Listed
33	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	10	7	8	1.3	87.5	1.4	2.9	3.0	5.8	Not Listed
34	Koyya	<i>Psidium guajava</i>	Myrtaceae	13	8	8	1.6	100.0	1.6	3.7	3.4	7.1	Not Listed
35	Seethapazham	<i>Annona reticulata</i>	Annonaceae	12	7	8	1.5	87.5	1.7	3.5	3.0	6.4	Not Listed
Shrubs													
1	Avarai	<i>Senna auriculata</i>	Fabaceae	15	11	12	1.3	91.7	1.4	6.1	6.3	12.4	Not Listed
2	Marudaani	<i>Lawsonia inermis</i>	Lythraceae	13	9	12	1.1	75.0	1.4	5.3	5.1	10.5	Not Listed
3	Karuveappilai	<i>Murraya koenigii</i>	Asclepiadaceae	14	10	12	1.2	83.3	1.4	5.7	5.7	11.5	Not Listed
4	Sundaika	<i>Solanum torvum</i>	Solanaceae	15	11	12	1.3	91.7	1.4	6.1	6.3	12.4	Not Listed
5	Arali	<i>Nerium indicum</i>	Apocynaceae	11	9	12	0.9	75.0	1.2	4.5	5.1	9.7	Not Listed
6	Seemaigaththi	<i>Cassia alata</i>	Caesalpinaceae	12	8	12	1.0	66.7	1.5	4.9	4.6	9.5	Not Listed
7	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae	15	11	12	1.3	91.7	1.4	6.1	6.3	12.4	Not Listed

8	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae	11	7	12	0.9	58.3	1.6	4.5	4.0	8.5	Not Listed
9	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae	16	12	12	1.3	100.0	1.3	6.6	6.9	13.4	Not Listed
10	Idlipoo	<i>Ixoracoc cineia</i>	Rubiaceae	15	10	12	1.3	83.3	1.5	6.1	5.7	11.9	Not Listed
11	Thuthi	<i>Abutilon indicum</i>	Meliaceae	10	6	12	0.8	50.0	1.7	4.1	3.4	7.5	Not Listed
12	Nithyakalyani	<i>Cathranthus roseus</i>	Apocynaceae	16	13	12	1.3	108.3	1.2	6.6	7.4	14.0	Not Listed
13	Uumaththai	<i>Datura metel</i>	Solanaceae	11	9	12	0.9	75.0	1.2	4.5	5.1	9.7	Not Listed
14	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	16	14	12	1.3	116.7	1.1	6.6	8.0	14.6	Not Listed
15	Neermulli	<i>Hydrophila auriculata</i>	Acanthaceae	13	9	12	1.1	75.0	1.4	5.3	5.1	10.5	Not Listed
Herbs/Climbers/Grass													
1	Nayuruvi	<i>Achyranthes aspera</i>	Amaranthaceae	15	9	18	0.8	50.0	1.7	25.9	2.3	28.2	Not Listed
2	Veetukaayapoondur	<i>Tridax procumbens</i>	Asteraceae	13	10	18	0.7	55.6	1.3	22.4	2.6	25.0	Not Listed
3	Mukkirattai	<i>Boerhaavia diffusa</i>	Nyctaginaceae	16	9	18	0.9	50.0	1.8	27.6	2.3	29.9	Not Listed
4	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae	15	11	18	0.8	61.1	1.4	25.9	2.8	28.7	Not Listed
5	Karisilanganni	<i>Eclipta prostrata</i>	Asteraceae	11	9	18	0.6	50.0	1.2	19.0	2.3	21.3	Not Listed
6	Korai	<i>Cyperus rotundus</i>	Cyperaceae	10	8	18	0.6	44.4	1.3	17.2	2.0	19.3	Not Listed
7	Kanamvazha	<i>Commelina benghalensis</i>	Commelinaceae	11	7	18	0.6	38.9	1.6	19.0	1.8	20.8	Not Listed
8	Thumbai	<i>Leucas aspera</i>	Lamiaceae	15	12	18	0.8	66.7	1.3	25.9	3.1	28.9	Not Listed
9	Nai kadugu	<i>Celome viscosa</i>	Capparidaceae	12	8	18	0.7	44.4	1.5	20.7	2.0	22.7	Not Listed
10	Parttiniyam	<i>Parthenium hysterophorus</i>	Asteraceae	11	7	18	0.6	38.9	1.6	19.0	1.8	20.8	Not Listed
11	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae	16	13	18	0.9	72.2	1.2	27.6	3.3	30.9	Not Listed
12	Arugampul	<i>Cynodon dactylon</i>	Poaceae	17	14	18	0.9	77.8	1.2	29.3	3.6	32.9	Not Listed
13	Manathakkali	<i>Solanum nigrum</i>	Solanaceae	12	10	18	0.7	55.6	1.2	20.7	2.6	23.2	Not Listed
14	Kudai korai	<i>Cyperus difformis</i>	Cyperaceae	11	9	18	0.6	50.0	1.2	19.0	2.3	21.3	Not Listed
15	Thoiya keerai	<i>Digeria muricata</i>	Amarantheceae	12	11	18	0.7	61.1	1.1	20.7	2.8	23.5	Not Listed

16	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae	16	14	18	0.9	77.8	1.1	27.6	3.6	31.2	Not Listed
17	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	17	15	18	0.9	83.3	1.1	29.3	3.8	33.1	Not Listed
18	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	15	11	18	0.8	61.1	1.4	25.9	2.8	28.7	Not Listed
19	Kovakkai	<i>Trichosanthes dioica</i>	Cucurbitaceae	11	9	18	0.6	50.0	1.2	19.0	2.3	21.3	Not Listed
20	Sangupoo	<i>Clitoriaternatia</i>	Fabaceae	15	12	18	0.8	66.7	1.3	25.9	3.1	28.9	Not Listed
21	Siru puladi	<i>Desmodium triflorum</i>	Fabaceae	16	11	18	0.9	61.1	1.5	27.6	2.8	30.4	Not Listed
22	Amman Pacharisi	<i>Euphorbia hirta</i>	Euphorbiaceae	11	9	18	0.6	50.0	1.2	19.0	2.3	21.3	Not Listed
23	Thumattikai	<i>Cucumis callosus</i>	Cucurbitaceae	13	10	18	0.7	55.6	1.3	22.4	2.6	25.0	Not Listed
24	Seppu nerunjil	<i>Indigofera enneaphylla</i>	Fabaceae	15	13	18	0.8	72.2	1.2	25.9	3.3	29.2	Not Listed
25	Vallikeerai	<i>Ipomoea aquatica</i>	Convolvulaceae	12	11	18	0.7	61.1	1.1	20.7	2.8	23.5	Not Listed
26	Muthiyar koonthal	<i>Merremia tridentata</i>	Convolvulaceae	15	9	18	0.8	50.0	1.7	25.9	2.3	28.2	Not Listed
27	Mookuthi poondu	<i>Wedelia trilobata</i>	Asteraceae	16	12	18	0.9	66.7	1.3	27.6	3.1	30.7	Not Listed
28	Kattu kanchippul	<i>Apluda mutica</i>	Poaceae	11	9	18	0.6	50.0	1.2	19.0	2.3	21.3	Not Listed
29	Chevvarakupul	<i>Chloris barbata</i>	Amaranthaceae	16	12	18	0.9	66.7	1.3	27.6	3.1	30.7	Not Listed
30	Kuthirai vaali	<i>Echinochloa colona</i>	Poaceae	12	8	18	0.7	44.4	1.5	20.7	2.0	22.7	Not Listed
31	Pullu	<i>Eragrostis ferruginea</i>	Poaceae	17	15	18	0.9	83.3	1.1	29.3	3.8	33.1	Not Listed
32	Nagathali	<i>Opuntia dillenii</i>	Cactaceae	11	9	18	0.6	50.0	1.2	19.0	2.3	21.3	Not Listed

Table 3.27 Calculation of Species Diversity in 10 km Radius

S. No	Local Name	Scientific name	No. of Species	Pi	In (Pi)	Pi x in (Pi)
Trees						
1	Vembu	<i>Azadirachta indica</i>	10	0.03	-3.55	-0.10
2	Unjai maram	<i>Albizia amara</i>	9	0.03	-3.65	-0.09
3	Vetpalai	<i>Wrightia tinctoria</i>	8	0.02	-3.77	-0.09
4	Thekku	<i>Tectona grandis</i>	9	0.03	-3.65	-0.09
5	Pongam oiltree	<i>Pongamia pinnata</i>	10	0.03	-3.55	-0.10
6	Thennai maram	<i>Cocos nucifera</i>	8	0.02	-3.77	-0.09
7	Manga	<i>Mangifera indica</i>	11	0.03	-3.45	-0.11
8	Puliyamaram	<i>Tamarindus indica</i>	7	0.02	-3.90	-0.08
9	Vadanarayani	<i>Delonix elata</i>	8	0.02	-3.77	-0.09
10	Thenpazham	<i>Muntingia calabura</i>	9	0.03	-3.65	-0.09
11	Punnai	<i>Calophyllu inophyllum</i>	10	0.03	-3.55	-0.10
12	Athi	<i>Ficus recemosa</i>	8	0.02	-3.77	-0.09
13	Ilanthai	<i>Ziziphus jujubha</i>	10	0.03	-3.55	-0.10
14	Nattu Karuvelam	<i>Acacia nilotica</i>	11	0.03	-3.45	-0.11
15	Nettilinkam	<i>Polylathia longifolia</i>	9	0.03	-3.65	-0.09
16	Perumungil	<i>Bambusa bamboos</i>	10	0.03	-3.55	-0.10
17	Arai nelli	<i>Phyllanthus acidus</i>	8	0.02	-3.77	-0.09
18	Panai maram	<i>Borassus flabellifer</i>	10	0.03	-3.55	-0.10
19	Sapota	<i>Manilkara zapota</i>	11	0.03	-3.45	-0.11
20	Navalmaram	<i>Sygygium cumini</i>	12	0.03	-3.36	-0.12
21	Ezhumuchaipalam	<i>Citrus lemon</i>	11	0.03	-3.45	-0.11
22	Alamaram	<i>Ficus benghalensis</i>	9	0.03	-3.65	-0.09
23	Vazhaimaram	<i>Musa</i>	8	0.02	-3.77	-0.09
24	Nelli	<i>Embllica officinalis</i>	10	0.03	-3.55	-0.10
25	Thailamaram	<i>Eucalyptus globules</i>	11	0.03	-3.45	-0.11
26	Maramalli	<i>Millingtonia hortensis</i>	9	0.03	-3.65	-0.09
27	Palamaram	<i>Artocarpus heterophyllus</i>	13	0.04	-3.28	-0.12
28	Kuduka puli	<i>Pithecellobium dulce</i>	11	0.03	-3.45	-0.11
29	Karimurungai	<i>Moringa olefera</i>	12	0.03	-3.36	-0.12
30	Pappali maram	<i>Carica papaya L</i>	13	0.04	-3.28	-0.12
31	Poovarasu	<i>Thespesia populnea</i>	8	0.02	-3.77	-0.09
32	Arasanmaram	<i>Ficus religiosa</i>	9	0.03	-3.65	-0.09
33	Nuna maram	<i>Morinda citrifolia</i>	10	0.03	-3.55	-0.10
34	Koyya	<i>Psidium guajava</i>	13	0.04	-3.28	-0.12
35	Seethapazham	<i>Annona reticulata</i>	12	0.03	-3.36	-0.12

Shrubs						
1	Avarai	<i>Senna auriculata</i>	15	0.06	-2.79	-0.17
2	Marudaani	<i>Lawsonia inermis</i>	13	0.05	-2.93	-0.16
3	Karuveappilai	<i>Murraya koenigii</i>	14	0.06	-2.86	-0.16
4	Sundaika	<i>Solanum torvum</i>	15	0.06	-2.79	-0.17
5	Arali	<i>Nerium indicum</i>	11	0.05	-3.10	-0.14
6	Seemaigaththi	<i>Cassia alata</i>	12	0.05	-3.01	-0.15
7	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	15	0.06	-2.79	-0.17
8	Kattamanakku	<i>Jatropha curcas</i>	11	0.05	-3.10	-0.14
9	Chaturakalli	<i>Euphorbia antiquorum</i>	16	0.07	-2.72	-0.18
10	Idlipoo	<i>Ixorococ cineia</i>	15	0.06	-2.79	-0.17
11	Thuthi	<i>Abutilon indicum</i>	10	0.04	-3.19	-0.13
12	Nithyakalyani	<i>Cathranthus roseus</i>	16	0.07	-2.72	-0.18
13	Uumaththai	<i>Datura metel</i>	11	0.05	-3.10	-0.14
14	Erukku	<i>Calotropis gigantea</i>	16	0.07	-2.72	-0.18
15	Neermulli	<i>Hydrophila auriculata</i>	13	0.05	-2.93	-0.16
Herbs/Climbers						
1	Nayuruv	<i>Achyranthes aspera</i>	15	0.03	-3.52	-0.10
2	Veetukaayapoondur	<i>Tridax procumbens</i>	13	0.03	-3.67	-0.09
3	Mukkirattai	<i>Boerhaavia diffusa</i>	16	0.03	-3.46	-0.11
4	Kuppaimeni	<i>Acalypha indica</i>	15	0.03	-3.52	-0.10
5	Karisilanganni	<i>Eclipta prostrata</i>	11	0.02	-3.83	-0.08
6	Korai	<i>Cyperus rotundus</i>	10	0.02	-3.93	-0.08
7	Kanamvazha	<i>Commelina benghalensis</i>	11	0.02	-3.83	-0.08
8	Thumbai	<i>Leucas aspera</i>	15	0.03	-3.52	-0.10
9	Nai kadugu	<i>Celome viscosa</i>	12	0.02	-3.75	-0.09
10	Parttiniyam	<i>Parthenium hysterophorus</i>	11	0.02	-3.83	-0.08
11	Thulasi	<i>Ocimum tenuiflorum</i>	16	0.03	-3.46	-0.11
12	Arugampul	<i>Cynodon dactylon</i>	17	0.03	-3.40	-0.11
13	Manathakkali	<i>Solanum nigrum</i>	12	0.02	-3.75	-0.09
14	Kudai korai	<i>Cyperus difformis</i>	11	0.02	-3.83	-0.08
15	Thoiya keera	<i>Digeria muricata</i>	12	0.02	-3.75	-0.09
16	Kovai	<i>Coccinia grandis</i>	16	0.03	-3.46	-0.11
17	Perandai	<i>Cissus quadrangularis</i>	17	0.03	-3.40	-0.11
18	Mudakkotan	<i>Cardiospermum helicacabum</i>	15	0.03	-3.52	-0.10
19	Kovakkai	<i>Trichosanthes dioica</i>	11	0.02	-3.83	-0.08
20	Sangupoo	<i>Clitoriaternatia</i>	15	0.03	-3.52	-0.10
21	Siru puladi	<i>Desmodium triflorum</i>	16	0.03	-3.46	-0.11
22	Sithrapaalavi	<i>Euphorbia prostrata</i>	11	0.02	-3.83	-0.08
23	Thumattikai	<i>Cucumis callosus</i>	13	0.03	-3.67	-0.09

24	Seppu nerunjil	<i>Indigofera enneaphylla</i>	15	0.03	-3.52	-0.10
25	Vallikeerai	<i>Ipomoea aquatica</i>	12	0.02	-3.75	-0.09
26	Muthiyar koontha	<i>Merremia tridentata</i>	15	0.03	-3.52	-0.10
27	Mookuthi poondu	<i>Wedelia trilobata</i>	16	0.03	-3.46	-0.11
28	Kattu kanchippul	<i>Apluda mutica</i>	11	0.02	-3.83	-0.08
29	Chevvarakupul	<i>Chloris barbata</i>	16	0.03	-3.46	-0.11
30	Kuthirai vaal	<i>Echinochloa colona</i>	12	0.02	-3.75	-0.09
31	Pullu	<i>Eragrostis ferruginea</i>	17	0.03	-3.40	-0.11
32	Nagathali	<i>Opuntia dillenii</i>	11	0.02	-3.83	-0.08

Table 3.28 Species Richness (Index) in 10 km radius

Details	H	H max	Evenness	Species Richness
Trees	3.54	3.56	1.00	5.81
Shrubs	2.88	2.89	1.00	3.09
Herbs	3.60	3.61	1.00	5.78

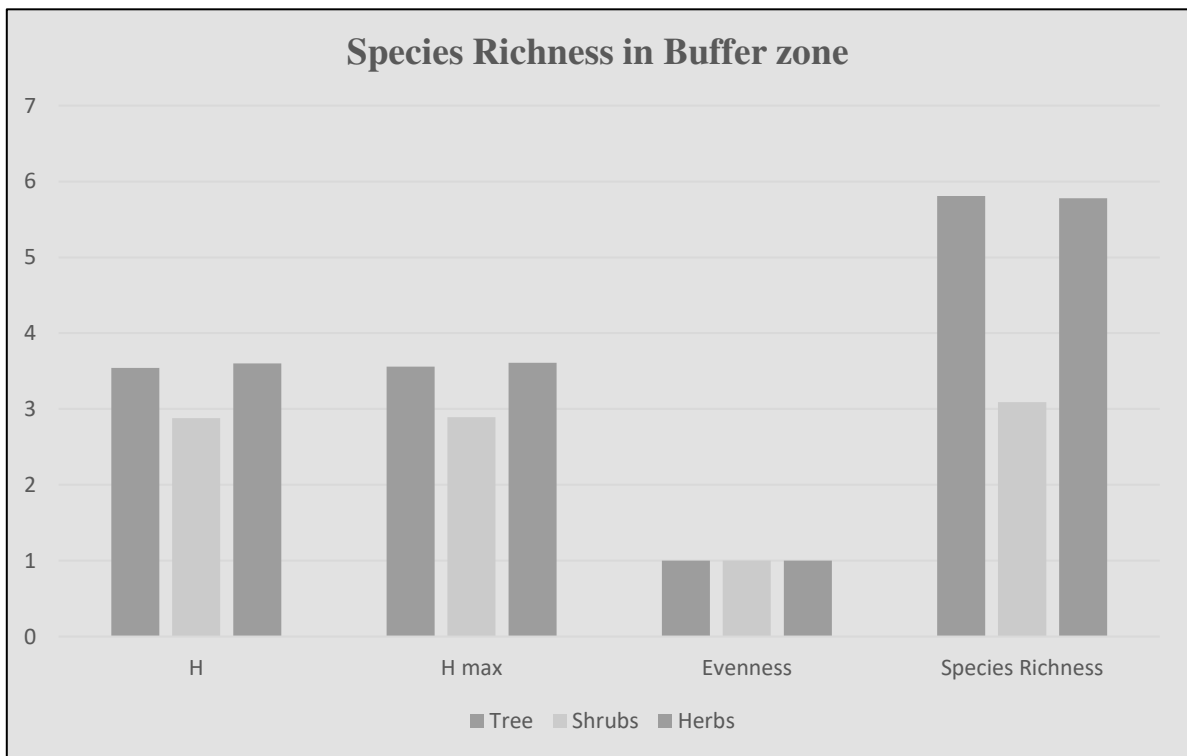


Figure. 3.27 Species Richness (Index) in 300 m Radius



Azadirachta indica



Zornia reticulata



Sida acuta



Leucas aspera



Calyptocarpus vialis Less



Mangifera indica



Bambusa bambos



Tectona grandis



Tridax procumbens



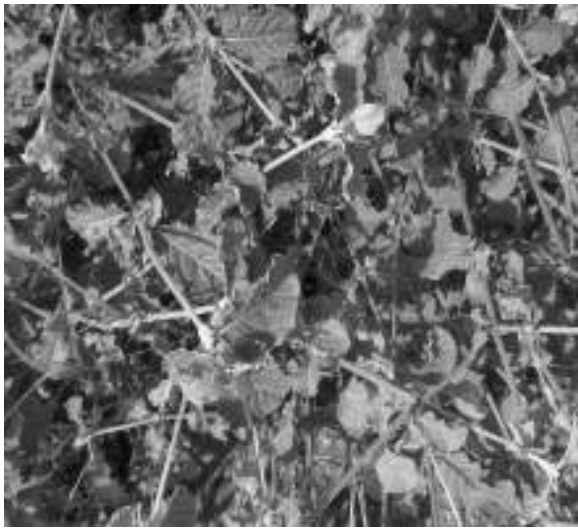
Chromolaena odorata



Ipomoea staphylina



Hyptis suaveolens



Achyranthes aspera



Lantana camara



Chloris barbata Sw



Melinis repens (Willd.)

Figure 3.28 Flora in Core and Buffer Area

Aquatic Vegetation

The field survey for assessing the aquatic vegetation was also undertaken during the study period. The list of aquatic plants observed in the study area is given in Table 3.29.

Table 3.29 Aquatic Vegetation

S.No.	Scientific name	Common Name	IUCN Red List Status
1	<i>Eichornia crassipes</i>	Water hyacinth	NA
2	<i>Aponogeton natans</i>	Floating lace plant	NA
3	<i>Carex cruciata</i>	Cross Grass	NA
4	<i>Cynodon dactylon</i>	Scutch grass	LC
Aquatic fauna			
5	<i>Oreochromis mossambicus</i>	Jalebi	VU
6	<i>Labeo catla</i>	Catla catla	LC
7	<i>Channa striata</i>	Korava meen	LC

*LC- Least Concern, NA-Not yet assessed

The food chain in aquatic ecosystems often begins with the algae or phytoplankton producers, and then the zooplankton that feed on them. Table 3.29 lists the aquatic plants and animals commonly found in rivers, ponds and lakes within a radius of 5 km from the quarry. Phytoplankton, zooplankton, fish and Artiola form this food chain.

Eg: Phytoplankton→zooplankton→small fish→large fish

Forest Vegetation

There are no Reserve Forests or Biosphere Reserves or Wildlife Sanctuaries or National Parks or Bird Areas (IBAs) and faunal migration routes within 10 km radius. The area under study (mining lease area and 10 km buffer zone) is not ecologically sensitive.

Endangered and endemic species as per the IUCN Red List

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

Agriculture & Horticulture in 1km radius

Major Agricultural Crops

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

Table 3.30 Major Crops in 1km radius

S. No	Major crops	Scientific name	Families
1	Paddy	<i>Oryza sativa</i>	Grasses
2	Sorghum	<i>Sorghum bicolor</i>	Grasses
3	Gingelly	<i>Sesamum indicum</i>	Pedaliaceae
4	Groundnut	<i>Arachis hypogaea</i>	Legumes
5	Sugarcane	<i>Saccharum officinarum</i>	Grasses

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 this district are fruit crops like 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 3.31.

Table 3.31 Major Field Crops & Horticulture cultivation in 1km radius.

SI.NO	Common Name	Scientific Name	Family
Major Horticultural Crops			
1	Banana	<i>Musa</i>	Musaceae
2	Mango	<i>Mangifera indica</i>	Anacardiaceae
4	Guava	<i>Psidium guajava</i>	Myrtaceae
5	Sapota	<i>Manilkara zapota</i>	Sapotaceae
6	Amla	<i>Phyllanthus emblica</i>	Phyllanthaceae
7	Lemon	<i>Citrus × limon</i>	Rutaceae
8	Papaya	<i>Carica papaya</i>	Caricaceae
Vegetables			
9	Onion	<i>Allium cepa</i>	Amaryllidaceae
10	Tapioca	<i>Manihot esculenta</i>	Spurges
11	Brinjal	<i>Solanum melongena</i>	Nightshade
12	Tomato	<i>Solanum lycopersicum</i>	Nightshade
13	Bottle Gourd	<i>Lagenaria siceraria</i>	Cucurbits
14	Veandai kai	<i>Abelmoschus esculentus</i>	Mallows
15	Moringa	<i>Moringa oleifera</i>	Moringaceae
16	Mullangi	<i>Raphanus sativus</i>	Brassicaceae
Flowers			
18	Jasmine	<i>Jasminum</i>	Jasminaceae
20	Sambanthi poo	<i>Crysanthimum</i>	Asteraceae
21	Rose & Jathi	<i>Rosa</i>	Rosaceae
23	Tuberose	<i>Polianthes tuberosa</i>	Asparagus
Spices and Condiments			
24	Chillies	<i>Capsicum frutescens</i>	Solanaceae
25	Turmeric	<i>Curcuma longa</i>	Zingiberaceae
26	Tamarind	<i>Tamarindus indica</i>	Legumes
27	Curry leaf	<i>Murraya koenigii</i>	Rutaceae



Figure 3.29 Agricultural land in the study area

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.

Fauna Methodology

Table 3.32 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 30 varieties of species observed in the Core zone of Kalapanahalli Village, among them numbers of Insects 13, Reptiles 3, Mammals 4 and Avian 10. A total of 30 species belonging to 20 families have been recorded from the core Zone. There is no schedule I and II species. A total of 10 species of bird were sighted in the study area. Details of fauna in core zone with the scientific name were mentioned in Table. 3.33.

Fauna in Buffer Zone

Taxonomically a total of 87 species belonging to 56 families have been recorded from the buffer zone area. Based on habitat classification the majority of species were Birds 52, followed by insects 15, reptiles 12, mammals 5 and amphibians 3. A total of 52 species of bird were sighted in the buffer zone. There are no critically endangered, endangered, vulnerable and endemic species were observed. Details of fauna in buffer zone with the scientific name were mentioned in Table. 3.34. data collation in secondary data

Table 3.33 Fauna in Core Zone

S.no	Common Name/English Name	Scientific Name	Family name	IUCN Red List data
Insects				
1	Chocolate pansy	<i>Junonia iphita</i>	Nymphalidae	NA
2	Lime swallowtail	<i>Papilio demoleus</i>	Papilionidae	NA
3	Common Mormon	<i>Papilio polytes</i>	Papilionidae	NA
4	Crimson dropwing	<i>Trithemis aurora</i>	Libellulidae	LC
5	Lemon pansy	<i>Junonia lemonias</i>	Nymphalidae	NA
6	Tawny coster	<i>Acraea terpsicore</i>	Nymphalidae	NA
7	Slender skimmer	<i>Orthetrum sabina</i>	Libellulidae	LC
8	Plaina tiger butterfly	<i>Danaus chrysippus</i>	Nymphalidae	LC
9	Mottled emigrant	<i>Catopsilia pyranthe</i>	Pieridae	LC
10	Spotted locust	<i>Aularches miliaris</i>	Pyrgomorphidae	LC
11	Ditgh jewel	<i>Brachythemis contaminata</i>	Libellulidae	LC
12	Gray well jumping spider	<i>Menemerus bivittatus</i>	Salticidae	LC
13	Silky sugar ant	<i>Camponotus sericeus</i>	Formicidae	LC
Reptiles				
1	Oriental garden lizard	<i>Calotes uersicolor</i>	Agamidae	LC
2	Fan-Throated Lizard	<i>Sitanaponticeriana</i>	Agamidae	LC
3	Common skink	<i>Mabuya carinatus</i>	Scincidae	LC
Aves				
1	Baya weaver	<i>Ploceus philippinus</i>	Ploceidae	LC
2	White – browed Wagtail	<i>Motacilla maderaspatensis</i>	Motacillidae	LC
3	Great cormorant	<i>Phalacrocorax carbo</i>	Phalacrocoracidae	LC
4	Indian robin	<i>Copsychus fulicatus</i>	Muscicapidae	LC
5	Indian Roller	<i>Coracias benghalensis</i>	Coraciidae	LC
6	Indian paradise flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae	LC
7	Common myna	<i>Acridotheres tristis</i>	Sturnidae	LC
8	European bee- eater	<i>Merops apiaster</i>	Meropidae	LC
9	Black drongo	<i>Dicrurus macrocerus</i>	Dicruridae	LC
10	Corvus	<i>Corvus corax</i>	Corvidae	LC
Mammals				
1	House mouse	<i>Mus musculus</i>	Muridae	LC
2	Indian hare	<i>Lepus nigricollis</i>	Leporidae	LC
3	Cow	<i>Bos taurus</i>	Bovidae	NA
4	Goat	<i>Capra hircus</i>	Bovidae	NA

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

Table 3.34 Fauna in Buffer Zone

S. No	Common Name/English Name	Scientific Name	Family name	IUCN Red List data
Insects				
1	Chocolate pansy	<i>Junonia iphita</i>	Nymphalidae	NA
2	Lime swallowtail	<i>Papilio demoleus</i>	Papilionidae	NA
3	Common Mormon	<i>Papilio polytes</i>	Papilionidae	NA
4	Crimson dropwing	<i>Trithemis aurora</i>	Libellulidae	LC
5	Lemon pansy	<i>Junonia lemonias</i>	Libellulidae	NA
6	Tawny coster	<i>Acraea terpsicore</i>	Nymphalidae	NA
7	Slender skimmer	<i>Orthetrum sabina</i>	Libellulidae	LC
8	Plaina tiger butterfly	<i>Danaus chrysippus</i>	Nymphalidae	LC
9	Danaid eggfly	<i>Hypolimnas misippus</i>	Nymphalidae	LC
10	Bark blue tiger butterfly	<i>Tirumala septentrionis</i>	Nymphalidae	NA
11	Mottled emigrant	<i>Catopsilia pyranthe</i>	Pieridae	NA
12	Spotted locust	<i>Aularches miliaris</i>	Pyrgomorphidae	NA
13	Ditgh jewel	<i>Brachythemis contaminata</i>	Libellulidae	LC
14	Gray well jumping spider	<i>Menemerus bivittatus</i>	Salticidae	NA
15	Silky sugar ant	<i>Camponotus sericeus</i>	Formicidae	NA
Reptiles				
1	Oriental garden lizard	<i>Calotes uersicolor</i>	Agamidae	NA
2	Fan-Throated Lizard	<i>Sitanaponticeriana</i>	Agamidae	NA
3	Common skink	<i>Mabuya carinatus</i>	Scincidae	NA
4	Buff striped keelback	<i>Amphiesma stolatum</i>	Colubridae	LC
5	Common bronzeback tree snake	<i>Dendrelaphis tristis</i>	Colubridae	LC
6	Common krait	<i>Bungarus caeruleus</i>	Elapidae	LC
7	Russells wolf snake	<i>Lycodon fasilolatus</i>	Colubridae	LC
8	Brahminy blindsnake	<i>Indotyphlope braminus</i>	Typhlopidae	LC
9	Rock dragon	<i>Psammophilus dorsalis</i>	Agamidae	LC
10	Indian vine snake	<i>Ahaetulla oxyrhynca</i>	Colubridae	NA
11	Blotched house gecko	<i>Hemidactylus triedrus</i>	Gekkonidae	LC
12	Leschenaults snake -eye	<i>Ophisops leschenaultia</i>	Lacertidae	NA
Aves				
1	Baya weaver	<i>Ploceus philippinus</i>	Ploceidae	LC
2	White – browed Wagtail	<i>Motacilla maderaspatensis</i>	Motacillidae	LC
3	Great cormorant	<i>Phalacrocorax carbo</i>	Phalacrocoracidae	LC
4	Indian robin	<i>Copsychus fulicatus</i>	Muscicapidae	LC

5	Indian Roller	<i>Coracias benghalensis</i>	Coraciidae	LC
6	Indian paradise flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae	LC
7	Red junglefowl	<i>Gallus gallus</i>	Phasianidae	LC
8	Common myna	<i>Acridotheres tristis</i>	Sturnidae	LC
9	European bee- eater	<i>Merops apiaster</i>	Meropidae	LC
10	Black drongo	<i>Dicrurus macrocercus</i>	Dicruridae	LC
11	Black – winged stilt	<i>Himantopus Himantopus</i>	Recurvirostridae	LC
12	Crested serpent eagle	<i>Spilornis cheela</i>	Accipitridae	LC
13	Brahminy kite	<i>Haliastur indus</i>	Accipitridae	LC
14	Spotted owlet	<i>Athene brama</i>	Strigidae	LC
15	Black rumped flameback	<i>Dinopium benghalense</i>	Picidae	LC
16	White -browed bulbul	<i>Pycnonotus luteolus</i>	Pycnonotidae	LC
17	House sparrow	<i>Passer domesticus</i>	Passeridae	LC
18	Grey heron	<i>Ardea cinerea</i>	Ardeidae	LC
19	Indian peafowl	<i>Pavo cristatus</i>	Phasianidae	LC
20	Rose -ringed parakeet	<i>Psittacula krameri</i>	Psittaculidae	LC
21	Scaly – breasted munia	<i>Lonchura punctulata</i>	Estrildidae	LC
22	White -throated kingfisher	<i>Halcyon smyrnensis</i>	Alcedinidae	LC
23	House crow	<i>Corvus splendens</i>	Corvidae	LC
24	Asian koel	<i>Eudynamys scolopaceus</i>	Cuculidae	LC
25	Asian green bee- Eater	<i>Merops orientails</i>	Meropidae	LC
26	Little cormorant	<i>Microcarbo niger</i>	Microcarbo	LC
27	Painted stork	<i>Mycteria leucocephala</i>	Ciconiidae	NT
28	Shikra	<i>Accipiter badius</i>	Accipitridae	LC
29	Indian robin	<i>Copsychus fulicatus</i>	Muscicapidae	LC
30	Indian roller	<i>Coracias benghalensis</i>	Coraciidae	LC
31	Indian paradise flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae	LC
32	Yellow – billed babbler	<i>Argya affinis</i>	Leiothrichidae	LC
33	Ashy – crowned sparrow lark	<i>Eremopterix griseus</i>	Alaudidae	LC
34	Small pratincole	<i>Glareola lactea</i>	Glareolidae	LC
35	Great egret	<i>Ardea alba</i>	Ardeidae	LC
36	Rock pigeon	<i>Columba livia</i>	Columbidae	LC
37	Eurasian collared – dove	<i>Streptopelia decaocto</i>	Columbidae	LC
38	Eurasian coot	<i>Fulica atra</i>	Rallidae	LC
39	Northern shoveler	<i>Spatula clypeata</i>	Anatidae	LC
40	Black kite	<i>Milvus migrans</i>	Accipitridae	LC
41	Red junglefowl	<i>Gallus gallus</i>	Phasianidae	LC

42	Common kingfisher	<i>Alcedo atthis</i>	Alcedo atthis	LC
43	Common sandpiper	<i>Actitis hypoleucos</i>	Scolopacidae	LC
44	Striated heron	<i>Butorides striata</i>	Ardeidae	LC
45	Laughine dove	<i>Spilopelia senegalensis</i>	Columbidae	LC
46	Red vented bulbul	<i>Pycnonotus cafer</i>	Pycnonotidae	LC
47	Black winked kite	<i>Elanus caeruleus</i>	Accipitridae	LC
48	Common tailorbird	<i>Orthotomus sutorius</i>	Cisticolidae	LC
49	Indian pond -heron	<i>Ardeola grayii</i>	Ardeidae	LC
50	Greater racket tailed drongo	<i>Dicrurus paradiseus</i>	Dicruridae	LC
51	Paddyfield pipit	<i>Anthus rufulus</i>	Motacillidae	LC
52	Common iora	<i>Aegithina tiphia</i>	Aegithinidae	LC
Mammals				
1	House mouse	<i>Mus musculus</i>	Muridae	LC
2	Indian hare	<i>Lepus nigricollis</i>	Leporidae	LC
3	Jungle cat	<i>Felis chaus</i>	Felidae	LC
4	Cow	<i>Bos taurus</i>	Bovidae	NA
5	Goat	<i>Capra hircus</i>	Bovidae	NA
Amphibians				
1	Asian common toad	<i>Duttaphrynus melanostictus</i>	Bufoidea	LC
2	Chunam tree frog	<i>Polypedates maculatus</i>	Rhacophoridae	LC
3	Common skittering frog	<i>Euphlycitis cyanophlyctis</i>	Dicroglossidae	LC

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

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 ECONOMICS 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.

3.6.1 Objectives of the Study

The main objectives of the study are as follows:

- ❖ To know the current socio-economic condition in the region to cover the sub sectors education, health, sanitation, and water & food security.
- ❖ To recommend practical strategic interventions in the sector.
- ❖ To help in providing better living standards.
- ❖ To understand skill sets and plan for employment opportunities which shall be created.

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 24 Villages including Adilam, Baisuhalli, Bathalahalli, Begarahalli, Chennarayanahalli, Donnenahalli, Guthalahalli, Indamangalam, Jagirburgur, Kerakodahalli, Konanginaickanahalli, Kottumaranahalli, Mallikuttai, Molappanahalli, Naganampatty, Nallanahalli, Nariyanahalli, Neralamarudahalli, Periyannahalli, Poonathanahalli, Pothalahalli, Pulikkarai, Pumandahalli, Sitiganahalli. As Kalappanahalli is the village in which the proposed project site is located, the summary of population facts for the village is exclusively provided in Table 3.35 and for other 8 villages in Tables 3.36 - 3.38.

Table 3.35 Kalappanahalli Village Population Facts

Kalappanahalli	
Number of Households	858
Population	3701
Male Population	1938
Female Population	1763
Children Population	463
Sex-ratio	910
Literacy	63.53%
Male Literacy	72.92%
Female Literacy	53.40%
Scheduled Tribes (ST) %	82
Scheduled Caste (SC) %	477
Total Workers	1834
Main Worker	1747
Marginal Worker	807

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

Table 3.36 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
Adilam	1412	5652	2949	2703	2949	1818	1131	2703	1131	1572
Baisuhalli	1890	8181	4293	3888	4946	2947	1999	3235	1346	1889
Bathalahalli	187	768	407	361	421	268	153	347	139	208
Begarahalli	1483	6088	3184	2904	3390	2102	1288	2698	1082	1616
Chennarayanahalli	163	643	343	300	360	230	130	283	113	170
Donnenahalli	116	463	233	230	242	132	110	221	101	120
Guthalahalli	265	1089	581	508	621	382	239	468	199	269
Indamangalam	1386	5675	3035	2640	3027	1871	1156	2648	1164	1484
Jagirburgur	593	2685	1366	1319	1776	1001	775	909	365	544
Kerakodahalli	960	3914	2011	1903	2348	1400	948	1566	611	955
Konanginaickanahalli	1024	4378	2331	2047	2724	1643	1081	1654	688	966
Kottumaranahalli	813	3366	1744	1622	2090	1226	864	1276	518	758
Mallikuttai	1295	5289	2746	2543	3035	1846	1189	2254	900	1354
Molappanahalli	307	1188	641	547	617	391	226	571	250	321
Naganampatty	946	3654	1904	1750	2064	1198	866	1590	706	884
Nallanahalli	1414	5962	3087	2875	3711	2190	1521	2251	897	1354
Nariyanahalli	947	3840	2003	1837	2337	1362	975	1503	641	862
Neralamarudahalli	72	324	165	159	136	79	57	188	86	102
Periyanahalli	1749	7388	3909	3479	4777	2832	1945	2611	1077	1534
Poonathanahalli	326	1352	719	633	748	455	293	604	264	340
Pothalahalli	869	3483	1817	1666	2072	1243	829	1411	574	837
Pulikkarai	1376	5590	2883	2707	3091	1836	1255	2499	1047	1452
Pumandahalli	1086	4442	2314	2128	2476	1470	1006	1966	844	1122
Sitiganahalli	89	338	175	163	170	103	67	168	72	96

Table 3.37 Details on Educational Facilities, Water, and Drainage & Health Facilities

Villages	Private Primary School (Number)	Govt. Vocational Training School/ITI (Numbers)	Primary Health Centre (Number)	Tap Water Untreated	River/Canal	Area Covered under Total Sanitation Campaign (TSC)?	Telephone (landlines)	Public Bus Service	Gravel (kutchha) Roads	Commercial Bank	Agricultural Credit Societies	Self - Help Group (SHG)	Nutritional Centres-Anganwadi Centre	Community Centre with/without TV	Power Supply for Domestic Use
Adilam	2	2	0	2	2	1	2	1	1	2	2	1	1	1	1
Baisuhalli	2	2	0	1	2	2	1	1	1	2	2	1	1	1	1
Bathalahalli	2	2	0	1	2	2	2	2	1	2	2	1	1	2	1
Begarahalli	1	2	0	1	2	2	1	1	1	2	1	1	1	2	1
Chennarayanahalli	2	2	0	1	2	1	1	1	1	2	2	1	1	1	1
Donnenahalli	2	2	0	1	2	1	1	1	1	2	2	1	2	2	1
Guthalahalli	2	2	0	1	2	1	1	1	1	2	2	1	1	2	1
Indamangalam	2	2	0	2	2	1	1	1	1	2	2	1	1	2	1
Jagirburgur	2	2	0	1	2	1	1	2	1	2	2	1	1	2	1
Kerakodahalli	2	2	0	2	1	1	2	2	1	2	1	1	1	1	1
Konanginaickanahalli	2	2	0	1	2	1	1	2	1	2	1	1	1	2	1
Kottumaranahalli	2	2	0	2	1	2	2	1	1	2	1	2	1	2	1
Mallikuttai	2	2	0	2	2	2	1	1	1	2	2	1	1	1	1
Molappanahalli	2	2	0	1	2	1	1	1	1	2	2	1	1	1	1
Naganampatty	2	2	0	1	2	2	1	2	1	2	2	1	1	1	1
Nallanahalli	1	2	0	1	2	2	1	1	1	2	2	1	1	1	1
Nariyanahalli	2	2	0	2	1	1	1	1	1	2	1	1	1	2	1
Neralamarudahalli	2	2	0	1	2	2	1	2	1	2	2	1	2	2	1
Periyanahalli	1	2	0	2	2	2	1	1	1	1	1	1	1	1	1
Poonathanahalli	2	2	0	1	2	1	1	1	1	2	2	1	1	2	1
Pothalahalli	2	2	0	2	2	1	1	2	1	2	2	1	1	2	1
Pulikkarai	2	2	1	1	2	2	1	1	1	2	1	1	1	1	1
Pumandahalli	2	2	0	1	2	1	1	1	1	2	1	1	1	2	1
Sitiganahalli	2	2	0	1	2	2	1	2	1	2	2	1	2	2	1

Table 3.38 Workers' Profile of Study Area

Village	Total Worker Population Person	Total Worker Population Male	Total Worker Population Female	Main Working Population	Main Working Population	Main Working Population	Main Cultivator Population	Main Agricultural Labourers	Main Other Workers Population	Non-Working Population Person
Adilam	3053	1695	1358	2880	1621	1259	1281	944	631	2599
Baisuhalli	3795	2400	1395	3676	2355	1321	991	1180	1483	4386
Bathalahalli	452	237	215	352	226	126	146	104	101	316
Begarahalli	3388	1855	1533	2994	1692	1302	1338	969	665	2700
Chennarayanahalli	340	182	158	335	180	155	2	304	29	303
Donnenahalli	282	143	139	245	138	107	113	77	53	181
Guthalahalli	605	321	284	560	300	260	117	386	57	484
Indamangalam	3142	1803	1339	3083	1777	1306	1571	789	704	2533
Jagirburgur	1300	679	621	574	448	126	255	78	235	1385
Kerakodahalli	2132	1205	927	2084	1183	901	650	861	456	1782
Konanginaickanahalli	1763	1209	554	1089	718	371	223	501	351	2615
Kottumaranahalli	1953	1057	896	1635	988	647	786	328	492	1413
Mallikuttai	2739	1534	1205	2101	1271	830	640	544	852	2550
Molappanahalli	598	376	222	568	360	208	178	266	124	590
Naganampatty	2026	1097	929	1965	1078	887	273	1378	282	1628
Nallanahalli	2815	1669	1146	2335	1497	838	401	660	1191	3147
Nariyanahalli	1811	1160	651	1164	829	335	334	198	626	2029
Neralamarudahalli	193	97	96	192	96	96	119	72	1	131
Periyanahalli	3408	2151	1257	2494	1701	793	527	507	1396	3980
Poonathanahalli	746	406	340	744	405	339	191	332	157	606
Pothalahalli	1901	1054	847	1847	1026	821	553	823	462	1582
Pulikkurai	3270	1742	1528	2800	1517	1283	1211	1057	510	2320
Pumandahalli	2256	1261	995	1772	1035	737	543	725	488	2186
Sitiganahalli	200	99	101	197	97	100	103	89	3	138

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 Village Road and Krishnagiri to Salem (NH-7) as shown in Table 3.39 and in Figure 3.30. 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 3.39 Traffic Survey Locations

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Village Road	1.24 Km-N	Village Road
TS2	Krishnagiri to Salem (NH-7)	2.24 Km- E	Krishnagiri to Salem (NH-7)

Source: On-site monitoring by GTMS FAE & TM

Table 3.40 Existing Traffic Volume

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	
TS1	76	228	42	42	82	41	311
TS2	140	420	75	75	106	53	548

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 3.41 Rough Stone Transportation Requirement

Transportation of Rough and Gravel per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
15 tonnes	22	66

Source: Approved Mining Plan

Table 3.42 Summary of Traffic Volume

Route	Existing traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960 guidelines
Village Road	311	66	377	1200
Krishnagiri to Salem (NH-7)	548	66	614	1200

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

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

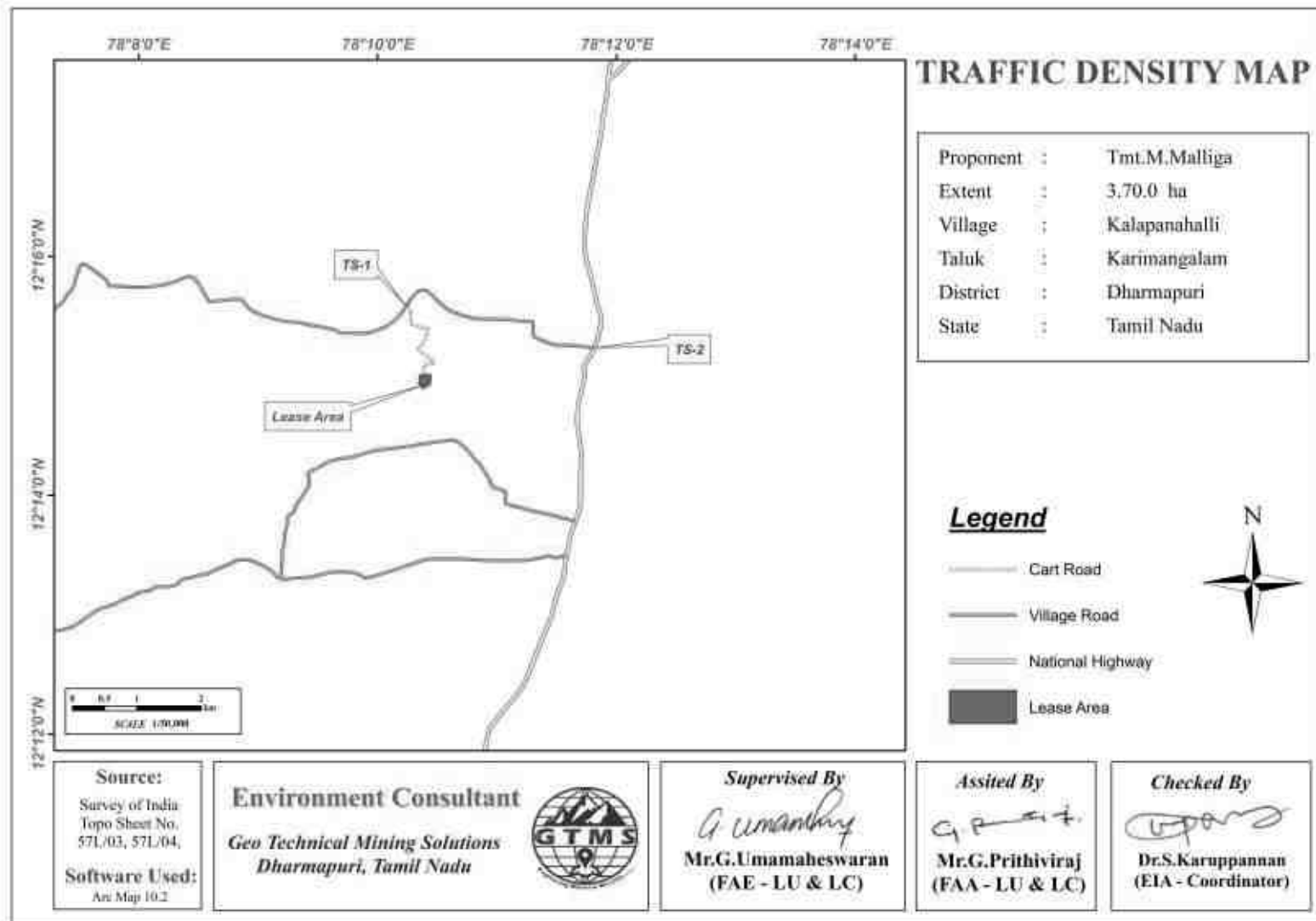


Figure 3.30 Traffic Density Map

3.8 SITE SPECIFIC FEATURES

There are no Wildlife Sanctuaries, Reserve Forest and National Park within 10 km radius. Therefore, there will be no need of acquisition/diversion of forest land. The details related to the environmentally sensitive areas around the proposed mine lease area i.e., 10 km radius and the nearby water bodies are given in the Table 3.43.

Table 3.43 Details of Environmentally Sensitive Ecological Features in the Study Area

S. No.	Sensitive Ecological Features		Areal Distance in km
1	National Park / Wild life Sanctuaries	None	Nil within 25 km radius
		Cauvery North WLS	25.28 km NW
2	Reserve Forest	Elumichanahalli R.F	10.30 km N
		Annamalahalli I R.F	11.84 km NW
		Erranahalli R.F	12.14 km NW
		Sokkampatty II R.F	12.28 km NW
		Panaikulam I R.F	13.05 km W
		Mallehalli R. F	13.7 km W
		Erraguttahalli R. F	13.45 km W
		Papparapatti R. F	13.82 km W
		Dhandukaranahalli R.F	14.13 km NW
		Dhandukaranahalli R.F	14.43 km NW
		Erranguttahalli R.F	14.59 km W
		Kanavenahalli R.F	15.24 km NW
		Noolahalli & Reddihalli R.F	15.45 km S
		Mookanur A R.F	15.48 km S
		Kadathur R.F	15.62 km S
		Panneswaramadam R.F	15.66km NE
		Thalihalli R.F	19.11 km NE
		Thattakal R.F	19.63km NE
		Nathathahalli R.F	19.93km S
Maniambadi R.F	20.00km SE		
Baleguli II R.F	22.42km NE		
Athimuttulu R. F	23.39km NW		
3	Lakes/Reservoirs/ Dams/Streams/Rivers	Kuppangarai Lake	0.85 km S
		Mekkanampatti Lake	2.19 km SW
		Baisuhalli Lake	3.63 km SE
		Kadagathur Lake	7.40 km SW
		Dharmapuri lake	10.35 km S
		Pidamaneri lake	13.32 km S
		Ilakkiyampatti lake	15.44 km S

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	Centrally Protected Archaeological Sites	None	Nil within 10 km radius
9	Industries/ Thermal Power Plants	None	Nil within 10 km radius
10	Defence Installation	None	Nil within 10 km radius

Source: Survey of India Toposheet





Figure 3.31 Field Study Photographs

CHAPTER IV

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

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

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

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

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

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

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

4.1 LAND ENVIRONMENT

4.1.1 Anticipated Impact

- ❖ Permanent or temporary change on land use and land cover.

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

4.1.2 Common Mitigation Measures from Proposed Project

- ❖ The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigate measures like phase wise development of greenbelt etc.
- ❖ Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area.
- ❖ Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt
- ❖ Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- ❖ At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir.
- ❖ In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 7.5 m 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

No top soil will be removed in this project. However, some of the common mitigation measures is discussed in the following sections.

4.2.1 Anticipated Impact on Soil Environment

Following impacts are anticipated due to mining operations:

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

4.2.2 Common Mitigation Measures from proposed project

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

4.3 WATER ENVIRONMENT

The total water requirement for this project will be 8.0 KLD. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The domestic effluent to be generated from the project will be collected in septic tank with soak pits arrangements. There are no waste dumps in this quarry. Based on the available information and the geophysical investigations the study concluded that the project area is considered to have poor groundwater potential. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected.

4.3.1 Anticipated Impact

The major sources of water pollution normally associated due to mining and allied operations are:

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

- ❖ As the proposed project acquires 8.0 KLD of water from water vendors, it will not extract water by developing abstraction structures in the lease area. Therefore, the project will not deplete aquifer beneath the lease area.

4.3.2 Common Mitigation Measures for the Proposed Project

- ❖ Garland drainage system and settling tank will be constructed along the proposed mining lease area. 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
- ❖ Rainwater from the mining pits will be collected in sump and will be allowed to store and pumped out to surface settling tank of 15 m x 10 m x 3 m to remove suspended solids if any. This collected water will be judiciously used for dust suppression and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judiciously utilize the rainwater as part of rainwater harvesting system
- ❖ Benches will be provided with inner slopes and through a system of drains and channels, rain water will be allowed to descent into surrounding drains to minimize the effects of erosion and water logging arising out of uncontrolled descent of water
- ❖ The water collected will be reused during storm for dust suppression and greenbelt development within the mines
- ❖ Interceptor traps/oil separators will be installed to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will be passed through interceptor traps/oil separators prior to its reuse
- ❖ Flocculating or coagulating agents will be used to assist in the settling of suspended solids during monsoon seasons
- ❖ Periodic (every 6 month once) analysis of ground water quality of quarry pit water and ground water of nearby villages will be conducted.
- ❖ Domestic sewage from site office and urinals/latrines provided in ML is discharged in septic tank followed by soak pits
- ❖ Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes
- ❖ De-silting will be carried out before and immediately after the monsoon season
- ❖ Regular monitoring (once every 6 months) and analysing the quality of water in open well, bore wells and surface water.

4.4 AIR ENVIRONMENT

The air borne particulate matter is the main air pollutant by opencast mining. The mining operation will be carried out by jack hammer drilling, excavation, loading and transportation.

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 Chaulya et al.,2001. The equations used for SPM, SO₂, and NO_x 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	$E = [u0.4a0.2\{9.7 + 0.01p + b/(4 + 0.3b)\}]$	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).
Overall Mine	SO ₂	Area	$E = a0.14\{u/(1.83 + 0.93u)\} [\{p/(0.48 + 0.57p)\} + \{b/(14.37 + 1.15b)\}]$	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).
Overall Mine	NO _x	Area	$E = a0.25\{u/(4.3 + 32.5u)\} [1.5p + \{b/(0.06 + 0.08b)\}]$	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. As the SPM emission calculation for overall mine is not considering pollution control measures, one-third of the SPM value is taken for derivation of PM₁₀ keeping in mind that proper control measures are followed. 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}, PM₁₀, SO₂ and NO_x 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}	0.0228045215663	37000	6.16338E-07
Overall Mine	PM ₁₀	0.0235252678238	37000	6.35818E-07
Overall Mine	SO ₂	0.0122116993875	37000	3.30046E-07
Overall Mine	NO _x	0.0110588864296	37000	2.98889E-07

4.4.2.1 Frame work of Computation and Model Details

By using the above-mentioned inputs, Ground Level Concentrations (GLC) due to the quarrying activities have been estimated to know the incremental concentration in ambient air quality and impact in the study area. The effect of air pollutants upon receptors are influenced by concentration of pollutants and their dispersion in the atmosphere.

Air quality modelling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards and to apply mitigation measures to reduce impact caused by quarrying activities. Suspended Particulate Matter (SPM) is the major pollutant occurred during quarrying activities. The prediction includes the impacts of excavation, drilling, loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and cloud cover.

The model was used to predict the impact on the ambient air environment at each receptor at various localities within 10km radius around the project site and the maximum incremental GLC at the project site. All the prediction models in Figures 4.1- 4.4 shows the maximum concentrations of PM_{2.5}, PM₁₀, SO₂ and NO_x close to the proposed project site due to low to moderate wind speeds.

4.4.2.2 Modelling of Incremental Concentration

The air borne particulate matter such as PM₁₀ and PM_{2.5} generated by quarrying operation, transportation, and wind erosion of the exposed areas and emissions of sulphur dioxide (SO₂) and oxides of nitrogen (NO_x) due to excavation and loading equipment's and vehicles plying on haul roads are the significant air pollutants arising from mining operation, leading to an adverse impact on the ambient air environment in and around the project area. 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 4.3-4.6.

4.4.2.3 Model Results

The post project resultant concentrations of PM₁₀, PM_{2.5}, SO₂ & NO_x (GLC) is given in Tables 4.3-4.6.

Table 4.3 Incremental & Resultant GLC of PM_{2.5}

Station ID	Distance to core	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	--	--	21.1	9.6	30.7	Below standard	45.5	Not significant
AAQ2	0.58	SE	20.9	4	24.9		19.1	
AAQ3	0.81	SSE	19.1	2	21.1		10.5	
AAQ4	3.11	SW	14.8	2	16.8		13.5	
AAQ5	4.54	SW	14.9	0.4	15.3		2.7	
AAQ6	3.62	SE	16.9	0.3	17.2		1.8	
AAQ7	2.51	NE	20.3	0	20.3		0.0	
AAQ8	3.60	NNW	15.8	0	15.8		0.0	
AAQ9	4.12	NNE	17.4	0	17.4		0.00	

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	--	--	39.7	15	54.7	Below standard	37.8	Not significant
AAQ2	0.58	SE	39.2	5	44.2		12.8	
AAQ3	0.81	SSE	37.6	3	40.6		8.0	
AAQ4	3.11	SW	33.8	3	36.8		8.9	
AAQ5	4.54	SW	33.3	0.8	34.1		2.4	
AAQ6	3.62	SE	35.8	0.3	36.1		0.8	
AAQ7	2.51	NE	37.6	0.5	38.1		1.3	
AAQ8	3.60	NNW	34.1	0	34.1		0.0	
AAQ9	4.12	NNE	35.6	0.3	35.9		0.84	

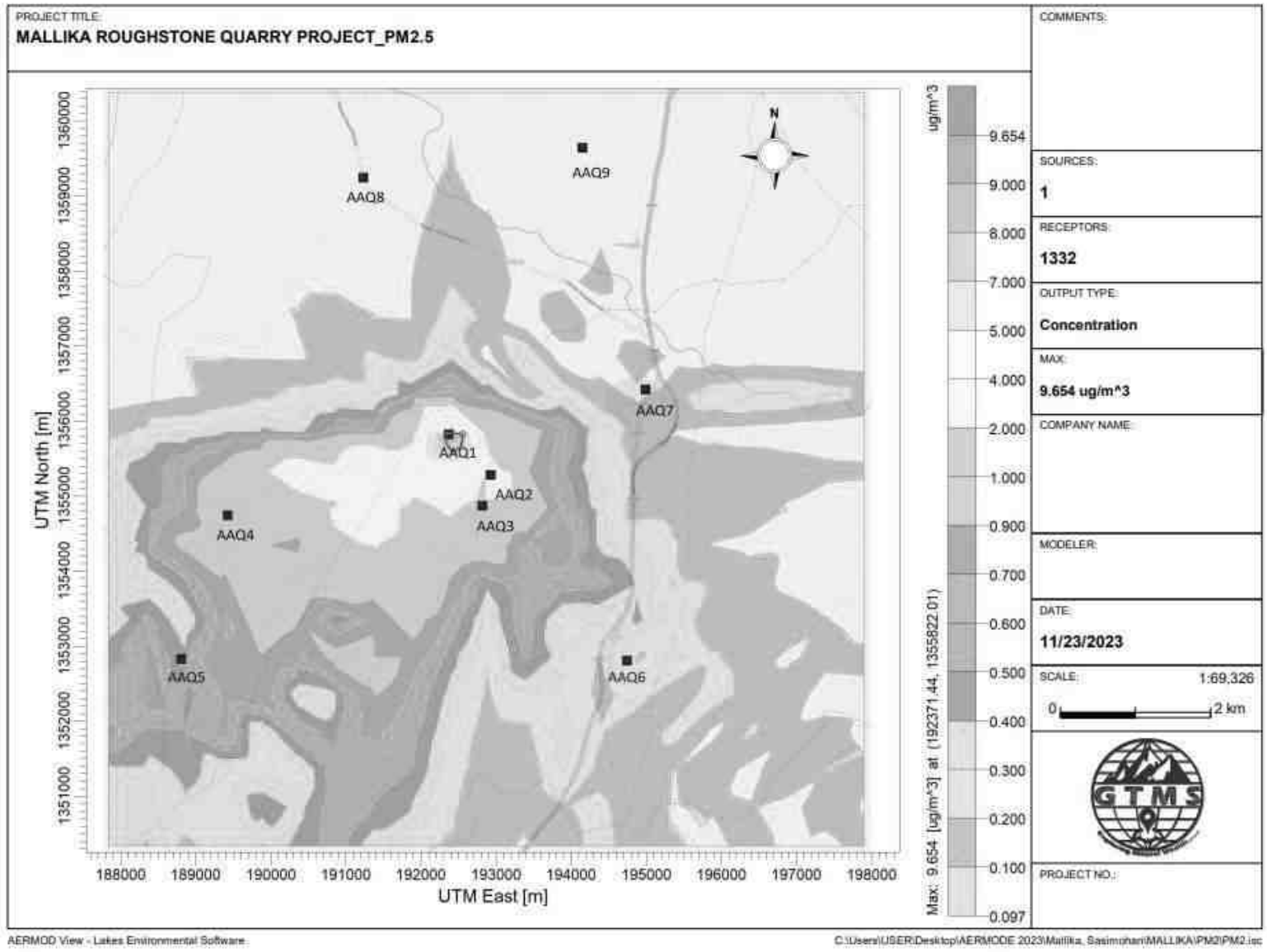


Figure 4.1 Predicted Incremental Concentration of PM_{2.5}

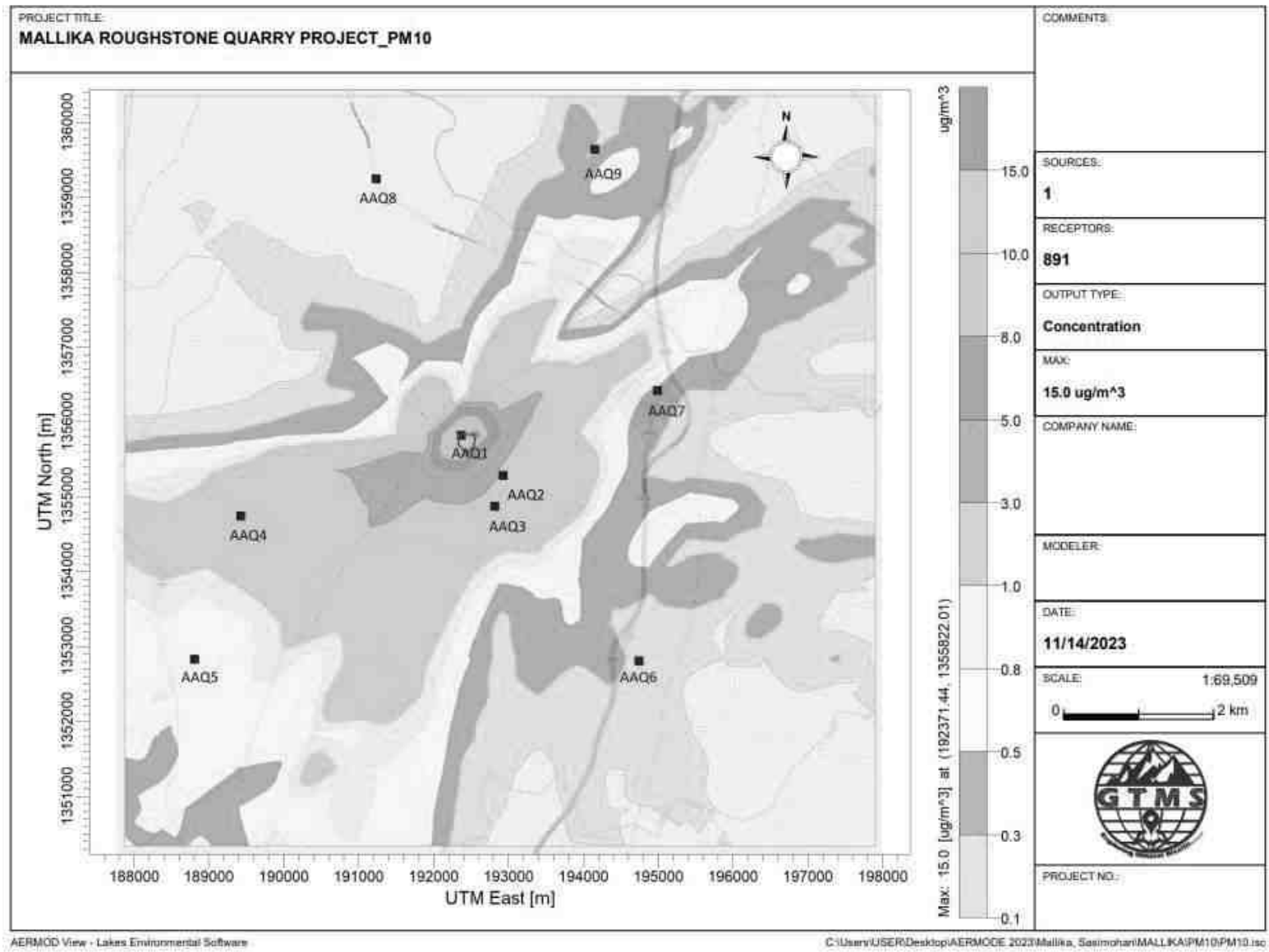


Figure 4.2 Predicted Incremental Concentration of PM₁₀

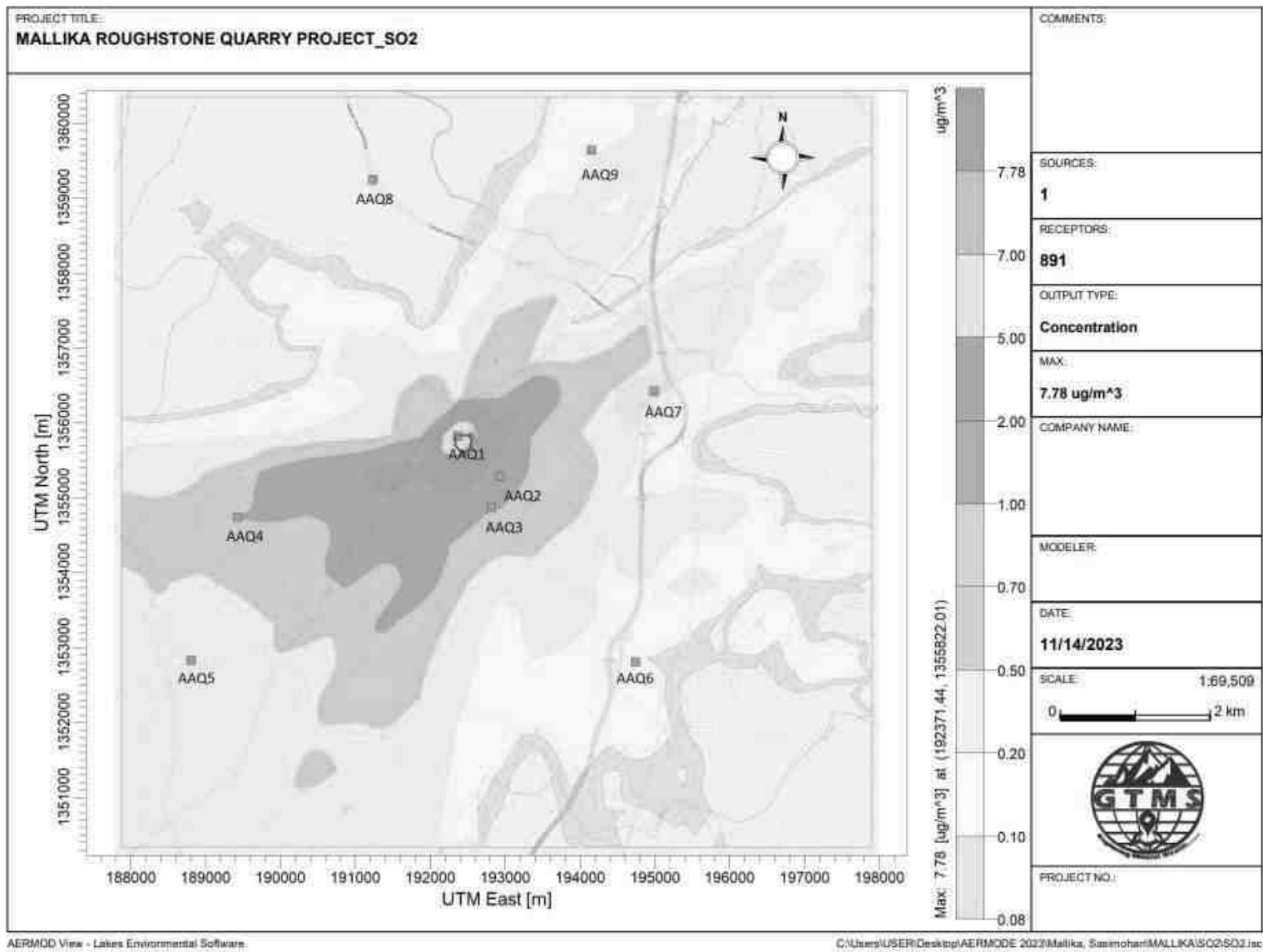


Figure 4.3 Predicted Incremental Concentration of SO₂

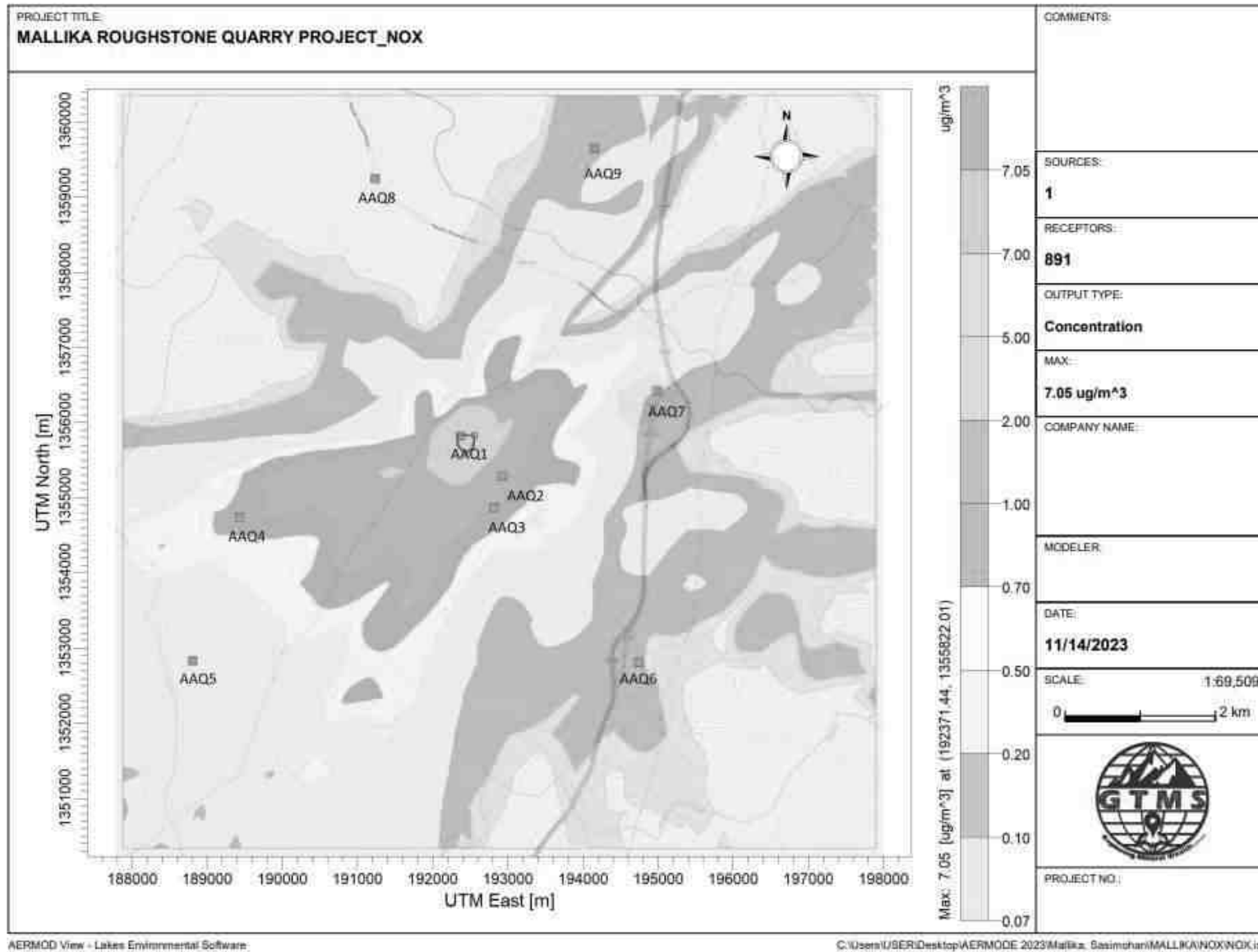


Figure 4.4 Predicted Incremental Concentration of NO_x

Table 4.5 Incremental & Resultant GLC of SO₂

Station ID	Distance to core	Direction	SO ₂ concentrations(µg/m ³)			Comparison against air quality standard (80 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	10.1	7.78	17.88	Below standard	77.0	Not significant
AAQ2	0.58	SE	9.1	2	11.1		22.0	
AAQ3	0.81	SSE	8.4	2	10.4		23.8	
AAQ4	3.11	SW	5.8	2	7.8		34.5	
AAQ5	4.54	SW	6.2	0.5	6.7		8.1	
AAQ6	3.62	SE	8.8	0.2	9		2.3	
AAQ7	2.51	NE	9.1	0.5	9.6		5.5	
AAQ8	3.60	NNW	7.1	0	7.1		0.0	
AAQ9	4.12	NNE	7.3	0.2	7.5		2.74	

Table 4.6 Incremental & Resultant GLC of NO_x

Station ID	Distance to core	Direction	NO _x concentrations(µg/m ³)			Comparison against air quality standard (80 µg/m ³)	Magnitude of change (%)	Significance
			Baseline	Predicted	Total			
AAQ1	--	--	18.5	7.05	25.55	Below standard	38.1	Not significant
AAQ2	0.58	SE	18.1	2	20.1		11.0	
AAQ3	0.81	SSE	15.5	2	17.5		12.9	
AAQ4	3.11	SW	11.0	1	12		9.1	
AAQ5	4.54	SW	10.7	0.5	11.2		4.7	
AAQ6	3.62	SE	14.3	0.2	14.5		1.4	
AAQ7	2.51	NE	16.5	0.5	17		3.0	
AAQ8	3.60	NNW	13.9	0	13.9		0.0	
AAQ9	4.12	NNE	14.0	0.2	14.2		1.43	

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.

4.4.3 Common Mitigation Measures

Drilling

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

Advantages of Wet Drilling

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

Blasting

- ❖ Suitable time of blasting will be chosen according to the local conditions and water will be sprinkled on blasting face.
- ❖ Blasting will be avoided when temperature inversion is likely to occur and strong wind blows towards residential areas.
- ❖ 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.

Haul Road and Transportation

- ❖ Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- ❖ Transportation of material will be carried out during day time and material will be covered with tarpaulin
- ❖ The speed of tippers plying on the haul road will be limited to < 20 km/hr to avoid generation of dust
- ❖ Water sprinkling on haul roads and loading points will be carried out twice a day
- ❖ Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process and reduces pollution

- ❖ The un-metalled haul roads will be compacted weekly before being put into use
- ❖ Overloading of tippers will be avoided to prevent spillage
- ❖ It will be ensured that all transportation vehicles carry a valid PUC certificate
- ❖ Haul roads and service roads will be graded to clear accumulation of loose materials

Green Belt

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

Occupational Health

- ❖ Dust mask will be provided to the workers and their use will be strictly monitored
- ❖ Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers and tipper drivers
- ❖ Ambient air quality monitoring will be conducted every six months to assess effectiveness of mitigation measures proposed area.

4.5 NOISE ENVIRONMENT

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

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

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

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

Where,

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

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

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

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

4.5.1 Anticipated Impact

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

- Source data
- Receptor data
- Attenuation factor

Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4.7.

Table 4.7 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

*50 feet from source = 15.24 meters

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

The total noise to be produced by mining activity is calculated to be 95.8 dB (A). Generally, most mining operations produce noise between 100-109 dB (A). We have considered equipment and operation noise levels (max) to be approx. 109 dB (A) for noise prediction modelling.

Table 4.8 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)
Malliga Core	100	45.8	57.16	57.47
Sasimohan core	430	45.6	44.49	48.09
Kuppangari	770	45.8	39.43	46.70
Sunnampatti	3040	40.2	27.50	40.43

Kunthiamman Kovilur	4580	40.3	23.94	40.40
Matlampatti	3500	49.8	26.28	49.82
Periyampatti	2470	51.6	29.31	51.63
Kottumaranahalli	3560	39.8	26.13	39.98
Naganampatti	4070	40.6	24.97	40.72
NAAQ Standards	Industrial Day Time - 75 dB (A) & Night Time- 70 dB (A) Residential Day Time -55 dB (A) & Night Time- 45 dB (A)			

The incremental noise level is found to be 57.16 dB (A) in core zone and ranges between 23.94 and 44.79dB (A) in buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to several factors including ground reflection, atmosphere, wind speed, temperature, trees, and buildings as 35.5 dB (A), the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O.123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E),dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment(Protection) Act, 1986.).

4.5.2 Common Mitigation Measures

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

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

- ❖ Silencers / mufflers will be installed in all machineries
- ❖ Greenbelt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise
- ❖ Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness
- ❖ Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects

4.5.3 Ground Vibrations

Ground vibrations due to the proposed mining activities are anticipated due to operation of mining machines like excavators, drilling and blasting, transportation vehicles, etc., however, the major source of ground vibration from the quarry is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The 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. Nearest habitation from the proposed project areas is listed in below table. The ground vibrations due to the blasting in the quarry are calculated using the empirical equation.

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

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

Where,

V = peak particle velocity (mm/s)

K = site and rock factor constant (500)

Q = maximum instantaneous charge (kg)

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

R = distance from charge (m)

Table 4.9 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	53.8	770	0.292	19	0.14	137

Table 4.10 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	53.8	100	7.64	19	1.57	158
		200	2.52		0.68	151
		300	1.31		0.42	146
		400	0.83		0.30	143
		500	0.58		0.23	141

4.5.3.1 Common Mitigation Measures

- ❖ The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators which reduce the ground vibrations
- ❖ Proper quantity of explosives, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting
- ❖ Adequate safe distance from blasting will be maintained as per DGMS guidelines
- ❖ Blasting shelter will be provided as per DGMS guidelines
- ❖ Blasting operations will be carried out only during day time
- ❖ The charge per delay will be minimized and preferably a greater number of delays will be used per blasts
- ❖ During blasting, other activities in the immediate vicinity will be temporarily stopped
- ❖ Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast
- ❖ A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed
- ❖ A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public
- ❖ Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire
- ❖ The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used
- ❖ The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects

- ❖ Appropriate blasting techniques shall be adopted in such a way that the predicted peak particle velocity shall not exceed 0.251mm/s
- ❖ Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices.

4.6 ECOLOGY AND BIODIVERSITY

4.6.1 Impact on Ecology and Biodiversity

- There 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
- Most of the land in the buffer area is undulating terrain with crop lands, grass patches and small shrubs. Hence, there will be no effect on flora of the region.
- Carbon released from quarrying machineries and tippers during quarrying would be 6344 kg per day, 1712815 kg per year and 8564076 kg over five years, as provided in Table 4.11.

Table 4.11 Carbon Released During Five Years of Rough Stone Production

	Per day	Per year	Per five years
Fuel consumption of excavator	448	120877	604384
Fuel consumption of compressor	54	14580	72900
Fuel consumption of tipper	1865	503653	2518267
Total fuel consumption in liters	2367	639110	3195551
Co ₂ emission in kg	6344	1712815	8564076

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

Carbon Sequestration

- ❖ To mitigate carbon emission due to mining activities, we recommend planting trees around the quarry to offset the carbon emission during quarrying. A tree can sequester 44356 kg of carbon per year. Therefore, we recommend 1850 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 2183 trees will be planted within three months from the beginning of mining. These trees, when grown up would sequester carbon of about 69519 kg of the total carbon, as provided in Table 4.12.

Table 4.12 CO₂ Sequestration

CO ₂ sequestration in kg	164	44356	221778
Remaining CO ₂ not sequestered in kg	6179	1668460	8342298
Trees required for environmental compensation	69519		
Area required for environmental compensation in hectares	139		

Greenbelt Development

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. This habitat improvement program would ensure the faunal species to re-colonize and improve the abundance status in the core zone. Greenbelt development plan and budget required for green belt development plan are given in Tables 4.14-4.15. For greenbelt development, species are recommended, as shown in Table 4.13 on the basis of:

- ❖ Natural growth of existing species and survival rate of various species.
- ❖ Suitability of a particular plant species for a particular type of area.
- ❖ Creating of biodiversity.
- ❖ Fast growing, thick canopy copy, perennial and evergreen large leaf area.
- ❖ Efficient in absorbing pollutants without major effects of natural growth.

Table 4.13 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 4.14 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		
	740	592	6660
	Number of plants outside the mine lease area		
	1110	888	9990
Total	1850	1480	16650

Table 4.15 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)	740	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))"	148000	22200
Plantation outside the area	1110	Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	333000	33300
Total			4,81,000	55,500

Source: EMP budget

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

4.6.3. Anticipated Impact on Fauna

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

4.6.4 Measures for Protection and Conservation of Wildlife Species

- ❖ All the preventive measures will be taken for growth & development of fauna.
- ❖ Creating and development awareness for nature and wildlife in the adjoin villages.
- ❖ The workers shall be trained to not harm any wildlife, should it come near the project site. No work shall be carried out after 6.00 pm.
- ❖ Undertaking mitigation measures for conducive environment to the flora and fauna in consultation with Forest Department.
- ❖ Dust suppression system will be installed within mine and periphery of mine for proposed project
- ❖ Plantation around mine area will help in creating habitats for small faunal species and to
- ❖ create better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages.

Aquatic Biodiversity

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

Table 4.16 Ecological Impact Assessments

S. No	Attributes	Assessment
1	Activities of the project affects the breeding/nesting sites of birds and animals	No breeding and nesting sites were identified in the lease area.

2	Located near an area populated by rare or endangered species	No endangered, critically endangered, vulnerable species were sighted in core area.
3	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/ coastline/estuary/sea	There are no reserve forest or national parks or eco-sensitive zones around 10 km radius
4	Proposed project restricts access to waterholes for wildlife	No. The proposed project does not restrict access to water holes for wildlife.
5	Proposed mining project impact surface water quality that also provide water to wildlife	No scheduled or threatened wildlife animal were sighted in core area.
6	Proposed mining project increase siltation that would affect nearby biodiversity area.	Surface runoff management system will be developed properly. So, there will be no siltation in nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities	Barbed wire fencing will be installed around the lease area. Therefore, wild animals will not fall into the quarry pit.
8	The project release effluents into a water body that also supplies water to a wildlife	No water bodies were found close to core zone so chances of water becoming polluted will be low.
9	Mining project effect the forest-based livelihood/ any specific forest product on which local livelihood depended	No. The proposed project does not involve any forestland. Therefore, it will not affect the livelihood of people depending the forest product.
10	Project likely to affect migration routes	No migration routes were found crossing the lease area.
11	Project likely to affect flora of an area, which have medicinal value	No flora with medicinal values were found in the study area.
12	Forestland is to be diverted, has carbon high sequestration	As the proposed project does not involve any forestland, there will be no need for diversion.
13	The project likely to affect wetlands, fish breeding grounds, marine ecology	Wetland was not present in and around mining lease area. No fish breeding grounds were present in core area.

Table 4.17 Anticipated Impact of Ecology and Biodiversity

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

	machine and labours, Transportation activities will generate noise.	to normal faunal movements at the site due to noise. (Partial impact)	habitat structure for unique flora or fauna.		operated after 5PM. Excavation of dump and transportation work should stop before 7PM.
3	Vehicular Movement for transportation of materials will result in generation of dust (SPM) due to haul roads and emission of SO ₂ , NO ₂ , CO etc.	Impact on surrounding agriculture and associated fauna due to deposition of dust and Emission of CO. (Indirect impact)	Impact is less as the agricultural land far from core area.	Less severe	All vehicles will be certified for appropriate Emission levels. More plantation has been suggested Upgrade the vehicles with alternative fuel such biodiesel, methanol and biofuel around the mining area.

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 2m from ground level;
- ❖ Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse top soil will be taken up.
- ❖ Mining for safety management awareness meeting monthly one-time discussion.

4.8.4 Occupational Health Survey

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

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

Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment. First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

4.9 MINE WASTE MANAGEMENT

No waste is anticipated from any of the proposed quarries.

4.10 MINE CLOSURE

Mine closure plan is the most important environmental requirement in mining project. The mine closure plan should cover technical, environmental, social, legal and financial aspects dealing with progressive and post closure activities. The closure operation is a continuous series of activities starting from the decommissioning of the project. Therefore, progressive mine closure plan should be specifically dealt with in the mining plan and is to be reviewed along with mining plan. As progressive mine closure is a continuous series of activities, it is obvious that the proposals of scientific mining have included most of the activities to be included in the closure plan. While

formulating the closure objectives for the site, it is important to consider the existing or the pre-mining land use of the site; and how the operation will affect this activity.

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

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

4.10.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

4.10.1.1 Physical Stability

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

4.10.1.2 Chemical Stability

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

4.10.1.3 Biological Stability

The stability of the surrounding environment is primarily dependent upon the physical and chemical characteristics of the site, whereas the biological stability of the mine site itself is closely related to rehabilitation and final land use. Nevertheless, biological stability can significantly

influence physical or chemical stability by stabilizing soil cover, prevention of erosion/wash off, leaching, etc.,

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

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

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

CHAPTER V

ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 INTRODUCTION

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

5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE

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

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

5.2 ANALYSIS OF ALTERNATIVE SITE

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

5.3 FACTORS BEHIND SELECTION OF PROPOSED TECHNOLOGY

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

- ❖ As the mineral deposition is homogeneous and batholith formation, opencast method of working is preferred over underground method.
- ❖ The material will be loaded with the help of excavators into tractors/tippers and transported to the need by customers.
- ❖ Semi-skilled labours fit for quarrying operations are easily available around the nearby villages.

5.4 ANALYSIS OF ALTERNATIVE TECHNOLOGY

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

CHAPTER VI

ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

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

6.1 METHODOLOGY OF MONITORING MECHANISM

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

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

- ❖ Implementation of pollution control measures
- ❖ Monitoring programme implementation
- ❖ Post-plantation care
- ❖ To check the efficiency of pollution control measures taken
- ❖ Any other activity as may be related to environment

- ❖ Seeking expert's advice when needed.

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

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

The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board (CPCB)/Ministry of Environment, Forest and Climate Change (MoEF & CC). The Environmental Monitoring Cell will be formed for the proposed project. The structure of the cell will be as shown in Figure 6.1.

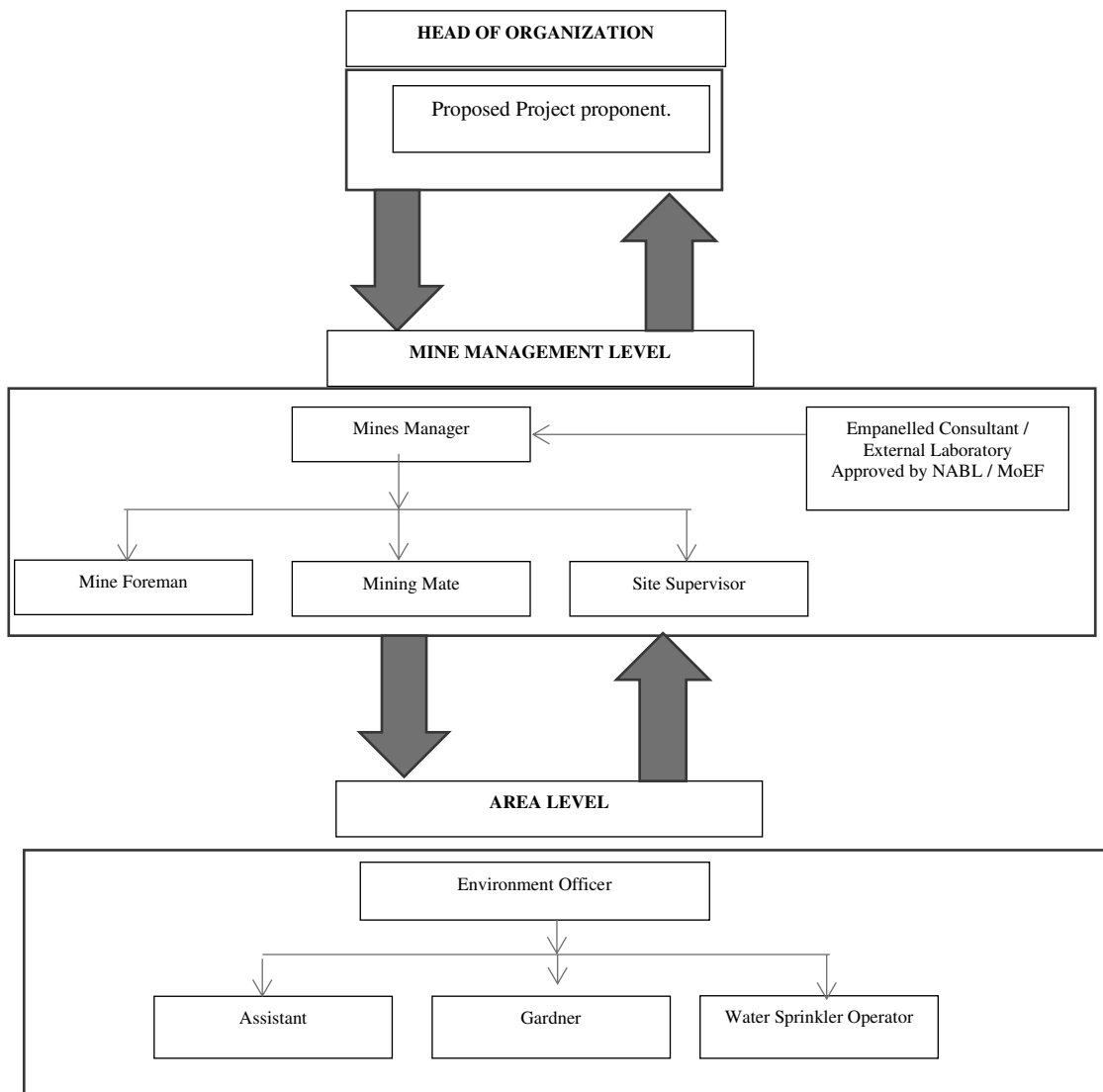


Figure 6.1 Proposed environmental monitoring chart

6.2 IMPLEMENTATION SCHEDULE OF MITIGATION MEASURES

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

Table 6.1 Implementation Schedule for Proposed Project

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

6.3 MONITORING SCHEDULE AND FREQUENCY

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

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

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

- ❖ Soil quality and
- ❖ Greenbelt development

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

Table 6.2 Proposed Monitoring Schedule Post EC for the Proposed Quarry

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

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

6.4 BUDGETARY PROVISION FOR ENVIRONMENT MONITORING PROGRAM

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and cost provision against each proposal is shown in Table 6.3. Monitoring work will be outsourced to external laboratory approved by NABL / MoEF. The proposed recurring cost for Environmental Monitoring Programme is Rs 2,95,000 /- per annum for the proposed project site.

Table 6.3 Environment Monitoring Budget

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

Source: Field Data

6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to:

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

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

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

CHAPTER VII

ADDITIONAL STUDIES

7.0 GENERAL

Additional studies deal with:

- ❖ Risk Assessment
- ❖ Disaster Management Plan
- ❖ Cumulative Impact Study
- ❖ Plastic Waste Management
- ❖ Post-COVID Health Management Plan

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

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

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

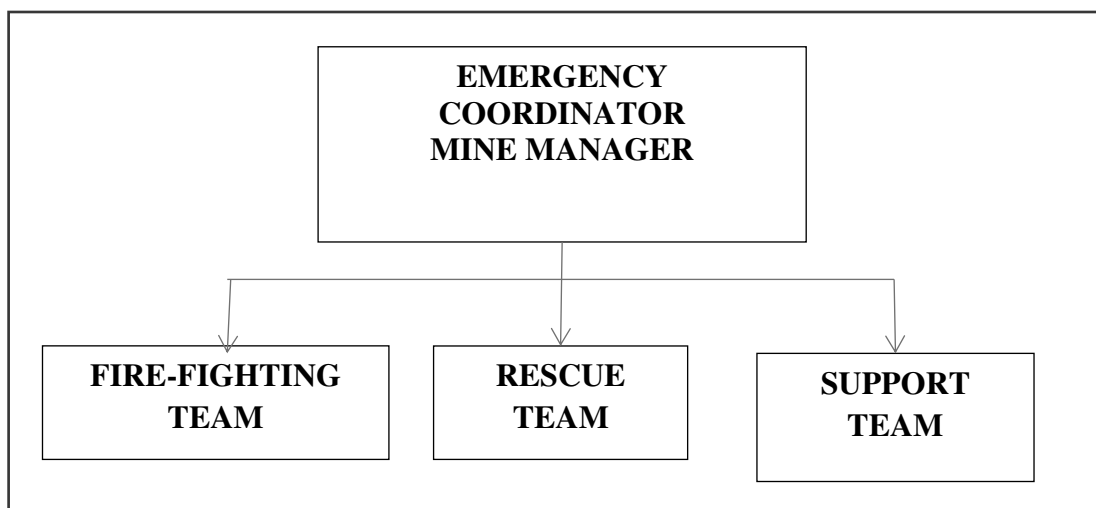


Figure 7.1 Disaster management team layout for proposed project

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

Table 7.2 Proposed Teams for Emergency Situation

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

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

7.3.1 Roles and Responsibilities of Emergency Team

(a) Emergency coordinator (EC)

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

(b) Incident controller (IC)

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

(c) Communication and advisory team

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

(d) Roll call coordinator

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

(e) Search and rescue team

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

(f) Emergency security controller

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

7.3.2 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

7.3.3 Proposed Fire Extinguishers

The following type of fire extinguishers has been proposed at strategic locations within the mine, as shown in Table 7.3.

Table 7.3 Proposed Fire Extinguishers at Different Locations in P1

Location	Type of Fire Extinguishers
Electrical Equipment	CO ₂ type, foam type, dry chemical powder type
Fuel Storage Area	CO ₂ type, foam type, dry chemical powder type, Sand bucket
Office Area	Dry chemical type, foam type

7.3.4 Alarm System

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

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

- ❖ Fire-fighting and first-aid provisions in the mines office complex and mining area are provided.
- ❖ Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring.
- ❖ Training and refresher courses for all the employees working in hazardous premises.
- ❖ Working of mine, as per approved plans and regularly updating the mine plans.
- ❖ Cleaning of mine faces is regularly done.
- ❖ Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- ❖ Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- ❖ Regular maintenance and testing of all mining equipment were carried out as per manufacturer's guidelines.

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, 3 proposed projects, known as P1, P2 and P3 are taken into consideration. The details of P1 have been given in Table 1.2 and the details of P2, P3, is given in the Table 7.4, 7.5.

Table 7.4 Salient Features of the Proposed Project ‘P2’

Name of the Quarry	Thiru.A. Sasimohan Rough Stone Quarry	
Toposheet No	57 L/04	
Latitude	12°14'42.56830" N to 12°14'47.16412" N	
Longitude	78°10'33.87094" E to 78°10'41.82401" E	
Highest Elevation	484 m AMSL	
Ultimate depth of Mining as for Tor	37 m BGL	
Geological Resources	Rough Stone in m ³	Top Soil in m ³
	559631	1818
Mineable Reserves	Rough Stone in m ³	Top Soil in m ³
	174305	304
Proposed reserve for five years	Rough Stone in m ³	Top Soil in m ³
	174305	304
Ultimate Pit Dimension as for Tor	139m (L) x 65m (W) x 37m (D)	
Method of Mining	Opencast Mechanized Mining Method	
Topography	Plain area	
Machinery proposed	Jack Hammer	3 Nos
	Compressor	1 Nos
	Hydraulic Excavator	1 Nos
	Tippers	4 Nos
Blasting Method	The quarrying operation is proposed to carried by open cost semi mechanized mining in conjunction with conventional method of mining using jack hammer drilling for shattering effect and loosen the rough stone.	
Proposed Manpower Deployment	17 Nos	
Project Cost0	Rs.1,04,94,000/-	
CER Cost	Rs.5,00,000/-	
Proposed Water Requirement	3.0 KLD	

Table 7.5 Salient Features of the Proposed Project ‘P3’

Name of the Quarry	Thiru. M.G. Sekar- Rough stone and Gravel Quarry.	
Toposheet No	57-L/04	
Extent	2.41.0 ha	
Lattitude	10°58’43.00” N to 10°58’50.22” N	
Longitude	77°55’27.40” E to 77°55’32.32” E	
Highest Elevation	485 m AMSL	
Ultimate depth of Mining as for Tor	35 m BGL	
Geological Resources	Rough Stone in m ³	Gravel in m ³
	760590	48178
Mineable Reserves	Rough Stone in m ³	Gravel in m ³
	376173	36104
Proposed reserve for five years	Rough Stone in m ³	Gravel in m ³
	376173	36104
Method of Mining	Opencast Mechanized Mining Method	
Topography	Plain area	
Ultimate Pit Dimension as for ToR	73m (L) x 140m (W) x 35m (D)	
Machinery proposed	Jack Hammer	3 Nos
	Compressor	1 Nos
	Hydraulic Excavator	1 Nos
	Tippers	4 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small diameter of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	13 Nos	
Project Cost	Rs.51,33,000 /-	
CER Cost	Rs.5,00,000/-	
Proposed Water Requirement	2.5 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 proposed project have been given in Tables 7.6 and 7.7.

Table 7.6 Cumulative Production Load of Rough Stone Quarry
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	1730944	346189	1282	214
P2	1743305	348661	1291	215
P3	376173	75235	279	46
Grand Total	38,50,422	7,70,085	2,852	475

Table 7.7 Cumulative Production Load of Gravel

Quarry	Production for 1 Year (m ³)	Yearly Production (m ³)	Daily Production (m ³)	Number of Lorry Loads Per Day
P1	---	---	---	---
P2	---	---	---	---
P3	36104	7221	27	4
Grand Total	36104	7221	27	4

The cumulative study shows that the overall production of rough stone from the quarry is 2852m³ per day with a capacity of 475 trips of rough stone per day and that production of gravel from the proposed quarry is 27 m³ per day accounting for 4 trips/day.

7.4.1.1 Cumulative Impact of Air Pollutants

The results on the cumulative impact of the 3 proposed projects on air environment of the cluster have been provided in Table 7.8. The cumulative values resulting from the 3 projects for each pollutant do not exceed the permissible limits set by CPCB.

Table 7.8 Cumulative Impact Results from the 3 proposed projects

Pollutants	Baseline Data (µg/m ³)	Incremental Values (µg/m ³)			Cumulative Value (µg/m ³)
		P1	P2	P3	
PM _{2.5}	17.9	9.6	6.08	4.84	38.42
PM ₁₀	36.3	15.0	12.9	11.66	75.86
SO ₂	8.0	7.78	5.67	4.43	25.88
NO _x	14.7	7.05	4.68	3.44	29.87

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.7.9 Cumulative Impact of Noise from 3 Proposed Quarries on Kuppangari Habitation

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	770	SSE	45.8	39.43	46.70	55
Habitation Near P2	450	NE	45.8	44.10	48.04	
Habitation Near P3	690	S	45.8	40.38	46.90	
Cumulative Noise (dB (A))					52.03	

Source: Lab Monitoring Data

The cumulative analysis of noise due to 3 proposed projects shows that habitation of Kuppangari will receive about 52.03dB(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 all the 3 mines have been shown in Table 7.10.

Table 7.10 Cumulative Effect of Ground Vibrations Resulting from 3 Mines on Habitation of Kuppangari

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in mm/s
P1	53.8	770	0.292
P2	12.4	450	0.213
P3	26.8	690	0.199
Total			0.704

Results from the above tables 7.10 indicate that the cumulative PPV value of each habitation is well below the peak particle velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

7.4.3 Socio Economic Environment

Socio Economic benefits of the proposed project were calculated and the results have been shown in Table 7.11 the project together will contribute Rs. 15,00,000/-towards CER fund.

Table 7.11 Socio Economic Benefits from 3 Mines

Location ID	Project Cost	CER Cost @
P1	Rs.1,56,07,100	Rs. 5,00,000
P2	Rs.1,04,94,000	Rs. 5,00,000
P3	Rs. 51,33,000	Rs. 5,00,000
Grand Total	Rs. 3,12,34,100	Rs. 15,00,000

Table 7.12 Employment Benefits from 3 Mines

Location ID	Employment
P1	20
P2	17
P3	13
Grand Total	50

A total of 50 people will get employment due to 3 proposed mines in cluster

7.4.4 Ecological Environment

Table 7.13 Greenbelt Development Benefits from 3 Mine

Code	Number of Trees proposed	Area to be covered (m ²)	No. of Trees expected to be grown @ 80% survival rate	Species recommended
P1	1850	16650	1480	<i>Azadirachta indica, Albizia lebbeck, Delonix regia, Techtona grandis, etc.,</i>
P2	1013	9112	810	
P3	1205	10845	964	
Total	4098	36607	3254	

Cumulative studies show that the proposed project will plant about 4098 native tree species like *Azadirachta indica*, *Albizia lebbeck*, *Delonix regia*, *Tectona grandis*, etc inside and outside the lease area. It is expected that 80 % of trees, i.e., 3254 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 7.14.

Table 7.14 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

7.6 POST COVID HEALTH MANAGEMENT PLAN FOR PROPOSED PROJECT

COVID – 19 diseases caused by SARS-CoV-2 Coronavirus is relatively a new disease, with fresh information being known on a dynamic basis about the natural history of the disease, especially in terms of post-recovery events.

After acute COVID-19 illness, recovered patients may continue to report wide variety of signs and symptoms including fatigue, body ache, cough, sore throat, difficulty in breathing, etc. As of now there is limited evidence of post-COVID sequelae and further research is required and is being actively pursued. A holistic approach is required for follow up care and well-being of all post COVID recovering patients.

7.6.1 Post-COVID Follow up Protocol

- ❖ Continue COVID appropriate behaviour (use of mask, hand & respiratory hygiene, physical distancing).
- ❖ Drink adequate amount of warm water (if not contra-indicated).
- ❖ Make sure your workplaces are clean and hygienic
- ❖ Surfaces (e.g., desks and tables) and objects (e.g., telephones, helmet) need to be wiped with disinfectant regularly
- ❖ Put sanitizing hand rub dispensers in prominent places around the workplace. Make sure these dispensers are regularly refilled
- ❖ Display posters promoting hand-washing.
- ❖ Make sure that staff, contractors and customers have access to places where they can wash their hands with soap and water.
- ❖ Display posters promoting respiratory hygiene.
- ❖ Brief your employees, contractors and customers that if COVID-19 starts spreading in your community anyone with even a mild cough or low-grade fever (37.3°C or more) need to stay at home. They should also stay home (or work from home) if they have had to take simple medications, such as paracetamol/acetaminophen, ibuprofen or aspirin, which may mask symptoms of infection.
- ❖ Keep communicating and promoting the message that people need to stay at home even if they have just mild symptoms of COVID-19.

- ❖ Consider whether a face-to-face meeting or event is needed. Could it be replaced by a teleconference or online event?
- ❖ Could the meeting or event be scaled down so that fewer people attend?
- ❖ Pre-order sufficient supplies and materials, including tissues and hand sanitizer for all employees. Have surgical masks available to offer anyone who develops respiratory symptoms.
- ❖ It is also suggested by the Ministry of AYUSH that the use of Chyawanprash in the morning (1 teaspoonful) with Luke warm water/milk is highly recommended (under the direction of Registered Ayurveda physician) as in the clinical practice Chyawanprash is believed to be effective in post-recovery period.
- ❖ If there is persistent dry cough / sore throat, do saline gargles and take steam inhalation. The addition of herbs/spices for gargling/steam inhalation. Cough medications, should be taken on advice of medical doctor or qualified practitioner of Ayush.
- ❖ Look for early warning signs like high grade fever, breathlessness, Sp O₂ < 95%, unexplained chest pain, new onset of confusion, focal weakness.
- ❖ Avoid smoking and consumption of alcohol.
- ❖ Communicate to your employees and contractors about the plan and make sure they are aware of what they need to do – or not do – under the plan. Emphasize key points such as the importance of staying away from work even if they have only mild symptoms or have had to take simple medications (e.g., paracetamol, ibuprofen) which may mask the symptoms.
- ❖ The plan should address how to keep your business running even if a significant number of employees, contractors and suppliers cannot come to your place of business - either due to local restrictions on travel or due to illness.

CHAPTER VIII

PROJECT BENEFITS

8.0 GENERAL

The proposed project at Kalappanahalli Village aims to produce **755480 m³** of rough stone 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 20 persons for carrying out mining operations and give preference to the local people in providing employment in this cluster. In addition, there will be an opportunity for indirect employment to the form of contractual jobs, business opportunities, and service facilities etc. Because of this, the economic status of the local people will improve.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

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

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

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

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

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

8.5 OTHER TANGIBLE BENEFITS

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

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

8.6 CORPORATE SOCIAL RESPONSIBILITY

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

Under this programme, the project proponents will take-up following programmes for social and economic development of villages within 5 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these schemes, proponent will interact with LSG. The schemes will be selected from the following broad areas –

- ❖ Health Services
- ❖ Social Development
- ❖ Infrastructure Development
- ❖ Education & Sports
- ❖ Self-Employment
- ❖ CSR Cost Estimation

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

8.7 CORPORATE ENVIRONMENT RESPONSIBILITY

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

Table 8.1 CER Action Plan

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

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

8.8 SUMMARY OF PROJECT BENEFITS

The project would pay about **Rs.8,20,91,840** 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.)
CER	5,00,000
Seigniorage @ Rs.90/m ³ of rough stone	6,79,93,200
District Mineral Foundation Tax @ 10% of Seigniorage	67,99,320
Green Tax @ 10% of Seigniorage	67,99,320
Total	8,20,91,840

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 **Tmt.M.Malliga** 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 LAND ENVIRONMENT MANAGEMENT

Landscape of the area will be changed due to the quarrying operation, restoration of the land by converting the quarry pit into temporary reservoir and the remaining part of the area (unutilized areas, infrastructure, haul roads) will be utilized for greenbelt development. Aesthetic of the environment will not be affected. There is no major vegetation in the project area. During the course of quarrying operation and after completion of the quarrying operation thick plantation will be developed under greenbelt development program. A detailed land environment management plan has been provided in Table 10.1.

Table 10.1 Proposed Controls for Land Environment

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

Source: Proposed by FAEs & EIA Coordinator

10.3 SOIL MANAGEMENT

There is no overburden or waste anticipated from proposed project.

Table 10.2 Proposed Controls for Soil Management

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

Source: Proposed by FAE's & EIA Coordinator

10.4 WATER MANAGEMENT

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash and domestic sewage from mines office is anticipated. The quarrying operation is proposed up to a depth of 54 m. The water table in the area is at 80 m below ground level. Hence, the proposed project will not intersect the ground water table during entire quarry period. A detailed water environment management plan has been provided in Table 10.3.

Table 10.3 Proposed Controls for Water Environment

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

Source: Proposed by FAEs & EIA Coordinator

10.5 AIR QUALITY MANAGEMENT

The proposed quarrying activity would result in the increase of particulate matter concentrations in the ambient air. Daily water sprinkling on the haul roads, approach roads in the vicinity will be undertaken and will be continued as there is possibility for dust generation due to truck mobility. It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements. A detailed ambient air environment management plan is provided in Table 10.4.

Table 10.4 Proposed Controls for Air Environment

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

Source: Proposed by FAEs & EIA Coordinator

10.6 NOISE POLLUTION CONTROL

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and cutting activities. No mining activities are planned during night time. A detailed noise environment management plan has been provided in Table 10.5.

Table 10.5 Proposed Controls for Noise Environment

Control	Responsibility
Development of thick greenbelt all along the buffer zone (7.5 meters) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Foreman

Deployment of mining equipment with an inbuilt mechanism to reduce noise	Mines Manager
Provision of earmuff / ear plugs to workers working in noise prone zones in the mines	Mining Mate
Provision of effective silencers for mining machinery and transport vehicles	Mines Manager
Provision of sound proof AC operator cabins to HEMM	Mines Manager
Sharp drill bits are used to minimize noise from drilling	Mines Foreman
Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting	Mines Manager
Annual ambient noise level monitoring is carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	Mines Manager
Reduce maximum instantaneous charge using delays while blasting	Mining Mate
Change the burden and spacing by altering the drilling pattern and/or delay layout, or altering the hole inclination	Mines Manager
Undertake noise or vibration monitoring	Mines Manager

Source: Proposed by FAEs & EIA Coordinator

10.7 GROUND VIBRATION AND FLY ROCK CONTROL

The rough stone quarry operation creates vibration due to the blasting and movement of heavy earth moving machineries, fly rocks due to the blasting. A detailed ground vibration management plan has been provided in Table 10.6.

Table 10.6 Proposed Controls for Ground Vibrations & Fly Rock

Control	Responsibility
Controlled blasting using delay detonators will be carried out to maintain the PPV value (below 8Hz) well within the prescribed standards of DGMS	Mines Manager
Drilling and blasting will be carried under the supervision of qualified persons	Mines Manager
Proper stemming of holes should be carried out with statutory competent qualified blaster under the supervision of statutory mines manager to avoid any anomalies during blasting	Mines Manager

Suitable spacing and burden will be maintained to avoid misfire / fly rocks	Manager Mines
Number of blast holes will be restricted to control ground vibrations	Manager Mines
Blasting will be carried out only during noon time	Mining Mate
Undertake noise or vibration monitoring	Mines Manager
ensure blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material	Mines Foreman

Source: Proposed by FAEs & EIA Coordinator

10.8 BIOLOGICAL ENVIRONMENT MANAGEMENT

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

- ❖ Greenbelt development all along the safety barrier of the project area.
- ❖ It is also proposed to implement the greenbelt development program and post plantation status will be regularly checked for every season.
- ❖ The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
- ❖ Year wise greenbelt development will be recorded and monitored based on the area of plantation, period of plantation, type of plantation, spacing between the plants, type of manuring and fertilizers and its periods, lopping period, interval of watering, survival rate and density of plantation.
- ❖ The ultimate reclamation planned leaves a congenial environment for development of flora & immigration of small fauna through green belt and water reservoir. The green belt and water reservoir developed within the Project at the end of mine life will attract the birds and animals towards the project area in the post mining period.

10.8.1 Green Belt Development Plan

The main objectives of the greenbelt development plan are to:

- ❖ Combat the dispersal of dust in the adjoining areas.
- ❖ Protect the erosion of the soil and conserve moisture of the soil.

- ❖ Increase the rate of recharge of ground water.
- ❖ Restore the ecology of the area, restore aesthetic beauty of the locality and meet the requirement of fodder, fuel and timber of the local community. The proposed green belt development plan is given in Table 10.7.

Table 10.7 Proposed Greenbelt Development Plan

	No. of trees proposed for plantation	No. of trees expected to survive @ 80%	Area to be covered(m²)
Plantation in the construction phase (3 months)	Number of plants inside the mine lease area		
	740	592	6660
	Number of plants outside the mine lease area		
	1110	888	9990
Total	1850	1480	16650

Source: Proposed by FAEs & EIA Coordinator

About 1850 saplings will be planted in and around the lease area with the survival rate of 80%. A well-planned green belt of trees with long canopy leaves shall be developed with dense plantations around the boundary and along the haul roads to prevent air, dust noise propagation to undesired places and efforts will be taken for the enhancement of survival rate.

10.9 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

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

10.9.1 Medical Surveillance and Examinations

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

The health status of workers in the mine shall be regularly monitored under an occupational surveillance program. Under this program, all the employees are subjected to a detail medical

examination at the time of employment. The medical examination covers the following tests under mines act 1952.

- ❖ General Physical Examination and Blood Pressure.
- ❖ X-ray Chest and ECG.
- ❖ Sputum Test, Sperm Count Test.
- ❖ Detailed Routine Blood and Urine Examination.

The medical histories of all employees will be maintained in a standard format annually. Thereafter, the employees will be subject to medical examination annually. The below tests (Table 10.8) keep upgrading the database of medical history of the employees.

Table 10.8 Medical Examination Schedule

S. No.	Activities	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
1	Initial Medical Examination (Mine Workers)					
A	Physical Check-up					
B	Psychological Test					
C	Audiometric Test					
D	Respiratory Test					
2	Periodical Medical Examination (Mine Workers)					
A	Physical Check – up					
B	Audiometric Test					
C	Eye Check – up					
D	Respiratory Test					
3	Medical Camp (Mine Workers & Nearby Villagers)					
4	Training (Mine Workers)					
Medical Follow ups: Work force will be divided into three targeted groups age wise as follows:						
Age Group		PME as per Mines Rules 1955		Special Examination		
Less than 25 years		Once in a Three Years		In case of emergencies		
Between 25 to 40 Years		Once in a Three Years		In case of emergencies		
Above 40 Years		Once in a Three Years		In case of emergencies		
Medical help on top priority immediately after diagnosis/ accident is the essence of preventive aspects.						

10.9.2 Proposed Occupational Health and Safety Measures

- ❖ The mine site will have adequate drinking water supply so that workers do not get dehydrated.
- ❖ Lightweight and loose-fitting clothes having light color will be preferred to wear.

- ❖ Noise exposure measurements will be taken to determine the need for noise control strategies.
- ❖ The personal protective equipment will be provided for mine workers.
- ❖ Supervisor will be instructed for reporting any problems with hearing protectors or noise control equipment.
- ❖ At noisy working activity, exposure time will be minimized.
- ❖ Dust generating sources will be identified and proper control measure will be adopted.
- ❖ Periodic medical examinations will be provided for all workers.
- ❖ Strict observance of the provisions of DGMS Acts, Rules and Regulations in respect of safety both by management and the workers.
- ❖ The width of road will be maintained more than thrice the width of the vehicle. A code of traffic rules will be implemented.
- ❖ In respect of contract work, safety code for contractors and workers will be implemented. They will be allowed to work under strict supervision of statutory person/officials only after they will impart training at vocational training centers. All personal protective equipment's will be provided to them.
- ❖ A safety committee meeting every month will be organized to discuss the safety of the mines and the persons employed.
- ❖ Celebration of annual mines safety week and environmental week in order to develop safety awareness and harmony amongst employees and co quarry owners.



Figure 10.1 Personal Protective Equipment to the Mine Workers

10.9.3 Health and Safety Training Program

The Proponents will provide special induction program along with machinery manufacturers for the operators and co-operators to run and maintain the machinery effectively and efficiently. The training program for the supervisors and office staffs will be arranged in the Group Vocational Training Centers in the State and engage Environmental Consultants to provide periodical training to all the employees to carry out the mining operation in and eco-friendly manner, as shown in Table 10.9.

Table 10.9 List of Periodical Trainings Proposed for Employees

Course	Personnel	Frequency	Duration	Instruction
New-Employee Training	All new employees exposed to mine hazards	Once	One week	<ul style="list-style-type: none"> ✓ Employee rights, ✓ Supervisor responsibilities ✓ Self-rescue ✓ Respiratory devices ✓ Transportation controls ✓ Communication systems ✓ Escape and emergency evacuation ✓ Ground control hazards ✓ Occupational health hazards ✓ Electrical hazards and First aid Explosives
Task Training Like Drilling, Blasting, Stemming, safety, Slope	Employees assigned to new work tasks	Before new Assignments	Variable	<ul style="list-style-type: none"> ✓ Task-specific health & safety procedures and SOP for various mining activity

stability, Dewatering, Haul Road maintenance.				✓ Supervised practice in assigned work tasks.
Refresher Training	All employees who received new-hire training	Yearly	One week	<ul style="list-style-type: none"> ✓ Required health and safety standards ✓ Transportation controls ✓ Communication systems ✓ Escape ways, emergency evacuations ✓ Fire warning ✓ Ground control hazards ✓ First aid on electrical hazards ✓ Accident prevention ✓ Explosives ✓ Respirator devices
Hazard Training	All employees exposed to mine hazards	Once	Variable	<ul style="list-style-type: none"> ✓ Hazard recognition and avoidance ✓ Emergency evacuation procedures ✓ Health standards ✓ Safety rules ✓ Respiratory devices

Source: Proposed by FAEs & EIA Coordinator as per DGMS Norms

10.9.4 Budgetary Provision for Environmental Management

Adequate budgetary provision has been made by the company for execution of Environmental Management Plan. The Table 10.10 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

Table 10.10 EMP Budget for Proposed Project

Attribute	Mitigation measures	Provision for Implementation	Capital Cost	Recurring Cost/annum
			(Rs.)	(Rs.)
Air Environment	Compaction, gradation and drainage on both sides	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare and yearly maintenance @ Rs. 10,000/- per hectare	37000	37000
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed sprinkler installation and new water tanker cost for capital; and water sprinkling (thrice a day) cost for recurring	800000	50000
	Air quality will be regularly monitored as per norms within ML area & ambient area	Yearly compliance as per CPCB norms	0	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance	75000	7500
	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	30000	0
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes	0	7500
	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	74000
	Installing wheel wash system near exit gate of quarry	Installation + Maintenance + Supervision	50000	20000
Total Air Environment			992000	266000
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	2115344
Total Noise Environment			50000	2117344
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)	37000	18500
Total Water Environment			37000	18500
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency (capital cost,	25000	20000

		recurring cost for collection /disposal).		
		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)	80000	20000
	Health checkup for workers will be provisioned	IME & PME Health checkup @ Rs. 1000/- per employee	0	20000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	14800
	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)	740000	37000
	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	185000	37000
	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			1045000	915800
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))"	148000	22200

		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	333000	33300
Total Development of Green Belt			481000	55500
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	125800
Green fund	G.O.(Ms)No.23, Dated: 28.09.2021	Section IVA of TNMMCR 1959 (@10% of Seigniorage Fee) (Seigniorage Fee for Roughstone = Rs.90)	6799320	0
Total Seigniorage Fee			6799320	0
TOTAL			9444320	3396144 (Excel. Mine Closure)

Table 10.11 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
3396144	3565951	3744249	3931461	4253834	18891639	28335959

In order to implement the environmental protection measures, an amount of **Rs.9444320** as capital cost and recurring cost as **Rs.3396144** 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.28335959** as shown in Table 10.11.

10.10 CONCLUSION

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

CHAPTER XI SUMMARY AND CONCLUSION

11.0 INTRODUCTION

This EIA report was prepared in compliance with ToR obtained vide Lr.No:SEIAA-TN/F.No.10028/SEAC/ToR-1502/2023 Dated:19.07.2023 by considering 3 proposed quarry in a cluster with the total extent of 8.13.5 hectares in Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District and Tamil Nadu. Cluster area was calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016. Baseline Monitoring studies were carried out during the period of March – May 2023.

11.1 PROJECT DESCRIPTION

The proposed project deals with excavation of rough stone which is primarily used in construction projects. The method adopted for rough stone excavation is an open cast semi-mechanized mining method involving drilling, blasting and formation of benches with 5 m height and 5 m width and secondary blasting. The proposed project area is located between latitudes from 12°14'53.30500"N to 12°15'00.92683"N and from longitudes from 78°10'20.33795"E to 78°10'27.16153"E in Kalappanahalli Village, Karimangalam Taluk, and Dharmapuri District. The project site is a Government land with the extent of 3.70.0 ha owned by the project proponent. The proponent had applied for quarry lease on 27.07.2017 to extract rough stone and obtained the precise area communication letter was issued by Department of Geology and Mining, Dharmapuri vide Rc.No.157/2017 (Mines) dated:07.08.2017. 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, Dharmapuri Roc.No.307/2022 (Mines) dated:24.11.2022.

According to the approved mining plan, about 75548 m³ of rough stone will be mined up to the depth of 54 m BGL in the first five years. It is the quantity that has been mentioned in this EIA report.

To achieve the estimated production, 3 jack hammers, 1 compressor, 1 excavator with bucket/rock breaker, and 6 tippers will be deployed. To operate the machineries and to break the rough stone to preferred dimension, about 20 persons will be employed. At the end of the quarry life, the dimension of the ultimate pit will be 103 m*174 m*54 m and At Present about 2.47.27 ha of land is used for quarrying, 1.19.73 ha of land is unutilized, Whereas, at the end of the mine life, about 0.0.17.35 ha of land is unutilized; about 0.35.02 ha of land is used for green belt and 0.05.0 will be used for roads and 0.03.0 is used for infrastructure. The final mine closure plan shows that about **Rs.12,58,000** with the annual recurring cost of **Rs.1,11,000** will be spent towards mine closure.

11.2 DESCRIPTION OF THE ENVIRONMENT

The baseline monitoring studies were carried out during October - December, 2023 to assess the existing environmental conditions in the study area. For the purpose of the EIA studies, project area was considered as the core zone and area outside the project area up to 5 km radius from the periphery of the project site was considered as buffer zone. Baseline Environmental data has been collected for land, water, air, noise, ecology, socio-economy, and traffic.

11.2.1 Land Environment

Land Use and Land Cover (LULC) map, as shown in Figure 3.3 was prepared using Sentinel II image for the study area of 5 km radius to provide a baseline status of the study area covering 5 km radius around the proposed mine site. Totally, 7 LULCs were mapped. The areal extent of each LULC is provided in Table 3.2. Of the total area, mining area covers only 35.93 ha accounting for 0.47 %, of which lease area of 3.70.0 ha contributes only about 0.048%. This small percentage of mining activities shall not have any significant impact on the land environment.

11.2.2 Soil Characteristics

Eight soil samples were obtained from the study area and sent to laboratory for analysing physical and chemical characteristics of soil.

Physical Characteristics & Chemical Characteristics

The soil samples in the study area show loamy textures varying between silty clay loam, silty loam and sandy loam. pH of the soil varies from 6.3 to 7.8 indicating slightly acidic to slightly alkaline nature. Electrical conductivity of the soil varies from 100 to 803 $\mu\text{s}/\text{cm}$. Organic Matter ranges between 4.2 to 16 g/cm^3 . Nitrogen ranges between 0.8 to 1.9 %. Phosphate ranges between 0.05 to 0.13 %. Potassium ranges between 0.02 to 0.05 %. Sodium ranges between 0.013 and 0.023. The physical and chemical characteristic results of soil samples are provided in Table 3.4

11.2.3 Water Environment

Surface Water Resources

Kuppangarai Lake, Baisuhalli Lake and Periyapoolapatti Thumbala Halli Lake are three prominent surface water resources present in the study area. These are ephemeral in nature, which convey water only after rainfall events. The proposed project area is located 1.28 km SE of Kuppangarai Lake 4.26 km SE of Baisuhalli Lake and 2.70 km NNE of Periyapoolapatti

Thumbala Halli Lake, as shown in Table 3.5 and Figure 3.5. Three surface water samples, known as SW1 SW2 and SW3 were collected from the three surface water bodies to assess the baseline water quality. Table 3.7 summarizes surface water quality data of the three samples.

Result for surface water sample 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.

Ground Water Resources

Five groundwater samples, known as BW1, BW2, BW3, OW1 and OW2 collected from bore wells and open wells were 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 3.5 and the spatial occurrence of water sampling locations is shown in Figure 3.7. Table 3.6 summarizes ground water quality data of the five samples.

Results for ground water samples in the Table 3.6 indicate that the physical, chemical and biological parameters, and heavy metals are within permissible limits in comparison with standards of IS10500:2012.

11.3 AIR ENVIRONMENT

Site Specific Meteorology

Site specific meteorology during the study period was recorded by an automated weather station. According to the onsite data, the temperature in October 2023 varied from 15.36 to 30.46⁰ C with the average of 24.04⁰ C; in November, 2023 from 13.61 to 29.0⁰ C with the average of 22.45⁰ C; and in December, 2023 from 15.15 to 29.12⁰ C with the average of 22.16⁰C. In October, 2023, relative humidity ranged from 47.06 to 100 % with the average of 84.21%; in November, 2023, from 49.19 to 100% with the average of 85.67 %; and in December, 2023, from 39.88 to 100 % with the average of 84.18 %. The wind speed in October, 2023 varied from 0.13 to 6.09 m/s with the average of 2.30 m/s; in November, 2023 from 0.72 to 6.03 m/s with the average of 2.72 m/s; and in December, 2023 from 0.56 to 7.13 m/s with the average of 3.08 m/s. In October,2023, wind direction varied from 1.06 to 357.75⁰ with the average of 172.33⁰; in November, 2023, from 0.17 to 359.27⁰ with the average of 80.56⁰; and in December, 2023, from 0.00 to 359.48⁰ with the average of 88.23⁰. In October,2023, surface pressure varied from 94.97 to 95.99 kPa with the average of 95.51 kPa; in November, 2023, from 95.28 to 96.09kPa with the average of 95.69 kPa; and in December, 2023, from 94.68 to 96.45 kPa with the average of 95.66 kPa.

Ambient Air Quality Results

As per the monitoring data, PM_{2.5} ranges from 15.6 µg/m³ to 20.5 µg/m³; PM₁₀ from 33.7µg/m³ to 39.0µg/m³; SO₂ from 6.6 µg/m³ to 9.5 µg/m³; NO_x from 12.3 µg/m³ to 17.9g/m³. The concentration levels of the pollutants fall within the acceptable limits of NAAQS prescribed by CPCB.

11.4 NOISE ENVIRONMENT

Noise level in core zone was 45.8 dB (A) Leq during day time and 37.3 dB(A) Leq during night time. Noise levels recorded in buffer zone during day time varied from 39.8 to 51.6dB (A) Leq and during night time from 36.2 to 45.3 dB (A) Leq. Thus, the noise level for industrial and residential area meets the requirements of CPCB.

11.5 BIOLOGICAL ENVIRONMENT

There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. Hence this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

11.6 SOCIO-ECONOMIC ENVIRONMENT

An attempt has been made to assess the impact of the proposed mining project on Socio-economic aspect of the study area. The various attributes that have been taken into account are population composition, employment generation, occupational shift, household income and consumption pattern. Implementation of the Proposed Mine Project will generate both direct and indirect employment. Besides, mining operation will be legally valid and it will bring income to the state exchequer. At present seasonal agriculture is the main occupation of the people as more than half of the population depends on it. With the implementation of the proposed mining project the occupational pattern of the people in the area will change making more people engaged in mining-based activities rather in seasonal agriculture.

11.7 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED PROJECT

The summary of anticipated adverse environmental impacts due to the proposed project and mitigation measures are given below:

Table 11.1 Anticipated Impacts & Mitigation Measures

Impact	Mitigation Measure
Land Environment	
<ul style="list-style-type: none"> ❖ Destruction of natural landscapes ❖ Changes in soil characteristics ❖ Soil erosion and slope instability 	<ul style="list-style-type: none"> ❖ Mining will be carried out as per approved mine plan in scientific and systematic way ❖ Safety Zone or Buffer area will be maintained and will not be mined and instead plantation will be carried out in the safety zone ❖ Barbed wire fencing will be provided all along the proposed mine boundary ❖ At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir ❖ Construction of garland ❖ Construction of garland drains all around the quarry pit and construction of settling traps at strategic location in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
Water Environment	
<ul style="list-style-type: none"> ❖ Decrease in aquifer recharge and increase in surface runoff; ❖ Disturbance to land drainage, overload and erosion of watercourses; ❖ Changes to the surface over which water flows; 	<ul style="list-style-type: none"> ❖ Construction of garland drains all around the quarry pit and construction of settling traps at strategic location in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area ❖ De-silting will be carried out before and immediately after the monsoon season and the

<ul style="list-style-type: none"> ❖ Changes to surface and groundwater resources quantity and quality due to stream blockage and contamination by particulate matter or waste; ❖ Contamination of aquifers due to removal of the natural filter medium. 	<p>settling tank and drains will be cleaned weekly, especially during monsoons</p> <ul style="list-style-type: none"> ❖ Domestic sewage from site office & urinals/latrines provided in project area will be discharged through septic tank followed by soak pit system. ❖ Tippers & HEMM will be washed in a designated area and the washed water will be routed through drains to a settling tank, which has an oil & grease trap, only clear water will be reused for greenbelt development.
Air Environment	
<ul style="list-style-type: none"> ❖ Generation of Fugitive Dust ❖ Dust will be generated mainly during excavation, loading & unloading activities. ❖ Gaseous pollutants will be generated mostly by the traffic. ❖ Reduction in visibility due to dust plumes. ❖ Coating of surfaces leading to annoyance and loss of amenity. ❖ Physical and/or chemical contamination and corrosion. ❖ Increase in the concentration of suspended particles in runoff water. ❖ Coating of vegetation leading to reduced photosynthesis, ❖ Inhibited growth, destroying of foliage, degradation of crops; ❖ Increase in health hazards due to inhalation of dust. 	<ul style="list-style-type: none"> ❖ Haul roads will be well maintained by sprinkling water twice a day ❖ The access road will be cleaned and brushed to ensure that mud and dust deposits do not accumulate. ❖ To ensure that dust and debris is minimised on the access road, all the tipper drivers will be instructed to use water spray system on all the tyres and spray water on the loaded material that is provided at the compound area before leaving the site ❖ Speed restrictions will be imposed to avoid spillage of loaded materials upon the road and to reduce wear and tear of the road. ❖ Weekly inspections of the condition of the access road by competent person employed, and immediate action will be taken to address any potholes or damage to the road surface. ❖ Dust wetting agents can be mixed with the water applied to haul roads during hot, dry

	<p>weather conditions to increase the duration that the road surface remains damp.</p> <ul style="list-style-type: none"> ❖ Personal Protective Equipment's will be provided to all workers ❖ All drilling rods used will have dust suppression systems fitted which injects water into the hole. ❖ Wet gunny bags will be used as a cover while drilling. ❖ The blast zone will be kept damp by the application of water from the rain gun fitted to the water tanker prior to each blast to control any fugitive dust emissions that could arise from the surface during detonation. ❖ A daily visual inspection shall be conducted by the site manager who will keep a daily log of all process operations and site activities and note any malfunctions which could lead to abnormal emissions from the quarry operations. ❖ A site speed limit of 20 km/h will be set to minimise the potential for dust generation ❖ Weekly maintenance programme to identify machinery due for maintenance, based on the number of hours it has been in operation. ❖ Air filters are renewed after every 10⁰ hours of use, unless otherwise indicated by an on-board computer system. ❖ All site machineries & tippers will be serviced and maintained 6 months once and drivers will report any defects immediately to the site manager to enable repairs to be carried out promptly.
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Noise & Vibration

- | | |
|---|--|
| <ul style="list-style-type: none">❖ Annoyance and deterioration of the quality of life;❖ Propelling of rocks fragments by blasting.❖ Shaking of buildings and people due to blasting; | <ul style="list-style-type: none">❖ Usage of sharp drill bits while drilling which will help in reducing noise;❖ Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;❖ Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;❖ The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;❖ Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;❖ Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;❖ Silencers / mufflers will be installed in all machineries;❖ Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;❖ Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness. |
|---|--|

Biological Environment	
<ul style="list-style-type: none"> ❖ Direct impacts include land clearance and excavation causing destruction of flora and fauna and loss of habitats; ❖ Indirect impacts include habitat degradation due to noise, dust, and human activity. 	<ul style="list-style-type: none"> ❖ Only some common herbs, shrubs and grass will be cleared. So, there will be no impact on the biodiversity. ❖ Green belt development with suitable species will enhance the biodiversity of the project area. ❖ The core zone or buffer zone does not encompass any threatened flora or fauna species.
Socio-Economic Environment	
<ul style="list-style-type: none"> ❖ Health and safety of workers and the general public; ❖ Increase in traffic volumes and sizes of road vehicles; ❖ Economic issues, including the increase in employment opportunities; 	<ul style="list-style-type: none"> ❖ The mining activity puts negligible change in the socio-economic profile. ❖ Around 88 local workers will get employment opportunities along with periodical training to generate local skills. ❖ New patterns of indirect employment/ income will generate. ❖ Regular health check-up camp. ❖ Assistance to schools and scholarship to children will be provided.
Occupational Health & Safety	
<ul style="list-style-type: none"> ❖ Exposure to Dust ❖ Noise and Vibration Exposure ❖ Physical Hazards ❖ Respiratory hazards due to Dust exposure 	<ul style="list-style-type: none"> ❖ Provision of rest shelters for mine workers with amenities like drinking water etc. ❖ All safety measures like use of safety appliances, such as dust masks, helmets, shoes, safety awareness programs, awards, posters, slogans related to safety etc. ❖ Training of employees for use of safety appliances and first aid in vocational training centre. ❖ Weekly maintenance and testing of all equipment as per manufacturers' guidelines.

	<ul style="list-style-type: none"> ❖ Pre placement and Yearly Medical Examination of all workers by a medical Officer ❖ First Aid facility will be provided at the mine site. ❖ Close surveillance of the factors in working environment and work practices which may affect environment and worker's health by the mine's manager employed.
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11.8 ANALYSIS OF ALTERNATIVES

There are no alternatives suggested as the proposed mining area has the following advantages:

- ❖ The mineral deposit occurs in a non-forest area.
- ❖ There is no habitation within the applied lease area; hence no R & R issues exist.
- ❖ There is no river, stream, nallas and water bodies in the or passing through the applied mine lease areas.
- ❖ Availability of skilled, semi-skilled and unskilled workers in this region.
- ❖ All the basic amenities such as medical, firefighting, education, transportation, communication and infrastructural facilities are accessible.
- ❖ Mine connectivity through road and rail is good.
- ❖ The proposed mining operations do not intersect the ground water level. Hence, no impact on ground water environment.

11.9 ENVIRONMENTAL MONITORING PROGRAM

Environmental Monitoring program will be conducted for various environmental components such as air quality, meteorology, water quality, water level monitoring, soil quality, noise level, vibration, and greenbelt as per conditions stipulated in Environmental Clearance Letter issued by SEIAA & Consent to Operate issued by TNPCB. For this environmental monitoring program, Rs **2,95,000** /- per annum will spent by the project proponent. 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 and 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.

11.10 ADDITIONAL STUDIES

Public Consultation

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

Risk Analysis & Disaster Management Plan

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad vide Circular No.13 of 2002, dated 31st December, and 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 time table are recorded along with pinpointed responsibilities.

In the unlikely event that a consequence has occurred, disaster management kicks in. This includes instituting procedures pertaining to a number of issues such as communication, rescue, and rehabilitation. These are addressed in the disaster management plan. Both, the RA and DMP, are living documents and need to be updated whenever there are changes in operations, equipment, or procedures. Assessment is all about preventing accidents and taking necessary steps to prevent it from happening.

The Disaster Management Plan (DMP) is a guide, giving general considerations, directions, and procedures for handling emergencies likely to arise from planned operations. The DMP has been prepared on the basis of the Risk Assessment and related findings covered in the report.

Cumulative Impact Studies

- 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 three proposed projects is well below the permissible limit of Peak Particle Velocity of 8 mm/s.
- The three proposed projects will allocate Rs.15,00,000/- towards CER as recommended by SEAC.
- The three proposed projects will directly provide jobs to about 50 local people.
- The three proposed projects will plant about 4068 saplings in and around the lease area.
- The three proposed projects will add 1437 PCU per day to the nearby roads.

11.11 PROJECT BENEFITS FOR PROPOSED PROJECT

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 20 local people
- ❖ Rain water harvesting structures to augment the water availability for irrigation and plantation and ground water recharge
- ❖ 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 Programme
- ❖ Skill development & capacity building like vocational training
- ❖ Awareness program and community activities, like health camps, medical aids, sports & cultural activities, plantation etc.,
- ❖ CSR activities mainly contributing to education, health, training of women self-help groups and infrastructure etc., will be taken up in the Kalappannahalli Village. CSR budget is allocated.
- ❖ Rs. 5,00,000 will be allocated for CER.

11.12 ENVIRONMENT MANAGEMENT PLAN

In order to implement the environmental protection measures, an amount of **Rs.9444320** as capital cost and recurring cost as **Rs.3396144** 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.28335959**.

11.13 CONCLUSION

EIA study was performed as per the approved ToR. Various environmental attributes were studied relating with aspects of mining activities. The related impacts were identified and evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and accordingly fund was allocated. The EMP has been dynamic, flexible and subject to periodic review. CER activities were identified and for its time bound implementation, fund has been allocated.

The project will increase the revenue of the State Govt. as well as it will help in the social upliftment of the local community. The green belt development programme will help in increasing the green cover in the area. Thus, the proposed project is not likely to affect the environment or adjacent ecosystem in an adverse way.

The Mines Management will be responsible for the project 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 XII

DISCLOSURES OF CONSULTANT

The Project Proponent, **Tmt.M.Malliga** 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.

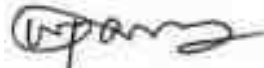
The accredited experts and associated members who were engaged in this EIA study are given below:

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. Vijayprabhu	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 modelling, 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 Tmt.M.Malliga rough stone quarry project with the extent of 3.70.0 ha situated in the cluster with the extent of 8.13.50ha in Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District of Tamil Nadu is true and correct to the best of our knowledge.


List of Functional Area Experts Engaged in this Project


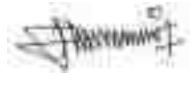


S. No.	Functional Area	Involvement	Name of the Experts	Signature
1	AP	○ Identification of different sources of air pollution due to the proposed mine activity	J.N. Manikandan	
		○ Prediction of air pollution and propose mitigation measures / control measures	P.Venkatesh	

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 	J.N. Manikandan	

		<ul style="list-style-type: none"> ○ Preparation of Emergency Preparedness Plan ○ Management plan for safety. 		
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	

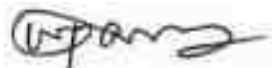
List of Functional Area Associate Engaged in this Project

S.No.	Name	Functional Area	Involvement	Signature
1	G. Prithviraj	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 Tmt.M.Malliga rough stone quarry project with the extent of 3.70.0 ha situated in the cluster with the extent of 8.13.50ha in Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District of Tamil Nadu is true and correct to the best of my knowledge.

Signature : 

Date :

Name : **Dr. S. Karuppannan**

Designation : Managing Partner

Name of the EIA Consultant Organization : Geo Technical Mining Solutions

NABET Certificate No & Issue Date : NABET/EIA/2124/SA 0184

Validity : Till April 02, 2024



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

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU

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

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.10028/SEAC/ToR-1502/2023 Dated: 19.07.2023

To

Tmt. M. Malliga,
W/o. P. Manickam,
No.5/20, Kairukaran Kottai,
Kerakodahalli Post,
Karimangalam Taluk,
Dharmapuri District - 635 305.

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Existing Rough Stone quarry lease over an extent of 3.70.0 Ha at S.F.No. 401 (Part) of Kalapanahalli Village, Karimangalam Taluk, Dharmapuri District, Tamil Nadu by Tmt. M. Malliga - 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/428374/2023, dated 08.05.2023
2. Your application submitted for Terms of Reference dated: 12.05.2023
3. Minutes of the 390th SEAC meeting held on 07.07.2023
4. Minutes of the 640th SEIAA meeting held on 19.07.2023

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

The proponent, Tmt. M. Malliga has submitted application for Terms of Reference (ToR) on 12.05.2023, in Form-I, Pre-Feasibility report for the Existing Rough Stone quarry lease over an


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SEIAA-TN

extent of 3.70.0 Ha at S.F.No. 401 (Part) of Kalapanahalli Village, Karimangalam Taluk, Dharmapuri District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Existing Rough stone quarry over an extent of 3.70.0 Ha at S.F. No. 401 (Part) (Government Poramboke Land) of Kalapanahalli Village, Karimangalam Taluk, Dharmapuri District, Tamil Nadu by Tmt. M. Malliga - For Terms of Reference

The proposal was placed in this 390th meeting of SEAC held on 07.07.2023. The details of the project furnished by the proponent are available in the website (parivesh.nic.in). The SEAC noted the following:

1. Earlier, the PP has obtained EC in DEIAA vide Lr.No.10/DEIAA-DPI/EC.No.10/2017 dated 31.10.2017 for the production quantity of 482238 m³ up to depth of 32m (12m AGL + 20m BGL).
2. Earlier the PP has applied for Extension of EC vide File No. 9802/2023. The proposal was placed in the 374th SEAC Meeting held on 03.05.2023. During the meeting the PP has stated that he would like to withdraw the proposal, and SEAC, therefore, decided to defer the proposal. The proposal was placed in the 621st SEIAA meeting held on 23.05.2023. The Authority decided to request Member Secretary, SEIAA to communicate the SEAC minutes to the project proponent.
3. CCR obtained from IRO(SZ), MOEF&CC Dt:23.12.2022.
4. The Project Proponent, Tmt. M. Malliga has applied seeking Terms of Reference for the existing Rough stone quarry over an extent of 3.70.0 Ha (**Government Poramboke Land**) at S.F. No. 401 (Part) of Kalapanahalli Village, Karimangalam Taluk, Dharmapuri District, Tamil Nadu.
5. 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.
6. The precise area communication was issued for the period of 10 Years. The mining plan is for 5 Years. The production for Five Years period shall not to exceed 755480 m³ of Rough Stone and the ultimate depth of 54m (4m AGL & 50m BGL).

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


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SEIAA-TN



Report:

1. The PP shall submit photographs of fencing, greenbelt and garland drain.
2. The PP shall submit the Modified Mining Plan duly approved by the concerned AD (Mines), Dept. of Geology & Mining in regard to the provision of the bench height of 5m / 6 m each instead of 7m shown as proposed bench height in the AMP submitted.
3. The PP shall submit the letter obtained from the concerned AD (Mines) showing details on the date of lease executed, date of last working day, Mining Plan approved quantity, EC Approved Quantity and Achieved quantity (year wise).
4. The study on impact of the dust & other environmental impacts due to proposed quarrying operations on the Rose flowers being cultivated through greenhouse nearby.
5. The revised and corrected version of the Production & Development Plan shall be produced with showing the safety berm width of 2m is maintained for the bench height of not exceeding 1.5 m distinctly in the gravel formation and it shall be duly signed by the concerned QP & approved by the concerned AD (Geology & Mining), Dept. of Geology & Mining.
6. Since the quarry is existing with a depth of excavation varies from 6 m to 19 m without benches of appropriate dimension (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall carry out a 'Slope Stability Assessment Studies' for the existing conditions of the quarry wall by involving anyone of these reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research (CIMFR) / Dhanbad, NIRM - Bengaluru, IIT-Madras, NIT Surathkal - Dept of Mining Engg. and Anna University Chennai - Dept of Mining Engg. The above studies shall spell out 'a Slope Stability Action Plan' for the proposed quarry covering the existing condition of the quarry wall including the overall pit slope angle and it shall cover the aspects of stability of quarry walls including the access ramp keeping the benches intact.
7. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.

ANNEXURE-I

1. The PP shall furnish the letter obtained from the AD (Mines) indicating the existing pit dimensions and pit conditions showing the details on mine having worked during the earlier lease period.


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SEIAA-TN

2. The PP shall furnish DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.
3. The PP shall provide individual notice regarding the Public Hearing to the nearby house owners located in the vicinity of the project site.
4. The Proponent shall justify the selection of the site for carrying out the stone quarrying with the total volume arrived for the excavation & production adequate details such as lithology of the deposit, reserve estimation, place for waste dump/mined mineral storage, end-use of mined materials, identified potential customers/end-users and travel path.
5. The PP shall also justify the selection of mining methodology (conventional or non-conventional) adopting blasting techniques/non-explosive techniques with proper ground reality & laboratory testing.
6. The proponent shall submit the "Blast Design Parameters for controlling the vibration and fly rock from the quarry blasting" considering the existence of sensitive structures including habitations within 500 m from the lease boundary.
7. The PP shall justify the estimation of HEMM population for excavation and transportation in the proposed quarries with proper calculation methodology adopted.
8. The PP shall enumerate the environmental settings situated within a radial distance of 1 km such rivers/water bodies/reserve forests/ grazing land/existence of the hospitals and educational institutions/structures.
9. The PP shall provide the details of the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.
10. 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 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.
11. The PP shall submit a 'Slope Stability Action Plan' for the proposed quarry where the proposed depth exceeds 30 m and it shall cover the aspects of stability of quarry walls including the access ramp keeping the benches intact.


MEMBER SECRETARY
SEIAA-TN

12. If the blasting operation is to be carried out, the PP shall present a conceptual design for carrying out the NONEL initiation based controlled blasting operation including the line drilling & muffle blasting techniques and a Simulation Model indicating the anticipated Blast-induced Ground Vibration levels in the proposed quarry as stipulated by the DGMS Circular No.7 of 1997, during the EIA Proposal.
13. 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.
14. The PP shall give an affidavit stating that no contractual persons provided by the explosive suppliers will be employed for carrying out the blasting operations in the proposed quarry.s
15. The PP shall also give an affidavit that no highly sensitive structure such as fire-cracker manufacturing units, Gas godown/explosive Magazine, LPG Bottling Units, etc are located within a radial distance of 300 m from the lease boundary of the proposed quarry.
16. 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 20 m from the blast site.
17. 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.
18. The PP shall provide the environmental mitigation measures implemented for the crusher(s) located within the mining lease.
19. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b. Quantity of minerals mined out.
 - c. Highest production achieved in any one year
 - d. Detail of approved depth of mining.
 - e. Actual depth of the mining achieved earlier.
 - f. Name of the person already mined in that leases area.


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SEIAA-TN

- g. If EC and CTO already obtained, the copy of the same shall be submitted.
- h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
20. 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.
21. 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).
22. The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc..
23. 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.
24. 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.
25. 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.
26. 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.
27. 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 &


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SEIAA-TN



- health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
28. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
 29. 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.
 30. 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.
 31. 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.
 32. If the Village road/State highway/National highway are located within a radial distance of 500 m from the lease boundary of the quarry proposal, the PP shall carry out traffic studies to indicate impact on local transport infrastructure due to the Project and mitigation measures.
 33. 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.
 34. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
 35. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.
 36. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
 37. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.


MEMBER SECRETARY
SEIAA-TN



38. 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.
39. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix-I** in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
40. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site-specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
41. 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.
42. 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.
43. 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.
44. 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.
45. 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.
46. Details of litigation pending against the project, if any, with direction /order passed by any


MEMBER SECRETARY
SEIAA-TN

- Court of Law against the Project should be given.
47. 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.
48. 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.
49. 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.
50. 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. *Adenanthera pavonina* - Manjadi
3. *Albizia lebbek* – Vaagai
4. *Albizia amara* - Usil
5. *Bauhinia purpurea* - Mantharai
6. *Bauhinia racemosa* - Aathi
7. *Bauhinia tomentosa* – Iruvathi
8. *Buchanania axillaris* - Kattuma
9. *Borassus flabellifer* - Panai
10. *Butea monosperma* - Murukka maram
11. *Bobax ceiba* – Ilavu, Sevvilavu
12. *Calophyllum inophyllum* - Punnai
13. *Cassia fistula* - Sarakondrai
14. *Cassia roxburghii*- Sengondrai
15. *Chloroxylon sweitenia* - Purasa maram
16. *Cochlospermum religiosum* – Kongu, Manjal Ilavu
17. *Cordia dichotoma* – Mookuchali maram
18. *Creteva adansonii* – Mavalingum


MEMBER SECRETARY
SEIAA-TN

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* – Uga Maram
49. *Sapindus emarginatus* - Manipungan, Soapu kai
50. *Saraca asoca* - Asoca


MEMBER SECRETARY
SEIAA-TN



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 proposal was placed in the 640th Authority meeting held on 19.07.2023. The authority noted that this proposal was placed for appraisal in 390th SEAC meeting held on 07.07.2023. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the conditions in 'Annexure B' of this 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.
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.


MEMBER SECRETARY
SEIAA-TN

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.


MEMBER SECRETARY
SEIAA-TN



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.


MEMBER SECRETARY
SEIAA-TN

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.


MEMBER SECRETARY
SEIAA-TN



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, odoi, 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. 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


MEMBER SECRETARY
SEIAA-TN

- geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
 - 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
 - 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
 - 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
 - 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
 - 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
 - 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned


MEMBER SECRETARY
SEIAA-TN



above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.

- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized


MEMBER SECRETARY
SEIAA-TN



agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).

- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.
- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should


MEMBER SECRETARY
SEIAA-TN

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


MEMBER SECRETARY
SEIAA-TN



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


MEMBER SECRETARY
SEIAA-TN



- b) All documents to be properly referenced with index and continuous page numbering.
- c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
- d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
- e) Where the documents provided are in a language other than English, an English translation should be provided.
- f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
- g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
- h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- i) As per the circular no. J-11011/618/2010-IA.II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).


MEMBER SECRETARY
SEIAA-TN

2. Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.
3. Measures for mitigating the impact on the environment and mode of discharge or disposal.
4. Capital cost of the project, estimated time of completion.
5. The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.
6. A detailed study of the lithology of the mining lease area shall be furnished.
7. Details of village map, "A" register and FMB sketch shall be furnished.
8. Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.
11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt/ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.


MEMBER SECRETARY
SEIAA-TN



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 (1) 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


MEMBER SECRETARY
SEIAA-TN

(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.


MEMBER SECRETARY
SEIAA-TN

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 Chairman, 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, Dharmapuri District.
7. Stock File.

From

Dr.G.Panneer Selvam, M.Sc, M.Phil, Ph.D.,
Assistant Director,
Geology and Mining,
Dharmapuri.

To

Tmt.M.Mallika,
W/o P.Manickam,
5/20, Kairukarankottai,
Kerakodahalli post,
Karimangalam Taluk,
Dharmapuri District.

Roc.No.307/2022 (Mines)**Dated. 20 .12.2022.****Sir,**

Sub: Mines and Minerals - Rough Stone - Dharmapuri District - Karimangalam Taluk - Kalappanahalli Village - Govt. Poramboke land - S.F.No.401 (P) - over an extent of 3.70.0 Hects. - quarry lease granted to Tmt.M.Malliga W/o P.Manickam, Kerakodahalli village, Dharmapuri - Scheme of Mining approved with direction to obtain clearance from State Level Environment Impact Assessment Authority - existing/proposed/abandoned quarries situated within 500 mts. radial distance - requested by the lessee - details furnished - reg.

Ref: 1 The District Collector, Dharmapuri proceedings Roc.No. 157/2017 (Mines) dated 06.02.2018.
2. Tmt.M.Malliga W/o P.Manickam, Kerakodahalli village, Dharmapuri letter dated. Nil (Received by this office on 05.12.2022)

Quarry lease for quarrying Rough Stone over an extent of 3.70.0 Hectares of Govt. Poramboke land in S.F.No.401 (Part) of Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District has been granted to Tmt.M.Malliga W/o P.Manickam for a period of 10 years from 12.02.2018 to 11.02.2028 vide reference 1st cited after obtaining Environmental Clearance vide DEIAA Letter No.10/DEIAA-DPI/ Ec.No.10/2017 dated.31.10.2017 valid upto 11.02.2023.

In the reference 2nd cited, Tmt.M.Malliga W/o P.Manickam have requested to furnish the details of all mines/quarry located within 500 mts. radius from the lease area for obtaining extension of environmental clearance from SEIAA for carrying quarry operation in the remaining lease period.

As requested, the following are furnished.

Abandoned Quarry

Sl. No.	Name and Address of the lessee	Taluk & Village	S.F.No.	Extent (in Hects.)	Remarks
1.	Tmt.Malliga, W/o.K.P.Anbalagan, Kerakodahalli Village and Post, Palacode Taluk, Dharmapuri District	Kalappanahalli	390	1.24.0	--
2.	Tmt.Nagarani, W/o Sivasankar, Poonathanahalli village, Palacode Taluk, Dharmapuri Dt.	Kalappanahalli	402/2, 402/3	2.66.5	--
Total				3.90.5 Hects.	

Existing Quarry

Sl. No.	Name and Address of the lessee	Taluk & Village	S.F. No.	Extent (in Hects.)	Classification of land	Lease period
1.	Thiru.A.Sasimohan, S/o K.P.Anbzhagan, 1/136-A, Kerakodahalli village, Karimangalam Taluk, Dharmapuri District.	Karimangalam & Kalappanahalli	389 (Part)	2.02.5	Govt. Poramboke land	26.12.2017 to 25.12.2027
Total				2.02.5 Hects.		

Proposed Quarry

Sl. No.	Name and Address of the lessee	Village & Taluk	S.F.No.	Extent (in Hects.)	Classification of land
1.	M.G.Sekar, No.10-A, First Street, Appavu Nagar, Dharmapuri Taluk & District	Karimangalam & Kalappanahalli	387/3, 387/4	2.41.0	Patta land

[Signature]
Assistant Director,
Geology and Mining,
Dharmapuri.

[Signature]
20.12.22

From

Dr.G.Panneer Selvam,M.Sc, M.Phil, Ph.D.,
Assistant Director,
Geology and Mining,
Dharmapuri.

To

Tmt.M.Mallika,
W/o P.Manickam,
5/20, Kairukarankottai,
Kerakodahalli post,
Karimangalam Taluk,
Dharmapuri District.

Roc.No.307/2022 (Mines) Dated: 24.11.2022

Sir,

Sub:- Mines and Minerals - Rough Stone - Dharmapuri District - Karimangalam Taluk - Kalappanahalli Village - Govt. Poramboke land - S.F.No.401 (P) - over an extent of 3.70.0 Hects. - quarry lease granted to Tmt.M.Malliga W/o P.Manickam, Kerakodahalli village, Dharmapuri - Scheme of Mining prepared and submitted for approval - Scheme of Mining approved with direction to obtain clearance from State Level Environment Impact Assessment Authority.

- Ref:-**
- 1) The District Collector, Dharmapuri proceedings Roc.No. 157/2017 (Mines) dated 06.02.2018.
 - 2) The District Environment Impact Assessment Authority Environmental Clearance Letter No. 10/DEIAA-DPI/ EC.No. 10/2017 dated 31.10.2017
 - 3) Tmt.M.Mallika, W/o P.Manickam, Kairukarankottai, Kerakodahalli post, Karimangalam Taluk, Dharmapuri District letter received this office on 24.11.2022.

Quarry lease for quarrying Rough Stone over an extent of 3.70.0 Hectares of Govt. Poramboke land in S.F.No.401 (Part) of Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District has been granted to Tmt.M.Malliga W/o P.Manickam for a period of 10 years from 12.02.2018 to 11.02.2028 vide reference 1st cited.

2) The lessee has obtained Environmental Clearance from the District Environment Impact Assessment Authority in Letter No. 10/DEIAA-DPI/ EC.No. 10/2017 dated 31.10.2017 for a period of five years from the date of execution of lease deed. As of, its validity will expire on 11.02.2023.

3) In the reference 3rd cited, Tmt.M.Malliga W/o P.Manickam has submitted three copies of the Scheme of Mining prepared for the subject quarry lease area for the period from 2022-23 to 2026-27.

4) The Scheme of Mining submitted has been scrutinized as per rule 41 of the TamilNadu Minor Mineral Concession Rules, 1959 and the guidelines issued by the Commissioner of Geology and Mining, Chennai in letter Rc.No.3868/LC/2012, dated 19.11.2012 and also based on the available records and ground realities. As authorized by the Commissioner of Geology and Mining, Chennai in letter Rc.No.3868/LC/2012, dated 19.11.2012, I hereby approve the Scheme of mining prepared for the subject area. This approval is subject to the following conditions:

- i) That the Scheme of Mining is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- ii) This approval of the Scheme of Mining does not in any way imply the approval of the Government in terms of any other provisions of the Mines and Minerals (Development and Regulation) Act, 1959 or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884 (Central Act IV of 1884) and the Rules made there under the TamilNadu Minor Mineral Concession Rules, 1959.
- iii) That the Scheme of Mining is approved without prejudice to any other order or direction from any court of contempt jurisdiction.
- iv) Quarrying shall be done as per the approved Scheme of Mining and that the Scheme of Mining is approved without

prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.

- v) The lessee should leave a safety distance of 7.5 mts to the adjacent patta land.
- vi) The lessee should leave a safety distance of 10 mts to the adjacent Govt. poramboke land.

The lessee Tmt.M.Malliga W/o P.Manickam is directed to produce Extended Environmental Clearance from the State Level Environment Impact Assessment Authority, Chennai over the subject area as per rule 42 of the TamilNadu Minor Mineral Concession Rules, 1959 for carrying out conditions quarry operation until the expiry of lease period.

Encl.:

2 Copies of approved Scheme of Mining.


24.11.2022
**Assistant Director,
Geology and Mining,
Dharmapuri.**


24.11.2022


24.11.22

Copy to:

The Commissioner of Geology and Mining,
Chennai-32.

SCHEME OF MINING FOR

KALAPPANAHALLI VILLAGE ROUGH STONE MINING LEASE WITH PROGRESSIVE QUARRY CLOSURE PLAN

Government land/Open Cast-Semi-Mechanized mining/Non- Forest/Non-Captive Use –
“B2” Category

(Lease Period: 12.02.2018 – 11.02.2028 for 10 years lease period)

Scheme of Mining Period: - 2023-2024 to 2027-2028

(Prepared under rule 41 (3) (i) and submitted under rule 41 (8) (i) of Tamil Nadu Minor
Mineral Concession Rules, 1959)

LOCATION OF THE LEASE AREA

STATE : TAMILNADU
DISTRICT : DHARMAPURI
TALUK : KARIMANGALAM
VILLAGE : KALAPPANAHALLI
S.F.NO : 401 (Part)
EXTENT : 3.70.0 HECTARES

ADDRESS OF THE APPLICANT

Tmt. M. Malliga,
W/o. P.Manickam,
No.5/20, Kairukaran Kottai,
Kerakodahalli Post, Karimangalam Taluk,
Dharmapuri District,

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.gtmsdpnr@gmail.com,
Website: www.gtmsind.com



CONTENTS



Sl. No.	Description	Page No.
-	Certificates	5-8
-	Introductory notes	9
1.0	General	12
2.0	Location and Accessibility	13
<u>PART-A</u>		
3.0	Geology and Mineral reserves	16
4.0	Mining	21
5.0	Blasting	27
6.0	Mine drainage	30
7.0	Stacking of mineral rejects and disposal of waste	30
8.0	Uses of mineral	31
9.0	Others	31
10.0	Mineral processing/Beneficiations	32
<u>PART-B</u>		
11.0	Environmental management plan	34
12.0	Progressive quarry closure plan	40
13.0	Financial assurance	42
14.0	Certificates	42
15.0	Plan and Sections, etc	42
16.0	Any other details intend to furnish by the applicant	43
17.0	CSR Expenditure	43

ANNEXURES



Sl. No.	Description	Annexure No.
1.	Copy of Tender Gazette Notification	I
2.	Copy of previous precise area communication letter	II
3.	Copy of previous approval letter	III
4.	Copy of previous lease particulars a. Environmental Clearance certificate b. TNPCB CTO & CTE consent c. District Collector proceeding letter d. Lease execution deed	IV
5.	Copy of DFO letter	V
6.	Copy of the FMB (Field Measurement Book)	VI
7.	Copy of combine sketch	VII
8.	Copy of "A" Register	VIII
9.	Photo copy of the lease area	IX
10.	Copy of explosive willing letter, agreement from explosive license holder & explosive license	X
11.	Copy of ID Proof of the authorized signatory	XI
12.	Copy of RQP certificate	XII

LIST OF PLATES



Sl. No.	Description	Plate No.	Scales
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.	Surface, Geological Section	IIIA	Sections HOR 1:1000 VER 1:500
9.	Year wise development, Production Plan	IV	1:1000
10.	Year wise development, Production section	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 Section	VIA	Sections HOR 1:1000 VER 1:500

M.Malliga,
W/o. P. Manickam,
No.5/20, Kairukaran Kottai,
Kerakodahalli Post,
Karimangalam Taluk,
Dharmapuri District.



CONSENT LETTER FROM THE APPLICANT

The Scheme of mining in respect of existing rough stone quarry lease in Government poramboke land at S.F.No: 401 (Part), over an extent of 3.70.0hectares of Kalappahahalli Village, Karimangalam Taluk, Dharmapuri District, Tamil Nadu State has been prepared by

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

We request the **Assistant Director, Department of Geology and Mining, Dharmapuri District** to make further correspondence regarding modifications of the scheme of mining 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 scheme of mining 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: Dharmapuri, TN

Date:


Signature of the applicant
(M. MALLIGA)

M.Malliga,
W/o. P. Manickam,
No.5/20, Kairukaran Kottai,
Kerakodahalli Post,
Karimangalam Taluk,
Dharmapuri District.



DECLARATION

The Scheme of mining in respect of existing rough stone quarry lease in Government poramboke land at S.F.No: 401, over an extent of 3.70.0hectares of Kalapanahalli Village, Karimangalam Taluk, Dharmapuri 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: Dharmapuri, TN

Date:


Signature of the applicant
(M. MALLIGA)

Dr. S.KARUPPANNAN.M.Sc., Ph.D.,
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
(A NABET Accredited & ISO certified Company)
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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

This is to certify that, the provisions of 8(a) and (c) Tamil Nadu Minor Minerals Concession Rules, 1959 have been observed in the Scheme of mining for the existing rough stone quarry lease in Government poramboke land at S.F.No: 401, over an extent of 3.70.0hectares of Kallapanahalli Village, Karimangalam Taluk, Dharmapuri District, Tamil Nadu State prepared for **Tmt.M.Malliga**, W/o. P.Manickam residing at, Kairukaran Kottai, Kerakodahalli Post, Karimangalam Taluk, Dharmapuri District.

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

Place: Dharmapuri, TN

Date: 14/9/22

Signature of the Recognized Qualified Person

Dr. S. KARUPPANNAN, M.Sc., Ph.D.,
RQP/MAS/263/2014/A
GEO TECHNICAL MINING SOLUTIONS
1/213-B, Ground Floor, Natesan Complex,
Collectorate Post Office, Oddapatti,
Dharmapuri-636705, Tamil Nadu, India.

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

RQP/MAS/263/2014/A

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Ph: +91 9443937841,7010076633

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

Website: www.gtmsind.com



CERTIFICATE

This is to certify that the preparation of Scheme of mining for existing rough stone quarry lease in Government land at S.F.No: 401(Part), over an extent of 3.70.0hectares of Kallapanahalli Village, Karimangalam Taluk, Dharmapuri District, Tamil Nadu State prepared to **Tmt.M.Malliga**, W/o. P.Manickam residing at, Kairukaran Kottai, Kerakodahalli Post, Karimangalam Taluk, Dharmapuri District, Covers all the provisions of Mines Act, Rules, and Regulations etc made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Place: Dharmapuri, TN

Date: 14/9/22

Signature of the Recognized Qualified Person

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

RQP/MAS/263/2014/A

GEO TECHNICAL MINING SOLUTIONS

1/213-B, Ground Floor, Natesan Complex,

Collectorate Post Office, Oddapatti,

Dharmapuri - 636705, Tamil Nadu, India.

SCHEME OF MINING

FOR

KALLAPANAHALLI VILLAGE ROUGH STONE MINING LEASE WITH PROGRESSIVE QUARRY CLOSURE PLAN

Government land/Open Cast-Semi-Mechanized mining/Non-forest/Non-Captive Use-
"B2" Category

(Lease Period: 12.02.2018 – 11.02.2028 for 10 years lease period)

Scheme of Mining Period: - 2023-2024 to 2027-2028

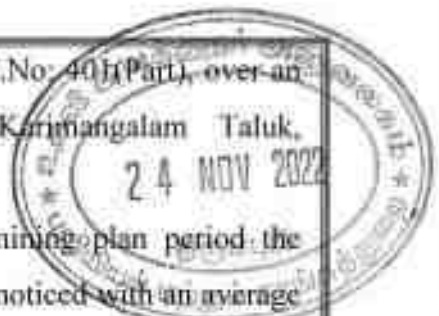
(Prepared under rule 41 (3) (i) and submitted under rule 41 (8) (i) of Tamil Nadu Minor
Mineral Concession Rules, 1959)



INTRODUCTORY NOTES:

- a) **Introduction:** The Tmt.M.Malliga, W/o. P.Manickam has residing at, No. 5/20, Kairukaran Kottai, Kerakodahalli Post, Karimangalam Taluk, Dharmapuri District, Tamil Nadu State and the District Collector, Dharmapuri, has granted a quarry lease for a period of 10 years his proceedings letter vide **Roc.No. 157/2017 (Mines) Dated 06.02.2018** and lease was executed from 12.02.2018 to 11.02.2028 in favor of **Tmt.M.Malliga** to quarrying rough stone in Government poramboke land at S.F.No: 401 (Part), over an extent of 3.70.0hectares of Kallapanahalli Village, Karimangalam Taluk, Dharmapuri District, Tamil Nadu State.
- b) **Previous mining plan approved & EC:** The Mining plan was prepared Recognized Qualified Person as per precise area communication letter Roc.No.157/2017(Mines) Dated: 07.08.2017 issued by the District Collector, Dharmapuri and Mining plan was approved by the Assistant Director, Department of Geology and Mining, Dharmapuri vide Roc.No.157/2017(Mines) Dated: 05.09.2017 and Environmental Clearance was obtained from the District level Environmental Impact Assessment Authority (DEIAA-DPI), Dharmapuri vide Lr.No. 10/DEIAA-DPI/Ec.No.10/2017 Dated 31.10.2017. (Ref. Annexure- IV). The District collector, Dharmapuri his proceedings letter vide Roc.No.157/2017 (Mines) Dated 06.02.2018 and mining lease deed was executed on 12.02.2018 and the lease will be expiry on 11.02.2028 (Ten years plan period).
- c) **Preparation and submission of scheme of mining:** Accordingly, scheme of mining with progressive mine closure plan has prepared under rule 41 (3) (i) and submitted under rule 41 (8) (i) of Tamil Nadu Minor Mineral Concession Rules, 1959 for

existing quarrying of rough stone in Government land at S.F.No: 40(H Part), over an extent of 3.70.0hectares of Kallapanahalli Village, Karimangalam Taluk, Dharmapuri District, Tamil Nadu State.



- d) **Present existing pit dimensions:** During this, previous mining plan period the rough stone was excavated and there is an existing pit's was noticed with an average pit dimensions as given under the table and the existing pit marked in the surface plan (Ref Plate No: III).

Existing pit level details			
Pit level	Length (m)	Width (m)	Depth (m)
Level-1	64	75	4 AGL
Level-2	55	35	1 AGL
Level-3	130	120	3 BGL
Level-4	45	45	5 BGL

- e) **Previous approved quantity and achieved quantity:** As per the previous approved Mining plan, the proposed quantity of Mineable reserves is **964879m³** of rough stone and **19691m³** of rough stone rejects (2%) up to depth of 62m (which is 12m (R.L.486-474m) above ground level (AGL) and 50m (R.L.474-424m) below the ground level (BGL). The approved year wise production of **482238m³** of rough stone up to a depth of 32m (which is 12m (R.L.486-474m) above ground level (AGL) and 20m (R.L.474-454m) below the ground level (BGL). The details of approved and achieved production in the below,

S.No	Year	Approved quantity (m ³)		Achieved quantity (m ³)	
		Rough stone @ 98%	Rough stone rejects @ 2%	Rough stone up to June-2022	Topsail
1	2018-2019	96711	1973	6300	---
2	2019-2020	96279	1966	35100	---
3	2020-2021	96363	1967	66000	---
4	2021-2022	96324	1966	91500	---
5	2022-2023	96559	1970	10500	---
	Total	482236	9842	209400	---

f) **Remaining Geological resources and Mineable reserves:**

The lease area of 3.70.0hectares have been splitted into two sections XY-AB and XY-CD. In both sections, the same applicant quarried about 5m depth below ground level of area in the previous lease period. Now, he continued the lease on the same area to do quarry depth of 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL). In this connection, the irregularities in the surface level present in the lease area. Therefore, a small portion is left in the lease area from on the surface, which gives a meager quantity of rough stone in a depth of 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL). Therefore, we computed the resources from R.L.478m to R.L.424m on an average in **1730944m³** including the resources of safety zone. Of which, rough stone resources of about **1730944m³** (Refer Plate No's. III & IIIA). The total mineable reserve is estimated to be **755480m³** by deducting the reserve safety zone, block in benches from the total Geological resources. Of which, rough stone is about **755480m³** upto a depth of 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL) (Refer Plate No's. VI & VIA) after leaving necessary safety distance from the lease boundary.

g) **Proposed production schedule:** Total proposed production of **755480m³** up to depth of 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL) for next five years plan period. Average production is **151096m³** of rough stone per year (Refer Plate No's. IV & IVA).

h) **Environmental sensitivity of the lease area:**

(i) **Interstate boundary:** No inter-state boundary situated around 10Km radius.

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

(iii) **Indian Reserve Forest Act, 1980:** The no reserve forests within 10Km radius. The nearest reserve forest is Mallehalli RF is situated about 13.7km away from the western side of the lease area.

(iv) **CRZ Notification, 1991/2011:** There is no sea coastal zone found within radius of 10km and this project site doesn't attract CRZ Notification, 1991/2011.

1.0 GENERAL:

a.	Name of the applicant	: M.MALLIGA
	Applicant address	: M.MALLIGA, W/o. P. Manickam, No.5/20, Kairukaran Kottas, Kerakodahalli Post, Karimangaludi Taluk, Dharmapuri District.
	District	: Dharmapuri
	State	: Tamil Nadu
	Pin code	: 635305
	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 quarry lease
d.	Period for which the mining lease granted /renewed/proposed to be applied	: The District collector, Dharmapuri has lease deed executed to the project proponent for the period of 10years
e.	Name of the RQP preparing the Mining Plan/Scheme of mining	: 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.	Name of the prospecting agency	: The commissioner, Department of Geology and Mining
	Address	: Department of Geology and Mining,



		Thiru Ve Ka Industrial Estate Guindy, Chennai.
	Phone	: 044-22501874
g.	Reference No. and date of consent letter from the state government	: The proceedings letter issued by District collector, Dharmapuri vide Roc.No.457/2017 (Mines) Dated 06.02.2018



2.0 LOCATION AND ACCESSIBILITY:

Details of the Area:	: Refer plate no: IA & IB
District & State	: Dharmapuri, Tamil Nadu
Taluk	: Karimangalam
Village	: Kallapanahalli
Khasra No./ Plot No./ Block Range/ Felling Series etc.	: 401(Part)
Lease area (hectares)	: 3.70.0hectares
Whether the area is recorded to be in forest (please specify whether protected, reserved, etc)	: The proposed lease area is recorded as Government land. Copy of land documents are enclosed. (Ref. Anne. No: VIII)
Ownership / Occupancy	: Government of Tamil Nadu
Existence of Public Road / Railway line if any nearby and approximate distance	: <ul style="list-style-type: none"> ✓ Excavated materials will be transported through the village cart road on the northern side of the lease area. ✓ Northing of SH- road is situated around 5km radius. ✓ The NH-44-road is situated at 2.49km away on the eastern side of the lease area which is connecting Dharmapuri to Krishnagiri. ✓ There is no railway line situated around 5km radius.

Toposheet No. with latitude and longitude

Toposheet No. 57 L/03 & 57 L/04
 Latitude: From 12°14'53.30500"N to
 12°15'00.92683"N
 longitude: From 78°10'20.33495"E to
 78°10'27.16153"E



Geo-Coordinates of the lease boundary:

DGPS SURVEY WAS CONDUCTED IN STATIC METHOD (BASE POINT 2 HOUR DGPS POINT)

ID	Latitude (Global)	Longitude (Global)	Easting (Meter)	Northing (Meter)	Elevation (Meter)	Feature Code
BS	12°14'53.75173"N	78°10'23.67632"E	192452.003	1355616.921	469.991	REVENUE STONE

ROVER POINTS 1 HOUR FOR BOUNDARY PILLARS AND 20 MINUTES FOR INTERMEDIATE PILLARS IN STATIC METHOD

ID	Latitude (Global)	Longitude (Global)	Easting (Meter)	Northing (Meter)	Elevation (Meter)	Feature Code
1	12° 15' 00.69794" N	78° 10' 27.13232" E	192558.763	1355829.427	470.220	Boundary Pillar
2	12° 14' 59.07374" N	78° 10' 27.05652" E	192555.948	1355779.306	471.434	Intermediate Pillar
3	12° 14' 57.69642" N	78° 10' 26.99237" E	192553.562	1355737.173	471.434	Boundary Pillar
4	12° 14' 56.71644" N	78° 10' 26.35347" E	192533.924	1355707.240	471.054	Boundary Pillar
5	12° 14' 56.05501" N	78° 10' 27.16153" E	192558.152	1355686.644	470.358	Boundary Pillar
6	12° 14' 55.14825" N	78° 10' 23.78942" E	192516.361	1355699.194	470.012	Intermediate Pillar
7	12° 14' 54.24142" N	78° 10' 24.41731" E	192474.570	1355631.744	470.012	Intermediate Pillar
8	12° 14' 53.75173" N	78° 10' 23.67632" E	192452.003	1355616.921	469.991	Revenue Stone + (Boundary Pillar)
9	12° 14' 53.30500" N	78° 10' 22.81693" E	192425.867	1355603.457	468.633	Boundary Pillar
10	12° 14' 53.85400" N	78° 10' 22.27172" E	192409.555	1355620.510	464.253	Boundary Pillar
11	12° 14' 54.99741" N	78° 10' 21.09641" E	192374.377	1355656.043	472.553	Intermediate Pillar
12	12° 14' 55.73831" N	78° 10' 20.33495" E	192351.382	1355679.068	479.514	Boundary Pillar
13	12° 14' 57.34931" N	78° 10' 20.55794" E	192358.848	1355728.538	479.841	Intermediate Pillar
14	12° 14' 58.96036" N	78° 10' 20.78100" E	192366.113	1355778.007	477.331	Intermediate Pillar
15	12° 15' 00.57132" N	78° 10' 21.00400" E	192373.378	1355827.476	475.675	Intermediate Pillar
16	12° 15' 00.92683" N	78° 10' 21.05321" E	192374.981	1355838.393	473.856	Boundary Pillar
17	12° 15' 00.86462" N	78° 10' 22.70512" E	192424.922	1355835.956	473.656	Intermediate Pillar
18	12° 15' 00.80243" N	78° 10' 24.35713" E	192474.862	1355833.520	470.675	Intermediate Pillar
19	12° 15' 00.74024" N	78° 10' 26.00900" E	192524.803	1355833.083	470.523	Intermediate Pillar

Land use pattern (Forest, Agricultural, Grazing, Barren etc.)

It is a existing quarry, barren, Rocky and waste land

b). *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.* : Refer plate no-IA & IB



D) INFRASTRUCTURE AND COMMUNICATION IN AERIAL DISTANCE:

a	Nearest post office	:	Post office is available at Periyampatti about 2.33km away from the site towards Northern side.
b	Nearest police station	:	Police Station is available at Karimangalam about 6.85km away from the site towards Northern side.
c	Nearest fire station	:	Fire Station is available at Dharmapuri about 15.6km away from the site towards southern side.
d	Nearest Medical facility	:	Primary health center is available at Periyampatti about 2.37km away from the site towards NE side.
e	Nearest school	:	Primary School Education is available at Periyampatti about 1.65km away from the site towards NE side.
f	Nearest railway station	:	The Nearest railway station is available at Dharmapuri about 13.5km away from Southern side.
g	Nearest port facility	:	The Nearest Port is available at Chennai about 247km away from Northeastern side.
h	Nearest Airport	:	The Nearest Airport is available at Salem about 52.8km away from southern side
i	Nearest DSP office	:	The Nearest DSP office is available at Dharmapuri about 13.7km away on the southern side.
j	Nearest Villages	:	i. North - Periyannahalli - 1.68km ii. South - Kuppangari - 0.90km iii. East - Periyampatti - 2.64km iv. West - Begarahalli - 4.10km

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 lease area exhibits a small hillock and which is elevated topography, the elevation difference of 6m. The highest elevation observed in center of the lease area is 480m MSL, whereas the lowest elevation of North, East, South and Western side as respectively is 474m MSL. The lease area previously excavated with reached average depth level is 5m BGL.
(ii)	a) Geology of the District : <p>The geological formations of the district belong mainly to Archaean age along with rock of Proterozoic age. The former is represented by Khondalite Group of rocks, Charnockite Group of rocks, Migmatite Complex, Sathyamangalam Group of rocks, Bhavani Group of rocks and Kolar Alkaline rocks. The Khondalite Group includes garnet-sillimanite gneiss and quartzite which occur as small patches. The Charnockite Group occupies a major part of southern part of this district, and it is mainly charnockites along with some small bands of pyroxene granulites and magnetite quartzite. Two small patches of pyroxenite and gabbro are seen to occur in the pyroxene granulite near about 10 km. NE of Karimangalam. The Migmatite Complex includes garnetiferous quartzofeldspathic gneiss and hornblende-biotite gneiss, the former exposed on the western part of the district. The Sathyamangalam Group of rocks include fuchsite quartzite, sillimanite mica schist and amphibolites. The Bhavani Group in this area includes fissile hornblende-biotite gneiss, granitoid gneiss and pink migmatite. Amphibolites with banded ferruginous quartzite and associated quartzo-feldspathic rocks (Chapion Gneiss) represent the Kolar Group and are found west and southwest of Veppanapalli. Following this there are basic intrusions occurring as dykes. The Alkaline Complex is represented by epidote-hornblende gneiss, ultramafics, syenite and carbonatite and these are distributed in the eastern part of the district. Innumerable basic dykes and felsites, quartz, barites and pegmatite veins form part of the Alkali Complex. The tentative stratigraphy of the district is furnished bellow:</p>		

Age	Group	Rock Formation
Recent to Sub recent	---	Red Soil
Upper Proterozoic	Alkali/Ultramafic complex	Carbonatite, Syenite, Pyroxenite, Epidote-hornblende gneiss, Dolerite, granite
Archaean to Lower Proterozoic	PGC	Pink migmatite, Granitoid gneiss,
Archaean	Sargur Group/ Sathyamangalam Group	Amphibolite, Cordierite-sillimanite-mica schist, Fuchsite quartzite, Charnockite,



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

i) Topography of the proposed lease area:

The lease area exhibits a small hillock and which is elevated topography, the elevation difference of 6m. The highest elevation observed in center of the lease area is 480m MSL, whereas the lowest elevation of North, East, South and Western side as respectively is 474m MSL. The lease area previously excavated with reached average depth level is 5m BGL. Charnockites rocks are well exposed in the existing pit and contour lines surveyed and Geological mapped the proposed lease area.

ii) Mode of origin:

The Charnockite series originally was assumed to have developed by the fractional crystallization of silicate magma. The constituents of the rock suggest of its origin in particularly dry and high temperature conditions which is deduced to have an important bearing in explicating prehistoric crustal development of the earth.

iii) 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.

iv) Chemical composition of rocks:

The compositional characteristics of co-existing orthopyroxene, garnet and biotite have established several petrographic varieties within the Charnockites-Enderbites such as the granulites and gneisses. The mineral composition shows an unvarying presence of pleochroic rhombic pyroxene. 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	---	Red soil
Archaean	Charnockite Group	Charnockites.

(iv) Drainage Pattern : There are no major water bodies like rivers, pond, etc., located within a radius of 100m. The drainage 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: : No exploration carried out. The lease area in S.F. No: 401(Part) was presently operated quarrying of rough stone, over an extent of 3.70.0hectares in favor of **Tmt.M.Malliga** by District Collector, Dharmapuri Proceedings vide Roc.No.157/2017 (Mines) Dated 06.02.2018 and mining lease deed was executed on 12.02.2018 to 11.02.2028 for a period of 10years.
There are four existing pits level are noticed with an average pit dimension of pit level-1 is 64m X 75m X 4m AGL, Pit level-2 is 55m X 35m X 1m AGL, pit level-3 is 130m X 120m X D3m BGL, pit level-4 is 45m X 45m X D5m BGL. Hence, RQP personally examined during mining survey.

b. Surface Plan : Surface plan showing elevation contour, existing pit, dumps 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)	<i>Broadly indicate the Year wise future programme of exploration, taking into consideration the future production programme planned in next five years as in table below: -</i>																																	
	<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>VI</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>VII</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>VIII</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>IX</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> <tr> <td>X</td> <td>N.A</td> <td>---</td> <td>---</td> <td>N.A</td> </tr> </tbody> </table>				Year	No.of boreholes	Total meterage	No.of Pits and Dimensions	No.of Trenches and Dimensions	VI	N.A	---	---	N.A	VII	N.A	---	---	N.A	VIII	N.A	---	---	N.A	IX	N.A	---	---	N.A	X	N.A	---	---	N.A
Year	No.of boreholes	Total meterage	No.of Pits and Dimensions	No.of Trenches and Dimensions																														
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VIII	N.A	---	---	N.A																														
IX	N.A	---	---	N.A																														
X	N.A	---	---	N.A																														
	No future programmed proposed in this area. Its massive formation charnockite homogeneous parent rock. Hence exploration proposal is not required to this mining project.																																	
(c)	<i>Indicate geological and recoverable reserves and grade, duly supported by standard method of estimation and calculations along with required sections (giving split up of various categories i.e. proved, probable, possible). Indicate cut-off grade. Availability of resources should also be indicated for the entire leasehold.</i>																																	
	<p>The lease area of 3.70,0hectares have been splitted into two sections XY-AB and XY-CD. In both sections, the same applicant quarried about 5m depth below ground level of area in the previous lease period. Now, he continued the lease on the same area to do quarry depth of 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL). In this connection, the irregularities in the surface level present in the lease area. Therefore, a small portion is left in the lease area from on the surface, which gives a meager quantity of rough stone in a depth of 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL). Therefore, we computed the resources from R.L.478m to R.L.424m on an average in</p>																																	



1730944m³ including the resources of safety zone. Of which, rough stone-resources of about 1730944m³ (Refer Plate No's, III & IIIA).

GEOLOGICAL RESOURCES						
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Rough Stone in m ³
XY-AB	I	17	50	4	3400	3400
	II	35	72	3	7560	7560
	III	64	191	2	24448	24448
	IV	116	191	5	110780	110780
	V	116	191	5	110780	110780
	VI	116	191	5	110780	110780
	VII	116	191	5	110780	110780
	VIII	116	191	5	110780	110780
	IX	116	191	5	110780	110780
	X	116	191	5	110780	110780
	XI	116	191	5	110780	110780
TOTAL					1032428	1032428
XY-CD	II	10	22	3	660	660
	III	116	128	2	29696	29696
	IV	116	128	5	74240	74240
	V	116	128	5	74240	74240
	VI	116	128	5	74240	74240
	VII	116	128	5	74240	74240
	VIII	116	128	5	74240	74240
	IX	116	128	5	74240	74240
	X	116	128	5	74240	74240
	XI	116	128	5	74240	74240
	TOTAL					698516	698516
GRAND TOTAL					1730944	1730944

(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 755480m³ by deducting the reserve safety zone, block in benches from the total Geological resources up to a depth of 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL). Of which, rough stone is about 755480m³. 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.VI & VIA).

MINEABLE RESERVES						
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Rough Stone in m ³
XY-AB	I	17	50	4	3400	3400
	II	26	53	3	4134	4134
	II	55	174	2	19140	19140
	III	103	164	5	84460	84460
	IV	98	154	5	75460	75460
	V	93	144	5	66960	66960
	VI	88	134	5	58960	58960
	VII	83	124	5	51460	51460
	VIII	78	114	5	44460	44460
	IX	73	104	5	37960	37960
	X	68	98	5	33320	33320
	XI	63	84	5	26460	26460
TOTAL					506174	506174
XY-CD	II	106	108	2	22896	22896
	III	101	98	5	49490	49490
	IV	96	88	5	42240	42240
	V	91	78	5	35490	35490
	VI	86	68	5	29240	29240
	VII	81	58	5	23490	23490
	VIII	76	48	5	18240	18240
	IX	71	38	5	13490	13490
	X	66	28	5	9240	9240
		XI	61	18	5	5490	5490
TOTAL					249306	249306
GRAND TOTAL					755480	755480

4.0 MINING:

- a. Briefly describe the existing / proposed method for developing / working the deposit with all design parameters.
(Note: In case of pocket deposits, sequence of development/working may be indicated on the same plan)
- : It is an existing quarry lease and its involve open cast mining method and the mining method doesn't change in this scheme of mining period. Under the regulation 106 (i) (a) 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.

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

Total proposed production of **755480m³** up to a depth of 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL). Average production is **151096m³** of rough stone per year (Refer Plate No's. IV & IVA).

ear	Pit No.(s)	Topsoil/ Over burden (m ³)	ROM (m ³)	Salcable rough stone (m ³) @ 100%	Rough stone rejects(m ³)	Sub grade/ Weathered rock in (m ³)	Salcable Gravel (m ³)	Rough stone to topsoil ratio
VI	I	....	135960	135960	...	....	....	....
VII	I	....	156020	156020	...	....	....	....
VIII	I	....	155240	155240	...	....	....	....
IX	I	....	153800	153800	...	....	....	....
X	I	....	154460	154460	...	....	....	....
Total	---	...	755480	755480	...	....	....	....

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

Composite plans and Year wise sections (In case of 'B' class mines):

YEARWISE PRODUCTION							
Section	Year	Bench	length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Rough Stone in m ³
XY-AB	VI-YEAR	I	17	50	4	3400	3400
		II	26	53	3	4134	4134
		II	55	174	2	19140	19140
XY-CD		II	106	108	2	22896	22896
		III	101	98	5	49490	49490
XY-AB		III	45	164	5	36900	36900
TOTAL						135960	135960
XY-AB	VII-YEAR	III	58	164	5	47560	47560
		IV	98	154	5	75460	75460
XY-CD		IV	75	88	5	33000	33000
TOTAL						156020	156020
XY-CD	VIII-YEAR	IV	21	88	5	9240	9240
		V	91	78	5	35490	35490
XY-AB		V	93	144	5	66960	66960
		VI	65	134	5	43550	43550
TOTAL						155240	155240
XY-AB	IX-YEAR	VI	23	134	5	15410	15410

XY-CD		VI	86	68	5	29240	29240
		VII	81	58	5	23490	23490
XY-AB		VII	83	124	5	51460	51460
		VIII	60	114	5	34200	34200
TOTAL						153800	153800
XY-AB	X-YEAR	VIII	18	114	5	10260	10260
XY-CD		VIII	76	48	5	18240	18240
		IX	71	38	5	13490	13490
XY-AB		IX	73	104	5	37960	37960
		X	68	98	5	33320	33320
XY-CD		X	66	28	5	9240	9240
		XI	61	18	5	5490	5490
XY-AB		XI	63	84	5	26460	26460
TOTAL						154460	154460
GRAND TOTAL						755480	755480

d. Attach supporting composite plan and section showing pit layouts, dumps, stacks of sub-grade mineral, if any, etc. ; The composite plan is prepared showing pit layouts, etc in surface plan. (Refer Plate No's: III & IIIA).

e. *Indicate proposed rate of production when the mine is fully developed and the expected life of the mine and the year from which effected:*

The proposed production is $12591\text{m}^3/\text{month}$. At this rate of production, the expected life of quarry is calculated as given below: -

Rough stone:

Mineable reserves of rough stone = 755480m^3

Five years production of rough stone = 755480m^3

Monthly production of rough stone = 12591m^3

Life of Mine ($755480/12591$) = **5 years**

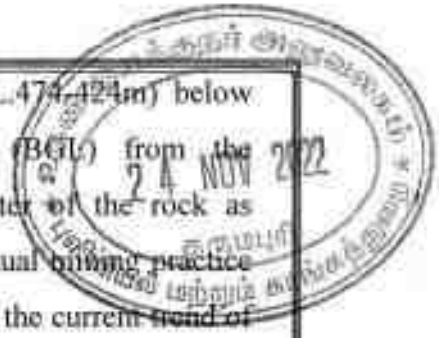
The regular working of the quarry and its production depends upon the demand from the market. The market is always fluctuating and flexible one. Accordingly, there is a possibility to increase or decrease the production. The year wise production, anticipated life of quarry etc., are only a tentative figure.

f. *Attach a note furnishing a conceptual mining plan for the entire lease period (for "B" category mines) and upto the life of the mine (for "A" category mines) based on the geological, mining and environments considerations:*

i) Time frame of completion of mineral exploration program in leasehold area: Give broad description identified potential areas to be covered in the given ; Considering the indefinite depth persistence of the rough stone deposit is proved beyond the workable limits about up to a depth of 54m (which is 4m (R.L. 478-474m) above ground level

time frame:

(AGL) + 50m (R.L.474-424m) below the ground level (BGL) from the petrogenetic character of the rock as well as from the actual mining practice in the area and with the current trend of rough stone production.



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

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

ULTIMATE PIT LIMIT-(XY-AB)							
Section	Bench	Bench R.L.	Period	Overburden/ Mineral	L (m)	W (m)	D (m)
XY-AB	I	R.L.478-474m	Remaining period of 5 years	Rough stone	17	50	4
	II	R.L.474-471m		Rough stone	26	53	3
	II	R.L.471-469m		Rough stone	55	174	2
	III	R.L.469-464m		Rough stone	103	164	5
	IV	R.L.464-459m		Rough stone	98	154	5
	V	R.L.459-454m		Rough stone	93	144	5
	VI	R.L.454-449m		Rough stone	88	134	5
	VII	R.L.449-444m		Rough stone	83	124	5
	VIII	R.L.444-439m		Rough stone	78	114	5
	IX	R.L.439-434m		Rough stone	73	104	5
	X	R.L.434-429m		Rough stone	68	98	5
XI	R.L.429-424m	Rough stone	63	84	5		
Total						54m	

ULTIMATE PIT LIMIT-(XY-CD)							
Section	Bench	Bench R.L.	Period	Overburden/ Mineral	L (m)	W (m)	D (m)
XY-AB	II	R.L.471-469m	Remaining period of 5 years	Rough stone	106	108	2
	III	R.L.469-464m		Rough stone	101	98	5
	IV	R.L.464-459m		Rough stone	96	88	5
	V	R.L.459-454m		Rough stone	91	78	5
	VI	R.L.454-449m		Rough stone	86	68	5
	VII	R.L.449-444m		Rough stone	81	58	5
	VIII	R.L.444-439m		Rough stone	76	48	5
	IX	R.L.439-434m		Rough stone	71	38	5
	X	R.L.434-429m		Rough stone	66	28	5
	XI	R.L.429-424m		Rough stone	61	18	5
	Total						47m

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

The recovery of rough stone in this quarry is 100%. There is no waste rock will be proposed in this lease area.

	continuation of mining activity:-	
	iv) Whether back filling of pits after recovery of mineral upto techno - economically feasible depth envisaged. If so, describe the broad features of the proposal:-	: As the depth of persistence of the deposit may likely to continue for further depth, it is proposed not to backfilled the quarry pit.
	v) Whether post mining land use envisaged:-	: At the end of mining activities over the quarry pit may be utilized fish culture or storage of rain water reservoir used for irrigation purposes.
g.	Open cast Mines:	
	i) Describe briefly giving salient features of the mode of working (Mechanized, Semi-Mechanized, manual)	: It is an existing open cast mining method and the mining method doesn't change in this scheme of mining period. Under the regulation 106 (i) (a) 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. Machineries like Tractor mounted compressor attached with Jack hammers is proposed to drilling and blasting. Hydraulic excavators and tipper combination are adapted.
	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 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	:	Topsoil doesn't propose from this lease area.																					
b. Rough Stone waste and side burden waste:-	:	The recovery of rough stone in this quarry is 100%. There is no waste or side burden shall be removed.																					
h. <i>Underground Mines:</i>	:	Not applicable																					
i. <i>Extent of mechanization:</i>		Describe briefly including the calculation for adequacy and type of machinery and equipment proposed to be used in different mining operations.																					
		(1) Drilling Machines: Drilling of shot holes will be carried out using tractor mounted compressor and jack hammer. Details of drilling equipment's are given below.																					
		<table 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>3</td> <td>32 mm</td> <td>Hand held</td> <td>--</td> <td>Diesel</td> <td>--</td> </tr> <tr> <td>Compressor</td> <td>1</td> <td>--</td> <td>Air</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	3	32 mm	Hand held	--	Diesel	--	Compressor	1	--	Air	--	Diesel	--
Type	Nos	Dia of hole (mm)	Size / Capacity	Make	Motive power	H.P.																	
Jack Hammer	3	32 mm	Hand held	--	Diesel	--																	
Compressor	1	--	Air	--	Diesel	--																	
		(2) Loading Equipment:																					
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Hydraulic excavator	1	EX 210 LC	--	Diesel	--																		
Rock breaker	1	--	--	Diesel	--																		
		Hydraulic excavator and tippers combination utilized for internal transport sizeable rough stone lumps and deliver to the consumer area.																					
		(3) Haulage and Transport equipment																					
		(a) Haulage within the mining leasehold:																					
		<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>6</td> <td>--</td> <td>--</td> <td>Diesel</td> <td>--</td> </tr> </tbody> </table>	Type	Nos	Size / Capacity	Make	Motive power	H.P.	Tipper	6	--	--	Diesel	--									
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Tipper	6	--	--	Diesel	--																		

Whether the dumpers are fitted with exhaust conditioner should be indicated:
The dumpers doesn't used in this quarry area, hence it's a small B1 category mine.

(b) Transport from mine head to the destination : Tipper will be used for transport rough stone from the mine head to the needy customer.

c. Describe briefly the transport system (please specify) : Hydraulic excavator and tippers utilized for internal transport sizeable rough stone lumps and deliver to the customer's area.

d. Ore transported by: own trucks / hired trucks : --

e. 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

f. Details of hauling / transport equipment:

Type	Nos	Size / Capacity	Make	Motive power	H.P.
--	--	--	--	--	--

(4).Miscellaneous:

Describe briefly any allied operations and machineries related to the mining of the deposit not covered earlier.

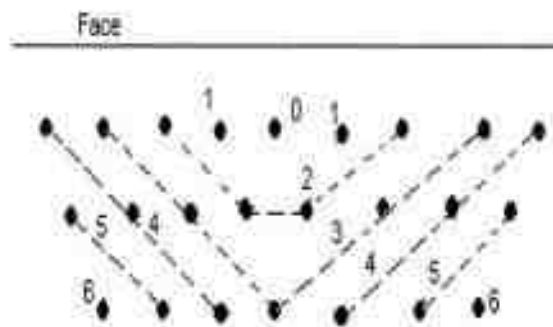
(A) Operations : The mining operation is open-cast, semi-mechanized methods are adopted and on single shift basis only.

(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. (refer Part-A- 4 (i))

5. **BLASTING :**
a) *Broad blasting parameters like charge per hole, blasting pattern, charge per delay, maximum number of holes blasted in a round, manner and sequence of firing, etc.*
Blasting pattern:
The quarrying operation is proposed to carried by open cast mining in

conjunction with conventional method of mining using jack hammer drilling and blasting for shattering effect and loosen the rough stone.

1	Diameter of the hole	82mm
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 $1.2 \times 1.0 \times 1.5 = 1.8 \times 2.8$	5.04 T
6	Output per hole = $1.8 \times 2.8 = 5 T$	5 T
7	Production per annum $151096m^3 \times 2.8 = 423069 T$	423069 T
8	Total handling per day (300 working day)	1410 T
9	Nos. of holes per day ($1410/5.04 = 280$)	280holes.
10	Meterage required per day ($280 \times 5.5 = 1540$)	1540meters
11	Charge per hole	0.5 kg
12	Powder factor ($280 \text{ holes} \times 0.5 \text{ kg} = 140$)	140 kg



Staggered "V" pattern of blasting design

Spacing	=	1.2m
Burden	=	1.0m
Depth of hole	=	1.5m
No of holes proposed per day	=	280holes

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 hearing effect in rough stone for easy excavation and to control fly rock.

Delay detonators:

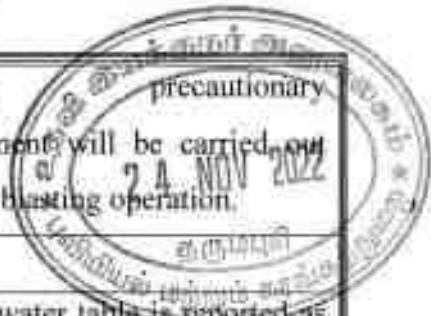
Delay blasting permits to divide the shot to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals. The major advantages of delay blasting are:

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

Blasting program for the production per day

No of holes	:	280holes
Yield	:	1410tons
Total explosive required	:	140kg-Explosives
Charge per hole	:	0.5kg
Blasting at day time only	:	12.00-1.00p.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 crushers.
e) Storage of explosives (like capacity and type of explosive magazine)	:	1. The applicant is advised to engage an authorized explosive agency to carry out blasting. 2. First Aid Box will be keeping ready at all the time.



		3. Necessary precautionary announcements 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 65m in summer and 55m 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 50m 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 about periodically by a stand by diesel powered Centrifugal pump motivated with 7.5 H.P. Motor.																													
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:																														
	<table border="1"> <thead> <tr> <th>Year</th> <th>Topsoil/ Overburden (m³)</th> <th>Weathered rock/ Side burden (m³)</th> <th>Mineral rejects/Waste (m³)</th> </tr> </thead> <tbody> <tr> <td>First</td> <td>....</td> <td>....</td> <td>....</td> </tr> <tr> <td>Second</td> <td>....</td> <td>....</td> <td>....</td> </tr> <tr> <td>Third</td> <td>....</td> <td>....</td> <td>....</td> </tr> <tr> <td>Fourth</td> <td>....</td> <td>....</td> <td>....</td> </tr> <tr> <td>Fifth</td> <td>....</td> <td>....</td> <td>....</td> </tr> <tr> <td>Total</td> <td>....</td> <td>....</td> <td>....</td> </tr> </tbody> </table>			Year	Topsoil/ Overburden (m ³)	Weathered rock/ Side burden (m ³)	Mineral rejects/Waste (m ³)	First	Second	Third	Fourth	Fifth	Total
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Total																												
(b).	Land chosen for disposal of waste with proposed justification	:	Topsoil doesn't proposed from 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%. There is no waste or side burden dumps shall be removed.
8. USE OF MINERAL:			
a).	Describe briefly the end-use of the mineral (sale to intermediary parties, captive consumption, export, industrial use)	:	<p>The Charnockite is quarried as rough stone/blue metal and used for road material and construction purpose, used as raw material to produce M-Sand, P-Sand, etc.</p> <p>Charnockite is a hard with Blue tinges bearing rock, hence it is called as "Blue Metal". It is mainly used in Stone crushing units and size reduced in to ½, ¾ and 1½ inches Jelly which are mainly used in road and building construction purpose.</p>
b).	Indicate physical and chemical specifications stipulated by buyers	:	Basically, the materials produced at this quarry are rough stone (charnockite) and 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.
9. OTHERS			
	<p>Describe briefly the following</p> <p>a) Site services</p>	:	Infrastructure required for such mines like office, stores, canteen, first aid station, shelter latrine and bath rooms have been provided as per the



	Metalliferous Mines Regulations 1961 as a welfare amenity for mine laborers. No manual mining shall be proposed. Approach road is available from nearby the site.
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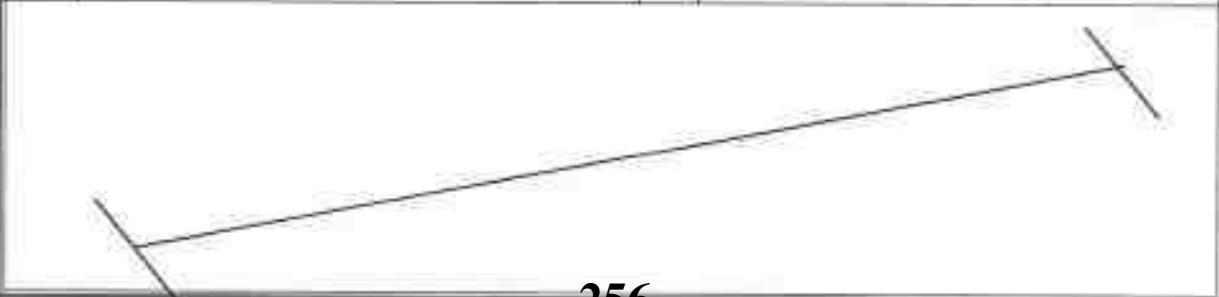
b) Employment potential:
As per Mines safety under the provisions of Metalliferous Mines Regulations, 1961 and under the Mines Act, 1952, whenever the workers are employed more than 10, it is preferred to have a qualified Mining Mate to keep all the production workers directly under his control and supervision.

The following man power is proposed for quarrying rough stone during the five years period the same manpower will be utilize for this plan period to achieve the proposed production and to comply the provisions of the DGMS norms.

1.	Highly Skilled	Quarry Manger	1No.
		Mines Forman	---
		Mechanical Engineer/Geologist	1No.
		Account cum & admin	1No.
2.	Skilled	Earth moving operator	---
		Driver	2 Nos.
		Mechanic	---
		Blaster/Mat	---
3.	Semi – skilled	Helpers, Greaser's	1No
4.	Unskilled	Musdoor / Labours	13Nos
		Cleaners	---
		Attendant's	1No
Total =			20 Nos

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 /beneficiation. This should indicate size and grade of feed material and concentrate (finished marketable product), recovery rate.	:	Excavated rough stone minerals directly will be used by the applicant in his own crusher for required size ½, ¾ and 1½ inches Jelly which are mainly used in road and building construction purpose. The recovery of rough stone and gravel in this quarry is 100%.
(b)	Explain the disposal method for tailings or waste from the processing plant (quantity and quality of tailings proposed	:	No water shall be used for quarrying or any other processing except drinking water to be drawn from

<p>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).</p>		<p>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.</p>
<p>(c) A flow sheet or schematic diagram of the processing procedure should be attached.</p>	:	---
<p>(d) Specify quantity and type of chemicals to be used in the processing plant.</p>	:	---
<p>(e) Specify quantity and type of chemicals to be stored on site / plant.</p>	:	---
<p>(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.</p>	:	<p>Drinking is 0.200KLD, utilized water is 0.8KLD, Dust suppression is 1.0KLD and Green Belt is 1.0KLD. Minimum quantity of water 3.0KLD per day has to be maintained as per the Mines Rules, 1952. Drinking water will be bought to authorized vendor of the nearby the village. The dust suppression and green belt development will be bought to water tanker.</p> <p>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.</p>
		

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.																									
<table border="1"><thead><tr><th>Sl. No.</th><th>Land use</th><th>Present Area (Hect.)</th></tr></thead><tbody><tr><td>1.</td><td>Quarrying pit area</td><td>2.47.27</td></tr><tr><td>2</td><td>Infrastructure</td><td>Nil</td></tr><tr><td>3</td><td>Roads</td><td>0.03.00</td></tr><tr><td>4</td><td>Green Belt</td><td>Nil</td></tr><tr><td>5</td><td>Drainage & Settling Tank</td><td>Nil</td></tr><tr><td>6</td><td>Unutilized</td><td>1.19.73</td></tr><tr><td colspan="2" style="text-align: right;">Total</td><td>3.70.00</td></tr></tbody></table>			Sl. No.	Land use	Present Area (Hect.)	1.	Quarrying pit area	2.47.27	2	Infrastructure	Nil	3	Roads	0.03.00	4	Green Belt	Nil	5	Drainage & Settling Tank	Nil	6	Unutilized	1.19.73	Total		3.70.00
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6	Unutilized	1.19.73																								
Total		3.70.00																								
11.2	Water Regime	: Water table in this area is noticed at a depth of 65m in summer and 55m in rainy season from the general ground level and presently the quarrying of rough stone is proposed up to a depth of 50m bgl. Hence, it will not affect the ground water depletion of this area.																								
11.3	Flora and Fauna	: Flora: It is existing quarry lease. There is no major flora found in this area and no other valuable trees are noticed in the lease area. Fauna: There is no fauna noticed in this area.																								
11.4	Quality of air, ambient noise level and water	: Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying. Quarrying of rough stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be																								

very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.



11.5 Climatic conditions:
Climatic conditions:
Climatic Conditions:- The climate of the district on the whole is slightly humid. The driest months are February and March with average relative humidity of about 30% in the afternoons. During the rainy months the average humidity is appreciably below the saturation level. Winds are generally light to moderate in strength round the year. In open areas, winds blow from northeasterly to easterly directions during the period November to March and from southwesterly to westerly directions during the period May to September. April and October are the transition months.
Rainfall: The normal annual rainfall over the district varies from about 760mm to about 910mm. It is lowest around Rayakota (766.5mm) in the northern part of the district.
Temperature: The district temperature is a gradual decrease of both day and night temperatures from June onwards till December, when the mean daily maximum is about 30°C and the mean daily minimum about 19°C in the plains. The day temperatures increase gradually from January onwards. The lowest temperature is reached in January when the mean daily minimum is about 19°C. April and May are the hottest months in the year with the mean daily maximum temperature of about 37°C and the mean daily minimum temperature of about 25°C in the plains.

11.6 Human Settlement:
The nearest villages are found in the buffer zone with population as per 2011 census.

S.No	Village	Direction	Distance in Km	Population
1	Periyannahalli	North	1.68km	7388
2	Kuppangari	South	0.90km	2360
3	Periyampatti	East	2.64km	1951
4	Begarahalli	West	4.10km	2066

11.7	Public buildings, places of worship and monuments	: No places of special interest like archeological monuments, Sanctuaries etc., are found around 10km radius.
11.8	Attach plans showing the locations of sampling stations	: The proposed Ambient air quality, Water quality Ambient noise level and vibration are periodically tested for every season (6 months once) around 5km radius as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
11.9	Does area (partly or fully) fall under notified area under Water (Prevention & Control of Pollution), Act, 1974	: The proposed area not fall under notified area under Water (Prevention & Control of Pollution), Act, 1974

b) 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" data-bbox="422 1467 1300 1825"> <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 quarrying</td> <td>3.01.90</td> </tr> <tr> <td>2</td> <td>Infrastructure</td> <td>0.03.00</td> </tr> <tr> <td>3</td> <td>Roads</td> <td>0.05.00</td> </tr> <tr> <td>4</td> <td>Green Belt</td> <td>0.35.02</td> </tr> <tr> <td>5</td> <td>Drainage & Settling Tank</td> <td>0.07.73</td> </tr> <tr> <td>6</td> <td>Unutilized</td> <td>0.17.35</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total</td> <td>3.70.00</td> </tr> </tbody> </table>		Sl. No.	Land use	Area in use during the quarrying period (Hect.)	1.	Area under quarrying	3.01.90	2	Infrastructure	0.03.00	3	Roads	0.05.00	4	Green Belt	0.35.02	5	Drainage & Settling Tank	0.07.73	6	Unutilized	0.17.35	Total		3.70.00
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ii).	Air Quality	Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying.																								

iii).	Water quality	A water sample from the open bore wells was tested to NABL approved lab to assess hardness, salinity, colour, Specific gravity, etc.
iv).	Noise levels	Quarrying of rough stone will be carried out by drilling and blasting by using low power explosives and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out every six months around the quarry site.
v).	Vibration levels (due to blasting)	No deep hole blasting envisaged. Small dia shot holes are used for breaking boulders. The maximum peak particles velocity shall be recorded using mini seismograph devices as per the guidance of MoEF and EIA Notification 2006 and also covering DGMS norms.
vi).	Water regime	No major river or any odai track are found around 100m 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 10km 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	:	Topsoil doesn't propose from this lease area.
ii).	Year wise proposal for reclamation of land affected by abandoned quarries and other mining activities during first five years (and up to conceptual plan period for 'A'	:	The present mining is proposed to an average depth of 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the



	<p>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.</p>	<p>ground level (BGL) has been envisaged as workable depth for safe & economical mining during the lease period. Low lying areas with water logging shall be used for fish culture. No immediate proposals for closure of pit as the rough stone persist still at deeper level.</p>																																	
<p>iii).</p>	<p>Programme of afforestation, Year wise 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.</p> <p>Green Belt Development:</p> <p>7.5m safety barrier, school and Nearest Panchayat Roads has been identified to be utilized for Greenbelt appropriate native species of Neem, Pungan and other regional trees will be planted in a phased manner as described below</p> <table border="1" data-bbox="359 1254 1364 1624"> <thead> <tr> <th>Year</th> <th>Place</th> <th>Area in Sq.m</th> <th>No.of Plants</th> <th>Rate of survival</th> <th>Rate</th> <th>Amount in Rs</th> </tr> </thead> <tbody> <tr> <td>VI</td> <td>Lease Boundary</td> <td>3502</td> <td>389</td> <td>80%</td> <td rowspan="3">@100 Rs Per sapling</td> <td>38900/-</td> </tr> <tr> <td>VII</td> <td>Approach road and Nearby Village Road</td> <td>--</td> <td>600</td> <td>80%</td> <td>60000/-</td> </tr> <tr> <td>VIII</td> <td>Schools</td> <td>--</td> <td>200</td> <td>80%</td> <td>20000/-</td> </tr> <tr> <td colspan="6" style="text-align: right;">Total</td> <td>1,18,900/-</td> </tr> </tbody> </table>		Year	Place	Area in Sq.m	No.of Plants	Rate of survival	Rate	Amount in Rs	VI	Lease Boundary	3502	389	80%	@100 Rs Per sapling	38900/-	VII	Approach road and Nearby Village Road	--	600	80%	60000/-	VIII	Schools	--	200	80%	20000/-	Total						1,18,900/-
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<p>iv).</p>	<p>Stabilization and vegetation of dumps along with waste dump management Year wise for the first five years (and up to conceptual plan period for 'A' category mines).</p>	<p>No waste or rejects shall be proposed.</p>																																	

v).	Measures to control erosion / sedimentation of water courses.	: Not applicable. There are no major dumps are stabilized in this lease 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. The worked-out pit will be protected with barbed wire and the mined-out pit will be used as storage rain water pit. The open pit will be used as rain water storage structure to augment groundwater levels which improve the mine environment.
viii).	Protective measures for ground vibrations / air blast caused by blasting.	: It is a 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.



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 B1 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 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL). 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 80 trees per year will be proposed. 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 an existing mining lease. There is no mitigation measures adopted in this lease area
12.4	Mine closure activity	: The present scheme of mining depth is proposed to 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL) 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. Low lying areas with water logging shall be used for fish culture. 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 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	: During temporary discontinuance the working place will be fenced completely and 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. 20labors will be improved.



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

A	Fixed Asset Cost:	
	1. Land Cost (Tender Cost)	: Rs. 72,04,000/-
	2. Labour Shed	Rs. 2,00,000/-
	3. Sanitary Facility	: Rs. 1,00,000/-
	4. Fencing	: Rs. 4,00,000/-
	5. Other expenses (Security guard, dust bin, etc)	: Rs. 5,00,000/-
	Total	: Rs. 84,04,000/-
B	B. Machinery cost	: Rs. 30,00,000/- (Hire Basis)
C	Total Expenditure of EMP cost (for five years)	
	1. Drinking Water Facility	: Rs. 2,00,000/-
	2. Sanitary facility & Maintenance	: Rs. 1,50,000/-
	3. Permanent water sprinkler	: Rs. 1,50,000/-
	4. Afforestation and its maintenance	: Rs. 1,18,900/-
	5. Safety Kits	: Rs. 2,00,000/-
	6. Provision of tyre washing facility	: Rs. 75,000/-
	7. Surface runoff management structures like garland drain, settling pond & Bund (0.07,73Hect or 773Sq.m X 400	: Rs. 3,09,200/-
	8. Blasting materials with blast mat cost	: Rs. 25,00,000/-
	9. Environment monitoring	: Rs. 5,00,000/-
	Total	: Rs. 42,03,100/-
D	Total Project Cost (A+B+C)	: Rs. 1,56,07,100/-

13.0 FINANCIAL ASSURANCE:

Not applicable, it is a "B2" categorized rough stone quarry.

14.0 CERTIFICATES:

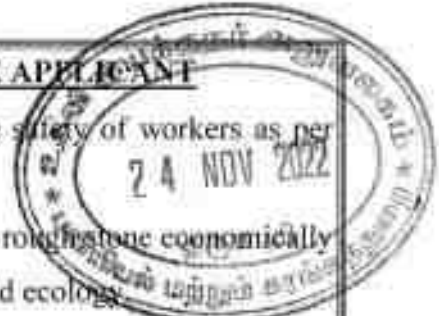
All required certificates are enclosed.

15.0 PLAN AND SECTIONS, ETC:

Plan and Sections are submitted along with scheme of mining.

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 scheme of mining with progressive quarry closure plan has prepared by incorporating the conditions stipulated in the proceeding letter issued by District collector, Dharmapuri vide letter Roc.No. 157/2017 (Mines) Dated 06.02.2018.
- (iv) Total proposed production of 755480m³ a depth of 54m (which is 4m (R.L.478-474m) above ground level (AGL) + 50m (R.L.474-424m) below the ground level (BGL). Average production is 151096m³ of rough stone per year.



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: 14/9/22

Signature of the Recognized Qualified Person

Dr. S. KARUPPANNAN, M.Sc., Ph.D.
 RQP/MAS/285/2014/A
 GED TECHNICAL MINING SOLUTIONS
 1/213-B, Ground Floor, Whiteside Complex,
 Collectorate Post Office, Odmapatti,
 Dharmapuri - 638705, Tamil Nadu, India.

This Mining Plan is approved based on the incorporation of the particulars specified in the letter of the Commissioner of Geology and Mining, Chennai Roc. No: 3888/LC/2012 Dated: 19.11.2012 and subject to further fulfillment of the condition laid down under Tamilnadu Minor Mineral Concession Rules 1959.

This Mining Plan is Approved Subject to the Conditions / Stipulation & Indicated in the Mining Plan Approval Letter No 307/2022 (Nl. of 24.11.2022) Office of the DD. Geology & Mining Dharmapuri.

ASSISTANT DIRECTOR
 GEOLOGY AND MINING
 DHARMAPURI.
 24-11-2022

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2017



தர்மபுரி மாவட்ட அரசிதழ்

சிறப்பு வெளியீடு

ஆணையின்படி வெளியிடப்பட்டது

தர்மபுரி, ஜூலை 8, 2017

[வேளாளியி, ஆனி 23 - திருவள்ளூர் ஆண்டு 2048] [எண் 17

மாவட்ட ஆட்சியர் அறிவிக்கை

[ப.க. எண். 01202 (கனிமம்) நாள் : 07, 07, 2017]

சாதாரண கற்குவாரி ஒப்பந்தப்புள்ளி (டெண்டர்) மற்றும் ஏலம் குறித்த அறிவிப்பு

டெண்டர் விண்ணப்பங்கள் பெற கடைசி நாள்	:	26.07.2017
பொது ஏலம் நடத்துதல் மற்றும் டெண்டர் விண்ணப்பங்களை பிரித்து பரிசீலிக்கும் நாள்	:	27.07.2017
தர்மபுரி வரலாய கோட்டத்தில் அமைந்துள்ள சாதாரண கற்குவாரிகள்	:	07
ஆளுர் வரலாய கோட்டத்தில் அமைந்துள்ள சாதாரண கற்குவாரிகள்	:	02
மொத்தம்	:	09

1. தர்மபுரி மாவட்டத்தில் அரசு பூம்போக்கு நிலங்களில் அமைந்துள்ள சாதாரண கற்குவாரிகளிலிருந்து சாதாரண பொது உட்பிரக சிறுவர்கள்களான சாதாரணகற்குவாரி வெட்டிபெடுத்துச் செயல்படுத்த தனிநபர் மற்றும் தனிபவர் பிறுவகையங்களுக்கு சலுகை குத்தகை உரியம் ஏலங்க மூல முத்திரையிடப்பட்ட ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பங்கள் வரவேற்கும் மற்றும் ஏல ஆய்விட



2. 1959 ஆம் ஆண்டு தமிழ்நாடு சிறுகளில் சலுகை விதிகளின் விதி 8-ன்படி தர்மபரி மாஸ்டர் த்தில் இத்தரவு இணைக்கப்பட்ட அட்டவணையில் குறிப்பிடப்பட்டுள்ள அளவு பூங்கொக்கு நிலங்களில் தரையத்துள்ள சாதாரண கற்குவாரிகளின்மீது சாதாரணகற்களை குவாரி செய்து எடுத்துச் செல்லுபவர்கள் இணைந்த ஏல முறையில் குவாரி குத்தகை உரிய வரங்க மூல முத்திரையிடப்பட்ட சென்ட் விண்ணப்பங்கள் 3 பிரதிகளில் தர்மபரி மாஸ்டர் ஆட்சியரால் வரவேற்கப்படுகின்றன.

3. இந்த அறிவிக்கையின்படி விண்ணப்பிக்கப்படும் ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பம் 1959 ஆம் ஆண்டு தமிழ்நாடு சிறுகளில் சலுகை விதிகளின் விதி இணையடி VI-ல் குறிப்பிடப்பட்டுள்ள படிவத்தில் இடக்க வேண்டும் மாதிரி விண்ணப்பப்படிவம் இந்த மாஸ்டர் அரசிதழ் சிறப்பு வெளியீட்டின் இணையடி VI-ல் பிரசுரிக்கப்பட்டுள்ளது. இணையடி VI-ல் பிரசுரிக்கப்பட்டுள்ள படிவம் VI-ன்படி பூர்த்தி செய்து அனுப்பப்படாத விண்ணப்பங்கள் ஏற்றுக் கொள்ளப்படாது.

4. ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பப்படுபவர்கள் இணைத்து அனுப்பப்பட வேண்டிய இணையடிகளின் விவரங்கள் மற்றும் குத்தகை நிபந்தனைகள் பற்றிய விவரங்கள் குறிப்பிடப்பட்டுள்ள அரசிதழ் தர்மபரி மாஸ்டர் ஆட்சியர் அலுவலகம் தர்மபரி முகியில் மற்றும் காங்கத்தூறு உதவி இயக்குநர் அலுவலகம் தர்மபரி மாஸ்டர் த்திலுள்ள அனைத்து வருவாய் கோட்டாட்சியர், வட்டாட்சியர் மற்றும் ஊராட்சி ஒன்றிய ஆணையர் அலுவலகங்களின் தகவல் பலகையில் விளம்பரம் செய்யப்பட்டுள்ளது.

5. அட்டவணையில் குறிப்பிடப்பட்டுள்ள குவாரிகளின் குத்தகை காலம் குத்தகை ஒப்பந்த பத்திரம் திறப்பெற்றபின் நாளிலிருந்து ஏற்கனவே குவாரி குத்தகை வழங்கப்பட்டு குத்தகை காலம் முடிவற்ற சாதாரண கற்குவாரிகளுக்கும் ஐந்து ஆண்டுகள் மற்றும் புதியதாக சேர்க்கப்பட்டுள்ள சாதாரண கற்குவாரிகளுக்கு 10 ஆண்டுகளாகும்.

6. ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பதாரர் தனது விண்ணப்பத்தில் குவாரியின் மொத்த குத்தகை காலத்திற்கான ஒரே தவணையில் செலுத்தத்தக்க குத்தகை தொகையை உரிய இடத்தில் எண்ணிலும் எழுந்திரும் தொகையாக குறிப்பிட வேண்டும்.

7. மாஸ்டர் ஆட்சியர், வருவாய் கோட்டாட்சியர், வருவாய் வட்டாட்சியர், ஊராட்சி ஒன்றிய ஆணையர், உதவி இயக்குநர் (முகியில் மற்றும் காங்கத்தூறு) அலுவலக தகவல் பலகையில் அறிவிப்பு செய்யப்பட்டுள்ள அரசிதழில் யண்டுள்ள நிபந்தனைகளின்படி பூர்த்தி செய்யப்பட்ட ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பங்களை அனைத்து இணையடிபடிவம் வாரியல் வைத்து மூல முத்திரை இட்டு மாஸ்டர் ஆட்சியர் தர்மபரி என்று விவசாயிட்டு நேரினே அல்லது ஒப்புரை செய்து பதியுதல் மூலமாக மாஸ்டர் அரசு வளர்ச்சி முகமை வட்டத்தில் உள்ள முகியில் மற்றும் காங்கத்தூறு, உதவி இயக்குநர் அலுவலகத்தில் 2017-ம் ஆண்டு ஜூலை 26 அன்று மாலை 05.00 மணிக்குள் கிடைக்கும்படி அனுப்பப்பட வேண்டும். கவரின் மீது விண்ணப்பிக்கும் குவாரியின் விவரம் மற்றும் அட்டவணையில் குறிப்பிடப்பட்டுள்ள குவாரியின் வரிசை எண் போன்றவற்றை தவறாமல் குறிப்பிட வேண்டும்.

8. மேலே குறிப்பிட்ட காலம்மெடுவிற்குள் வரப்பெற விண்ணப்பங்கள் மற்றும் மாஸ்டர் ஆட்சியரால் அல்லது அளவு அளக்காரம் பெற்ற அலுவலரால் தர்மபரி மாஸ்டர் ஆட்சியர் அலுவலக வளாகத்தில் தர்மபரி/அரசு வருவாய் கோட்டத்தில் அமைந்துள்ள குவாரிகளுக்கு 2017ம் ஆண்டு ஜூலை 27 ஆம் நாளன்று முற்பகல் 10.30 மணிக்கு ஆலோசனைக்குட்பட்ட குவாரிக்கு விண்ணப்பித்துள்ள விண்ணப்பதாரர்கள் மற்றும் கொது ஏலத்தில் கலந்து கொள்ளுபவர்கள் முன்னிகையில் அட்டவணைகளில் உள்ள குவாரிகளின் வரிசை கிரமமாக முதலில் செய்து ஏலமும் பின்னர் ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பங்கள் திறப்பும் மேற்கொள்ளப்படும்.



9. மேலே குறிப்பிட்ட நாளில் ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பங்கள் திரும்பிவந்து முன்பு ஒப்பந்தப்புள்ளி குவாரித் தனித்தனியே பொது ஏலம் விடப்படும் ஏல நடவடிக்கை முடிவு செய்த பின்பு சம்பந்தப்பட்ட குவாரிக்கு ஏலப்பிணை விடும் விண்ணப்பங்கள் பிரித்து பரிசீலிக்கப்பட்டு டெண்டர் விண்ணப்பம் மூலம் கோரப்பட்டிருக்கிற உயர்ந்தபட்ச டெண்டர் தொகை அல்லது ஏலம் மூலம் கேடரப்பட்ட உயர்ந்தபட்ச குத்தகை தொகை இதில் எது அதிகமோ அத்தொகையே சம்பந்தப்பட்ட குவாரிக்கான உயர்ந்தபட்ச குத்தகை தொகையாக எடுத்துக்கொள்ளப்பட்டு குவாரி குத்தகை உரிமை வழங்குதல் சம்பந்தமாக நடவடிக்கைகள் மேற்கொள்ளப்படும்.

10. மேற்கண்டபடி வாய்ப்பெறும் டெண்டர் / ஏல விண்ணப்பங்கள், 1959ஆம் ஆண்டு அக்டோபர் சிறுசனியம் சறுகை விதிகள், காங்கல்வர் மற்றும் கனிமங்கள் (மேம்படுத்தும் மற்றும் மூலமுடிக்கும்) எட்டம் 1957 மற்றும் இந்த ஏல அறிவிப்பில் குறிப்பிட்டுள்ள முக்கிய நிபந்தனைகளின்படி பரிசீலிக்கப்பட்டு அவற்றின்மீது மாவட்ட ஆட்சியரால் தக்க ஆணைகள் பிறப்பிக்கப்படும்.

11. இந்த மாவட்ட அரசிதழ் அறிவிக்கை பிரசுரிக்கப்பட்ட பின்னரே, குத்தகை உறுதி ஆணை பிறப்பிப்பதற்கு முன்னரே, நிபந்தனைகளை மாற்றுவோ அல்லது ஏற்று செய்யவோ மற்றும் பட்டியலில் கண்டுள்ள எவ்வா குவாரிகளின் குத்தகை உரிமை கோரும் ஒப்பந்தப்புள்ளி மனுக்களை எக்காரணமும் உதரமும் ஏற்று செய்யவோ அல்லது மேற்படி மனுக்களை மூடி முத்திரையிடப்பட்ட உறைகளை திறக்கும் நாளே மேல் மற்றும் ஏலம் நடக்கும் நாளே மேலும் ஆய்வினைகளை தள்ளிவைக்கவோ நிறுத்திவைக்கவோ மாவட்ட ஆட்சியருக்கு முழு அதிகாரம் உண்டு. ஏதாவது காரணத்தினால் குத்தகைத் தேர்ந்தால் அதற்கு மனுதாரர்கள் யாராகும் தட்டாடு கேட்க உரிமை இல்லை.

12. விண்ணப்பதாரர் ஒவ்வொரு குவாரிக்கும் தனித்தனியே ஒரு ஒப்பந்தப்புள்ளி விண்ணப்பத்தை உரிய இலாபப்படிமேல் அனுப்ப வேண்டும். ஒரே விண்ணப்பத்தில் ஒரு குவாரிக்கு மேல் பல குவாரிகளை குறிப்பிட்டு அனுப்பும் விண்ணப்பம் நிராகரிக்கப்படும்.

13. ஒப்பந்தப்புள்ளி விண்ணப்பம் அனுப்புவதற்கு முன்/ ஏலத்தில் கலந்து கொள்வதற்கு முன் இம்மாவட்ட அரசிதழ் அறிவிக்கையின் இலாபக்கப்பட்டிருக்கிற பட்டியலில் கண்ட சம்பந்தப்பட்ட குவாரியை / குவாரியை விண்ணப்பதாரர் தனது சொந்த சொல்லியே தேரில் பங்கேற்கி பானத வசதி கனிமத்தின் தரம் மற்றும் கனிமத்தின் இருப்பு ஆகியவற்றை ஆராய்ந்து பின்னர் குத்தகை உரிமை கோரி விண்ணப்பிக்க வேண்டும் மற்றும் ஏலத்தில் கலந்து கொள்ளவேண்டும் ஆணை வழங்கப்பட்ட பின் குவாரி அமைப்பதற்கான டூ என், பர்ட்டி குவாரிகளின் தளக்கு எல்லைகள், பானத வசதி, கனிமத்தின் தரம் கனிமத்தின் இருப்புக்குறித்து எவ்வித தவறையும் செய்ய குத்தகைதாரருக்கு உரிமை கிடையாது.

14. 1959ஆம் ஆண்டு அக்டோபர் சிறுசனியம் சறுகை விதிகளில் கண்டுள்ள அனைத்து காரணங்களுமையும் மாவட்ட அரசிதழில் உள்ள அனைத்து நிபந்தனைகளையும் நன்றாக தெரிந்து கொள்பவர்கள் ஒப்பந்தப்புள்ளி விண்ணப்பங்களை உரிய இலாபப்படிமேல் அனுப்பவேண்டும். விண்ணப்பம் அனுப்பிய பிறகு விதிகள் மற்றும் குத்தகை நிபந்தனைகள் பற்றி எரியாக தெரியாது என மனுதாரர் திட்டால் அது எடுத்துக்கொள்ளப்பட மாட்டாது.

15. ஒப்பந்தப்புள்ளி (டெண்டர்) மற்றும் ஏல நிபந்தனைகள் :

1) ஒவ்வொரு குவாரிக்கும் இந்த அரசிதழின் பிழைக்கவகையில் பிரசுரிக்கப்பட்டுள்ள இலாபப்படி VI-ல் காணும் மாற்றி விண்ணப்ப வழத்தின்படி தனித்தனி விண்ணப்பங்களில் விண்ணப்பிக்க வேண்டும்.

2) நடவடிக்கை ஒரு நாளுக்கு இரண்டு குவாரிகளுக்கு மட்டும்தான் குத்தகை உரிமை வழங்கப்படும்.



3) இந்த அரசினர் அட்டவணையில் குறிப்பிட்டுள்ள குவாரிசரின் குத்தகை காலம் குத்தகை ஒப்பந்த பத்திரம் நிறைவேற்றப்பட்ட நாளிலிருந்து ஏற்கனவே குவாரி குத்தகை வழங்கப்பட்டு குத்தகை காலம் முடிவான சாதாரண கட்டுவாரிசரின் குவாரி மற்றும் புதியதாக சேர்க்கப்பட்டுள்ள சாதாரண கட்டுவாரிசரின் குத்தகை ஆண்டுகளாகும். குத்தகை ஒப்பந்தப்பத்திரத்தில் குறிப்பிடப்படும் இறுதி நாளில் குத்தகை காலம் முடிவான பின், குத்தகை காலம் சர்க்காரச் சந்தைமன்றத்தின் கீழ் தீர்மானிக்கப்படும்.

4) ஒப்பந்தப்பத்திரம் (டெண்டர்) விண்ணப்பக்குடன் சீக்கண்டவற்றை இணைத்து அனுப்ப வேண்டும்.

(அ) தீர்மானம் வழங்க இயலாத விண்ணப்பக் கட்டணமாக ரூ.1500/-க்கான கேப்பு வரைவோலையை (டிமானிட் டிராப்ட்) ஏதேனும் ஒரு தேசிய வங்கியில் மாவட்ட ஆட்சியர் தரமுள்ள மாவட்டம் அலுவலகின் பதவியின் பெயரில் பெற்று இணைக்க வேண்டும்.

(ஆ) பிணை வைப்புத்தொகை (Earnest money deposit) ரூ. 25000/- (ரூபாய் இருபத்தைந்தாயிரம் மட்டும்)க்கான கேப்பு வரைவோலை ஏதேனும் ஒரு தேசிய வங்கியில் மாவட்ட ஆட்சியர் தரமுள்ள மாவட்டம் அலுவலகின் பதவியின் பெயரில் பெற்று இணைக்க வேண்டும். குத்தகை உரிமை வழங்கப்படுவது செலுத்த வேண்டிய டெண்டர்/ஏலத் தொகையில் இந்த தொகை பின்னர் சரி செய்து கொள்ளப்படும்.

(இ) ஒப்பந்தப்பத்திரம் (டெண்டர்) விண்ணப்பத்தில் குறிப்பிட்டுள்ள மொத்த குத்தகை தொகையில் 10 சதவீதத் தொகைக்கான கேப்பு வரைவோலை (டிமானிட் டிராப்ட்) மாவட்ட ஆட்சியர் தரமுள்ள மாவட்டம் அலுவலகின் பதவியின் பெயரில் ஏதேனும் ஒரு தேசிய வங்கியில் பெற்று இணைக்க வேண்டும்.

5) ஏலத்தில் நேரடியாக கலந்து கொள்பவர்கள் திருப்பித்தரவேண்டாத விண்ணப்பக்கட்டணம் ரூ.1500/- மற்றும் பிணை வைப்புத்தொகை ரூ.25000/- ஆகியவற்றிற்கான கேப்பு வரைவோலைகள் (டிமானிட் டிராப்ட்) மாவட்ட ஆட்சியர் தரமுள்ள மாவட்டம் அலுவலகின் பதவியின் பெயரில் ஏதேனும் ஒரு தேசிய வங்கியில் மாவட்ட ஆட்சியர் தரமுள்ள ஏலத்தில் நேரடியாக கலந்து கொள்வதற்கு மூன்று நாட்கள் முன்பாக அனுப்பப்பட வேண்டும். மேலும் ஏலம் மூலம் சேரவேண்டிய உபநிதிக்கான தொகை டெண்டர் மூலம் சேரப்பட்ட உபநிதி பட்ச தொகையில் அதுமாதிரி இலிருந்து ஏலத்தொகையில் 10 சதவீதத்தொகையை உடன் ஏலம் நடத்தும் அலுவலரிடம் தேசிய வங்கியில் ஏதேனும் ஒரு வங்கியில் பெறப்பட்ட கேப்பு வரைவோலையாகவோ அல்லது மொத்த தொகையாகவோ செலுத்தி தக்க இரசீதுகளை பெற்றுக்கொள்ள வேண்டும்.

6) மாவட்ட வாரியாக அல்லது வாரியாக விண்ணப்பதாரர் / ஏலதாரர் நேரடியாகவோ அல்லது பங்குதாரராகவோ தொடர்புள்ள குவாரிசரின் பற்றிய சீக்கண்ட விவரங்களை ஆணை உறுதி வாக்குமூலம் (அபி.ஸி.) மூலம் தெரிவிக்க வேண்டும்.

i. அனுபவத்திலிருந்தும் குவாரி குத்தகை அனுபவி பற்றிய விவரம்.

ii. ஏற்கனவே விண்ணப்பித்து இதுவரை அனுபவி வழங்கப்படாத குவாரி குத்தகை அனுபவி பற்றிய விவரம்.

iii. தற்போது உடனிக் குவாரி குத்தகை அனுபவி விவரம்.

iv. விண்ணப்பதாரருக்கு கனம் குத்தகைதாரர் மாவட்ட ஆட்சியர் மூலம் வழங்கப்பட்ட செலுத்தக்க கரங்களை நிறுவை இன்ன சான்றிதழ் அல்லது கரங்களை நிறுவை இன்ன சான்றிதழ் ஆணையுறுதி வாக்குமூலம் இணைக்கப்பட வேண்டும்.

v. வரலாறு வரி செலுத்திய சான்றிதழ் அல்லது வரலாறு வரி வாங்கிய சான்றிதழ் ஆணையுறுதி வாக்குமூலம் இணைக்கப்பட வேண்டும்.



7) ஒப்பந்தப்புள்ளி(டெண்டர்) விண்ணப்பங்கள் செற்கூறிய இணைப்புகளுடன் நேரிடையாக அல்லது மூலக்கருவியில் மதிவகுக்க முடியாதவாறு மாவட்ட ஆட்சியர் கட்டிடத்தில் பின்புறம் உள்ள மாவட்ட அரசு வளர்ச்சி அலுவலகத்தில் தர்ப்பரி புவியியல் மற்றும் கரங்கத்துறை உதவி இயக்குநர் அலுவலகத்தில் 2017ஆம் ஆண்டு சூலை 27 அன்று மாலை 05.00 மணிக்குள் கிடைக்கும்படி செய்ய வேண்டும். நேரில் விண்ணப்பங்கள் அளித்தால் அதைப்பற்றியுள்ள தர்ப்பரி மதிப்பும் அன்றைய தினமே வழங்கப்படும். தபால் மூலம் தெரிப்படும் விண்ணப்பத்திற்கு ஒப்பந்தல் கடிதம் மூன்று தினங்களுக்குள் தபாலில் அனுப்பிவைக்கப்படும். டெண்டர் விண்ணப்பங்கள் மூல முத்திரையிடப்பட்ட கவர்களில் மட்டுமே அனுப்பிவைக்கப்பட வேண்டும். கவரின் மேல்புறத்தில் விண்ணப்பதாரரின் பெயர் மற்றும் விவரம் தெரியாக குறிப்பிடப்பட வேண்டும். கவரின் இடது மூலையில் காரிமத்தின் பெயர் குவாரி அமைந்துள்ள கிராமம், புல எண், பரப்பு அளியுடன் இணைப்பில் பிரகரிக்கப்பட்டுள்ள குவாரிகளின் பட்டியலில் உள்ள வரிசை எண் ஆகியவற்றை தவறாமல் குறிப்பிட்டு வேண்டும்.

8) மாவட்ட ஆட்சியரால்/அல்லது அவரால் அங்கீகாரம் வழங்கப்பட்ட அலுவலரிடம் உள்ள வருமான பரிசீலனையில் விண்ணப்பதாரர்கள் / ஏஜன்கள் ஈடுபாடுகளைக் கண்டறிவதற்காக ஏது அளவுகட்டுப்பாடுகள்.

9) குறிப்பிட்ட காலகாலத்திற்கும் வாய்ப்பு விண்ணப்பங்கள் மாவட்ட ஆட்சியர் அல்லது அவரால் அங்கீகாரம் வழங்கப்பட்டுள்ள அலுவலரால் மாவட்ட ஆட்சியர் அலுவலகத்தில் தர்ப்பரி மற்றும் அஞ்சல் வசூலாய் கோட்டத்தில் அமைந்துள்ள குவாரிகளுக்கு 2017ம் ஆண்டு சூலை 27 அன்று மாலை 10.30 மணிக்கு வருமான தந்திரக்குழு தொடர்புள்ள குவாரிக்கு விண்ணப்பிடுகின்ற விண்ணப்பதாரர்கள் மற்றும் ஏலம் கோர வந்திருக்கும் நபர்களின் முன்பினையிடல் ஒப்பந்தப்புள்ளி (டெண்டர்) விண்ணப்பங்கள் திறக்கப்படுவதற்கு முன்னர் ஏலம் நடத்தப்படும். ஏலத்தில் கலந்து கொள்ள விரும்பினார் பிணை வைத்துத்தொகை ரூ.25000/-களை கேட்பு வாரியகமே வழங்கும் விண்ணப்பக் கட்டணம் ரூ.1500/-களை கேட்பு வாரியகமே கரங்க நிறுவனத்திடம் சமர்ப்பித்து அல்லது உறுதிமொழி ஆவணம், ஏஜன்கள் நேரிடையாகவோ பங்குதாரர்களிடம் உள்ள குவாரிகள் தொடர்பான உறுதிமொழி ஆவணம், வருமானவரி நிறுவனத்திடம் சமர்ப்பித்து அல்லது உறுதிமொழி ஆவணம் முதலிய ஆவணங்களை ரூ.20/- மதிப்புள்ள முத்திரைத்தாளியில் சமர்ப்பித்து அல்லது அலுவலரிடம் (Notary Public) ஈடுபாடுகளைக் கண்டறிவதற்காக ஏலம் நடாட்டுவதற்கு முன் ஆதர்ப்புக்கொண்டும். ஏலம் மற்றும் ஒப்பந்தப்புள்ளி(டெண்டர்) ஒன்றுமேயொன்று செலுத்தும் விண்ணப்பக் கட்டணத்தொகை ரூ.1500/- திருப்பித்தரப்படாது. ஏலத்தில் தேர்ந்தெடுக்கப்பட்டவர்கள் கொடுக்கும் விண்ணப்பத்தில் குத்தகை தொகையை குறிப்பிட்டு தேவையில்லை. ஏற்கனவே டெண்டர் விண்ணப்பம் கொடுத்தவர்கள் ஏலத்தில் கலந்துகொள்ள முடியாவிடில் அவருக்குத்தலாக அவரால் நியமிக்கப்பட்ட வேறு ஒரு நபர் மட்டுமே நேரிடையாக முன்பு விண்ணப்பதாரர் மற்றும் நியமிக்கப்பட்ட நபர் ஈடுபாடுகளைக் கண்டறிவதற்காக உறுதிமொழி ஆவணம் (அடீவரி) தாக்கல் செய்ததில் பெரிய ஏலத்தில் கலந்து கொள்ள அனுமதிக்கப்படுவார்கள்.

10) ஒப்பந்தப்புள்ளி விண்ணப்பப்படுத்திய மறு செய்தி நபர்கள் தங்கள் மறு செய்தி குவாரிக்கு குத்தகை தொகையாக செலுத்த விரும்பும் தொகையை விண்ணப்பத்தில் குறிப்பிடாமல் இருந்தாலே அல்லது விண்ணப்ப கட்டணம், பிணைவைப்புத் தொகை, அடிகட்டலாக குறிப்பிடும் குத்தகை தொகையின் 10% தொகை ஆகியவற்றிற்கான கட்டுமானங்களை விண்ணப்பிடுகின்ற இணைக்காமல் இருந்தாலே, விண்ணப்பத்தாளியில் விண்ணப்பதாரர் தன் ஈடுபாட்டில் செய்ப்பாடல் இருந்தாலே 1959ம் ஆண்டு தமிழ்நாடு சிறுவாரிய சபை விதிகளில் கூறப்பட்ட கரங்கவரி பாக்கியின்மை சமர்ப்பித்து, வருமானவரி பாக்கியின்மை சமர்ப்பித்து அல்லது இணைப்புகளை வழங்கப்படும் ஆவண உறுதி ஆவணம் மற்றும் ஏற்கனவே மறுதாரர் நேரிடையாகவோ பங்குதாரர்களிடம் உள்ள குவாரிகள் தொடர்பான உறுதிமொழி ஆவணம் ஆகியவற்றை இணைக்கப்பட்டால் இருந்தாலே மேற்படி ஒப்பந்தப்புள்ளி விண்ணப்பம் மாவட்ட ஆட்சியரால் அல்லது அவரால் அங்கீகரிக்கப்பட்ட அலுவலரால் தீர்மானிக்கப்படும். மேற்கூறியவை மறு



விண்ணப்பம் திராவிடக்கட்சட்ட ஒப்பந்தப்பள்ளி விண்ணப்பதாரர்களுக்கு ஒப்பந்த பள்ளிகள் திறக்கும் சமயத்தில் விண்ணப்பதாரர் ஆதாரம் இல்லாதவர்கள் மட்டும் மாவட்ட ஆட்சியர் அல்லது அவரது அலுவலகம் பெற்ற அலுவலகம் விண்ணப்பதாரர்கள் தக்க ஒப்பந்தப் பெற்று வங்கியை;வோலை திருப்பி வழங்கப்படும் ஒப்பந்தப்பள்ளி திறக்கும் சமயத்தில் ஆதாரம் இல்லாதவர்களுக்கு திருப்பி வழங்கப்படும் வங்கி வரைவோலைகள் திரும்பி அனுப்பி வைக்கப்படும்.

11) ஒவ்வொரு குளாசுக்கும் பொது ஏலம் நடத்தி முடிந்தபின்னர் சம்பந்தப்பட்ட குளாசுக்கான டெண்டர் விண்ணப்பங்கள் வருகை தந்திருக்கும் சம்பந்தப்பட்ட டெண்டர் விண்ணப்பதாரர்கள் மற்றும் ஏலதாரர்கள் அல்லது அவர்களது அதிகாரம் பெற்ற நபர்கள் முன்னிலையில் சம்பந்தப்பட்ட அதிகாரிகளால் திறக்கப்படும் ஒப்பந்தப்பள்ளி (டெண்டர்) திறக்கும் நேரத்தில் விண்ணப்பதாரர் அல்லது ஏலதாரர் அல்லது அலுவலகம் பெற்ற நபர் ஆதாரம் இல்லாததற்கு மாவட்ட நிர்வாகம் பொறுப்பு அல்ல. மேலும் ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பம் திறப்பதோ ஏலம் நடத்துவதோ நிறுத்தி வைக்கப்படும் படி.

12) மாவட்ட ஆட்சியர் அல்லது அவரது அலுவலகம் பெற்ற அலுவலர் பெறக்கூடிய குளாசுக்கு ஏற்பெற்ற சொந்த செலவுத்தக்க விண்ணப்பங்கள், விண்ணப்பதாரர்களின் செய்கள் ஒவ்வொரு விண்ணப்பதாரராலும் குறிப்பிடப்பட்ட அதிகப்பட்ச டெண்டர் தொகை ஆகியவற்றையும் அதிகப்பட்ச தொகைக்கு ஏலம் கேட்ட நபர் பெற மற்றும் அதிகப்பட்ச ஏலத்தொகை ஆகியவற்றையும் ஏலம் முடிவடைந்தவுடனே அறிவிப்பார். ஏலத்தொகை ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பத்தில் குறிப்பிடப்பட்டுள்ள குத்தகை (டெண்டர்) தொகையை விட குறைவாக இருந்து ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பங்கள் மூலமாக கோரப்படும் குத்தகை தொகைகள் ஒன்றுக்கும் மேற்பட்ட விண்ணப்பதாரர்களால் ஒரே மாதிரியாக குறிப்பிடப்பட்டிருந்தால் மாவட்ட ஆட்சியர் அல்லது அவரது அலுவலர் அலுவலகம் அளிக்கப்பெற்ற அலுவலர் சம்பந்தப்பட்ட விண்ணப்பதாரர்களை மட்டும் அழைத்து சம்பந்தப்பட்ட குளாசுக்கு மட்டும் பற்றியபடி மூலம் உயர் குத்தகை தொகை பெற நடவடிக்கை எடுக்கப்படும். அதிகப்பட்ச குத்தகைத்தொகை கோரும் நபர் அதிகப்பட்ச ஏலத்தொகை கோரிய நபராக அறிவிக்கப்படுவார். ஒவ்வொரு குளாசுக்கும் பெறப்பட்ட ஒப்பந்தப்பள்ளி (டெண்டர்) விண்ணப்பங்களில் குறிப்பிடப்பட்டுள்ள அதிகப்பட்ச குத்தகைத்தொகை அல்லது பொது ஏலத்தின் மூலம் கேட்கப்படும் அதிகப்பட்ச குத்தகைத் தொகையை இயல்பில் எழு அதிகமே அந்த தொகை பெறக்கூடிய குளாசுக்கு கோரப்பட்ட அதிகப்பட்ச குத்தகை தொகை என அறிவிக்கப்பட்டு அதிகப்பட்ச குத்தகைத் தொகை குறிப்பிடப்படாத அறிவிக்கப்படுவார். அதிகப்பட்சத்தொகைக்கு டெண்டர்/ ஏலம் மூலம் கேட்ட நபர் என மாவட்ட ஆட்சியர் அல்லது அவரது அலுவலர் அலுவலகம் பெற்ற நபர் மூலம் உறுதிசெய்யப்பட்டவுடன், டெண்டர்/ ஏலம் கேட்ட நபர் அவரால் அதிகப்பட்சமாக கோரப்பட்ட தொகையில் பத்து சதவிகித தொகையினை கேட்பு வரைவோலைகளை மூலம் / மாவட்ட ஆட்சியர் அல்லது அவரது அலுவலர் அலுவலகம் பெற்ற நபர் மூலம் / டெண்டர் ரத்து செய்யப்பட்டு அவருக்கு அடுத்தபடியாக அதிகப்பட்சத்தொகை கேட்ட நபருக்கு வாய்ப்பளிக்கும்படி அவரும் பத்து சதவிகிதத்தொகையினை செலுத்த தவறும் பட்சத்தில் இதை நடைமுறையை தொடர்ந்து நடத்துவது அல்லது மறு ஏலம் விட ஆணையிடுவது போன்றவை மாவட்ட ஆட்சியரின் இறுதி முடிவு மற்றும் அதிகார வரம்பிற்கு உட்பட்டதாகும். அதிகப்பட்ச ஏலம் / டெண்டர் கேட்ட நபரது தவிர மற்றவர்களுக்கு அவர் தாம் செலுத்திய பிணைவைப்பதற்கான திரும்பு தரப்படும். ஏலம் / டெண்டர் உறுதி செய்யப்பட்ட நபர் மீதுள்ள 90 சதவிகித தொகையினை எழு திரைக்கருக்குள் செலுத்தியே வேண்டும், தவறும் பட்சத்தில் ஏலம் / டெண்டர் ரத்துசெய்யப்பட்டு அவர் செலுத்திய அளவத்து தொகைகளும் பரிசுதல் செய்து அரசு கணக்கில் செல்கப்படும்.

13) (அ) சிறப்பு நிபந்தனைகள்:

(i) இந்த டெண்டர் மற்றும் ஏலமுறையில் கைத்து கொள்ளும் விண்ணப்பதாரர்கள் அனைவரும் இந்திய அரசின் வரமான பரிந்துரைப்பாளர் வழங்கப்படும் திராவிட கணக்கு எண் (PAN - CARD) அட்டமவை பெற்றிருக்கவேண்டும்.

24 NOV 2022

(ii) இந்த நிரந்தர தொகை எண்ணவை சமர்ப்பித்து டெண்டர் மற்றும் ஏலம் போரும் தொகைக்குள்ளாகவே ஏலம் வாங்கி வரவேண்டிய மாவட்ட முறையியல் மற்றும் கரங்கத்துறை, உதவி இயக்குநர் அவர்களுக்கு வருமான கட்டுப்பாட்டின்படி அளிக்கப்பட்டுள்ள TAN.No CHEA11977A-ன் கீழ் உரிய வருமானவரித்துறை செலுத்துகிறபடி முடிவெடுத்தியுள்ளோம்.

(iii) மேலும் குத்தகை உரிய பெற்ற நிரந்தர கனியங்களை எடுத்துச் செல்ல போகுவதற்கு அனுமதி சீட்டுபெற ஒள்வொருமுறையும் செலுத்துகின்ற சீனியரேஜ் தொகையின் மீது இரண்டு சதவீத வருமான வரி தொகை செலுத்தவேண்டும்.

14) ஒரு குவாரிக்கு ஒரு டெண்டர் விண்ணப்பம் மட்டும் வரப்பெற்று ஏலம் கேட்க யாதும் முன்வரவில்லை எனில் அந்த ஒரு விண்ணப்பதாரர் குறிப்பிட்ட தொகை நியாயமானது என்றும் கனிய அபிவிருத்திக்கு உகந்தது என்றும் மாவட்ட ஆட்சியரால் கருதப்பட்டால் அவருக்கு மாவட்ட ஆட்சியரால் குத்தகை உரிய வழங்கப்படும். அந்த ஒரு விண்ணப்பதாரரால் குறிப்பிடப்பட்ட தொகை நியாயமானது அல்ல என்றும் அவருக்கு உரிய வழங்குவது கனிய அபிவிருத்திக்கு உகந்ததல்ல என்றும் மாவட்ட ஆட்சியர் கருதினால், அவருடைய விண்ணப்பம் மாவட்ட ஆட்சியரால் நிராகரிக்கப்படும். ஒரு குவாரிக்கு ஒன்றற்கு மேற்பட்ட விண்ணப்பங்கள் வரப்பெறின் அதிகபட்ச ஏலத்தொகை / டெண்டர் தொகை நியாயமானது எனக் கருதப்படும் பட்சத்தில் குவாரி குத்தகை வழங்க நடவடிக்கை எடுக்கப்படும். ஒரு குவாரிக்கு பெறப்பட்ட அதிகபட்ச ஏல தொகை / டெண்டர் தொகை நியாயமானது அல்ல மற்றும் கனிய அபிவிருத்திக்கு உகந்ததல்ல என மாவட்ட ஆட்சியர் கருதும் பட்சத்தில் அத்தனை ஏற்கனவே நிராகரித்து ஏலத்தொகை / டெண்டர் தொகையில் 10 % தொகையை பெற முடிந்தது மறு ஏலம் மீண்டும் டெண்டருக்கு கொண்டு வர நடவடிக்கை எடுக்கப்படும்.

15) மாண்புமிகு இந்திய உச்சநீதிமன்றம் வழக்கு எண் ஐ.ஏ 12-13/2012 என்.எம்.பி (சி) என்.19628 - 19629/2009 முடியவந்தின் மீது 27.02.2012 அன்று வழங்கியுள்ள ஆணைகளின்படியும், இந்திய அரசு கற்றுச் சூழல் மற்றும் வளத்துறை அறிவிப்பை எண். எம்.11011/47/2011 - IA, II(M) நாள் 18.05.2012ன்படியும், அரசாங்க எண். (எம்எஸ்)என். 79, தெலிங்க (எம்எம்சி)தூறை நாள் 05.04.2015ன்படி 1959ம் வருடத்தில் தமிழ்நாடு சிறுகனிய சேவக விதிகளில் திருத்தம் செய்யப்பட்டு கேட்கப்பட்ட விதிகள் எண். 41 மற்றும் 42-ன் மையம் அமைத்து சிறுகனிய குவாரிகளுக்கு குவாரி குத்தகை வழங்குமுன்பு அங்கீகரிக்கப்பட்ட கரங்கத்திட்டம் மற்றும் தமிழ்நாடு மாநில கற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம் மற்றும் இந்திய அரசு கற்றுச்சூழல் மற்றும் வளத்துறையின் தடையின்மை சான்று பெற்று சமர்ப்பித்த பின்பு மட்டுமே குவாரி குத்தகை வழங்க முடியும்.

16) அதிகபட்சத்தொகை கேட்ட நபருக்கு குவாரி குத்தகை உரிய உறுதிசெய்யப்படுமளவின் தவருக்கு குவாரி குத்தகை உரிய வழங்கப்படவுள்ள குவாரியின் புகள் எண், பட்டியல், ஆகிய விவரங்கள் அடங்கிய அறிவிக்கை வழங்கப்பட்டு அங்கீகரிக்கப்பட்ட கரங்கத்திட்டம் மற்றும் தமிழ்நாடு மாநில கற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம் மற்றும் மத்திய அரசின் கற்றுச்சூழல் மற்றும் வளத்துறையின் தடையின்மை சான்று மற்றும் தமிழ்நாடு மாகாணகட்டுப்பாட்டு வாரிய இணைவு ஆணை ஆகியவற்றை உரிய காலத்திற்குள் சமர்ப்பிக்கவாறு தெரிவிக்கப்படும்.

i. மேற்கண்ட அறிவிக்கை பெற்றுக்கொண்ட பழநாள் கரங்கத்திட்டத்தை அங்கீகாரம் பெற தகுதி வாய்ந்த நபர் (RQP) மூலம் அரசு தெரிவித்துள்ள விதிகள் மற்றும் வழிகாட்டுதலின் படி தவிர்த்து அறிவிக்கை பெறப்பட்ட நாளிலிருந்து மூன்று மாத காலத்திற்குள் தர்மபரி முறையியல் மற்றும் கரங்கத்துறை உதவி இயக்குநரிடம் அங்கீகாரம் பெற சமர்ப்பிக்க வேண்டும்.

ii. மேற்கண்ட பழநாள் தர்மபரி முறையியல் மற்றும் கரங்கத்துறை உதவி இயக்குநரால் அங்கீகாரம் வழங்கப்பட்ட கரங்கத்திட்டத்தை மாவட்ட அளவிலான கற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம்/மாநில அளவிலான கற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், மத்திய அரசின் கற்றுச்சூழல், வளத்துறையின் தடையின்மை சான்று மற்றும் தமிழ்நாடு மாகாணகட்டுப்பாட்டு வாரிய இணைவு ஆகியவற்றை பெற்று சமர்ப்பிக்க வேண்டும்.



iii. இது மாநில சங்கவையில் இருந்து ஐந்து கிளொமிட்டர் தொலைவிற்குள்ளும் வனவிலக்கு சாணாயத்திட்டுக்து பத்து கிலோமீட்டர் தொலைவிற்குள்ளும் அமைந்துள்ள குவாரியளுக்கு மத்திய அரசு சுற்றுச்சூழல் ஆணையத்தின் முன் அனுப்பி பெற்று சமர்ப்பிக்க வேண்டும்.

iv. வனவிலக்கு சாணாயத்திட்டுக்து பத்து கிலொமிட்டர் தொலைவிற்குள் அமைந்துள்ள குவாரியளுக்கு வனவிலக்கு தேசிய வாரிய நிணயக்குழுவிடமிருந்து (Standing Committee of National Board of Wildlife) தடயபிணய சான்று பெற்று சமர்ப்பிக்க வேண்டும்.

v. அங்கீகரிக்கப்பட்ட சுரங்கத்திட்டம் முதல் ஐந்து ஆண்டு காலத்திற்கு மட்டுமே செய்வதற்காகவும்.

vi. மேற்கண்ட ஆவணங்களை சமர்ப்பித்தபின்பு மனுதாரருக்கு குவாரி குத்தகை வரமாகி மாவட்ட ஆட்சியரால் ஆணையிடப்படும். அங்கீகரிக்கப்பட்ட சுரங்கத்திட்டம் மற்றும் தமிழ்நாடு மாநில சுற்றுச்சூழல் பாதிப்பு மதிப்பீட்டு ஆணையம் மற்றும் மத்திய அரசின் சுற்றுச்சூழல் மற்றும் வளத்துறையிடம் தடயபிணய சான்று ஆட்சியருக்கு குறிப்பிட்ட காலக்கெடுவிற்குள் சமர்ப்பிக்க தவறினால் மாவட்ட ஆட்சியர் அவர்களால் மனுதாரருக்கு மாவட்ட ஆட்சியர் முன்பு விளாசனைக்கு ஆதார கார்ப்பளித்து விளாசனை நடத்தப்பட்டு ஏற்கனவே வரங்கப்பட்ட உத்தரவு ரத்து செய்யப்படும்.

17) மேற்கூறிய உத்தரவு மாவட்ட ஆட்சியரிடமிருந்து கிடைக்கப்பெற்றவுடன் விண்ணப்பதாரர் மாவட்ட ஆட்சியரின் ஆணையில் குறிப்பிடப்பட்ட காலக்கெடுவிற்குள் கீழ்க்கண்ட ஆவணங்களை குத்தகை ஒப்பந்த ஆவணம் நிறைவேற்றுவது தொடர்பாக மாவட்ட ஆட்சியருக்கு சமர்ப்பிக்க வேண்டும்.

(அ) விண்ணப்பதாரரின் கையொப்பமிட்ட வரவு குத்தகை ஒப்பந்தப்பத்திரம் மற்றும் வரவுபடி.

(ஆ) அசல் குத்தகை ஒப்பந்தப்பத்திரம் தயார் செய்வதற்கு தேவையான நீதித்துறை சாரா முத்திரைத்தாள்

(இ) கட்டப்படுகக்காக ஏலம் / டெண்டர் தொகையில் பத்து சதவீதம் அல்லது ரூ.5000/-ம் இதில் எது அதிகமோ அந்த செலுத்தியதற்கான அசல் செலுத்துச்சீட்டு (சலான்).

(ஈ) மாவட்ட ஆட்சியர் ஆணையில் குறிப்பிட்டுள்ள மொத்த குத்தகை கட்டுப்பாை கட்டுப்பாசி செலுத்தியதற்கான அசல் சலான்.

18) அச்சாறு குறிப்பிட்ட காலத்திற்குள் மேற்கண்ட ஆவணங்களை மாவட்ட ஆட்சியரிடம் சமர்ப்பிக்க தவறினால் மாவட்ட ஆட்சியரால் வரங்கப்பட்ட குத்தகை உரிமை ரத்து செய்யப்பட்டு அவர் செலுத்திய தணைத்து தொகைகளும் அரசுக்கு ஆதாயம் செய்து அரசு கணக்கில் சேர்க்கப்படும்.

19) மேற்கண்ட ஆவணங்களை ஒப்படைத்து குவாரி குத்தகை ஒப்பந்த ஆவணம் நிறைவேற்றிய பின்பே குவாரியினியை தொடங்கவேண்டும். குவாரி குத்தகை ஆவணம் நிறைவேற்றுமுன் குவாரியினி செய்வது கண்ட நிபந்தனாக அது அனுமதிபெற்றி களிடம் வெட்டியெடுத்ததாக கருதப்பட்டு தமிழ்நாடு சிறுவணிப சலாக விதிகள் 1959ன் விதி 38-ஆன் படி உரிய நடவடிக்கை எடுக்கப்படுவதுடன் குற்றவியல் நடவடிக்கையும் எடுக்கப்படும்.

20) குவாரி குத்தகைக்காக கோரப்பட்ட மொத்த குத்தகை காலத்திற்குமான சூடு தடயவியல் மொத்தமாக செலுத்தப்படும் குத்தகைத்தொகை நிங்கன குத்தகைதாரர் மேற்படி குவாரியில் இருந்து எடுத்துச்செல்ல உத்தேசிக்கும் சிறுகளியத்திற்கு 1200ம் ஆண்டைய தமிழ்நாடு சிறுவணிப சலாக விதிகளின் அட்டவணை 2ல் குறிப்பிடப்பட்டுள்ள விதிதாக்காய்ட்டு சீலிய/சீலு கட்டணத்தை செலுத்தி மொத்த இலவணயைச்சீட்டு மற்றும் அனுப்பகைச்சீட்டு பெற்றுதான் சிறுகளியத்தின எடுத்துச்செல்லவேண்டும். மேலும் அரசால் அளவீப்பாறு நிசுத்தி நிணயிக்கப்படும் சீலியிசுறு தொகையை செலுத்தி அனுமதிச்சீட்டுப்பெறு வேண்டும்.



- 21) குத்தகைதாரர் ஒய்வொரு மாதமும் குவாரிப்பணி செய்த தொழிலாளர்கள், குவாரி செய்த காலத்திற்கு அளவிற்குள்ளாக வளக்குவளை பிரதீயாதம் ஓய்வூதியாளர்களுக்கும் உதவி இயக்குநர் பதவியில் மற்றும் சுரங்கத்துறை தலைவர் அங்கீகரிக்கப்பட்டிருக்கிறவர்களுக்கு ஆதர்ப்பெய்ய வேண்டும்.
- 22) குவாரிகளுக்கு அருகில் உள்ள போக்குவரத்து சாலைகள், சிறுமீசாலைகள் குடியிருப்பு பகுதிகள் விடுகள், வளர்ச்சிப்பாதைகள், மின் மற்றும் தொலைபேசி கம்பிகள், புரான்கள் பாய்க்கால்கள், ரயில்பாதைகள் பொதுப்பணித்துறை, வாய்க்கால், மதாப்தீகமான வழிபாட்டுத்தளங்கள் மற்றும் இதர நிலையான அமைப்புகள் இவற்றிலிருந்து 1959ம் ஆண்டைய தமிழ்நாடு சிறுவனிய சபாலை விதிகளில் படி பாதுகாப்பு இடைவெளி விட்டு மீதமுள்ள இடத்திற்குள் தான் குவாரிப்பணி செய்யவேண்டும். பொதுமக்கள் உட்கொள்ளும் இடங்கள் குடியிருப்புக்கள் பட்டா நிலங்கள் அல்லது பொதுமக்களுக்கு ஆகியவற்றிற்கு சேதம் ஏதும் ஏற்படாமல் குவாரிப்பணி செய்யவேண்டும். குவாரி பணியால் சேதம் ஏதும் ஏற்பட்டால் அதற்கு குத்தகைதாரரோடு முடிபொறுப்பீற்று அதில் ஏற்படும் நட்டத்தை ஈடு செய்து தரவேண்டும்.
- 23) குத்தகைதாரரை மேற்கூறியிட்ட நிபந்தனைகள் அல்லாமல் 1959ம் ஆண்டைய தமிழ்நாடு சிறுவனிய சபாலை விதிகள், களியக்கள் மற்றும் சுரங்கங்கள் (மேம்படுத்தும் மற்றும் முறைப்படுத்துதல்) சட்டம் 1957 மற்றும் இந்த அரசிதழில் குறிப்பிட்டிருக்கின்ற சிறப்பு நிபந்தனைகள் மற்றும் அரசால் அங்கீகரிக்கப்பட்டுள்ளவாற்றால் ஆணைகளும் விதிகளும் கட்டுப்படுத்தும்.
- 24) இவ்விதிகளின் கீழ் வழங்கப்படும் குவாரிகளில் குத்தகை காலம் எக்கவணத்தைக் கொண்டும் குத்தகை வழங்கப்பட்ட காலத்திற்கு மேல் நீட்டிக்கப்படவே அல்லது குத்தகை காலம் முடிவிற்குள்ளேயே மாட்டாது. குத்தகை காலம் முடிந்தபின் குத்தகைதாரர்கள் குத்தகைக்கு விட்டபட்ட பகுதிகளில் எவ்விதமான உரிமையும் கொண்டாடக்கூடாது மற்றும் குவாரி பணியால் சேதம் செய்யப்பட்டு நஷ்டக்காயங்களில் எவரும் விழுந்தால்தான் பாதுகாப்பு செய்யக்கூட வேண்டும்.
- 25) குத்தகை தொழிலாளர்களை குவாரிப்பணியில் ஈடுபடுத்தக்கூடாது.
- 26) இந்த அரசிதழில் குவாரி குத்தகை உரிமத்திற்காக அறிவிக்கப்பட்டிருக்கும் மட்டியில் உள்ள குத்தகை விட்டப்படும் குவாரிகளை டெண்டர் / ஏலம் தடைபெறாதவர்களுக்கு முன்பாக நிறுத்தி வைக்கவே, தக்கவீலா, புதியதாக சேர்க்கவீலா குவாரி பணியை மாற்றுவீலா, மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு.
- 27) நிர்வாக குழுவை அமைக்க டெண்டர் மற்றும் ஏலத்தை எடுத்து செய்ய மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு.
- 28) செய்வித்தால் மூலமாகவோ, மாவட்ட அரசிதழ் மூலமாகவோ, அறிவிப்பு செய்யப்பட்ட குவாரிகளுக்கு ஏதாவது ஒப்பந்தப்பள்ளி விண்ணப்பங்கள் கிடைக்கப்பெற்றால் அவையாவும் முறிச்சரி அடையாத விண்ணப்பமாக கருதப்பட்டு மாவட்ட ஆட்சியரால் உடனடியாக நிராகரிக்கப்படும். குறித்த காலக்கெடுவிற்குள் வந்து கோராத விண்ணப்பங்கள் காலவரையறை கடந்த விண்ணப்பமாக கருதப்பட்டு அவையாவும் மாவட்ட ஆட்சியரால் நிராகரிக்கப்படும் நிராகரிக்கப்பட்ட விண்ணப்பங்களின் வாய்க்கால்களால் மட்டும் விண்ணப்பதாரருக்கு திரும்ப அனுப்பி வைக்கப்படும்.
- 29) 1959ம் ஆண்டு தமிழ்நாடு சிறுவனிய சபாலை விதிகள் அட்டவணைப்படிமம் 1ல் கண்ட ஒப்பந்தப்படுத்தித்தீர்ந்த தேவையான அளவிற்கு நிபந்தனைகளை புதியதாக சேர்க்கவீலா, தக்கவீலா மாற்றி அமைக்கவீலா மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு. குத்தகை பத்திரம் ஏற்படுத்தியபின்பு மட்டும் மற்றும் குவாரி செய்ய ஒதுக்கப்பட்ட பகுதிக்குறித்து எவ்வித தரவரம்பும் செய்ய குத்தகைதாரருக்கு உரிமை கிடையாது.



30) குத்தகை ஒப்பந்தப்பதிாத்தை பாய்வை த்துடன் சொத்து பாற்றுகைசட்டம் 1882-ன் பிரிவு 107ன் கீழ் குத்தகைதாரர் தனது சொந்த செலவில் பதிவுசெய்து பதிவுசெய்த ஒப்பந்தப்பதிாத்தினை தர்பரி புலியியல் பதிவு செய்யுதலுடன் உதவி இயக்குநர் அறுவலைத்திவி உடன் ஒப்படைக்கவேண்டும்.

31) தமிழ்நாடு சிறுவர் சிவகாம சிவகாம விதிகள் 1953ன் விதி 36(1)ல் வரையறுக்கப்பட்டுள்ளவாறு அருகிலுள்ள குடியிருப்புக்கு பாதுகாப்பு இடைவெளியாக 300 மீட்டரும் கிராம சாலைகளுக்கு 10 மீட்டரும் இதர சாலைகள் வட்டிகள், வழிவட்டு தகவிகள், மின்னம்பி பாறைகள், தொலைபேசி பாறைகள், டிராக்ஸன்டிப்பாறைகள், டிரான்ஸ்மிசர்ய்கள், ஆறு, ஏரி, குளம், குட்டை மற்றும் இது சொத்துக்கள் ஆகியவற்றிற்கு பாதுகாப்பு இடைவெளியாக 50 மீட்டரும் விட்டு மீளாமல் இடத்திற்குள் தான் குவாரிப்பணி செய்யப்பட வேண்டும். பூர்த்தா சின்னங்களுக்கு தொல்பியல் துறையால் வரையறுக்கப்பட்டுள்ள பாதுகாப்பு இடைவெளி விட்டும் குவாரிப்பணி செய்யவேண்டும். சொத்துக்கள் உடையகிக்கும் இடங்களான குடியிருப்புக்கள் பட்டா நிலங்கள் மற்றும் இது சொத்துக்கள் ஆகியவற்றிற்கு சேதம் ஏதும் நேரிட்டால் அதற்கு குத்தகைதாரரே முழுபொறுப்பிற்று அதில் ஏற்படும் தட்டைத கடுசெய்து தரவேண்டும்.

32) நிர்வாக காரணம் மற்றும் சொதுதவணை கடுத்தின்பொண்டு குத்தகைக்கு விட்டபட்ட பர்ப்பிணை பின்னர் குறைத்து நிர்ணயிக்கவும் குவாரி குத்தகையை வந்து செய்யவும் மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு.

33) குத்தகைதாரர் 1959ல் ஆண்டு தமிழ்நாடு சிறுவர் சிவகாம விதிகளின்படியும் பாயட்ட அரசிதழில் கண்டுள்ள திபுத்தகைகளின்படியும் ஒப்பந்தப்பதிா திபுத்தகைகளின்படியும் நடந்துகொள்ள வரையப்பட்டவரானால், குத்தகைகாலத்தில் சட்டதிட்டங்கள் மற்றும் குவாரி குத்தகை திபுத்தகைகளுக்கு ஒப்பந்த விதிசெய்து முறையிட்டு குத்தகைதாரர் நடந்துகொண்டால் குத்தகை வந்துசெய்யப்படுவதுடன் கப்பத்தொகை மற்றும் அவர் சொதுத்திய அணைத்து தொகைகளும் அரசுக்கு பதிவுதம் செய்யப்படும். அக்குவாரிக்கு மீண்டும் குவாரி குத்தகை வழங்க நடவடிக்கை மேற்கொள்ளப்படும்.

34) குவாரி குத்தகை வழங்கப்பட்ட இடத்தில் சாதாரண ஸ்ரணை குவாரி செய்வதில் ஏற்படக்கூடிய நஷ்டங்களுக்கு அரசால் எவ்வித நஷ்ட ஈடுமில் வழங்கப்பட மாட்டாது.

35) வழங்கப்பட்ட குத்தகை உரிமத்திற்கு பொதுமக்கள் மற்றும் அரசு துறை மூலம் கடுசெய்யான ஆட்சேபம் இருப்பின் சொதுதன்மையை கடுசி மாவட்ட ஆட்சியர் குத்தகையை வந்துசெய்ய நேரிட்டால் அதனால் ஏற்படும் இழப்பிற்கு கடுகோ குத்தகைதாரருக்கு உரிமை இல்லை.

36) குத்தகைதாரர் குவாரியை வேறு யாருக்கும் மாற்றுவது உள்சுத்தகைக்கு விடவே கூடாது. அப்படி ஏதாவது செய்திருப்பது தெரியவந்தால் மேற்படி குத்தகை வந்துசெய்யப்படுவதுடன் குத்தகைதாரர் சொதுத்திய தொகையும் அரசுக்கு ஆதாயம் செய்யப்படும்.

37) குத்தகைதாரர், புலியியல் மற்றும் காரங்கத்துறை உதவி இயக்குநர் அறுவலைத்தில் அரசு குறிப்பிட்ட படிவத்தில் அனுப்புகை சீட்டுகணை அச்சிட்டு சமர்ப்பிக்க வேண்டும். குத்தகைதாரர் சிறுவர் சிவகாம விதிகளில் எடுத்து செல்லும் வாகளத்துடன் அனுப்புகை சீட்டு கொடுத்து அனுப்ப வேண்டும். இந்நடை சதிட்டை இரு பிரதிகள் அச்சிட்டு வரிசை எண்ணிட்டு தாயகம் உத்தேசமாக எடுக்க இருக்கும் வேடுகளுக்கு கொடு ஒன்றுக்கு ஒரு சீட்டு வீதம் கணக்கிட்டு அபுர்சூரிய சிவகாம சிவகாம விதிகளின் கீழ் சொதுத்திய பின்னர், தர்பரி புலியியல் மற்றும் காரங்கத்துறை, உதவி இயக்குநரிடம் அனுப்புகைசீட்டு மற்றும் சொதுத இடைவெளிகளை சீட்டு ஆகியவற்றில் உரிய முத்திவரையும் கையொப்பமும் பெற்றபின்மே பசர்ப்படுத்த வேண்டும்.



38) ஒப்பந்தம் செய்து கொடுத்த அனுப்புகைகளைக் கட்டுவது கனியம் கொண்டு செல்லும் வாகனங்களை சிறப்பாக சீரமைப்பதற்கான முறையற்ற வகையில் எடுத்துச் செல்வதாக கருதப்பட்டு உரிய சட்டத்தின்படி உரிய அறுவளங்களில் சம்பந்தமாக அடர்த்தி விதிக்கப்படும்.

39) புவியியல் மற்றும் கரங்கத்திணை அலுவலர்கள் அயலது வசூலாக்கிணை அலுவலர்கள் முதலாளிகள் தனித்தனிக் செய்யும்போது உரிய கணக்குகள் மற்றும் அனுப்புகைக் கட்டு முதலாளிகளையகளை குவாரி குத்தகை உரியம் பெற்ற குத்தகைகளைக் கவனிப்பிக்கவேண்டும்.

40) நூரக அலுவலர்கள் தனித்தனிக் செய்யும் போது சிறுமளியின்கள் கொண்டு செல்லும் வாகனங்களையகளை தனித்தனிக் கு உட்படுத்த வாகன ஓட்டுனர்களைய குத்தகைகாரர்கள் அறிவதுக்கு வேண்டும்.

41) அனுப்புகைகளைக் கட்டும் உள்ள கண்கள் பூத்தி செய்யப்படவகளை அயலது தவறாக எடுத்துக்கட்டு வாகனங்களுக்கு கொடுக்கப்பட்டிருக்கவகளை சிறுமளியின்கள் கொண்டு செல்லும் வகளை உரியமளியின்களுக்கு அடர்த்தி விதித்து வசூல் செய்யப்படும் மற்றும் குவாரி குத்தகையைய ரத்து செய்ய நடவடிக்கை மேற்கொள்ளப்படும்.

42) குத்தகைகாரர் ஒவ்வொரு நாளும் குவாரியின்கள் எவ்வளவு சிறுமளியின்கள் கொட்டி எடுக்கப்பட்டது என்பதையம் எந்த அளவு கனியங்கள் வாரி, வண்பு மூலம் கொள்விய அனுப்பப்பட்டது என்ற விவரத்தைக் கூட்டும் பதிவேடு பராமரிக்க வேண்டும். குவாரி குத்தகை சம்பந்தமான இது பதிவேடுகளை பராமரிக்க வேண்டும்.

43) நூரக மற்றும் மாவட்ட ஆட்சியர்கள் குவாரி குத்தகை உரியம் சம்பந்தமாக ஏற்படுத்தப்பட்டுள்ள மற்றும் அயலவர்களுக்கு ஏற்படுத்தப்படும் சட்ட திட்டங்களுக்கும் நிபந்தனைகளுக்கும் குத்தகைகாரர் கட்டுக்கட்டு நடக்க வேண்டும். குத்தகை காலத்தின்கள் அயலது அறங்குளியின்களை கிராம தவறி குத்தகையைய பயன்படுத்திப்பதினாய் ஏற்படும் சகல நடவடிக்கைகளுக்கும் குத்தகைகாரர்கள் கொறுப்பிக்க வேண்டும். இதற்காக விதிக்கப்படும் அடர்த்தித்தையம் மேற்கொள்ளப்படும்.

44) குத்தகை திட்டத்தான கிராமத்தால் குத்தகையைய ரத்து செய்யவகளை செய்யப்பட்ட தவறுகளுக்கு குத்தகைகாரருக்கு தனித்தனிக் விதிக்கவகளை கிராமத்தால் வழங்குகொடுக்கவகளை மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு. குத்தகை ரத்துச் செய்யப்பட்டால் கட்டிக்கொடுக்க உரிய அளவித்து தொகையையும் அருக்கு அடர்த்தி செய்யப்படும். மாவட்ட ஆட்சியர் எக்காரணத்திற்கையகளை குவாரி குத்தகையைய ரத்துச்செய்யும் பட்சத்தில் அளவால் ஏற்படும் எவ்வகை நடவடிக்கைகளுக்கும் நூரக கொறுப்பிக்க குத்தகை எடுத்தவர் எந்த காரணத்தைய குவாரியின்கள் தளக்கு இரப்பு ஏற்பட்டால் நடவடிக்கை மேற்கொள்ளப்படாது.

45) குத்தகை எடுத்தவர் குத்தகையைய அனுப்பிக்கவகளை விட்டாலும், செலுத்தப்பட்ட குத்தகை தொகை எக்காரணத்தைய குவாரியின்கள் திரும்ப வழங்கப்படமாட்டாது.

46) குவாரியின்கள் எவ்வகைகள் பற்றி பிரச்சினையகளை ஏற்பட்டால் மாவட்ட ஆட்சியின்கள் திப்பெ இறுக்கியகளை.

47) கற்குவாரி குத்தகை உரியம் வழங்கப்பட்ட பின்னர் அகிலக்குவாரியின்கள் ஏதாவது ஒரு பகுதியின்கள் கரங்கத்திணை முக்கியத்துவம் வாய்ந்த முதலாளிகளைய கல்வெட்டுக்கள், சிறு வடிவையையின்கள் போன்றவகளைக் கவனிப்பட்டால் அது குறித்து அருக்கு தகவல் தரவேண்டும். மேலும், அயலகுதியின்கள் கற்கள் உடையது நிறுத்தப்பட்டு அயலத்தான கிண்கள் கரங்கத்திணை வேண்டும்.

48) கொட்டியின்கள் கொறுப்படும் பூ உள்ளகின்கள் கொள்ள எவ்வகையையும் நிதியன்களத்தின்கள் ஆவண / தகவலையகளை முதலாளிகளைய நிதின்களத்தின்கள் கொறுப்பட்டதாக கொடியன்களத்தின்கள் அளவகளை கீழ குத்தகை உரியம் வழங்குகுளியின்கள் மாவட்ட ஆட்சியின்கள் முடிவே இறுக்கியகளை.



49) குத்தகைதாரர் குத்தகை வழங்கப்பட்ட குவாரி முகப்பில் குவாரியின் புது எண் மட்டும் குத்தகைதாரர் பெண் குத்தகை வழங்கப்பட்ட மாவட்ட ஆட்சியர் செயல்புறது என குத்தகை தொகை, குத்தகை காலம் போன்ற விவரங்கள் குறிக்கப்பட்ட தகவல் மலையைய தளது சொந்த செலவில் கவர்த்து குத்தகை காலம் முழுமும் பராமரிக்கவேண்டும்.

50) குத்தகைதாரர் குவாரியின் எல்லைவளை தெரிவாக தெரியுமாடி வரண்பட்ட எல்லைக்கற்கள் ஊன்றி அடைபாறாபிட்டு பின்பே குவாரிசெய்ய வேண்டும். எல்லைக்கற்களை குத்தகை காலம் முழுமும் தளது சொந்த செலவில் தளது பராமரிக்கவேண்டும்.

51) குத்தகைக்கு வழங்கப்பட்ட கங்குவாரியில் சாதாரண ஈறிகள், உளிக்கல், சந்தை ஈறிகள், ஸ்டீல்கற்கள் ஆகியவைகளை மட்டுமே குவாரி செயல் வேண்டும். குவாரி நாட்டிற்கு ஏற்றவாழி செய்வதற்கும் பெருகு ஏற்றவதற்கும் பயன்படும் வடிவமைக்கப்பட்ட சந்தை உற்பத்தி செய்யக்கூடாது.

52) குவாரியில் வெடி வைத்து ஈற்களை உடை சிக அங்கீகாரம் பெற்ற வெடிபொருள் விற்பனைபாளரிடம் (Licenced Explosive Dealer) வெடிபொருள்வை கொள்முதல் செய்து சான்று பெற்ற வெடி வெடிப்பாளர் (Licenced shot Firer) கொண்டு தளது பாதுகாப்பு நிபந்தனைகளைபயம் கடைபிடித்து மிகச்சிறிய அளவில் மட்டுமே வெடிவை வெடி சிக வைக்க வேண்டும்.

53) குவாரியில் சாதாரண ஏர் கம்பர்சர்களை கொண்டு தளதுபிட்டு வெடிவைக்க வேண்டும். ஆழ்தளது கிளறு உபகரணங்களை (Rig Bore) கொண்டு தளதுபிட்டு வெடிவைக்கக்கூடாது. அருகிலுள்ள விவசாய நிலங்கள், பொதுமேத்துக்கள் மற்றும் பொதுக்கல் ஆகியவருக்கு எவ்வித பாதிப்பும் ஏற்படாமல் வெடி வைக்க வேண்டும். அங்காறு செயல்பட முன் கிராம நிர்வாக அலுவலர் மூலம் அப்பகுதி மக்களுக்கு தளதுரா மூலம் பாதுகாப்பு எச்சரிக்கை செய்யப்பட வேண்டும்.

54) ஆய்வைப் பரிசீலனை மற்றும் சரக்குத்தறை மற்றும் மாவட்ட ஆட்சியரால் இது தொடர்பாக ஏற்படுத்தப்பட்டுள்ள மற்றும் அங்கப்போது ஏற்படுத்தப்படும் சட்ட திட்டங்களுக்கும் நிபந்தனைகளுக்கும் குத்தகைதாரர் கட்டுப்பாட்டு நடக்க வேண்டும்.

55) 1961ம் ஆண்டில் வெட்டாரிபெரால் எவ்வளவு ரெடுவேஷன்ஸ், 1936 ஆம் ஆண்டில் எம்பளம் வழங்குதல் சட்டம், 1984 ஆம் ஆண்டில் இந்திய வெடிபொருட்கள் சட்டம், 1964 ஆம் ஆண்டு குணாதிபட்ச ஊதியச்சட்டம் ஆகியவற்றிற்கு சட்டப்பட்டு குத்தகைதாரர் கணியங்கள் வெடி எடுத்து வெளியேற்ற வேண்டும்.

அட்டவணை - 1

தர்மபுரி கோட்டம்

காரியங்கலை வட்டத்தில் அமைந்துள்ள சாதாரண கற்குவாரி பட்டியல்.

வ. எண்.	வட்டம்	கிராமம்	புறணி	பொத்த மாய்பு (ஹெக்)	ஏயல் விடும் மாய்பு (ஹெக்)	வகைபாடு	குத்தகை காலம்
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	காரியங்கலை	காரியங்கலை, அள்ளி	333 (பகுதி)	3,56.5	1,74.0	காடு	ஐந்து ஆண்டுகள்
2.	காரியங்கலை	காரியங்கலை, அள்ளி	384	0,69.0	0,69.0	தீ.ர.க. (கம்பாய்க்குத்து)	ஐந்து ஆண்டுகள்
3.	காரியங்கலை	காரியங்கலை, அள்ளி	389 (பகுதி)	6,44.5	2,02.5	தீ.ர.க. (காடு)	பத்து ஆண்டுகள்



(1)	(2)	(3)	(4)	(5)	(6)		
4.	காரியங்கலை	காவட்டண அள்ளி	325	1.78.0	1.78.0	தீர.த. (காடு)	ஐந்து ஆண்டுகள்
5.	காரியங்கலை	காவட்டண அள்ளி	401 (பகுதி)	4.18.0	3.70.0	கல்யாங்கருத்து	ஐந்து ஆண்டுகள்
6.	காரியங்கலை	பூளாண்ட அள்ளி	260	0.77.5	0.77.5	தீர.த. (காடு)	ஐந்து ஆண்டுகள்
<i>பாலக்கோடு வட்டத்தில் அமைந்துள்ள சாதாரண கற்குவாரி பட்டியல்.</i>							
7.	பாலக்கோடு	பெயராள அள்ளி	354 (பகுதி)	2.41.0	0.77.5	தீர.த. (காடு)	பத்து ஆண்டுகள்
<i>அருள் கோட்டம்.</i>							
<i>பாப்பிரெட்டிப்பட்டி வட்டத்தில் அமைந்துள்ள சாதாரண கற்குவாரி பட்டியல்.</i>							
8.	பாப்பிரெட்டிப்பட்டி	பெயராள அள்ளி	143 (பகுதி)	1.57.5	0.71.0	கல்யாங்கருத்து	ஐந்து ஆண்டுகள்
<i>அருள் வட்டத்தில் அமைந்துள்ள சாதாரண கற்குவாரி பட்டியல்.</i>							
9.	அருள்	கணபதிப்பட்டி	4/1	0.71.0	0.71.0	கல்யாங்கருத்து	பத்து ஆண்டுகள்

தமிழ்நாடு
07.07.2017.

அ. சங்கர்,
மாண்புமிகு ஆட்சியர்(கா),
தமிழ்நாடு மாண்புமிகு

பின் இணைப்பு VI



கொண்டர் விண்ணப்பம் / குவாரி குத்தகை உரிமை வழங்கலதற்கான விண்ணப்பம்
(மூன்று பிரதிகளில் சமர்ப்பிக்கப்பட வேண்டும்)

அனுப்புநர்

பெறுநர்

மாவட்ட ஆட்சியர்,
தர்மபுரி

அய்யா,

தர்மபுரி மாவட்ட அரசிதழ் (சிறப்பு வெளியீடு)என. நான் 2017 திசைநிலையில் வெளியிட்ட நான்.....2017ல் படி இத்துடன் தமிழ்நாடு சிறுகணிம சலுகை விதிகள் 1959 விதி 8ல் கீழ் எனது / எங்களது விண்ணப்பத்தினை சமர்ப்பிக்கின்றேன் / சமர்ப்பிக்கின்றோம்.

தமிழ்நாடு சிறு கணிம சலுகை விதிகள் 1959 விதி 8ல் கீழ் குவாரி குத்தகை உரிமை வழங்கும் படி நான் கேட்டுக்கொள்கிறேன் / நாங்கள் கேட்டுக்கொள்கிறோம்

தேவையான விவரங்கள் கீழே கொடுக்கப்பட்டுள்ளது

- 1) விண்ணப்பதாரர் பெயர் மற்றும் முழு முகவரி :
- 2) விண்ணப்பதாரர்
 - அ) 1) தனிநபர்? :
 - 2) தனிப்பட்ட நிறுவனம்? :
 - 3) நிறுவனம் அல்லது கழகம் :
- ஆ) தனிநபரானால் விண்ணப்பதாரர் எந்த நாட்டைச் சார்ந்தவர் :
- இ) தனிப்பட்ட நிறுவனமானால்/ கழகமானால் மேற்கண்ட நிறுவனத்தின் / கழகத்தின் இயக்குநர்களின் தாய் நாட்டை பற்றிய விவரம் (எழுத்துப் பூர்வ ஆதாரங்கள்) இணைக்கப்பட வேண்டும்)



- 3) பிணை வைப்பத்தொகை செலுத்திய விவரம் கேட்டு வரலாறுகளையின் எண் மற்றும் நாள் / : குடியரசு வரலாறுகளை இணைக்கப்பட வேண்டும்
- 4) விண்ணப்பதாரர்கள் கீழ்க்கண்ட இனங்களுக்கு : ஆணை உறுதி ஆவணம் (அபிடவிட்) இணைக்கப்பட்டுள்ளதா?
- 5) விண்ணப்பதாரர் குவாரி செய்ய விரும்பும் : சிறுகனிமத்தின் பெயர் மற்றும் விவரம்
- 6) குவாரி குத்தகை உரிமை கோரும் காலம் :
- 7) விண்ணப்பிக்கும் இடத்தின் மொத்த பரப்பளவு :
- 8) டெண்டர் விண்ணப்பம் அல்லது : விண்ணப்பம் செய்யப்படும் இடத்தின் விவரம்
மாவட்டம் :
வட்டம் :
கிராமம் :
புல எண் :
பரப்பளவு (ஹெக்டேரில்) :
- 9) குத்தகை உரிமை பெறுவதற்கு : விண்ணப்பதாரர்கள் செலுத்தப்படவுள்ள அதிக பட்ச ஒரு தடவை குவாரி குத்தகை தொகை (எண்ணாளும் எழுத்தாளும் எழுத்தப்பட வேண்டும்)
- 10) ஏற்கனவே தமிழ்நாட்டில் குவாரி குத்தகை : உரிமை பெற்ற இடத்தின் விவரம்
- 11) (அ) குவாரிகளுக்கு உரிய நிலுவை : செலுத்துதல் தொடர்பாக கூடுதல் நிலுவை இல்லா சான்று இணைக்கப்பட்டுள்ளதா?
(ஆ) விண்ணப்பிக்கும் நாளில் குத்தகை உரிமை : ஏதும் விண்ணப்பதாரருக்கு இம்மை எளில் அதற்கு உண்டான ஆணை உறுதி ஆவணம் இணைக்கப்பட்டுள்ளதா?

- (2) வீண்ணப்பதாரால் அளிக்கப்படும் மேலும் ஏதேனும் கூடுதல் விபரங்கள்



எண்ணல்/எங்களால் மேலே கொடுக்கப்பட்ட விபரங்கள் அளித்தும் உண்மை நான்/நாங்கள் அரசு/மாவட்ட ஆட்சியர், மாவட்ட வன அலுவலர் ஆகியவர்களால் கேட்கப்படும் இதர விபரங்கள் மற்றும் பிணை வைப்பு தொகையினை அளிக்க சம்மதிக்கின்றேன்/சம்மதிக்கின்றோம். தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959-ஆ் கீழ் நத்தகை உரிமம் வழங்க உள்ள விதிகள் மற்றும் துவாரி செய்ய கொடுக்கப்பட்ட இதர நிபந்தனைகள் அனைத்தையும் தெரிந்து கொண்டேன்/கொண்டோம் என உறுதி அளிக்கின்றேன்/அளிக்கின்றோம். மேலும் எந்த சூழ்நிலையிலும் மேற்கண்ட குத்தகை உரிம இடத்திலிருந்து ஏற்றுமதிக்கு ஏற்ற அல்லது அறுத்து மெருகேற்றுவதற்கு (Polish) உகந்த பரிமாணமுள்ள கற்கள் (Dimension stone) மற்றும் பலகை கற்கள் (Slabs) வெட்டிப்பெடுக்காமாட்டேன்/மாமட்டேன் என உறுதி அளிக்கின்றேன்/அளிக்கின்றோம்.

தங்கள் உண்மையுள்ள

மல்லசூர்

வீண்ணப்பதாரின் கையொப்பம்

நாள் : 26.07-2017

இடம் : காரியாலயம்

ந.க.எண்.157/2017 (கனிமம்),

மாவட்ட ஆட்சியர் அலுவலகம்,
(புவியியல் மற்றும் கரங்கத்துறை)
தருமபுரி மாவட்டம்,
நாள். 07.08.2017.



குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்களை தருமபுரி மாவட்டம் - காரிமங்கலம் வட்டம் - காளப்பனஅள்ளி கிராமம் - புல எண்.401(பகுதி)-ல் 3.70.0 ஹெக்டேர் பரப்பளவில் அரசு நிலத்தில் அமைந்துள்ள சாதாரண கற்குவாரிக்கு டெண்டருடன் இணைந்த ஏல முறையில் குத்தகை வழங்க டெண்டர்/பொது ஏலம் நடத்தப்பட்டது - பொது ஏலத்தில் அதிக தொகை கோரிய திருமதி.மல்லிகா என்பவருக்கு சாதாரண கற்குவாரி குத்தகை வழங்குதல் தொடர்பாக அங்கீகரிக்கப்பட்ட கரங்கத்திட்டம், தமிழ்நாடு மாநில/மாவட்ட கற்றுச்சூழல் பாதிப்பு மதிப்பீட்டு ஆணையத்தின் தடையின்மையி் சான்று மற்றும் தமிழ்நாடு மாக கட்டுப்பாட்டு வாரிய இசைவு ஆகியவற்றை பெற்று வழங்க கோருதல் - தொடர்பாக.

- பார்வை:**
1. தருமபுரி மாவட்ட அரசிதழ் சிறப்பு வெளியீடு எண்.17 நாள்: 08.07.2017.
 2. திருமதி.மல்லிகா என்பவரது மூடி முத்தியிடப்பட்ட மனு நாள். 26.07.2017.
 3. பொது ஏலம் நடைபெற்ற நாள். 27.07.2017.
 4. இவ்வலுவலக குறிப்பாணை நாள்.27.07.2017.

தருமபுரி மாவட்டம், காரிமங்கலம் வட்டம், காளப்பனஅள்ளி கிராமம், அரசு புல எண்.401(பகுதி)-ல் 3.70.0 ஹெக்டேர் பரப்பளவில் அமைந்துள்ள சாதாரண கற்குவாரிக்கு பத்து ஆண்டுகளுக்கு குவாரி குத்தகை வழங்குவது தொடர்பாக 27.07.2017 அன்று நடைபெற்ற டெண்டருடன் இணைந்த பொது ஏலத்தில் திருமதி.மல்லிகா, க/பெ மாணிக்கம், 5/20, சுயிறகாரன் கோட்டாய், கெரகோடஅள்ளி அஞ்சல், காரிமங்கலம் வட்டம், தருமபுரி மாவட்டம் என்பவர் அரசு நிர்ணயம் செய்த குறைந்தபட்ச குத்தகை தொகையை விட அதிக தொகையான ரூ.72,04,000/- (ரூபாய் எழுபத்து இரண்டு இலட்சத்து நான்காயிரம் மட்டும்)-ஐ பொது ஏலத்தில் கோரியதால் அவருக்கு தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959ன் வதி 8(6)(a)-ன்படி அவருக்கு கீழ்க்கண்ட நிபந்தனைகளுடன் குவாரி குத்தகை வழங்க உத்தேசிக்கப்பட்டுள்ளது.

(i) குவாரி குத்தகை வழங்க உத்தேசிக்கப்பட்டுள்ள குவாரிக்கு அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப்பணி செய்யவேண்டும்.

(ii) அருகிலுள்ள அரசு புறம்போக்கு பஸ்கள், வண்டிப்பாதை மற்றும் கிராம சாலைகளுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும், இதர நெடுஞ்சாலை மற்றும் மின்கம்பி பாதைக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி செய்யவேண்டும்.

From

Dr.P.Jayapal,
Assistant Director,
Geology and Mining,
Dharmapuri.

To

Tmt.M.Mallika,
W/o P.Manickam,
5/20, Kairukarankottai,
Kerakodahalli post,
Karimangalam Taluk,
Dharmapuri District.



Roc.No.157/2017 (Mines), Dated: 05.09.2017

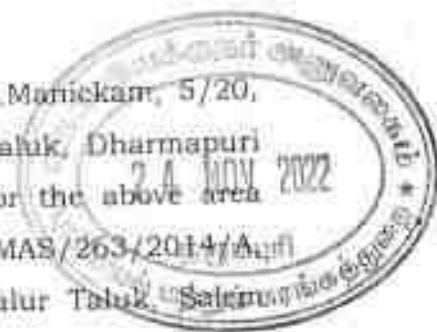
Sir,

Sub: Mines and Minerals - Minor Mineral - Rough stone - Tender cum Auction - Dharmapuri District - Karimangalam Taluk - Kalappanahalli Village - Government Poramboke land in S.F.No.401 (Part) - 3.70.0 Hectare - Tmt.M.Mallika - declared as highest tenderer bidder - Precise area communicated - Submission of mining plan for approval - Approved - Regarding.

- Ref:**
1. Order of the Hon'ble Supreme Court of India in I.A.Nos.12-13/2011 in SLP [C] No.19628-19629/2009, dated: 27.02.2012.
 2. Government of India, Ministry of Environment and Forest Office Memorandum, Dated: 18.05.2012.
 3. The Ministry of Environment, Forest and climate Change notification S.O.141 (E), dated 15.01.2016.
 4. The Ministry of Environment, Forest and climate Change notification S.O.190 (E), dated 20.01.2016
 5. The Commissioner of Geology and Mining, Chennai-32 letter No.1375/L.C./2016 dated 13.02.2017.
 6. The District Collector, Dharmapuri Proceedings Roc.No.213/2016 (Mines) dated 16.02.2017 and 09.05.2017.
 7. Dharmapuri District Gazette No.17, Dated: 08.07.2017.
 8. District Collector, Dharmapuri Notice Roc.No. 157/2017 (Mines), Dated: 07.08.2017.
 9. Mining Plan submitted by Tmt.M.Mallika Dated: 26.08.2017.

In the reference 8th cited, the applicant was directed to produce the mining plan for approval and for obtaining Environmental Clearance from District Level Environment Impact Assessment authority for the rough stone quarry to be leased out through tender cum auction over an extent of 3.70.0 Hects., of Government Poramboke land in S.F.No.401 (Part) of Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District.

In the reference 9th cited, Tmt.M.Mallika, W/o P.Marickam, S/20, Kairukarankottai, Kerakodahalli post, Karimangalam Taluk, Dharmapuri District has submitted three copies of Mining Plan for the above area prepared by Dr.S.Karuppannan, M.Sc., Ph.D., RQP/MAS/263/2014/A, M. Mangarukadu, Muthampatti Post, Bommididi (via), Omalur Taluk, Salem District.



The above mining plan submitted for the grant of Rough Stone quarry lease over an extent of 3.70.0 Hects., of Government Poramboke land in S.F.No.401 (Part) of Kalappannahalli Village, Karimangalam Taluk, Dharmapuri District has been examined in detail.

As per the orders of the Hon'ble Supreme court of India, dated 27.02.2012 in I.A.No.12-13/11 in SLP © No.19628 and 19629 of 2009 Deepak kumar Vs. State of Hariyana, the Commissioner of Geology and Mining in the letter 4th cited, has issued Guidelines/Instructions for submission of approved Mining Plan and Environment Clearance for the grant of quarry lease in respect of Minor Minerals.

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

- (i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- (ii) This approval of the mining plan does not in any way imply the approval of the Government in terms or any other provisions of the Mines and Minerals (Development and Regulation) Act, 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Explosives Act, 1884 [Central Act IV of 1884] Minor Mineral Concession and Development Rules, 2010 and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.


(iv) As per the District Collector, Dharmapuri notice in Roc.No.157/2017 (Mines), Dated: 07.08.2017, the following conditions incorporated in the Mining Plan plates



- 1) குவாரி சூத்தனக வழங்க உத்தேசிக்கப்பட்டுள்ள குவாரிக்கு அருகிலுள்ள நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப்பணி செய்ய வேண்டும்.
 - 2) அருகிலுள்ள அரசு புறம்போக்கு புலங்கள், வண்டிப்பாதை மற்றும் கிராம சாலைகளுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும், இதர நெடுஞ்சாலை மற்றும் மின்கம்பி பாதைக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி செய்ய வேண்டும்.
 - 3) மேலும் மாவட்ட அரசிதழ் எண். 17, நாள்: 08.07.2017-ல் குறிப்பிட்டுள்ள நிபந்தனைகளை தவறாமல் கடைபிடித்து குவாரிப்பணி செய்ய வேண்டும்.
- (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.
- (vi) If anything is found to be concealed as required by the Mines Act in the contents of the Mining Plan and the proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.

The applicant, Tmt.M.Mallika, W/o P.Marickam, 5/20, Kairukarankottai, Kerakodahalli post, Karimangalam Taluk, Dharmapuri District is directed to produce Environmental Clearance from the District Level Environment Impact Assessment Authority over the subject area as per rule 41 and 42 of the TamilNadu Minor Mineral Concession Rules, 1959.

Encl.: Two copies of Approved Mining Plan.


**Assistant Director,
Geology and Mining,
Dharmapuri.**

Copy to:

- 1) Dr S Karuppanan, M.Sc., Ph.D., RQP/MAS/263/2014/A, Mangarikadu, Muthampatti Post, Bommidi (via), Omalur Taluk, Salem District.
- 2) The Commissioner of Geology and Mining, Chennai-32.
- 3) The Chairman, District Level Environmental Impact Assessment Authority (DEIAA), Dharmapuri.



1

THIRU.K.VIVEKANANDAN, I.A.S.,
CHAIRPERSON- DEIAA/
DISTRICT COLLECTOR

Dharmapuri District Environment
Impact Assessment Authority,
Collectorate,
Dharmapuri.

ENVIRONMENTAL CLEARANCE

Lr.No.10/DEIAA-DPI/EC.No.10/2017 dated.31.10.2017

To

Tmt.Mallika,
W/o P.Manickam,
5/20, Kairukarankottai,
Kerakodahalli post,
Karimangalam Taluk,
Dharmapuri District.

Sir,

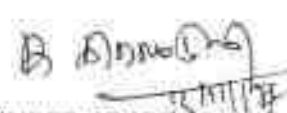
Sub: DEIAA-Dharmapuri - Proposed Rough Stone quarry over an extent of 3.70.0 Hects. in Government land - S.F.No.401 (Part) of Kalappanahalli village of Karimangalam Taluk and Dharmapuri District by Tmt.Mallika - issue of Environmental Clearance - Reg.

Ref: 1. Application of Tmt.Mallika for Environment Clearance dated 18.09.2017 submitted at DEIAA, Dharmapuri, TamilNadu.
2. Minutes of the DEAC meeting held on 12.10.2017
3. Minutes of the DEIAA meeting held on 17.10.2017.

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	Tmt.Mallika, W/o P.Manickam, 5/20, Kairukarankottai, Kerakodahalli post, Karimangalam Taluk, Dharmapuri District.
2.	Location of the Proposed Activity	
	Survey Number and Extent	401 (Part) and 3.70.0 Hects.
	Latitude and Longitude	12° 15'1.00" N to 12° 14'52.91" N 78° 10'27.05" E to 78° 10'19.39" E


MEMBER SECRETARY/
REVENUE DIVISIONAL OFFICER,
DEIAA, DHARMAPURI.

287

(Sd/- Thiru.K.Vivekanandan)
CHAIRPERSON/
DISTRICT COLLECTOR
DEIAA, DHARMAPURI.



	Village	Kallapanahalli
	Taluk	Karimangalam
	District	Dharmapuri
3.	Proposed Activity	
	i. Minor mineral	Rough Stone
	ii. Mining Lease Area	3.70.0 Hects.
	iii. Approved quantity	482238 Cu.m of Rough Stone for a period of Five years.
	iv. Depth of Mining	50 mts from general ground file.
	v. Type of mining	Opencast, semi mechanized mining
	vi. Category (B1/B2)	B2
	vii. Precise Communication Area	The District Collector, Dharmapuri notice Roc.No. 157/2017 (Mines) dated 07.08.2017.
	viii. Mining Plan approval	The Assistant Director of Geology and Mining, Dharmapuri Letter Roc.No.157/2017 (Mines) dated 05.09.2017
	ix. Mining lease period	Five 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	18 Employees
6.	Utilities	
	i. Source of Water	<p>a. For Drinking and Domestic purpose water to be proposed to make a borehole for providing uninterrupted supply of drinking water.</p> <p>b. 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.</p>


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(Sd/- Thiru.K.Vivekanandan)
 CHAIRPERSON/
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	ii.	Quantity of Water Requirement in KLD:	
	a.	Drinking & domestic purposes	0.750 KLD
	b.	Dust suppression	1.500 KLD
	c.	Green Belt	0.250 KLD
	iii.	Power requirement	
	a.	Domestic purpose	TNEB
	b.	Industrial purpose	Diesel (HSD) will be used for quarrying machineries. No power is required for the project.
7.		Cost	
	i.	Project Cost	Rs.98,04,000/-
	ii.	EMP Cost	Rs.3,75,000/-
8.		Public Consultation:-	Not required as per O.M. dated 24.12.2013 of MoEF, GOI.
9.		Date of Appraisal by DEAC: Agenda No.	Agenda No.5 of DEAC meeting conducted on 12.10.2017.
10.		Date of review / discussion by DEIAA and the Remarks:- The proposal was placed before the DEIAA in its 3 rd meeting held on 17.10.2017 and the Authority after careful consideration, decided to grant Environmental Clearance to the said project Mining of Rough Stone subject to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.	
11.		Validity: This Environmental Clearance is granted to quarrying of Rough Stone for the production quantity of 482238 Cbm of rough stone for the period of five years from the date of execution of the mining lease period.	

Conditions to be Compiled before / during commencing 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, Dharmapuri District.
 - iii) Environmental Clearance may also be seen on the website of the District Environment Impact Assessment Authority, Dharmapuri (TamilNadu).


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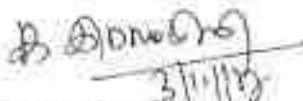
- iv) The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the DEIAA, Dharmapuri.
2. The applicant has to obtain land use classification as industrial use before issue / renewal of mining lease.
 3. NOC from the Standing 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 section V, Rule 36 of Tamil Nadu Minor Mineral 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 7A.M. and 5 P.M.
 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.


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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 following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust.
22. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment.
 - ii. Limiting time exposure of workers to excessive noise.


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- iii. The workers employed shall be provided with protection equipment and earmuffs etc.
 - iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
23. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010 dated 11.01.2010 issued by the MoE&F, GOI to control noise to the prescribed levels.
 24. 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.
 25. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
 26. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
 27. The following measures are to be adopted to control erosion of dumps:-
 - i. Retention/ toe walls shall be provided at the foot of the dumps.
 - ii. Worked out slopes are to be stabilized by planting appropriate shrub/grass species on the slopes.
 28. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling and Trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCCB.
 29. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
 30. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
 31. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be 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



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 CHAIRPERSON/
 DISTRICT COLLECTOR
 DEIAA, DHARMAPURI.



settling of soil be let into the nearby waterways. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.

32. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that measures shall be carried out Competent Authority shall ensure this.
33. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
34. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
35. It shall be ensured that the total extent of nearby quarries (existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 25.00.0 hectares within the mining lease period of this application.
36. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site.
37. Ground water quality monitoring should be conducted once in 3 Months.
38. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
39. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.
40. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF, GOI.


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41. Bunds to be provided at the boundary of the project site.
42. The project proponent shall undertake plantation/ afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
43. At least 10 Neem trees should be planted around the boundary of the quarry site.
44. Floor of excavated pit to be leveled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
45. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity.
46. The CSR Funds should be channelized for planting programme, nature conservation support, tribal development and activities that support forest and environment.
47. The Project Proponent shall provide solar lighting system to the nearby villages.
48. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
49. Rainwater shall be pumped out Via Settling Tank only
50. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
51. As per MoEF & CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wild Life angle including clearance from 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.
52. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.


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 DEIAA, DHARMAPURI.



53. Safety equipments to be provided to all the employees.
54. Safety distance of 50 m has to be provided in case of Railway Reservoir Canal / Odai.
55. Concerned Revenue Divisional Officer / Tahsildhar shall ensure that the proponent has engaged the blaster with valid Blasting license / certificate obtained from the competent authority before execution of mining lease.
56. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
57. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked quality for the proposed quarry site before execution of mining lease.
58. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
59. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent etc., with respect to the existing activity before execution of mining.
60. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
61. The quarrying activity in no way should disturb the Wildlife habitat, free migratory movement of the wildlife nor disturb the wildlife in any way.
62. The proponent shall ensure that the project activity including blasting, mining transportation etc., should in no way have adverse impact to the other forests, such as reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc.,
63. The project proponent shall provide Green Belt development at the rate of less than 400 trees/ Hectare. The tree saplings shall be not less than 1m height.
64. 1/3rd of the area should be maintained as green cover by planting saplings & will also act as shelter belt for Noise/ Dust Pollution.


 MEMBER SECRETARY/
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 DEIAA, DHARMAPURI.

295

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B. General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent for Establishment from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the DEIAA, Dharmapuri/ 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 particular 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 them 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


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- 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 labourer is not employed in the project as per the sworn affidavit furnished.
 15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its regional office located at Chennai.
 16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
 17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
 18. The DEIAA, Dharmapuri/ SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
 19. The DEIAA, Dharmapuri/ 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 DEIAA, Dharmapuri (Tamil Nadu) that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.


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DEIAA, DHARMAPURI.



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.


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Copy to

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary, Environment and Forest Department, Government of Tamil Nadu, Tamil Nadu.
3. The Principal Secretary to Government, 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, Parivesh Bhawan, CBD-Cum-Office Complex East Arjun Nagar, New Delhi 110 032.
6. The Member Secretary, State Level Environmental Impact Assessment Authority Tamil Nadu Panagal Building Saidapet, Chennai
7. The Chairman Tamil Nadu Pollution Control Board, 76, Mount Salai (Guindy, Chennai-32)
8. The Commissioner of Geology and Mining, Guindy, Chennai-32
9. E1 Division, Ministry of Environment and Forests Paryavaran Bhawan, New Delhi.
10. File No. 10/ DEIAA/DFI/2017.

ந.க.எண்.157/2017 (கனிமம்),

மாவட்ட ஆட்சியர் அலுவலகம்
(சலியியல் மற்றும் கரங்கத்தறை)
தருமபுரி மாவட்டம்,
நாள்- 07.08.2017.



குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்கள் தருமபுரி மாவட்டம் - காரிமங்கலம் வட்டம் - காளப்பனஅள்ளி கிராமம் - புல எண்.401(பகுதி)-ல் 3.70.0 ஹெக்டேர் பரப்பளவில் அரசு நிலத்தில் அமைந்துள்ள சாதாரண கற்குவாரிக்கு டெண்டருடன் இணைந்த ஏல முறையில் குத்தகை வழங்க டெண்டர்/பொது ஏலம் நடத்தப்பட்டது - பொது ஏலத்தில் அதிக தொகை கோரிய திருமதி.மல்லிகா என்பவருக்கு சாதாரண கற்குவாரி குத்தகை வழங்குதல் தொடர்பாக அங்கீகரிக்கப்பட்ட கரங்கத்திட்டம், தமிழ்நாடு மாநில/மாவட்ட கற்றுச்சீழல் பாதிப்பு மதிப்பீட்டு ஆணையத்தின் தடையின்மைச் சான்று மற்றும் தமிழ்நாடு மாக கட்டுப்பாட்டு வாரிய இசைவு ஆகியவற்றை பெற்று வழங்க கோருதல் - தொடர்பாக.

7

- பார்வை:
1. தருமபுரி மாவட்ட அரசிதழ் சிறப்பு வெளியீடு எண்.17 நாள்: 08.07.2017.
 2. திருமதி.மல்லிகா என்பவரது மூடி முத்தியிடப்பட்ட மனு நாள். 26.07.2017.
 3. பொது ஏலம் நடைபெற்ற நாள். 27.07.2017.
 4. இவ்வலுவலக குறிப்பாணை நாள்.27.07.2017.

தருமபுரி மாவட்டம், காரிமங்கலம் வட்டம், காளப்பனஅள்ளி கிராமம், அரசு புல எண்.401(பகுதி)-ல் 3.70.0 ஹெக்டேர் பரப்பளவில் அமைந்துள்ள சாதாரண கற்குவாரிக்கு பத்து ஆண்டுகளுக்கு குவாரி குத்தகை வழங்குவது தொடர்பாக 27.07.2017 அன்று நடைபெற்ற டெண்டருடன் இணைந்த பொது ஏலத்தில் திருமதி.மல்லிகா, க/பெ மாணிக்கம், 5/20, சுயிறுகாரன் கொட்டாய், வெரகோடஅள்ளி அஞ்சல், காரிமங்கலம் வட்டம், தருமபுரி மாவட்டம் என்பவர் அரசு நிர்ணயம் செய்த குறைந்தபட்ச குத்தகை தொகையை விட அதிக தொகையான ரூ.72,04,000/- (ரூபாய் எழுபத்து இரண்டு இலட்சத்து நான்காவிரம் மட்டும்)-ஐ பொது ஏலத்தில் கோரியதால் அவருக்கு தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959ன் வதி 8(6)(a)-ன்படி அவருக்கு கீழ்க்கண்ட நிபந்தனைகளுடன் குவாரி குத்தகை வழங்க உத்தேசிக்கப்பட்டுள்ளது.

(i) குவாரி குத்தகை வழங்க உத்தேசிக்கப்பட்டுள்ள குவாரிக்கு அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளியிட்டு குவாரிப்பணி செய்யவேண்டும்.

(ii) அருகிலுள்ள அரசு புறம்போக்கு புலங்கள், வண்டிப்பாதை மற்றும் கிராம சாலைகளுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும், இது நெடுஞ்சாலை மற்றும் மின்கம்பி பாதைக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி செய்யவேண்டும்.

T.P 265725

358/2018



भारतीय गैर न्यायिक INDIA NON JUDICIAL

रु.
25000
पच्चीस हजार रुपये



Rs.
25000
TWENTY FIVE THOUSAND RUPEES

தமிழ்நாடு தமில்நாடு TAMILNADU RS. 25,000
M. MALLIGA
Kerimangalm
16-12-117

B 789653
K.M. பிரகாஷ்
முத்திரைத்தரம் விநியோகப்பாளர்
உரிமை எண் : 5220 / 2014- 8
சுகரமேகலகர்னி, தருமபுரி,
பெண் : 9965380553

APPENDIX - I
(See Rule 8 and 8-A)

**FORM OF LEASE FOR QUARRYING AND CARRYING AWAY MINOR MINERALS
BY PRIVATE PERSONS**

Roc.No.157/2017(MINES) DATED: 06.02.2018.

THIS INDENTURE MADE THIS the 12th day of February 2018
between the Governor of Tamil Nadu (hereinafter referred to as "the lessor" which
expression shall where the context so admits include his successors in office and
assigns) on the one part and Tmt.Malliga, W/o Manickam, 5/20,
Kairukarankottai, Kerakodahalli post, Karimangalam Taluk, Dharmapuri District
(hereinafter called "the Lessee" which expression shall where the context so admits
include his/heirs, executors, administrators, legal representatives and assigns) on the
other part.

மல்லிகா
LESSEE



க.ம. பிரகாஷ்
LESSOR



பின்புள்ள 6 தமிழ்நாடு TAMILNADU RS.25.000

3 789637

B 789637

M. MALLIGA
KARTMANGIALAM

K.M. பிரகாஷ்
முத்திரைத்தரன் விற்பனைகாரர்
உரிய எண் : 5220 / ஆ1 / 2014- 9
சுகரகோடலாள்னி, தருமபுரி,
சென் : 9965380553

3929
18.12.17



WHEREAS the lessee has been the successful bidder in a sealed Tender cum Public auction conducted by the Government of Tamil Nadu as per the District Gazette Extraordinary Notification No.17, dated: 08.07.2017 (hereinafter referred as "the Government") for a lease of lands in Dharmapuri District for the purpose of quarrying for Rough Stone and has deposited with Collector of Dharmapuri the sum of Rs.7,20,400/- (Rupees Seven Lakhs Twenty Thousand and Four Hundred only) in challan No. Nil, at State Bank of India, Dharmapuri on 29.11.2017 as security Deposit for the due and faithful performance by the lessee of covenants and conditions on the part of lessee hereinafter contained.

AND WHEREAS the lessor has agrees to grant the lessee, a lease of the lands and premises hereinafter described.

மல்லிகா
LESSEE

[Signature]
LESSOR





4002
18/12/17

35648
M.MALLIGA
karimangalam

B 789648

K.M. பிரகாஷ்

முத்திரைத்தாள் விநியோகஸ்தர்
உரிமை எண் : 5220 / ஆ1 / 2014- 9
காரைக்காலம், தருமபுரி.
செல்: 9965380553

NOW THESE PRESENTS WITNESS as follows:-

1. The lessor hereby demises to the lessee all those several pieces or parcels of land situated as detailed below:-

Taluk	Village	S.F. No.	Extent (in Hect).
Karimangalam	Kalappannahalli	401 (Part)	3.70.0

in the State Tamil Nadu being more particularly described in the schedule hereunder written and delineated in map or plan hereunto annexed and therein coloured.

2. There are included in the said demise and for the purpose there of the liberties following:-

- (1) To get from the said demised pieces of land.
- (2) For the purpose aforesaid to use any water in or under the said demised pieces of land and to divert the same and to make or construct any water courses or ponds so, however, that nothing shall be done in the exercise of this authority which shall interfere with the rights of any adjoining owners or tenants of the lessor in respect of such water.

மல்லிகா

LESSEE



12/18
LESSOR

भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹ 25000

पच्चीस हजार रुपये

Rs. 25000

TWENTY FIVE THOUSAND RUPEES



தமிழ்நாடு TAMILNADU RS. 25000

3971

14.12.17

M. Malliga
Karimangalam.

B 789644

K.M. Prasad

K.M. பிரசாத்

குத்திரத்தூர் விடுமலை
பி.பி.என் : 5220 / 21 / 2014 - 9

சுற்றுலா துறை

☎: 9965360553

Generally to do all things which shall be convenient or necessary for the purpose of carrying out the work and for disposing there of as aforesaid.

- 3. There are excepted from and the reserved to the lessor out of this demise.
 - (1) All earth minerals and other substances not herein before expressly authorised to be got from the demised lands by the lessee.
 - (2) Liberty for the lessor or other persons authorised by him to search for, work, get, carry away and dispose of the excepted minerals and other substances and for such purposes to have the right of ingress, egress and regress over the said demised pieces of lands and to make erect and use all pits, machinery, buildings, roads and other necessary works and conveniences provided that the rights hereby reserved shall be exercised in such a way as to cause as little obstruction as possible to the lessee in the use and enjoyment of his rights hereunder and that reasonable compensation for damages caused by any such obstruction shall be paid to the lessee the amount thereof in case of difference to be settled by arbitration as hereinafter provided.

மல்லிகா
LESSEE

Document
No. 358 120 1F
Page No. 4
Total Pages 303

12/11/18
LESSOR

भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹ 25000

पच्चीस हजार रुपये

Rs. 25000

TWENTY FIVE THOUSAND RUPEES

भारत INDIA

2022

தமிழ்நாடு தமில்நாடு TAMILNADU RS. 25,000

789643

B 789643

3970
14.12.17

M. Malliga
Korimangalam.

K.M. விஜயலக்ஷ்மி
முத்தியைந்தரன் கிழப்பனையாள்
உரிமம் எண் : 5220 / ஆ1 / 2014-9
சுபிரகாசுலாட்சுமி, தஞ்சைபுரி.
செல்: 9965380553

4. The said premises shall be held by the lessee, for the term of TEN YEARS from the 12th Day of February 2018 to the 11th Day of February 2028 which shall however be determinable as hereinafter provided.

5. The lessee shall pay during the said term, the area assessment, the cess and seigniorage fee or dead rent whichever is greater, for the minerals removed or consumed at the rates prescribed from time to time in Appendix - II.

- (1). The said assessment and cess amount applicable per year payable by the lessee, shall be paid in advance before the commencement of the period of each year of the lease; and
- (2) The said Seigniorage fee as prescribed in Appendix II, from time to time, shall be paid before the same is removed from the said demised pieces of land.
- (3). The Lessee has paid Rs.72,04,000/- (Rupees Seventy Two Lakhs and Four Thousand only) towards one time lease amount for the said lease period

மல்லிகா
LESSEE

Document No 358 720 1A
Page No 5
Total Page 29
304

12/2/18
LESSOR

भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹ 25000

पच्चीस हजार रुपये

Rs. 25000

TWENTY FIVE THOUSAND RUPEES

भारत

भारत गणराज्य

INDIA

பிப்ரவரி 6 தமில்நாடு TAMILNADU RS. 25,000 789650

B 789650

4004

15.10.17

M. MALLICIA
Krimangalam.

K.M. விசுவாசம்
முத்திரைத் தரன் விற்புண்புலவர்
உரிமை எண் : 5220 / ஆ1 / 2014- 8
செய்தியோடகம். தஞ்சை.
செல்: 9965360553

6. The lessee hereby covenants with the lessor as follows:-

(1). To pay the assessment, cess and seigniorage fee or dead rent whichever is greater, on the days and in the manner aforesaid.

(2). To bear, pay and discharge all existing and future rates, taxes, assessment, duties, impositions, outgoings and burdens whatsoever imposed or charged upon the demised premises or the produce thereof or the land assessment, the cess and the seigniorage fee hereby reserved or upon the owner or occupier in respect thereof or payable by either in respect thereof except such charges or impositions as the lessee is or may hereby be, by law, exempted from.

பிப்பரவரி
LESSEE

சு. விசுவாசம்
LESSOR

Document
No. 358-120 14
Page No. 6
Total Pages 28



தமிழ்நாடு தமில்நாடு TAMILNADU RS. 25.000

3-789649

B 789649

M.MALLIGA
kari mangalam

K.M.சித்காஷ்

முத்திரைத்தரன் வித்பகையாள்
உரிமம் எண் : 5220 / ஆ1 / 2014- 3
சுரகேசலாள்னி, தருமபுரி.
செல்: 9685380553

2015
Mar
15.12.17

- (3). Before digging or opening any part of the said demised pieces of land for Rough Stone carefully removed the surface soil and lay aside and store the same in some convenient part of the said demised piece of land until the land from which it has been removed is again restored to a state, fit for cultivation as hereinafter provided.
- (4). To effectually fence off the same demised place of land from the adjoining lands and to keep the fences in good repairs and condition.
- (5). Not to assign, underlet or part with the possession of the demised premises or any part thereof without the written consent of the lessor first obtained.
- (6). After working out any part of the said demised pieces of land forthwith to level the same and replace the surface soil thereof and slope the edges where necessary so as to afford convenient connection with the adjoining land.

மல்லிகா

LESSEE

சித்காஷ்

LESSOR

Document
No. 354 / 20 14
Page No. 7
Total Pages 29

306



மீட்டர் 6 தமில்நாடு TAMILNADU RS. 25.000 789647

4001
15-12-17

M-MALLIGA
kari mangalam

B 789647

Jamiram
K.M.சிதம்பரம்
முத்திரைக்கல் கிழங்குமலை
உலகம் எண் : 5220 / 251/2014-9
செயலகம், தஞ்சை.
செல்: 9985380553

(7). That the lessee shall keep correct accounts in such form as the Collector shall from time to time require and direct showing the quantities and other particulars of the mineral obtained by the lessee from the said lands and also the number of persons employed in carrying on the said quarrying operations therein and shall from time to time when so directed by the Collector prepare and maintain complete and correct plans of all mines and workings in the said lands and shall allow any officer hereunto authorised by the Government from time to time and at any time, to examine such accounts and any such plans and shall when so required supply and furnish to the Government all such information and returns regarding all or any of the matters aforesaid, the Government shall from time to time require and direct.

Wangala
LESSEE

[Signature]
LESSOR

Document
No 35f 120 1f
Page No. 1
Total Page 23
[Signature]
307

भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹ 25000

पच्चीस हजार रुपये

RS 25000

TWENTY FIVE THOUSAND RUPEES



தமிழ்நாடு தமில்நாடு TAMILNADU RS. 25,000

M. MALLIGA
Krimangalm

B 789651

K.M. பிரகாஷ்

முத்திரைத்தாள் விற்பனைபாளர்
உரிமம் எண் : 5220 / ஆ1 / 2014- 9
காரைக்காலம், தருமபுரி.
செல்: 9965380553

4027
16.12.17

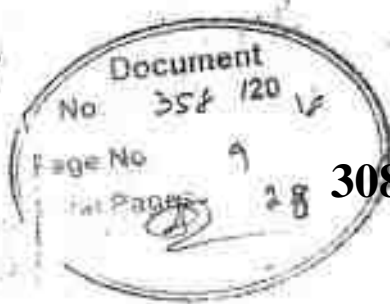


(8). That the lessor's agents, servants and workmen shall be at liberty at all reasonable times during the said term to inspect and examine the works carried on by the lessee under the liberties hereinbefore granted and the lessee shall and will from time to time and at all times during the said term hereby granted conform to and observe all orders and regulations which the lessor or his authorised agent as the result of such inspection may from time to time see fit to impose to keep the premises in good and substantial repair, order and condition or in the interest of public health and safety.

(9). That the lessee shall not without the express sanction in writing of the Collector cut down or injure any timber or trees on the said lands but he may clear away bush wood or undergrowth which interferes with any operations authorised by these presents.

(10). That if the lands shall be used for any purpose other than quarrying for ordinary rough stone or, if they are not under or at any time cease to be used for the said purpose the lessor shall be at liberty at any time to terminate the lease without notice.

LESSEE



308

LESSOR



தமிழ்நாடு தமில்நாடு TAMILNADU RS. 25.000

B 789646



3973
14.12.17

M. Malliga
Karimangalam.

K.M. பிரகாஷ்

முத்தியத்தரம் அற்பகையாளர்
உரிமம் எண் : 5220 / ஆ1 / 2014 - 9
சுதரகாடலுள்ளி, தருமபுரி.
செல்: 9965380553

- (11). That this lease may be terminated in respect of the whole or any part of the premises by six months notice in writing on either side.
- (12). That on such determination the lessee shall have no right to compensation of any kind
- (13). That the land assessment, cess and seigniorage, rents or other amounts payable under these presents shall be recoverable under the provisions of Tamil Nadu Revenue Recovery Act, 1864 (Tamil Nadu Act II of 1864) or any subsisting statutory modification thereof.
- (14). At the determination of the lease to deliver up the demised premises in such condition as shall be in accordance with the provisions of these presents save that the lessee shall, if so required by the lessor, restore in manner provided by the foregoing covenant in that behalf the surface of any part of the land which has been occupied by the lessee for the purpose of the works hereby authorised and has not been so restored.

வாஸு
LESSEE



12/2/18
LESSOR

भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹ 25000

पच्चीस हजार रुपये

Rs. 25000

TWENTY FIVE THOUSAND RUPEES

भारत

INDIA

தமிழ்நாடு TAMILNADU R3.25.000

B 789645

B 789645

3972

14.12.17

M. Malliga

Karimangalam

K.M. Prasad

K.M. பிரசாத்

முத்தியாற்றாள் விநாயகப்பாளர்

உரிமம் எண் : 5220 / ஆ1 / 2014 - 9

செங்கையலூர், தஞ்சாவூர்.

செல் : 9965380553

(15). That 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, 1884 (Central Act IV of 1884) and

7. The lessor hereby covenants with the lessee that the lessee paying the land assessment / the lease amount and seigniorage fee or the dead rent hereby reserved and observing and performing the several covenants and stipulations on the part of the lease herein contained shall peacefully hold and enjoy the premises, liberties and powers hereby demised and granted during the said term without any interruption by the lessor or any persons rightfully claiming under or in trust for him.

மல்லிகா குமார்

LESSEE

க.ம. பிரசாத்
LESSOR

Document No 358 12017
Page No 1
Total Page 28



31101566 तमिलनाडु TAMILNADU Rs. 25,000

789640

B 789640



3947
13.12.17

M. Malliga
Kovimangalam.

K.M. பிரகாஷ்
முத்தியைத்தவர் விற்பகனகாரர்
உரிமம் எண் : 5220 / ஆ1 / 2014- 2
சகரகேசுட.சுன்னி, தருமபுரி.
செக்: 9985380553

8. It is hereby further agreed between the parties as follows:-

(1). If any part of the land assessment, cesa, seigniorage fee or dead rent hereby reserved shall be unpaid for thirty days after becoming payable (whether formally demanded or not) or if the lessee which the demised premises or any part thereof remain vested in him, shall become insolvent or if any covenant on the lessee's part herein contained shall not be performed or observed, then and in any of the said cases it shall be lawful for the lessor at any time thereafter to declare the whole or any part of the said security deposit of Rs.7,20,400/- (Rupees Seven Lakhs Twenty Thousand and Four Hundred only) in challan No. Nil, at State Bank of India, Dharmapuri on 29.11.2017 to be forfeited and also to re-enter upon the demised premises or any part thereof in the name of the whole and thereupon the demise shall absolutely determine but without prejudice to the rights of action of the lessor in respect of any breach or non-observance of the lessee's covenants herein contained.

LESSEE



LESSOR

भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹. 25000

पच्चीस हजार रुपये

Rs. 25000

TWENTY FIVE THOUSAND RUPEES

INDIA



தமிழ்நாடு தமில்நாடு TAMILNADU RS. 25,000

A028
16.12.17

M. MALLIGA
Ierimangalm

789652

B 789652

K.M. பிரகாஷ்
முத்திரைத்தரன் சிற்பகலாசாலை
உரியம் எண் : 5220 / ஆ1 / 2014 - 9
சுரேஷ்கலாசாலை, தஞ்சை.
செல்: 9965380653

(2). At the determination of the lease, the lessee should be at liberty to remove, carry away and dispose of all the stock of rough stones, jelly etc., ready for delivery and all engines, machinery, and all plant, articles and things whatsoever (not being building or brick or stones), the lessee first paying any land assessment, cess and seigniorage and other sums which may be due and performing and observing the covenants on his part hereinbefore reserved and contained and also making good any damage done by such removal but any buildings which shall be erected on the said demised piece of lands by the lessee and left thereon at the determination of lease shall be absolute property of the lessor who shall not be bound to pay any price for the same.

வாசுதேவன்
LESSEE

LESSOR





தமிழ்நாடு தமில்நாடு TAMILNADU RS.25,000
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16.12.17
M.MALLIGA
Kerimangalm
B 789654
K.M.சிவசாமி
முத்தியத்தூர் விநாயகர்மடம்
உரிமை எண் : 5220 / ஆ1 / 2014 - 1
சுதேச அலுவலர், தருமபுரி.
செல்: 9965380553

(3). If the lessee shall have paid the land assessment, cess and seigniorage due to the Government and duly observed and performed the covenants and conditions on his part therein contained, the said deposit Rs.7,20,400/- (Rupees Seven Lakhs Twenty Thousand and Four Hundred only) in challan No. Nil, at State Bank of India, Dharmapuri on 29.11.2017 shall be returned to him at the expiration of the said term of Ten years.

(4). Should any question or dispute arise regarding this agreement executed in pursuance of these Rules or any other matter or thing connected therewith or the powers of the lessee thereunder, the amount or payment of the seigniorage fee or area assessment made payable thereby, the matter in issue shall be decided by the Commissioner of Geology and Mining, Chennai. In case the lessee is not satisfied with the decision of Commissioner of Geology and Mining, Chennai the matter shall be referred to the State Government for decision

LESSEE

LESSOR



भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹ 25000

पच्चीस हजार रुपये

Rs 25000

TWENTY FIVE THOUSAND RUPEES



1022

தமிழ்நாடு தமில்நாடு TAMILNADU RS.25.000

B 789638

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3930 / 12.12.17

M. MALLIGA
KARIMANGALAM

K.M. சுவாமிநாதன்
K.M. சுவாமிநாதன்
முத்தியத்தூர் விநாயகர்
உரிம எண் : 5220 / ஆ1 / 2014 - 9
காரைக்காலம், தஞ்சாவூர்.
செல்: 9985380553

9. If the lessee is in occupation of the lease-hold area after the expiry of the period for which the lease has been granted or renewed or after the determination of the lease, the lessee shall be deemed to be in unlawful possession of the said area and he shall be liable to eviction from the lease-hold area in addition to being liable to be charges at double the rate of the lease amount or bid amount as the case may be, for the period of such occupation.

பிழித்தணைகள்:

1. குத்தகை முடிந்தபின் அடுத்துள்ள ம.உ.ப. நிவாரணத்துக்கு 7.5 மீட்டர் இடைவெளி அளித்து குவாரிப்பணி புரிய வேண்டும்.
2. பொதுமக்கள் முக்கியமாக, பொது சொத்துக்களுக்கான பாதுகாப்பு சேதமும் இன்றி பாதுகாப்பான முறையில் குவாரிப்பணி செய்ய வேண்டும்.

மல்லிகா

LESSEE

12/12/18

LESSOR



भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹ 25000

पच्चीस हजार रुपये

Rs. 25000

TWENTY FIVE THOUSAND RUPEES

INDIA

தமிழ்நாடு தமில்நாடு TAMILNADU ₹ 25,000

B 789635

B 789635

3927

M. MALLIGA
KARIMANALAM.

K.M. பிதகாஷ்


கொழும்புத்தொழில் நகரம் கருதி பாதுகாப்பான முறையில் குறைந்தபட்ச விலைக்கு வசூலிப்பதற்காக
வெடிபெட்டிகள் பயன்படுத்தி, கைத்தொண்டியான கருவி கொண்டு குறைந்தபட்ச விலைக்கு வசூலிப்பதற்காக
தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்தும், அகலமான பெறும் வசூலிப்பதற்காக
குவாரிப்பணி செய்ய வேண்டும்.

சிறப்பு எண்: 5220 / 21 / 2014 - 9
செய்வகம்: தஞ்சை.
☎: 9965380553

4. மாவட்ட கற்றுச்சூழல் தாக்க வதிவிட்டு ஆணையத்தின் பரிந்துரை சுடிதம்
Lr.No. 30/DEIAA-DPI/Ec.No.108/2017 நாள்: 31.10.2017-ல் கண்ட சிறப்பு
பரிந்துரைகளை முறையாக கடைபிடித்து குவாரிப்பணி செய்வதுடன், சிறப்பு திட்டத்தை 4 (i) ல்
கண்டவாறு குவாரிப் பணி ஆய்விப்பதற்கு முன்பாக தமிழ்நாடு மாகாணப் பேரவை வாரியத்தின்
தடைபிடிப்பு சான்று பெற்று அதன் பின்னரே குவாரிப்பணி துவங்க வேண்டும்.

5. குத்தகைதாரர் தனக்கு அளிக்கப்பட்ட குத்தகை பகுதியின் எல்லைகளை தெளிவாக காட்டும்
வகையில் கல் நட்டு வளர்வாய் இட்டு குத்தகை காலம் முழுமையும் பராமரிக்க வேண்டும்.

மல்லிகா
LESSEE


LESSOR

Document
No. 358 / 2018
Page No. 16
Total Page. 28



தமிழ்நாடு தமில்நாடு TAMILNADU RS. 25.000



3928
12-12-17

M. MALLIGA
KARIMNAGALAM.

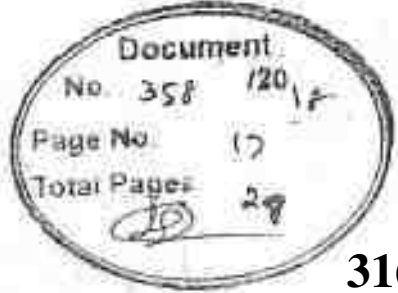
B 789636

K. M. Vijayaram
K.M. விஜயராம்
முத்திரைத்தாள் பிற்பகையாள்
உரிய எண் : 5220 / ஆ1 / 2014- 9
செரவேடசுள்ளி, தஞ்சாவூர்.
செல்: 9985380553

6. குத்தகைதாரர் குவார்டியின் அருகே குத்தகைதாரர் பெயர், கிராமத்தின் பெயர், வட்டத்தின் பெயர், புற எண், பரப்பு, குத்தகை ஆண்டை எண், குத்தகை காலம், களிமத்தின் பெயர், போன்ற விபரங்கள் குறிக்கப்பட்ட தகவல் பணிகளைய தமது சொந்த செலவில் வைத்து நன்கு பராமரிக்க வேண்டும்.
7. குவார்டிக்கு சென்றுவரும் பாதை வசதிகள் குத்தகைதாரர்கள் அவர் தம் சொந்த பொறுப்பிலேயே அமைத்துக் கொள்ள வேண்டும்.
8. குத்தகைக்கு வரக்கூடிய பாதையில் உளிக்கல், மூலி, சக்கை கல், மேலிக்கற்கள், போன்ற சிறுகளியங்கள் உடனத்தெடுக்க மட்டுமே அனுமதிபடும். வெளிநாடுகளுக்கு வரமுடியாதபடி மெருகட்டும் காவடிவ கற்கள் வெட்டி எடுக்கக் கூடாது.

M. Malliga
LESSEE

K. M. Vijayaram
LESSOR



भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹ 25000

पच्चीस हजार रुपये

Rs. 25000

TWENTY FIVE THOUSAND RUPEES

INDIA

தமிழ்நாடு வமில்நாடு TAMILNADU RS. 25.000

789641

B 789641

3948

13.12.17

M. Malliga
Kovimangalam.

K.M. பிரகாஷ்

முத்திரைத்தரன் விற்பனைகாரர்
உரிய எண் : 5220 / ஆ / 2014-9
சென்னை, தஞ்சை.
உரி : 9985380553

9. குவாண்டிக்கு கொண்டு செல்லப்படும் போது வகை கற்களுக்கு தமிழ்நாடு சிறுவாசி சலுகை விதிகள் பின் இலாபம் 2-ல் கண்டுள்ளவாறு வேண்டும். அரசு அங்கப்போது அறிவிக்கும் உரிமையி மாற்றங்களுக்கு ஏற்ப எவ்வித ஆட்சேபணை இன்றி செலுத்தப்பட வேண்டும்.

10. குத்தகை அனுமதி வழங்கப்பட்ட நினைவிடம் கொண்டு செல்லப்பட்ட கற்களுக்கு முறையான கணக்குகளுக்கும் குடியியல் பதிவேற்றம் முறையாக பராமரித்தல் வேண்டும். அவற்றை எப்போதும் அனுமதிக்க தனித்தனிக்கு ஆணைபடுத்த கோரினால் தவறாது உண்டிக்க வேண்டும்.

11. உதவி இயக்குநர் (முடியியல் மற்றும் காங்கிரசு)ன் அனுமதி முத்திரை, கையொப்ப முத்திரையுடன் கூடிய உரிய அனுமதிக்க சீட்டை வாகனங்களுக்கு கொடுக்கப்படும் போது அனுமதிக்க சீட்டில் வாகன எண், தேதி, ஸ்டாடம் நேரம், செல்லும் ஆகியவற்றை முறையாகக் குறிப்பிட்டு கையொப்பம் இட வேண்டும். குத்தகைதாரரோ அல்லது அவரது அனுமதி பெற்ற நபரோ கொடுக்க வேண்டும். மேற்கண்டவாறு குறிப்பிடுவதில் ஏதேனும் தவறுகள் இருந்தாலும், கவனம் பூர்த்தி செய்யப்படாமல் இருந்தாலும் முறையற்ற யுகையில் கவியல் எடுத்துச் செல்லுதல் கருதப்பட்டு யாணத்தை கைப்பற்றி அபாதம் விதிப்பதோடு, அதற்கு தக்கவகையான பொறுப்பாக்கி கவியல் விதிகளின் படி செல் நடவடிக்கை எடுக்கப்படும்.

12. இந்த நினைவில் குத்தகை அனுமதி வழங்கப்பட்ட முத்திரை முழுமையாகவோ, பகுதியாகவோ எவருக்கும் உள் குத்தகைக்கு விடுவதோ அல்லது கிராமம் செய்வதோ கூடாது.

LESSEE

Document No 354 120 IF
Page No. 1F
Total Page 317

LESSOR

भारतीय गैर न्यायिक INDIA NON JUDICIAL

₹ 25000

पच्चीस हजार रुपये

Rs. 25000

TWENTY FIVE THOUSAND RUPEES



தமிழ்நாடு தமில்நாடு TAMILNADU RS 25,000

B 789642



3949 / 13.12.17

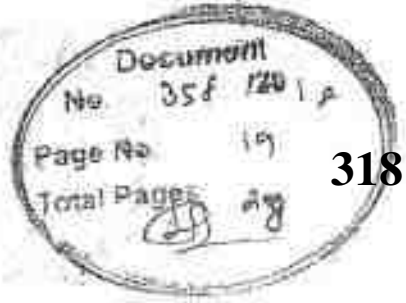
M. Malliga
Korimangalam.

K.M. பிரகாஷ்
முத்தியைத்தவம் விற்பனைபாரா
உரிமம் எண் : 5220 / ஆ1/2014-9
கொடுகையூர், தருமபுரி.
செல்: 9985380553

- 13. குத்தகைதாரர் ஒவ்வொரு நாளும் குவார்ட்டில் இருந்து எவ்வளவு சிறுகளினங்கள் எடுக்கப்பட்டது என்பதைப் பற்றி எந்த ஆராய்ச்சி களினங்கள் வாரி/ வாரிசு மூலம் வெளியே அனுப்பப்பட்டது என்ற விவரத்தைப்பற்றி வட்டிமீட்டினைப் பற்றித் தர வேண்டும்.
- 14. குத்தகைதாரர், நமக்கு ஒன்றாக வழங்கப்பட்ட பத்திரம் உட்கார் - எண் 10 - - பிளக்கிட்டு எவ்வித இடையூறும் இல்லாமல் குவார்ட்டி பணி செய்வது வேண்டும்.
- 15. வண்டிப்பாதை மற்றும் நடைபாதைகளில் இருந்து 10 மீட்டர் தூரம் தள்ளி குவார்ட்டி செய்ய வேண்டும். ரோடுகள், பாதையணிப்பு, பொதுப்பணித்துறை, வாய்க்கால், பொதுயுகள் உபயோகத்திற்கான பகுதிகள், பின்சாரம் மற்றும் தொலைபேசி கம்பி செல்லும் பகுதிகள், வழிபாட்டு இடங்கள் மற்றும் பழங்கால சின்னங்கள் உள்ள பகுதிகள் ஆகியவற்றில் இருந்து 50 மீட்டர் பாதுகாப்பு தூரம் விட்டு குவார்ட்டி செய்ய வேண்டும்.

கடத்தலாளர்
LESSEE

12/2/18
LESSOR





தமிழ்நாடு தமில்நாடு TAMILNADU ரூ. 25,000



13-12-17 M. Malliga
3946 Karrimangalam

B 789639
K.M. பிரகாஷ்
முத்திரைத்தரன் விற்பனைபரனர்
உரிமம் எண் : 5220 / ஆ1 / 2014- 9
சுரைகமட.அன்னி, தஞ்சைபுரி.
செல்: 9965980553

16. குத்தகைக்கு விடப்பட்டிருள்ள விஸ்தீரணத்தில் மட்டுமே குத்தகைதாரர் குவாரி செய்வது குவாரி செய்வது அகற்கவன் கூடுதலான விஸ்தீரணத்தில் குவாரி செய்வது தெரிபவந்தால் அபராத நடவடிக்கை மேற்கொள்வதுடன் குத்தகை இரத்து செய்ய நடவடிக்கை எடுக்கப்படும்.
17. குத்தகைத்திபந்தண மீறப்பட்டால் குத்தகை இரத்து செய்யவோ, செய்யப்பட்ட தலையுக்கு அபராத நடவடிக்கை எடுத்து தண்டம் விதிக்கவோ அல்லது கிரிமினல் வழக்குத் தொடுக்க மாவட்ட ஆட்சியருக்கு அதிகாரம் உண்டு. குத்தகை ரத்து செய்யப்பட்டால் கட்டத் தொகை உட்ப அணைத்து தொகைகளும் அகலக்கு ஆதாயமாகப்படும்.
18. குத்தகைதாரர் தமிழ்நாடு சிறுவகைக்கவரிய சலுகை விதிகள் 1959ல் கண்டுள்ள விதிகளுக்கும் மற்றும் தீரக அலவப்போது அறிவிக்கும் சட்டதிட்டங்களுக்கும் உட்பட்டு குவாரிப்பவர்கள் செய்ய வேண்டும்.
19. குவாரி குத்தகை உரிமம் கவலவதியான பின்பு எக்காரணத்தை முன்னிட்டும் கீண்டும் புதுப்பிக்கவே அல்லது கால நீடிப்பியா செய்து தரப்பட மாட்டாது.
20. வெப்பெருள் சட்டம் 1884ல் தெரிவிக்கப்பட்ட சரத்துக்கள்படி குறைத்த அளவு வெப்பெருளை உட்பயாக்கிது கற்கள் வெளியே சிறுமணும், சத்தம் அதிகம் ஏற்படாமலும், வெறுகைகளுக்கும், கால்தடைகளுக்கும், எவ்வித மாதிட்டம் இன்றியும் கஸ்தமாரி யனி செய்யப்பட வேண்டும்.

மல்லிகா
LESSEE



12/12/17
LESSOR



தமிழ்நாடு தமிழ்நாடு TAMILNADU RS 15000/- 313202 B 313202
 M. MALLIGA
 Karimangalam
 K.M. பிரகாஷ்
 முத்திரைத்தரம் விற்பனையாளர்
 உரிமை எண் : 5220 / ஆ1 / 2014 - 9
 சென்னை, தருமபுரி.
 செல்: 9965380553

22. குழந்தை தொழிலாளர்கள் எவ்வாறும் வேலைக்கு அமர்த்துதல் கூடாது.
 As per the Approved Mining Plan, the total production of Rough stone for Ten years lease period is 964879 Cubic Meter. Hence, based on the approved Mining Plan, for the purpose of calculating stamp duty the anticipated exigentage fee is Rs.4,34,19,555/- (Rupees Four Crore Thirty Four Lakhs Nineteen Thousand and Five Hundred and Fifty Five Only) and the Lease Amount is Rs.72,04,000/- (Rupees Seventy Two Lakhs and Four Thousand only)

சிறப்பு நிபந்தனைகள்:-
 1) குவாரி குத்தகை வழங்க உத்தேசிக்கப்பட்டுள்ள குவாரிக்கு அருகிலுள்ள மட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரிப்பணி செய்யவேண்டும்.
 2) அருகிலுள்ள அரசு புறம்போக்கு புலங்கள், வண்டிப்பாதை மற்றும் கிராம சாலைகளுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளிவும், இது நெடுஞ்சாலை மற்றும் மின்கம்பி பாதைக்கு 50 மீட்டர் பாதுகாப்பு இடைவெளிவும் விட்டு குவாரிப்பணி செய்யவேண்டும்.
 3) மேலும் தருமபுரி மாவட்ட அரசிதழ் எண்.17, நாள்.08.07.2017ல் குறிப்பிட்டுள்ள நிபந்தனைகளை தவறாமல் கடைபிடித்து குவாரிப் பணி செய்ய வேண்டும்.

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 LESSOR
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भारतीय गैर न्यायिक INDIA NON JUDICIAL

एक हजार रुपये
रु. 1000

ONE THOUSAND RUPEES
Rs. 1000



தமிழ்நாடு TAMILNADU ரூ. 1000/-

M. MALLIGA
Karimangalam

AR 929501

K.M. சிவசாண்டி
K.M. சிவசாண்டி
குத்திரைத்தலம் விரும்பலையாள்
உரிமை எண் : 5220 / 21 / 2014 - 6
காரைக்கல், தருமபுரி.
மொக் : 9985380553



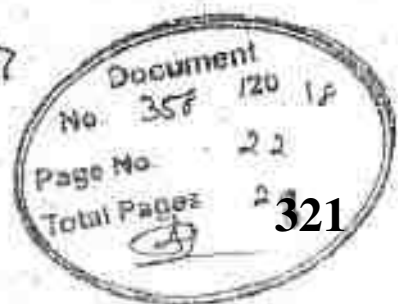
THE SCHEDULE

- 1. Name of the District : Dharmapuri
- 2. Name of the Taluk : Karimangalam
- 3. Name of the Village : Kalanganahalli
- 4. Name of the Sub Registration District : Dharmapuri
- 5. Lease Period : 10 years

From 12 .02.2018 to 11 .02.2028

S.F. No.	Extent (in Hect)	Area Assessment	Boundary			
			North by S.F. No	East by S.F. No.	West by S.F. No.	South by
401 (Part)	3.70.0	3,700/- (Rs. 100/- per hecta, per year)	402/1, 402/2, 402/3	314/1, 400	401 (Part)	312/1A, 314/1, 410/7

மல்லிகா
LESSEE



சிவசாண்டி
LESSOR

IN WITNESS WHEREOF Thiru.K.Vivekanandan, I.A.S., District Collector, Dharmapuri acting for and on behalf of and by the order and direction of the Government of Tamil Nadu and Tmt.Malliga, W/o Manickam, 5/20, Kairukarankottai Kerakodahalli post, Karimangalam Taluk, Dharmapuri District "the lessee" have hereunto set their respective hands.



Wojor ITI

LESSEE

[Signature]

LESSOR

Signed by the above named
Tmt.M.MALLIGA
In the lessee the presence
of the following witnesses

Signed by the above named
THIRU.K.VIVEKANANDAN,
the lessor in the presence of
the following witnesses

Signed by the above named
In the presence of

Signed by the above named
In the presence of

1. Signature : *V. Raja*
Name : **RAJA**
Address : *S/o Venkateshchalem*
Kairukarankottai
Kerakodahalli (post)
Karimangalam
623637050216

1. Signature : *[Signature]*
Name : **(P.JAYAPAL)**
Address : **ASSISTANT DIRECTOR,**
Dept. of Geology and Mining,
DHARMAPURI

2. Signature : *P. Arun*
Name : *P. Arun*
Address : *[Address]*
Govt of [?]
[?]
236952074252

2. Signature : *[Signature]*
Name : **K. ARUNABEER**
Address : **Special Revenue Inspector**
O/o. the Assistant Director
Geology and Mining
DHARMAPURI-636705.





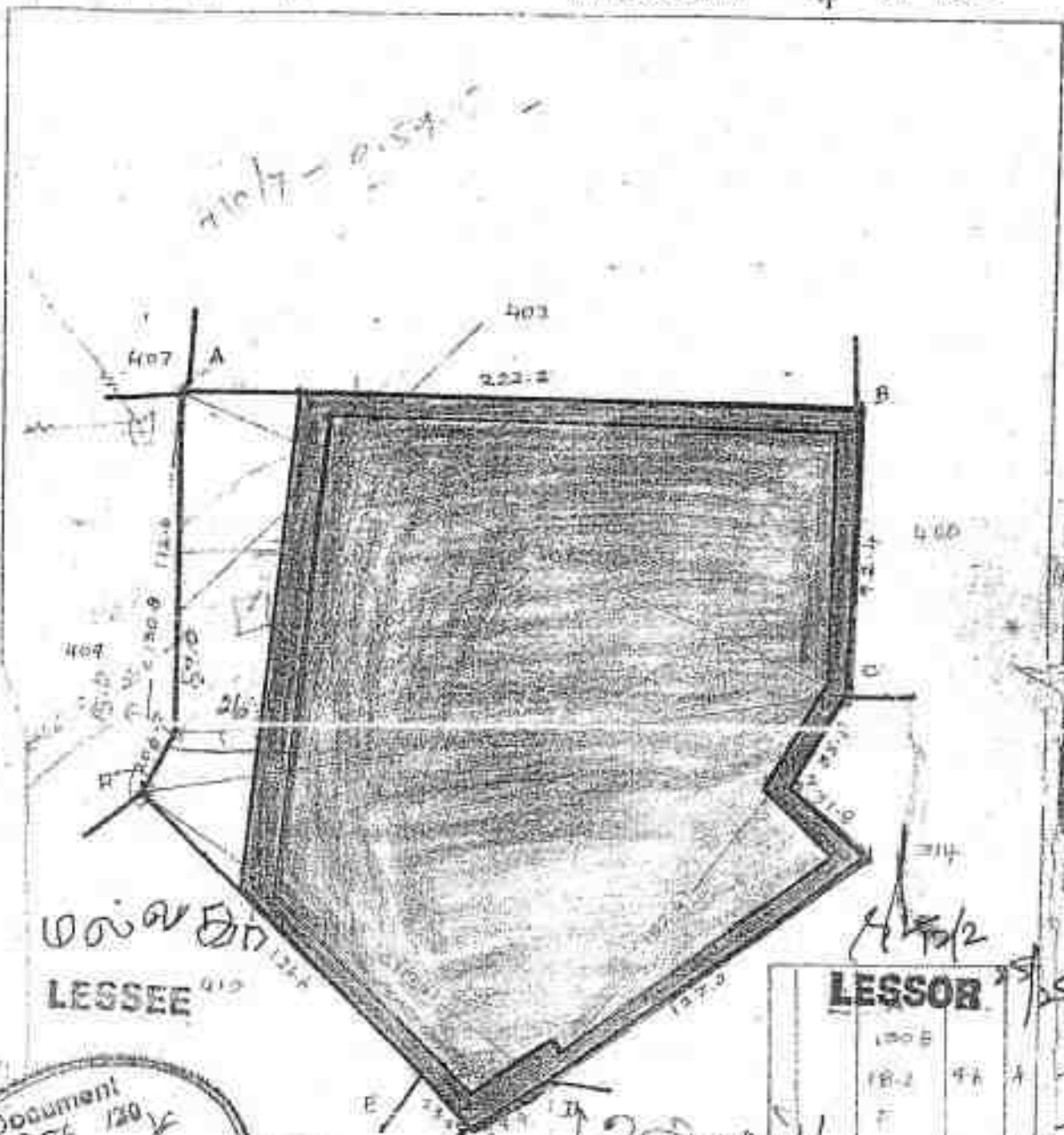
உட்க. தர்மபுரி

சுற்றுலா துறை

உட்க. பாலக்காடு
புல எண். 401

சீரமை
எண். 13
பெயர். சீரமை பண்புள்ளி

பரப்பு: சென்டீர் 4 ஏர். 18.0



1000 ஏர்
LESSEE

LESSOR

Document 35F 120 ✓
No. 2
Page No. 24
Total Pages 28

சீரமை பண்புள்ளி
10, சுற்றுலா துறை, சீரமை
சென்னை (Tn), தருமபுரி (O)

R/காரிமங்கலம்/புத்தகம்-1/358/2018



2018 ஆம் ஆண்டு பிப்ரவரி மாதம் 20ம் தேதி பி.பி. 0123 மனிதனின் காரிமங்கலம் சார்பதிவாளர் அலுவலகத்தில் தாக்கல் செய்து கட்டணம் ₹ 20,425/- செலுத்தியவர்.

இடது பெருவிரல்



மல்லிகா

கட்டுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளது.

எழுதி வங்கியதாசு ஒப்பக் கொண்டவர்
இடது பெருவிரல்



மல்லிகா

கட்டுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளது.

பதிவுச் சட்டம் பிரிவு எழுள் கீழ் நேரில் வருவதளிலிருந்து விலக்களிக்கப்பட்ட திரு விவேகானந்தன், மாவட்ட ஆட்சியர் அலுவலகம் தருமபுரி, தருமபுரி, தருமபுரி, தருமபுரி, தமிழ்நாடு, இந்தியா, 63670 (மாவட்ட ஆட்சியர், தருமபுரி) அவர்களால், இந்த ஆவணம் எழுதிக் கொடுத்தமை குறித்து நான் மனநிறைவுடைத்துள்ளேன்.

சார்பதிவாளர், காரிமங்கலம்

இன்னொரு நிருபித்தவர்கள்

1. V. [Signature]

கி.ந. என். த.பெ. பெருங்கடாழலம் சுயிற்சனரன் கோட்டாய், 636 காரிமங்கலம், காரிமங்கலம், தருமபுரி, தமிழ்நாடு, இந்தியா, 635111

2. P. [Signature]

திரு. அனந்தராஜ் த.பெ. பெருங்கடாழலம் சுயிற்சனரன் கோட்டாய், 636 காரிமங்கலம், காரிமங்கலம், தருமபுரி, தமிழ்நாடு, இந்தியா, 635111

2018 ஆம் ஆண்டு பிப்ரவரி மாதம் 20ம் நாள்

அன்னைத்துரை குடி சார்பதிவாளர், காரிமங்கலம்

R/காரிமங்கலம்/புத்தகம்-1/358/2018 எண்ணரசு பதிவு செய்யப்பட்டது

நாள் 20/02/2018
காரிமங்கலம்



அன்னைத்துரை குடி சார்பதிவாளர்



இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India

பதிவு அண்மையம் / Enrollment No.: 70077268890755

தகவல்

- ஆதார் அடையாளத்திற்கான சமீப நிகழ்வுகளைக் குறிப்பிடுகிறது.
- அடையாள சமீபநேர இணைப்புகள் மூலம் உறுதிப்படுத்திக் கொள்ளவும்.

To
 Mr. Govindarajan
 RAJA VENKATARAMAN
 S/O: Venkatesan
 502 KANNIKARANHOTTAI
 KANNIKANGALAM near
 Kanniyasalai
 Kanyakumari
 Palakkodu Thiruvananthapuram
 Tamil Nadu 625111
 9082292256
 8236 3705 0216



INFORMATION

- Aadhaar is proof of identity, not of citizenship.
- To establish identity, authenticate online.

உங்கள் ஆதார் எண் / Your Aadhaar No. :
8236 3705 0216

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- வருங்காலத்தில் அரசு மற்றும் அரசு சார்பு நேரவசனை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும்.
- Aadhaar is valid throughout the country.
- Aadhaar will be helpful in availing Government and Non-Government services in future.

இந்திய அரசாங்கம்
 Government of India
 Mr. Govindarajan
 RAJA VENKATARAMAN
 S/O: Venkatesan
 502 KANNIKARANHOTTAI
 KANNIKANGALAM near
 Kanniyasalai
 Kanyakumari
 Palakkodu Thiruvananthapuram
 Tamil Nadu 625111
 9082292256
 8236 3705 0216

8236 3705 0216
 ஆதார் - சாதாரண மனிதனின் அதிகாரம்

இந்திய அரசாங்கம்
 Unique Identification Authority of India
 முகவரி
 Mr. Govindarajan
 RAJA VENKATARAMAN
 S/O: Venkatesan
 502 KANNIKARANHOTTAI
 KANNIKANGALAM near
 Kanniyasalai
 Kanyakumari
 Palakkodu Thiruvananthapuram
 Tamil Nadu 625111
 9082292256
 8236 3705 0216

8236 3705 0216



மல்லூர்



இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India

உள்நாட்டு அடையாள அட்டை / Enrolment No.: 2007/26355/02400

To
அங்குரஜ் பெரியண்ணா
Anguraj Periyannan
S/O Periyannan
D NO 5/78
PACHAGOUNDAR STREET
ELAIKAMPPOST THAMMANAMPATTI
Laligan
Laligan
Dharmapuri Tamil Nadu - 636004
9443740324

உள்நாட்டு அடையாள அட்டை

உள்நாட்டு அடையாள அட்டை

பொருள்முறை
பெரிய அட்டை
உள்நாட்டு அடையாள அட்டை
பெரிய அட்டை



உங்கள் ஆதார் எண் / Your Aadhaar No. :

2369 5217 4252

எனது ஆதார், எனது அடையாளம்



உள்நாட்டு அடையாள அட்டை
உள்நாட்டு அடையாள அட்டை



அங்குரஜ் பெரியண்ணா
Anguraj Periyannan
பிறப்பு எண்/DOB: 07/07/1968
பால் / GENDER: MALE

2369 5217 4252

எனது ஆதார், எனது அடையாளம்



உள்நாட்டு அடையாள அட்டை
உள்நாட்டு அடையாள அட்டை

Address:
S/O Periyannan, D NO 5/78,
PACHAGOUNDAR STREET
ELAIKAMPPOST
THAMMANAMPATTI, Laligan,
Dharmapuri,
Tamil Nadu - 636004

குடியை:
S/O பெரியண்ணா, டி NO 5/78,
பாச்சாவுண்டார் சாலை
இலிகம்
தாமமணப்பட்டு, லலிசம்,
தேர்மாபுரி,
தமிழ்நாடு - 636004

2369 5217 4252

Dover 5/11





செய்திகளில்

தமிழ்நாடு வனத்துறை

அலுவலகம்

பெருதல்

திரு.க.திருமால், இ.வய.,
மாவட்ட வன அலுவலர்,
தருமபுரி வனக்கோட்டம்,
தருமபுரி - 5.

மாவட்ட ஆட்சித்தலைவர்,
தருமபுரி - 5.

மின்னஞ்சல் - vvdh@nls.gov.in
தொலைபேசி எண் - 04342 - 230003
தொலைபேசி எண் - 04342 - 230003

ந.க.எண்.3828 / 2015/வ. நாள். 09.08.2016

அப்பா,

பெருள் : கனிமங்களும், குவாரிகளும் - சிறு கனிமம் - சாதாரண கற்கள் - தருமபுரி மாவட்டத்தில் உள்ள அக டீமும்போக்கு நிலங்களில் சாதாரண கற்கள் வெட்டி எடுக்க உண்டாகும் இலாபத்திற்கு சிறு ஏய முறையில் குவாரி குத்தகை வழங்குதல் - வனத்துறை தொடர்பான தகவலின்மை சான்று வழங்க கோருதல் - தொடர்பாக

மாவட்ட ஆட்சித்தலைவர், தருமபுரி ந.க.எண்.V2012/(கனிமம்) நாள் 02.06.2015

—*—*—*—

மாவட்டத்தில் காணும் கடித்தல் உள்ள அனுப்பப்பட்ட மட்டியில் கண்ட குவாரிகளில் சாதாரண கற்கள் வெட்டி எடுப்பதற்கு, இத்துறையின் ஆட்சேபனையின்மை குறித்த விடயம் அத்தீர்த்த குவாரியின் எதிர் குறிப்பிடப்பட்டுள்ளது என்பதை அண்டின் தெரிவித்துக் கொள்கிறேன்.

வ. எண்	வட்டம்	கிராமம்	புல எண்	பரப்பு	குறிப்பு
1	மாவட்டக்கோடு	காளப்பன அள்ளி	401 (பகுதி)	3.70.0	ஆட்சேபனையின்மை
2	மாவட்டக்கோடு	காளப்பன அள்ளி	333 (பகுதி)	1.74.0	ஆட்சேபனையின்மை
3	மாவட்டக்கோடு	காளப்பன அள்ளி	384	0.69.0	ஆட்சேபனையின்மை
4	மாவட்டக்கோடு	காளப்பன அள்ளி	389 (பகுதி)	2.02.5	ஆட்சேபனையின்மை
5	மாவட்டக்கோடு	காளப்பன அள்ளி	335	1.78.0	ஆட்சேபனையின்மை

தங்கள் அன்புள்ள,

திரு.க.திருமால்,
மாவட்ட வன அலுவலர்,
தருமபுரி வனக்கோட்டம்.

11.11.2016

வனத்துறை அலுவலர்
4/11/16

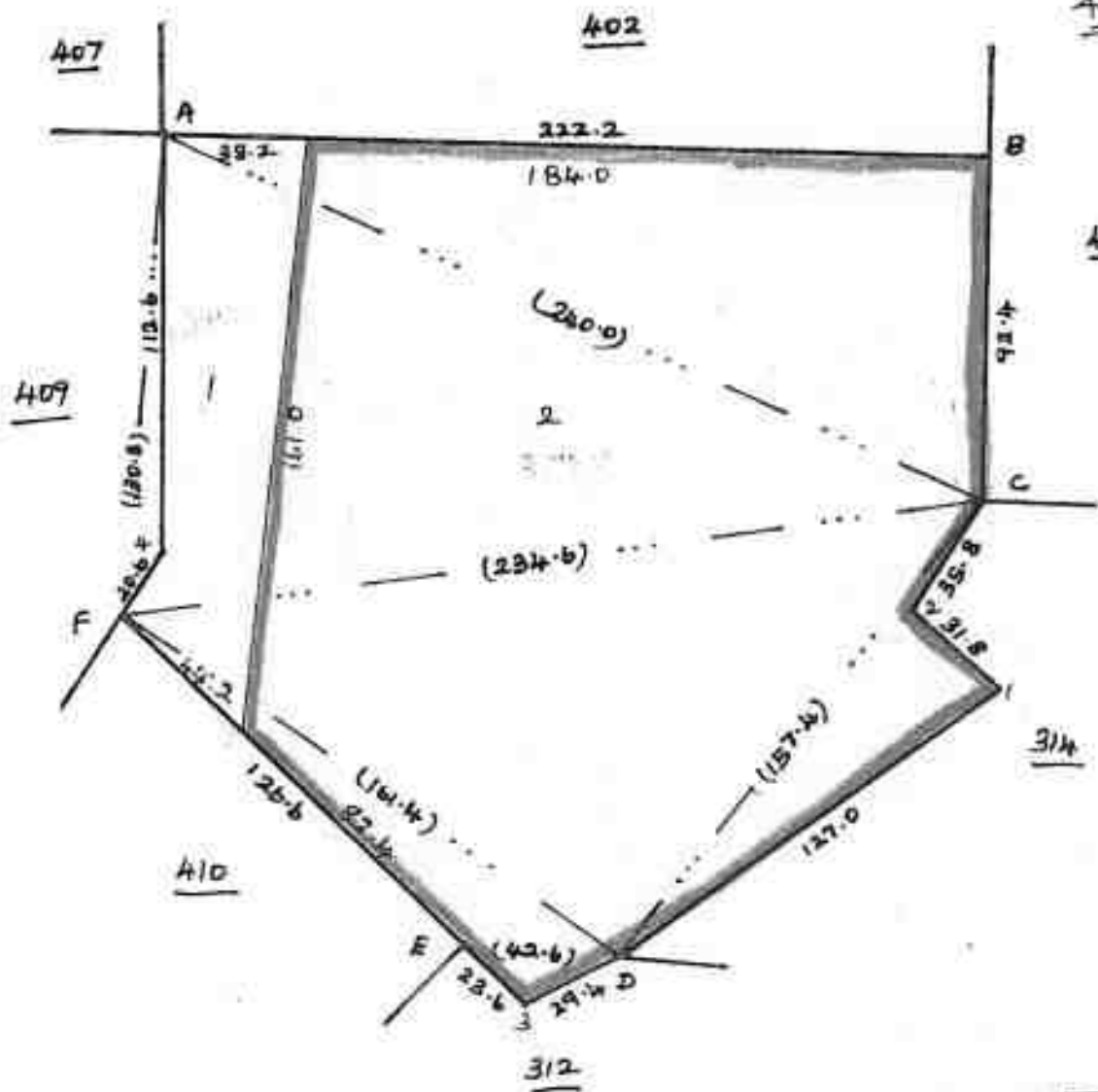
Handwritten notes in the top left corner, possibly indicating a date or reference.

Handwritten text: *Handwritten: 401*

Handwritten notes and a circular official stamp. The stamp contains text in Tamil and English, including 'TAMIL NADU GOVERNMENT' and 'REVENUE DEPARTMENT'. Handwritten numbers include '62' and '4.18.00'.

$$2 = 3.70.00$$

$$4.18.00$$



LEASE APPLIED AREA

தலைவர் அவர்களின் கையொப்பம் மற்றும் திருநெல்வேலி மாவட்டம்

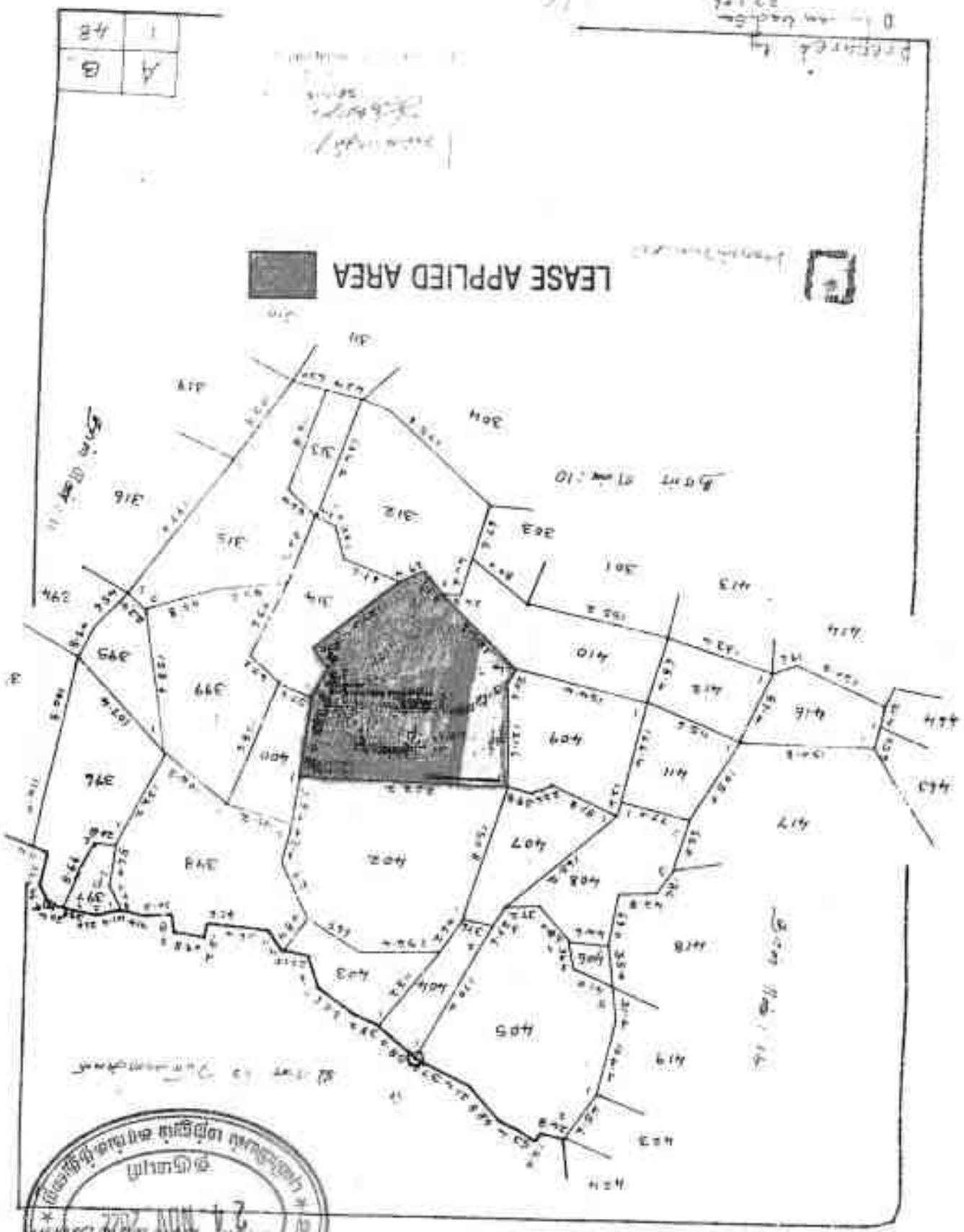
Handwritten signature and date: *Handwritten signature* 8/11/2016

Handwritten text: *Handwritten: 328*

Handwritten signature and text at the bottom right corner.

Prepared by
D. S. Rao
2014

LEASE APPLIED AREA



Prepared by
D. S. Rao
2014

Պ. հոդ. 62. ԱՐԽԱՆԱԳՐՈՒՄ



Գր. հոդ.	Գրքի հոդ.	Տեսակ	Գրքի անուն	Գրքի տեսակ	Գրքի քանակ	Գրքի արժեքը	Գրքի արժեքը	Գրքի արժեքը	Գրքի արժեքը	Գրքի արժեքը	Գրքի արժեքը
392	2	392-ԱԿ	Բ	Կ	8-3	8	2	15	1 01.5	2 28	1:18 Ք. Գրքերի արժեքը
									1 89.5	4 07	
393	1	393-ԱԿ	Բ	Կ	8-3	8	2	15	1 31.0	2 84	724 Ք. Գրքերի արժեքը
	2	-ԱԿ	Բ	Կ	8-3	8	2	15	1 01.0	2 17	724 Ք. Գրքերի արժեքը
									2 33.0	5 01	
394	1	394-ԱԿ	Բ	Կ	8-5	12	0	62	0 40.5	0 25	724 Ք. Գրքերի արժեքը
	2	-ԱԿ	Բ	Կ	8-5	12	0	62	0 34.5	0 21	202 Ք. Գրքերի արժեքը
	3	-ԱԿ	Բ	Կ	8-5	12	0	62	0 53.5	0 33	724 Ք. Գրքերի արժեքը
	4	-ԱԿ	Բ	Կ	8-5	12	0	62	0 04.5	0 06	909 Ք. Գրքերի արժեքը (1), Ք. Գրքերի արժեքը (2)
									1 33.0	0 85	
395	-	395	Բ	Կ	8-3	8	2	15	0 65.5	1 42	724 Ք. Գրքերի արժեքը
396	-	396	Բ	Կ	8-3	8	2	15	1 40.0	3 37	724 Ք. Գրքերի արժեքը
397	-	397	Պ	Ք. Գ. Բ.	-	-	-	-	0 41.5	-	
398	-	398	Բ	Կ	8-4	10	1	09	3 79.1	4 12	275 Ք. Գրքերի արժեքը
399	-	399	Պ	Ք. Գ. Բ.	-	-	-	-	2 99.5	-	
400	-	400	Բ	Կ	8-5	12	0	62	1 18.5	0 73	480 Ք. Գրքերի արժեքը
401	-	401	Պ	Ք. Գ. Բ.	-	-	-	-	4 18.0	-	
402	1	402-1	Բ	Կ	8-3	8	2	15	1 03.0	2 20	1090 Ք. Գրքերի արժեքը

Գրքերի արժեքը

Գրքերի արժեքը

Գրքերի արժեքը

Գրքերի արժեքը

6
10.21.2018

Գրքերի արժեքը

Գրքերի արժեքը



PHOTOCOPY OF THE LEASE AREA

Field photos in respect of rough stone quarry lease, Govt poramboke land, in S.F.No: 401(Part), over an extent of 3.70.0hectares of Kalappanahalli Village, Karimangalam Tahik, Dharmapuri District, Tamil Nadu State belongs to Tmt.Malliga W/o. Manickam.





இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India

தகவல்

- ஆதார் அடையாளத்திற்கான சான்று அடிப்படை அல்ல
- அடையாள சான்று இணையதளம் மூலம் உறுதிப்படுத்திக் கொள்ளவும்

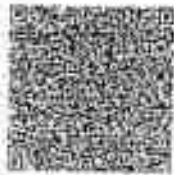
மேல் அடையாளம்/Enrollment No. : 2007/26714/53699

To
Malliga Munickam
மலிகா முனிக்கம்
V/O: Munickam
5203
KAYIRUKARAN KOTTAI
PALACODE
Kanniyakulam
Kanniyakulam, Dharmapuri
Tamil Nadu - 625111
344368348

INFORMATION

- Aadhaar is proof of identity, not of citizenship.
- To establish identity, authenticate online.

KL840886955FT
8465628



- ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.
- வாங்ககாலத்தில் அரசு மற்றும் அரசு சார்பு சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகளாக இருக்கும்.
- Aadhaar is valid throughout the country.
- Aadhaar will be helpful in availing Government and Non-Government services in future.

உங்கள் ஆதார் எண் / Your Aadhaar No. :

2618 2711 3608

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



இந்திய அரசாங்கம்

Government of India



மலிகா முனிக்கம்
Malliga Munickam
பிதர்: ராமகுண்டம்
Father: RAMGUNDAM

2618 2711 3608



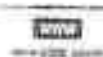
இந்திய அரசாங்கம்
Unique Identification Authority of India

மலிகா முனிக்கம்
KAYIRUKARAN KOTTAI
PALACODE Kanniyakulam
Kanniyakulam, Dharmapuri
Tamil Nadu - 625111

Address: V/O: Munickam
S/O:
KAYIRUKARAN KOTTAI
PALACODE Kanniyakulam
Kanniyakulam, Dharmapuri
Tamil Nadu - 625111

2618 2711 3608

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



மலிகா முனிக்கம்

भारत सरकार / GOVERNMENT OF INDIA
खान मंत्रालय / MINISTRY OF MINES
मास्तीय खान ब्यूरो / INDIAN BUREAU OF MINES



Signature

अर्हता प्राप्त व्यक्ति के रूप में मान्यता प्रमाण पत्र
(खनिज रियायत नियमावली, 1960 के नियम 22सी के तहत)
CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON
(Under Rule 22C of Mineral Concession Rules, 1960)

श्री एस करुपण्ण, मॉंगनीकाडू, मुत्तामपट्टी 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, Mangarikadu, Muthampatty (Post), Bommidu (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.

333
क्षेत्रीय नियंत्रक / Regional Controller of Mines
भारतीय खानब्यूरो/ Indian Bureau of Mines
चेन्नई क्षेत्र / Chennai Region

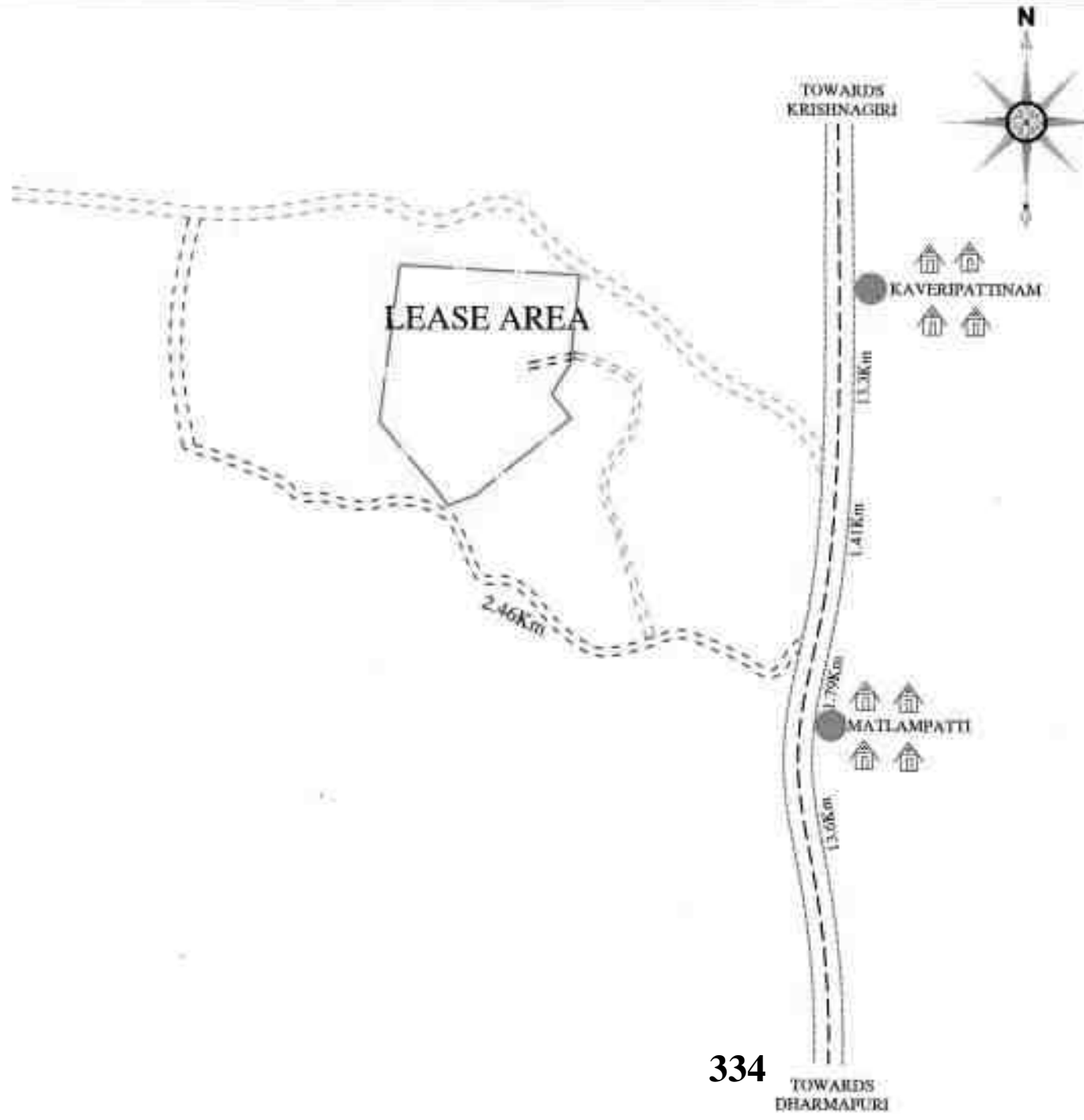


PLATE NO-I

APPLICANT:
 Tmt, M.MALLIGA,
 W/o P.MANICKAM,
 No. 5/20, KAIRUKARAN KOTTAL,
 KERAKODAHALLI POST,
 KARIMANGALAM TALUK,
 DHARMAPURI DISTRICT.

LEASE APPLIED AREA:
 EXTENT : 3.70 Hect,
 S.F.NO : 401 (Part)
 VILLAGE : KALAPANAHALLI,
 TALUK : KARIMANGALAM,
 DISTRICT : DHARMAPURI.

INDEX

MINE LEASE AREA	
APPROACH ROAD	
CART ROAD	
VILLAGE ROAD	
NH - 44 ROAD	

KEY MAP
 Not to Scale

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

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

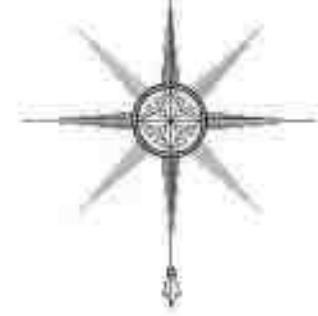


PLATE NO-IA

APPLICANT:
 Tmt.M.MALLIGA,
 W/o P.MANICKAM,
 No.5/20, KAIRUKARAN KOTTAL,
 KERAKODAHALLI POST,
 KARIMANGALAM TALUK,
 DHARMAPURI DISTRICT.

LEASE APPLIED AREA:
 EXTENT : 3.70.0Hect,
 S.F.NO : 401(Part)
 VILLAGE : KALAPANAHALLI,
 TALUK : KARIMANGALAM,
 DISTRICT : DHARMAPURI.

INDEX

MINE LEASE AREA: ●
 TOPO SHEET NO. : 57-L/03 & 57-L/04
 LATITUDE :
 12°14'53.30500"N to 12°15'00.92683"N
 LONGITUDE:
 78°10'20.33495"E to 78°10'27.16153"E

LOCATION PLAN
 NOT TO SCALE

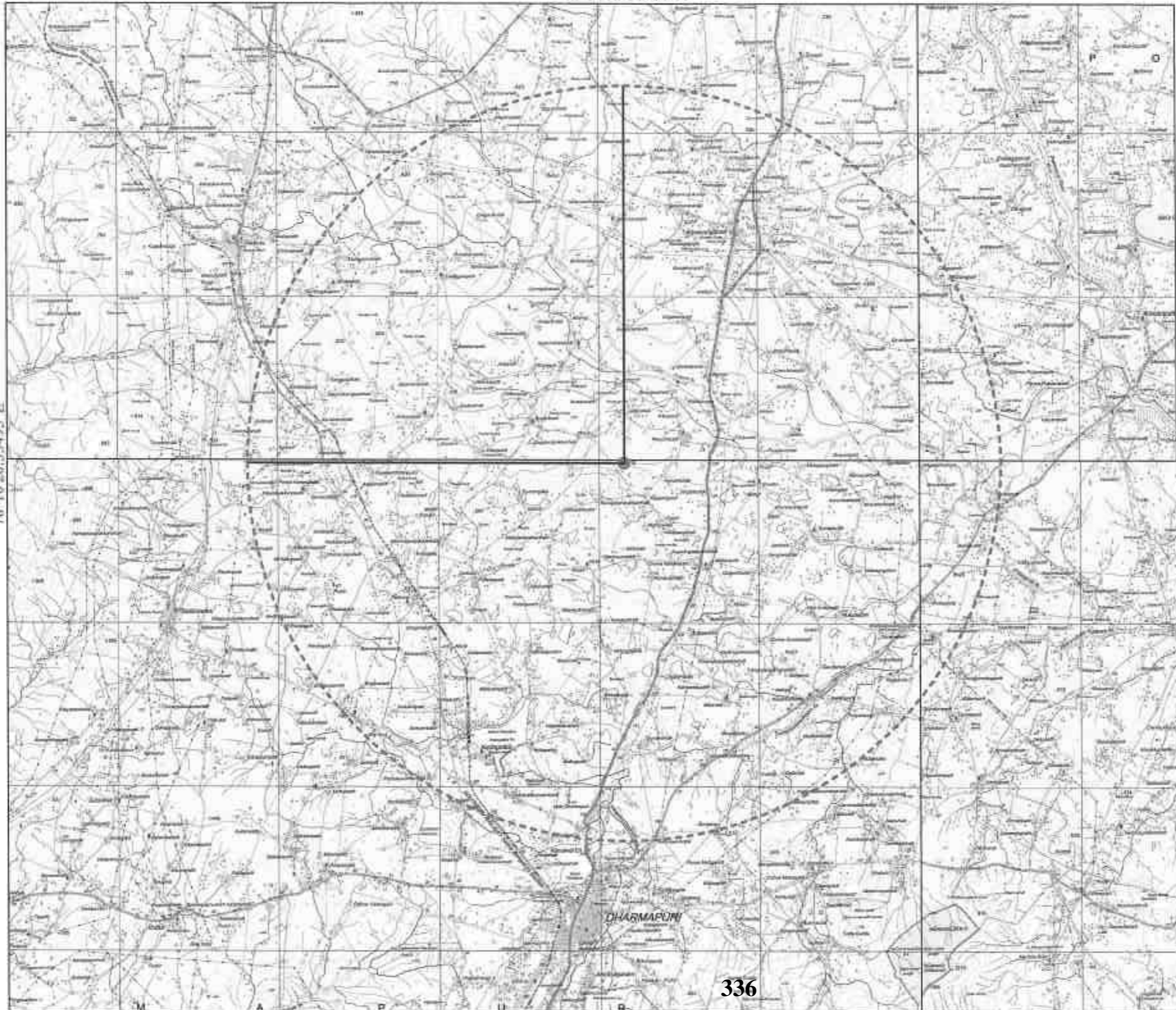
Prepared By:

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

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

12°14'53.30500"N

78°10'20.33495"E



336

PLATE NO: IB



APPLICANT:
 Mtl.M.MALLIGA
 W/o P.MANICKAM
 No.5/20, KAIRUKARAN KOTTAL,
 KERAKODAHALLI POST,
 KARIMANGALAM TALUK,
 DHARMAPURI DISTRICT.

LEASE APPLIED AREA:
 EXTENT : 3.70.0Hect.
 S.F.NO : 401(Part)
 VILLAGE : KALAPANAHALLI,
 TALUK : KARIMANGALAM,
 DISTRICT : DHARMAPURI.

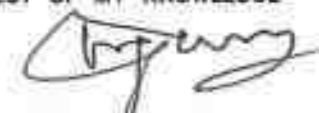
TOPO SHEET NO : 57-1/03 & 57-1/04
 LATITUDE :
 12°14'53.30500"N to 12°15'00.92683"N
 LONGITUDE:
 78°10'20.33495"E to 78°10'27.16153"E

MINE LEASE AREA 
10KM RADIUS 

CONVENTIONAL SYMBOLS

Contour lines with interval of 100m	100	200	300
Contour lines with interval of 50m	50	100	150
Contour lines with interval of 20m	20	40	60
Contour lines with interval of 10m	10	20	30
Contour lines with interval of 5m	5	10	15
Contour lines with interval of 2m	2	4	6
Contour lines with interval of 1m	1	2	3
Contour lines with interval of 0.5m	0.5	1	1.5
Contour lines with interval of 0.2m	0.2	0.4	0.6
Contour lines with interval of 0.1m	0.1	0.2	0.3
Contour lines with interval of 0.05m	0.05	0.1	0.15
Contour lines with interval of 0.02m	0.02	0.04	0.06
Contour lines with interval of 0.01m	0.01	0.02	0.03
Contour lines with interval of 0.005m	0.005	0.01	0.015
Contour lines with interval of 0.002m	0.002	0.004	0.006
Contour lines with interval of 0.001m	0.001	0.002	0.003
Contour lines with interval of 0.0005m	0.0005	0.001	0.0015
Contour lines with interval of 0.0002m	0.0002	0.0004	0.0006
Contour lines with interval of 0.0001m	0.0001	0.0002	0.0003
Contour lines with interval of 0.00005m	0.00005	0.0001	0.00015
Contour lines with interval of 0.00002m	0.00002	0.00004	0.00006
Contour lines with interval of 0.00001m	0.00001	0.00002	0.00003

TOPOSHEET MAP
 SCALE - 1:1,00,000

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

12°14'53.30500"N



78°10'20.33495"E



PLATE NO-IC

APPLICANT:

Tmt.M.MALLIGA,
W/o P.MANICKAM,
No.5/20, KAIRUKARAN KOTTAL,
KERAKODAHALLI POST,
KARIMANGALAM TALUK,
DHARMAPURI DISTRICT.

LEASE APPLIED AREA:

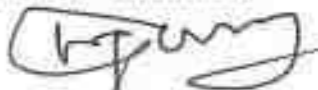
EXTENT : 3.70.0Hect,
S.F.NO : 401(Part)
VILLAGE : KALAPANAHALLI,
TALUK : KARIMANGALAM,
DISTRICT : DHARMAPURI.

INDEX

MINE LEASE AREA	
SAFETY DISTANCE	
APPROACH ROAD	
CART ROAD	
VILLAGE ROAD	
300m RADIUS	
500m RADIUS	
EXISTING QUARRY & PIT	
HABITATIONS	

TOPO SHEET NO : 57-L/03 & 57-L/04
LATITUDE : 12°14'53.30500"N to 12°15'00.92683"N
LONGITUDE: 78°10'20.33495"E to 78°10'27.16153"E

SATELLITE IMAGERY MAP
SCALE- 1:5000

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

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

OCTOBER TO DECEMBER



PLATE NO-IC

APPLICANT:

Tmt.M.MALLIGA,
W/o P.MANICKAM,
No.5/20, KAIRUKARAN KOTTAL,
KERAKODAHALLI POST,
KARIMANGALAM TALUK,
DHARMAPURI DISTRICT

LEASE APPLIED AREA:

EXTENT : 3.70.00Hect,
S.F.NO : 401(Part)
VILLAGE : KALAPANAHALLI,
TALUK : KARIMANGALAM,
DISTRICT : DHARMAPURI

INDEX

MINE LEASE AREA	
SAFETY DISTANCE	
APPROACH ROAD	
CART ROAD	
VILLAGE ROAD	
300m RADIUS	
500m RADIUS	
EXISTING QUARRY & PIT	
HABITATIONS	
SHRUBS & STRESS	

TOPO SHEET NO : 57-L/03 & 57-L/04

LATITUDE : 12°14'53.30500"N to 12°15'00.92683"N

LONGITUDE: 78°10'20.33495"E to 78°10'27.16153"E

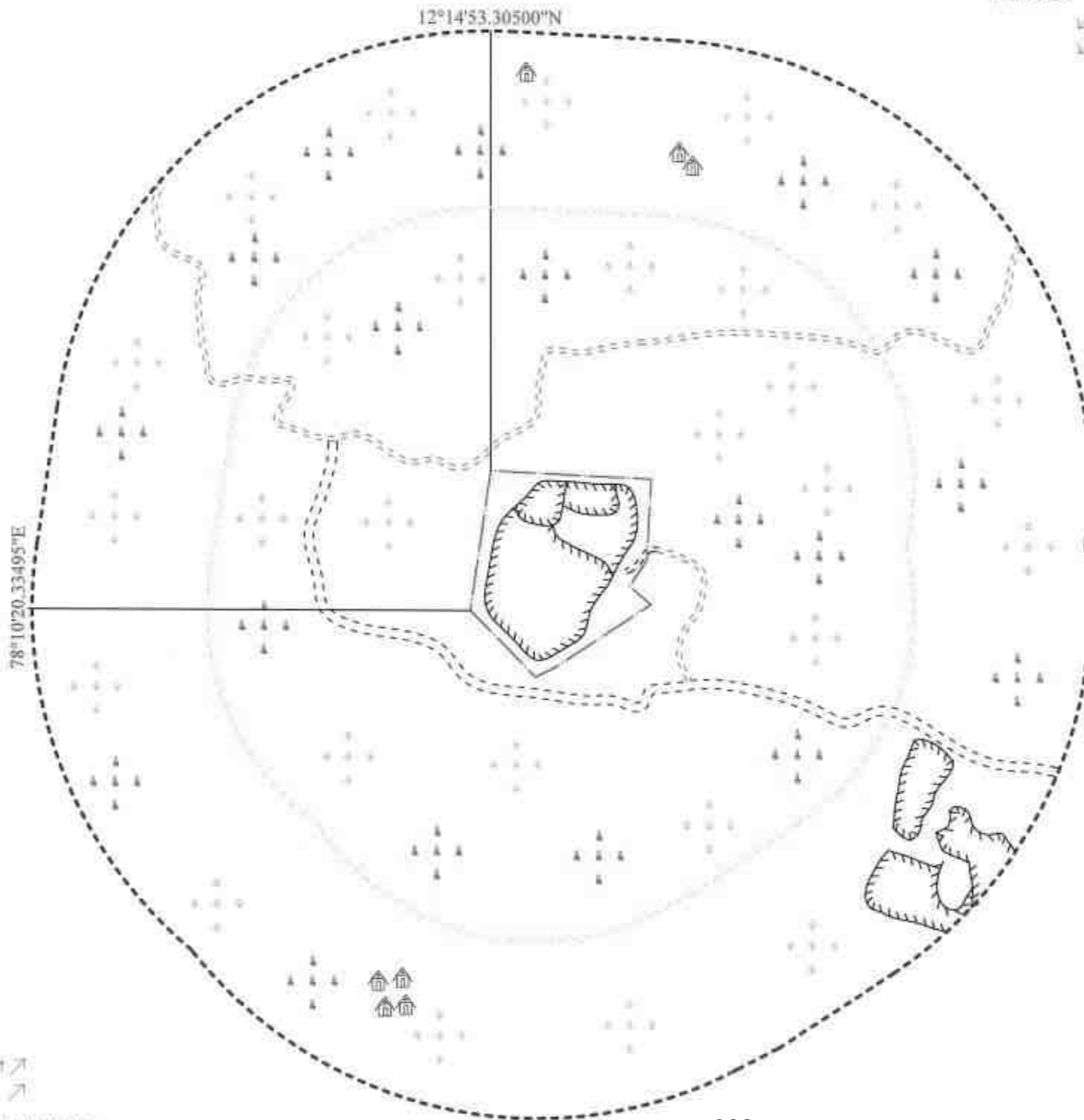
ENVIRONMENTAL PLAN

SCALE- 1:5000

Prepared By:

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

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



JULY TO SEPTEMBER

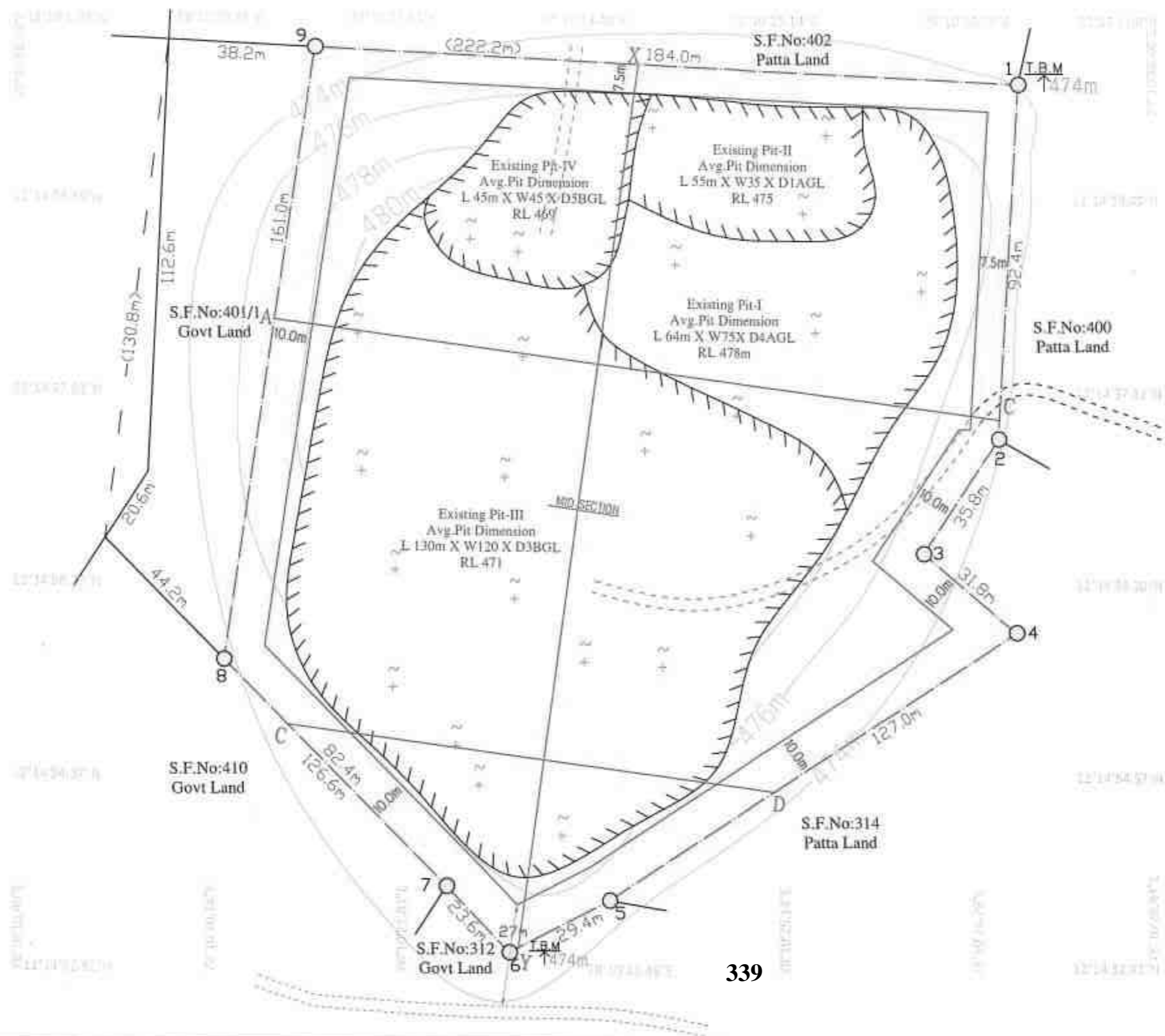


PLATE NO-III

APPLICANT:
Tmt.M.MALLIGA,
W/o P.MANICKAM,
No 5/20, KAIRUKARAN KOTTAL,
KERAKODAHALLI POST,
KARIMANGALAM TALUK,
DHARMAPURI DISTRICT.

LEASE APPLIED AREA:
EXTENT : 3.70Hect,
S.F.NO : 401(Part)
VILLAGE : KALAPANAHALLI,
TALUK : KARIMANGALAM,
DISTRICT : DHARMAPURI.

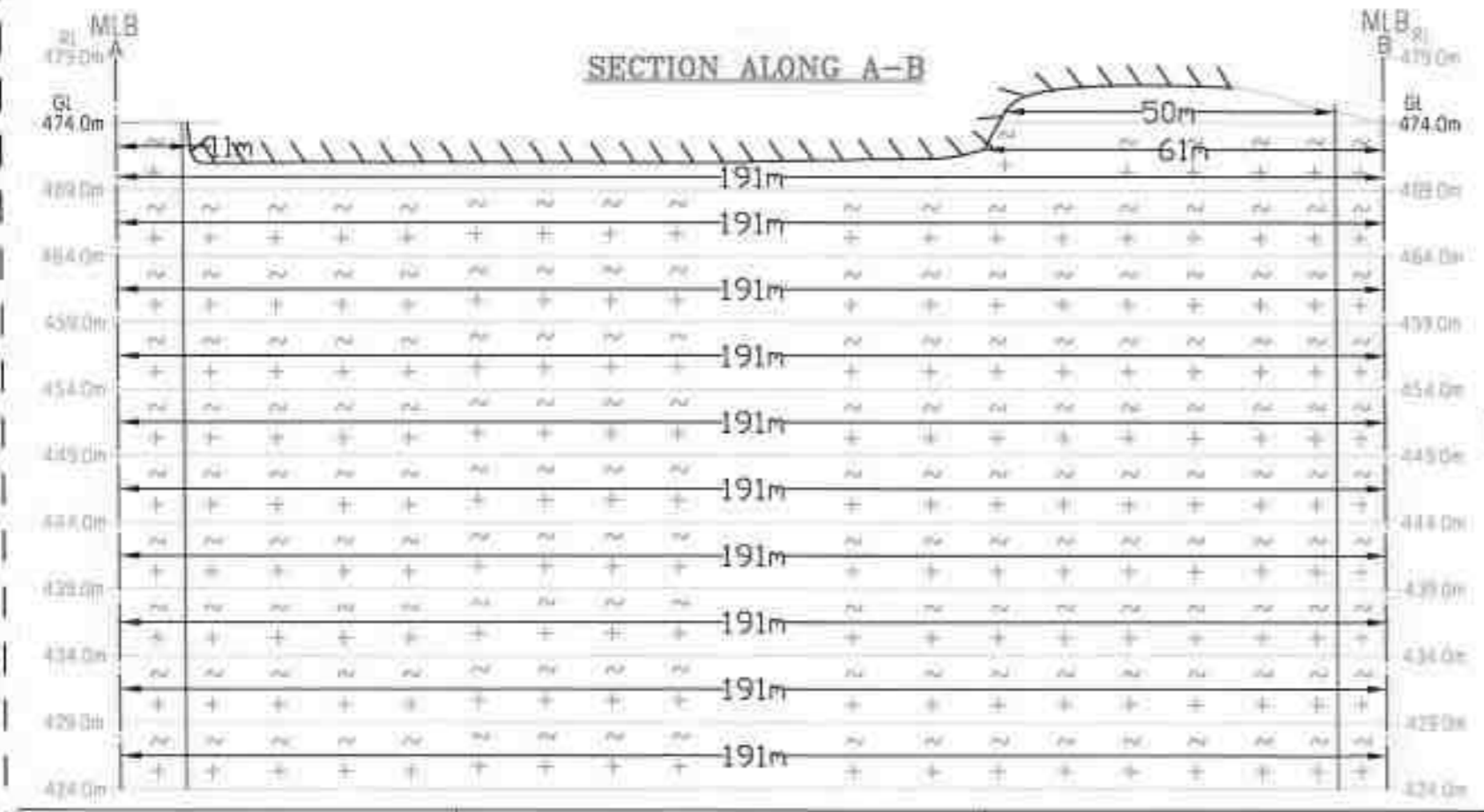
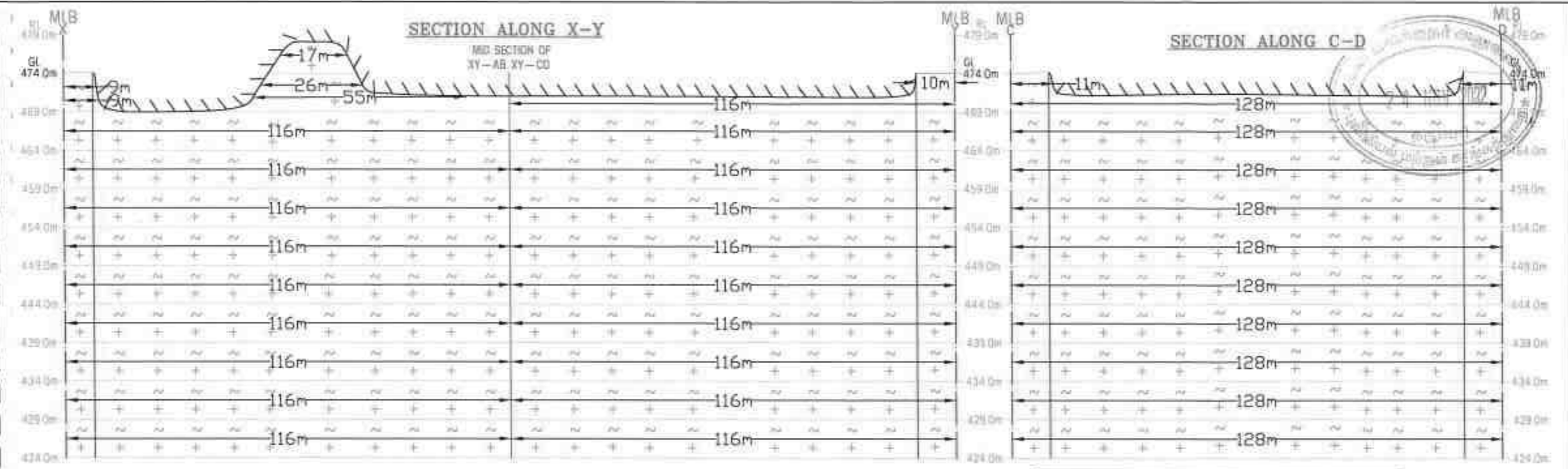
INDEX

MINE LEASE AREA	
SAFETY BOUNDARY	
TEMPORARY BENCH MARK	
BOUNDARY PILLAR	
APPROACH ROAD	
MINE HAUL ROAD	
CONTOUR LINE	
ROUGH STONE	
VILLAGE ROAD	
EXISTING PIT	

SURFACE AND GEOLOGICAL PLAN
SCALE 1 : 1000

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



GL = GROUND LEVEL

GEOLOGICAL RESOURCES						
Section	Bench	length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Rough Stone in m ³
XY-AB	I	17	50	4	3400	3400
	II	35	72	3	7560	7560
	III	64	191	2	24448	24448
	IV	116	191	5	110780	110780
	V	116	191	5	110780	110780
	VI	116	191	5	110780	110780
	VII	116	191	5	110780	110780
	VIII	116	191	5	110780	110780
	IX	116	191	5	110780	110780
	X	116	191	5	110780	110780
	XI	116	191	5	110780	110780
TOTAL					1032428	1032428
XY-CD	II	10	22	3	660	660
	III	116	128	2	29696	29696
	IV	116	128	5	74240	74240
	V	116	128	5	74240	74240
	VI	116	128	5	74240	74240
	VII	116	128	5	74240	74240
	VIII	116	128	5	74240	74240
	IX	116	128	5	74240	74240
	X	116	128	5	74240	74240
	XI	116	128	5	74240	74240
	TOTAL					698516	698516
GRAND TOTAL					1730944	1730944

APPLICANT:
Tmt.M.MALLIGA,
W/o P.MANICKAM,
No.5/20, KAIRUKARAN KOTTAL,
KERAKODAHALLI POST,
KARIMANGALAM TALUK,
DHARMAPURI DISTRICT.

LEASE APPLIED AREA:
EXTENT : 3.70.0Hect,
S.F.NO : 401(Part)
VILLAGE : KALAPANAHALLI,
TALUK : KARIMANGALAM,
DISTRICT : DHARMAPURI.

INDEX

MINE LEASE AREA	
SAFETY BOUNDARY	
ROUGH STONE	
EXISTING PIT	

340

PLATE NO-III A

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

Prepared By:

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

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

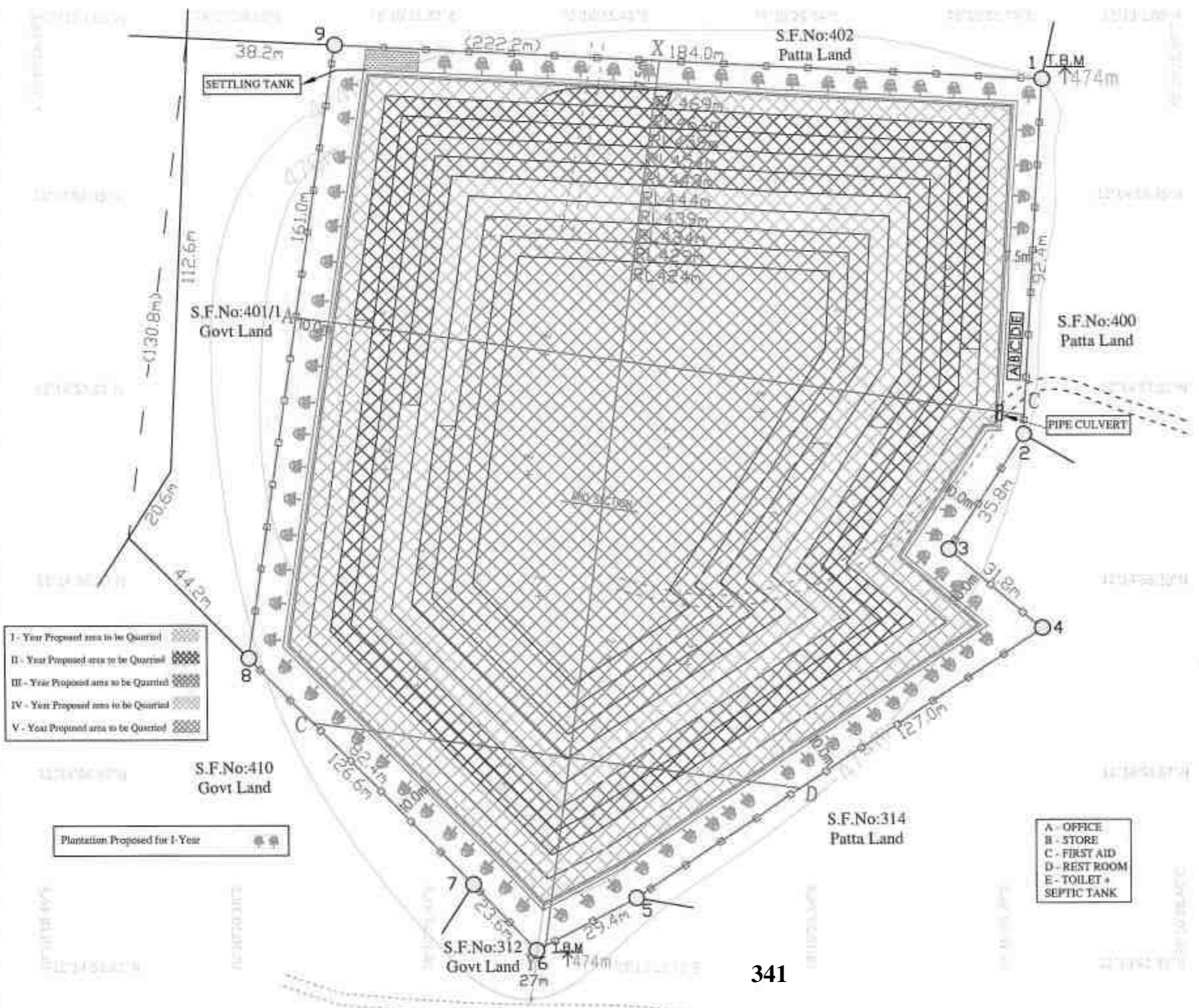


PLATE NO-IV

APPLICANT:
 Tmt.M.MALLIGA,
 W/o P.MANICKAM,
 No.5/20, KAIRUKARAN KOTTAL,
 KERAKODAHALLI POST,
 KARIMANGALAM TALUK,
 DHARMAPURI DISTRICT.

LEASE APPLIED AREA:
 EXTENT : 3.70 Hect,
 S.F.NO : 401(Part)
 VILLAGE : KALAPANAHALLI,
 TALUK : KARIMANGALAM,
 DISTRICT : DHARMAPURI.

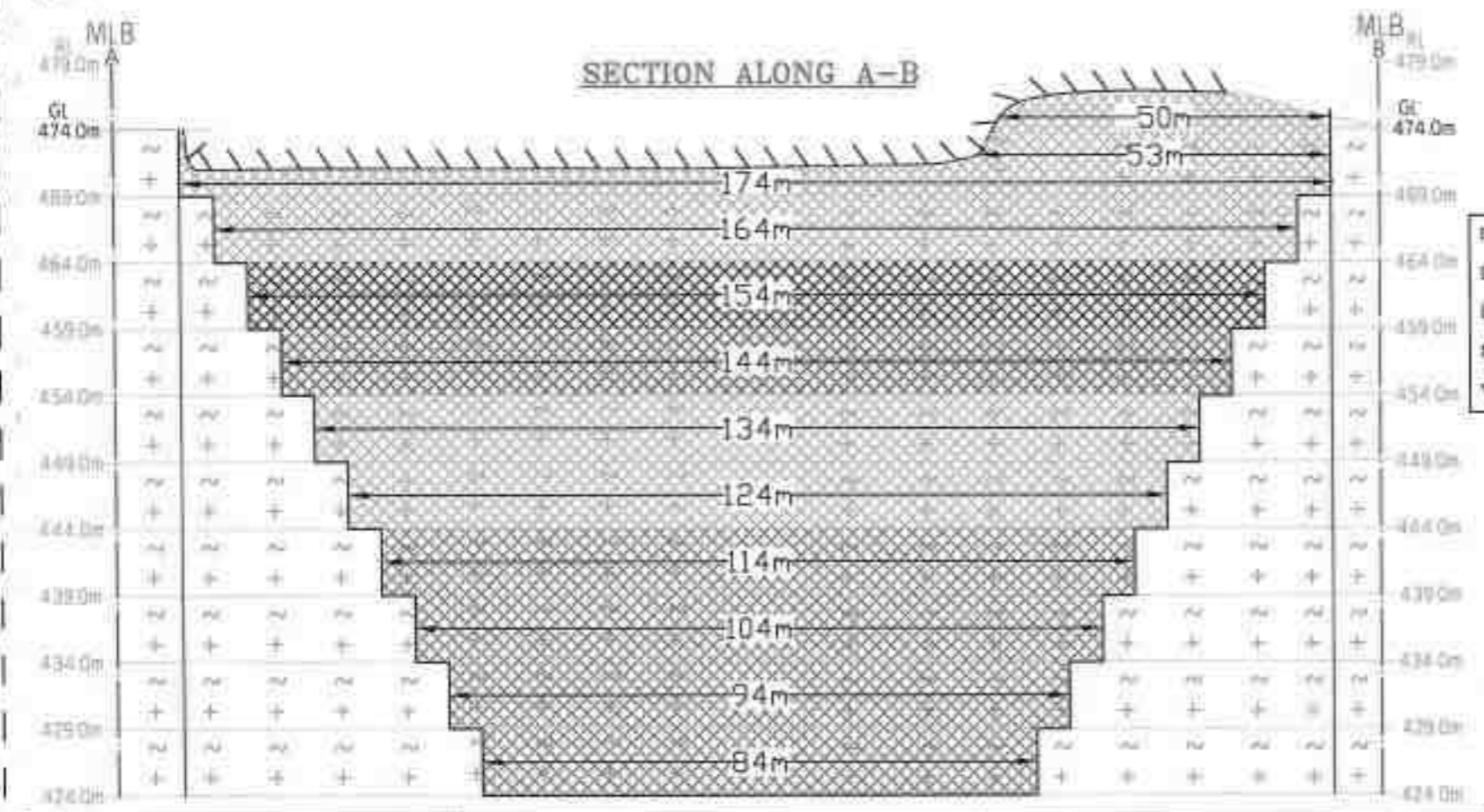
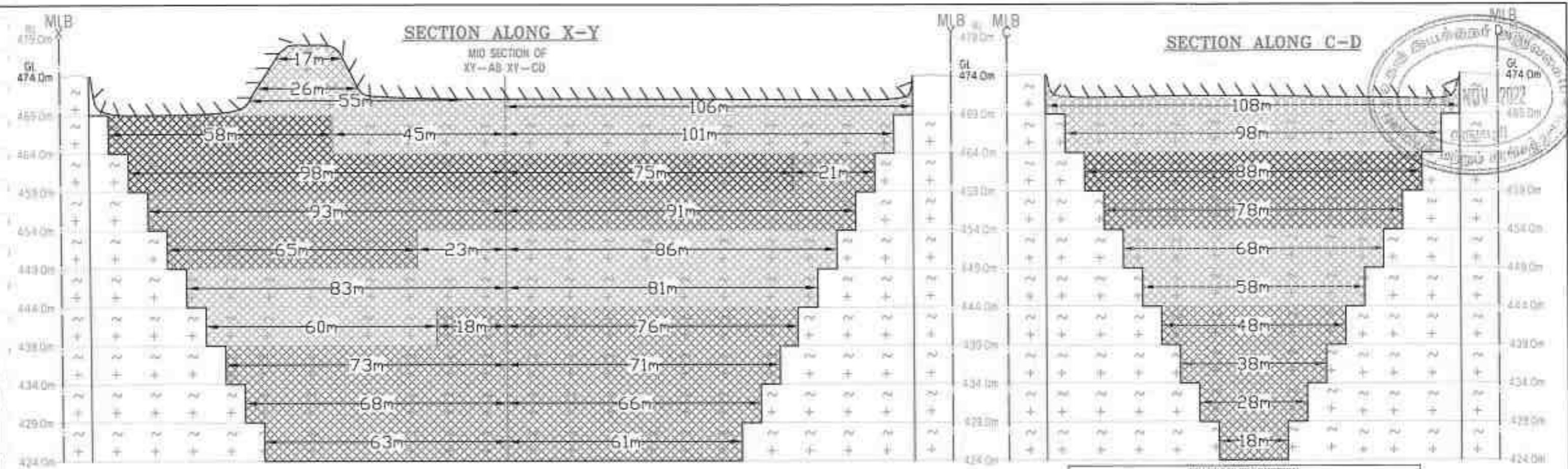
INDEX

MINE LEASE AREA	
SAFETY BOUNDARY	
TEMPORARY BENCH MARK	
BOUNDARY PILLAR	
APPROACH ROAD	
CONTOUR LINE	
ROUGH STONE	
VILLAGE ROAD	
EXISTING PIT	
SETTLING TANK & DRAINAGE	
FENCING	
MINE HAUL ROAD	

YEARWISE DEVELOPMENT & PRODUCTION PLAN
 SCALE 1 : 1000

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



GL = GROUND LEVEL

- 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							
Section	Year	Bench	length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Rough Stone in m ³
XY-AB	I-YEAR	I	27	50	4	3400	3400
		II	26	53	3	4134	4134
		III	55	174	2	19140	19140
XY-CD	I-YEAR	II	106	100	2	20996	20996
		III	101	98	5	49490	49490
XY-AB	I-YEAR	III	45	184	5	36900	36900
TOTAL						135960	135960
XY-AB	II-YEAR	III	58	154	5	47560	47560
		IV	98	134	5	75460	75460
XY-CD	II-YEAR	IV	75	88	5	33080	33080
TOTAL						156020	156020
XY-CD	III-YEAR	IV	21	88	5	9740	9740
		V	91	78	5	35490	35490
XY-AB	III-YEAR	V	93	144	5	66960	66960
XY-AB	III-YEAR	VI	85	134	5	43550	43550
TOTAL						155240	155240
XY-AB	IV-YEAR	VI	23	134	5	15410	15410
XY-CD		VI	86	60	5	29240	29240
XY-CD	IV-YEAR	VII	81	59	5	23490	23490
		VII	83	124	5	51460	51460
XY-AB	IV-YEAR	VIII	80	114	5	34200	34200
TOTAL						153800	153800
XY-AB	V-YEAR	VIII	18	114	5	10260	10260
		VIII	76	48	5	18240	18240
XY-CD	V-YEAR	IX	71	38	5	13490	13490
XY-AB		IX	73	104	5	37960	37960
XY-AB	V-YEAR	X	48	88	5	33320	33320
		X	86	28	5	9240	9240
XY-CD	V-YEAR	XI	61	18	5	5490	5490
XY-AB		XI	63	84	5	26460	26460
TOTAL						154460	154460
GRAND TOTAL						755480	755480

APPLICANT:
 Tmt.M.MALLIGA,
 W/o P.MANICKAM,
 No.5/20, KAIRUKARAN KOTTAL,
 KERAKODAHALLI POST,
 KARIMANGALAM TALUK,
 DHARMAPURI DISTRICT.

LEASE APPLIED AREA:
 EXTENT : 3.70.0Hect,
 S.F.NO : 401(Part)
 VILLAGE : KALAPANAHALLI,
 TALUK : KARIMANGALAM,
 DISTRICT : DHARMAPURI.

INDEX

MINE LEASE AREA	
SAFETY BOUNDARY	
ROUGH STONE	
EXISTING PIT	
PROPOSED BENCH	

342

PLATE NO-IVA
YEARWISE DEVELOPMENT & PRODUCTION SECTIONS
 SECTION HOR I : 1000, VER I : 500

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

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



PLATE NO-VI

APPLICANT:
 Tmt.M.MALLIGA,
 W/o P.MANICKAM,
 No.5/20, KAIRUKARAN KOTTAL,
 KERAKODAHALLI POST,
 KARIMANGALAM TALUK,
 DHARMAPURI DISTRICT.

LEASE APPLIED AREA:
 EXTENT : 3.7000Hect,
 S.F.NO : 401(Part)
 VILLAGE : KALAPANAHALLI,
 TALUK : KARIMANGALAM,
 DISTRICT : DHARMAPURI.

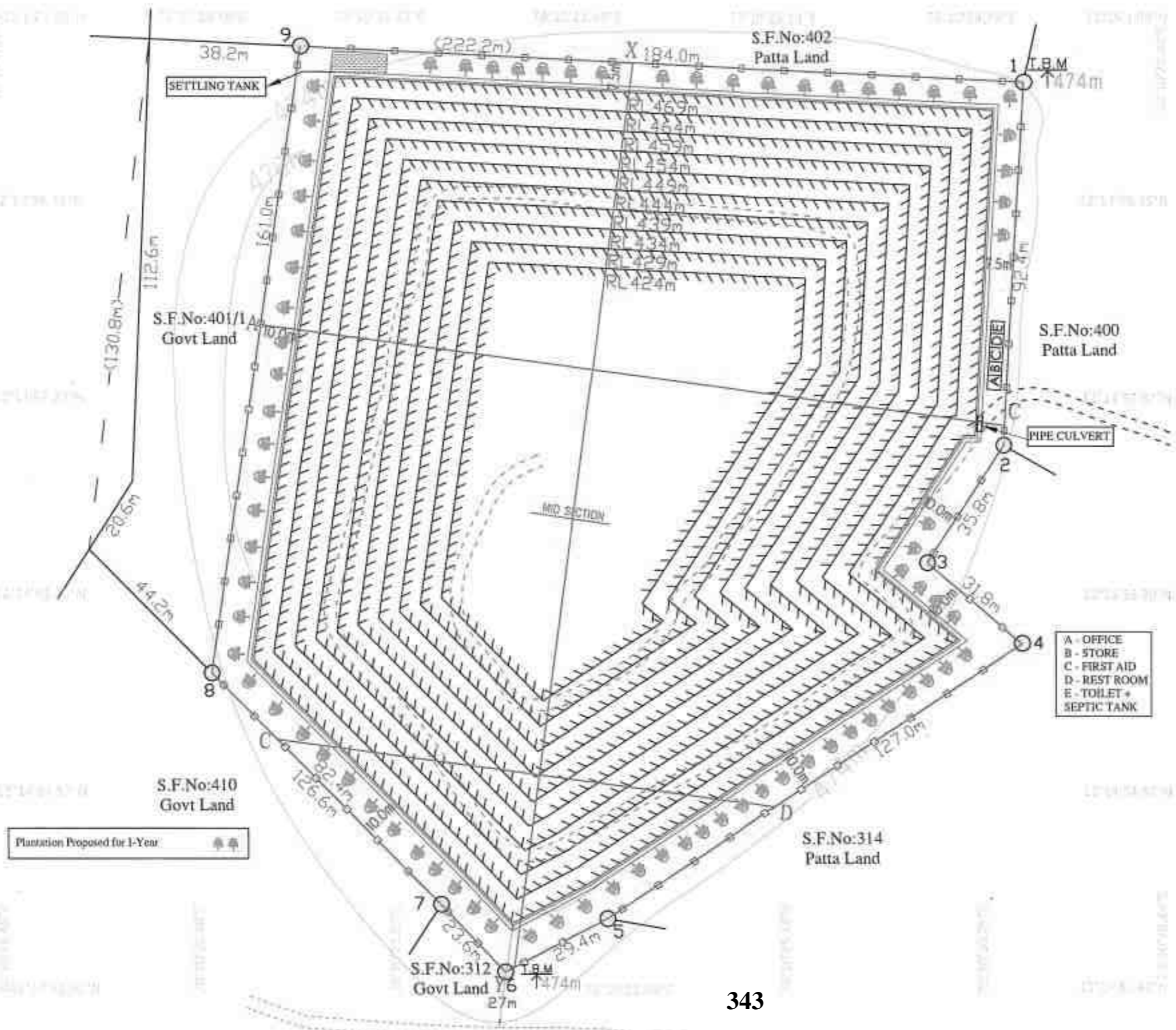
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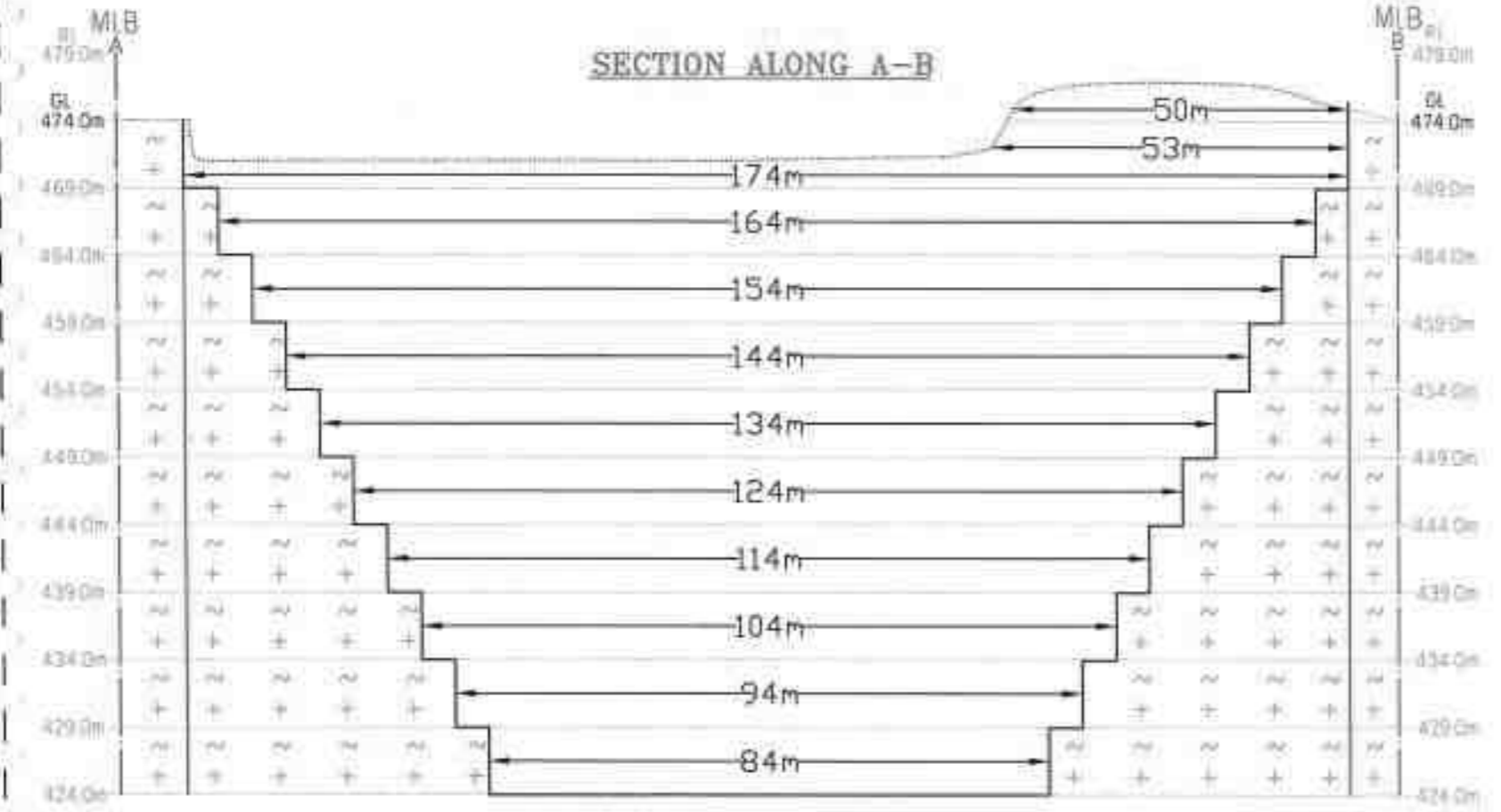
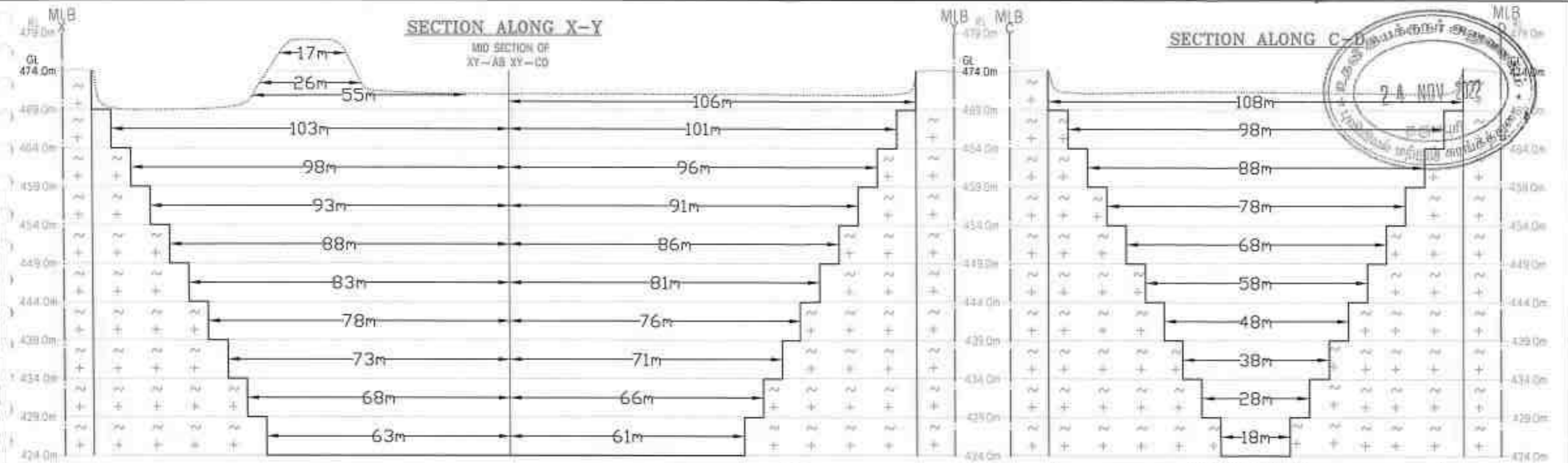
MINE LEASE AREA	
SAFETY BOUNDARY	
TEMPORARY BENCH MARK	
BOUNDARY PILLAR	
APPROACH ROAD	
FENCING	
CONTOUR LINE	
ROUGH STONE	
VILLAGE ROAD	
PROPOSED BENCH	
SETTLING TANK & DRAINAGE	
MINE HAUL ROAD	

CONCEPTUAL PLAN
 SCALE 1 : 1000

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





GL = GROUND LEVEL

MINEABLE RESERVES						
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Rough Stone in m ³
XY-AB	I	17	50	4	3400	3400
	II	26	53	3	4134	4134
	III	55	174	2	19140	19140
	IV	103	164	5	84460	84460
	V	98	154	5	75460	75460
	VI	93	144	5	66960	66960
	VII	88	134	5	58960	58960
	VIII	83	124	5	51460	51460
	IX	78	114	5	44460	44460
	X	73	104	5	37960	37960
	XI	68	98	5	33320	33320
TOTAL					506174	506174
XY-CD	II	106	108	2	22896	22896
	III	101	98	5	49490	49490
	IV	96	88	5	42240	42240
	V	91	78	5	35490	35490
	VI	86	68	5	29240	29240
	VII	81	58	5	23490	23490
	VIII	76	48	5	18240	18240
	IX	71	38	5	13490	13490
	X	66	28	5	9240	9240
	XI	61	18	5	5490	5490
	TOTAL					249306	249306
GRAND TOTAL					755480	755480

APPLICANT:
 Tmt.M.MALLIGA,
 W/o P.MANICKAM,
 No.5/20, KAIRUKARAN KOTTAL,
 KERAKODAHALLI POST,
 KARIMANGALAM TALUK,
 DHARMAPURI DISTRICT.

LEASE APPLIED AREA:
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 VILLAGE : KALAPANAHALLI,
 TALUK : KARIMANGALAM,
 DISTRICT : DHARMAPURI.

INDEX

MINE LEASE AREA

SAFETY BOUNDARY

ROUGH STONE 344

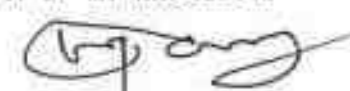
ULTIMATE BENCH

PLATE NO-VIA

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

Prepared By:

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



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

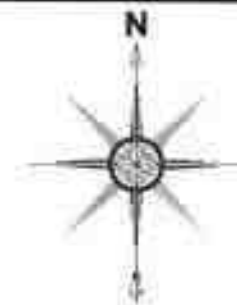


PLATE NO-V

APPLICANT:
 Tmt.M.MALLIGA,
 W/o P.MANICKAM,
 5/20, KAIRUKARAN KOTTAL,
 KERAKODAHALLI POST,
 KARIMANGALAM TALUK,
 DHARMAPURI DISTRICT.

LEASE APPLIED AREA:
 EXTENT : 3.70.0Hect,
 S.F.NO : 401(Part)
 VILLAGE : KALAPANAHALLI,
 TALUK : KARIMANGALAM,
 DISTRICT : DHARMAPURI.

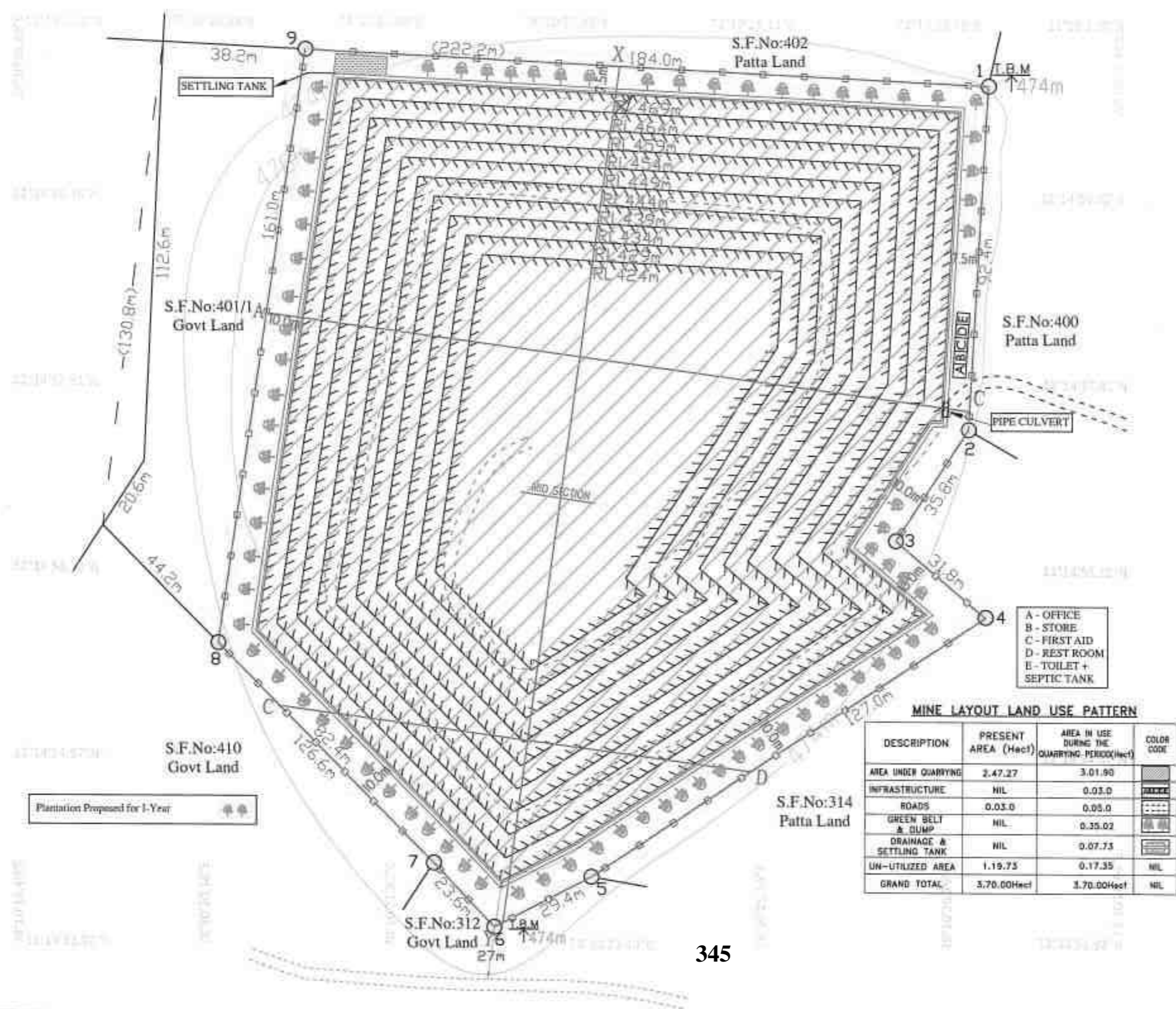
INDEX

- MINE LEASE AREA
- SAFETY BOUNDARY
- TEMPORARY BENCH MARK
- BOUNDARY PILLAR
- APPROACH ROAD
- FENCING
- CONTOUR LINE
- ROUGH STONE
- VILLAGE ROAD
- ULTIMATE BENCH
- SETTLING TANK & DRAINAGE
- MINE HAUL ROAD

**MINE LAYOUT PLAN AND
 LAND USE PATTERN
 SCALE 1:1000**

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



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

MINE LAYOUT LAND USE PATTERN

DESCRIPTION	PRESENT AREA (Hect)	AREA IN USE DURING THE QUARRYING PERIOD(Hect)	COLOR CODE
AREA UNDER QUARRYING	2.47.27	3.01.90	
INFRASTRUCTURE	NIL	0.03.0	
ROADS	0.03.0	0.05.0	
GREEN BELT & CLUMP	NIL	0.35.02	
DRAINAGE & SETTLING TANK	NIL	0.07.73	
UN-UTILIZED AREA	1.19.73	0.17.35	NIL
GRAND TOTAL	3.70.00Hect	3.70.00Hect	NIL

Plantation Proposed for 1-Year

Category of the Industry :

RED



CONSENT ORDER NO. 2208247661077 DATED: 02/09/2022.

PROCEEDINGS NO.F.0551DMP/RS/DEE/TNPCB/DMP/A/2022 DATED: 02/09/2022

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT –M/s. MALLIKA ROUGH STONE QUARRY , S.F.No. 401 part, KALAPPANAHALLI village, Karimangalam Taluk and Dharmapuri District - Renewal of Consent for the operation of the plant and discharge of emissions under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) –Issued- Reg.

REF: 1. Proc No. F.0551DMP/RS/DEE/TNPCB/DMP/W/2018 DATED: 12/09/2018
2. Units application dated 02.09.2022
3. IR.No : F.0551DMP/RS/AEE/DMP/2022 dated 02/09/2022

RENEWAL OF CONSENT is hereby granted under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) (hereinafter referred to as “The Act”) and the rules and orders made there under to

The Proprietrix
M/s.MALLIKA ROUGH STONE QUARRY,
S.F.No. 401 part,
KALAPPANAHALLI village,
Karimangalam Taluk,
Dharmapuri District.

Authorizing the occupier to operate the industrial plant in the Air Pollution Control Area as notified by the Government and to make discharge of emission from the stacks/chimneys.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending February 11, 2023

**District Environmental Engineer,
Tamil Nadu Pollution Control Board,
DHARMAPURI**

SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
Product Details			
1.	Rough stone quarrying in an extent of 3.70.0 Ha at S.F.No.401 part, Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District.	482238	Cu.m/5years

2. This renewal of consent is valid for operating the facility with the below mentioned emission/noise sources along with the control measures and/or stack. Any change in the emission source/control measures/change in stack height has to be brought to the notice of the Board and fresh consent/Amendment has to be obtained.

I	Point source emission with stack :			
Stack No.	Point Emission Source	Air pollution Control measures	Stack height from Ground Level in m	Gaseous Discharge in Nm ³ /hr
II	Fugitive/Noise emission :			
Sl. No.	Fugitive or Noise Emission sources	Type of emission	Control measures	
1.	Loading Unloading	Fugitive	Dust suppression system/Fogging system	

Special Additional Conditions:

- i. The unit shall install the approved retrofit emission control device/equipment with at least 70% Particulate matter reduction efficiency on all DG sets with capacity of 125 KVA and above or otherwise the unit shall be shift to gas based generators within the time frame prescribed in the notification No. TNPCB/Labs/DD(L)02151/2019 dated 10.06.2020 issued by TNPCB.
- ii. The unit shall obtain No Objection Certificate (NOC) from the Tamil Nadu Bio Diversity Board /National Bio Diversity Authority if the unit is using any Biological resources or knowledge associated thereto as per the provisions of Biological Diversity Act 2002.

Additional Conditions:

1. The unit shall provide, operate and maintain the APC measures in the form of portable water sprinklers effectively and continuously so as to satisfy the NAAQ / Emission standards prescribed by the Board.
2. The unit shall adhere to the AAQ/emission/ANL standards prescribed by the Board.
3. The unit shall comply with the conditions stipulated in the Environmental Clearance of DISTRICT LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, TAMILNADU vide Letter dated 31.10.2017
4. The unit shall comply all the conditions prescribed in the Mining Lease Agreement executed with the District Collector, Dharmapuri on 12.02.2018 valid for 10 years i.e., upto 11.02.2028.
5. Roads shall be graded to mitigate dust emission
6. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust emissions
7. The unit's operation/ activity for the mining shall not disturb the nearby agricultural land if any at any circumstances.
8. The unit shall develop green belt around the periphery of the premises to attenuate noise and air pollution.
9. The unit shall not use 'use and throw away plastics' such as plastic sheets used for food wrapping, spreading on dining table etc., plastic plates, plastic coated tea cups, plastic tumblers, water pouches and packets, plastic straw, plastic carry bags and plastic flags irrespective of thickness, within the industry premises. Instead unit shall encourage use of eco friendly alternative such as banana leaf, arecanut palm plate, stainless steel, glass, porcelain plates/cups, cloth bag, jute bag etc.,
10. In case of revision of consent fee by the Government, the unit shall remit the difference in amount within one month from the date of notification, failing which this order will be withdrawn without any notice and further action will be initiated against the unit as per law.

**District Environmental Engineer,
Tamil Nadu Pollution Control Board,
DHARMAPURI**

To
The Proprietrix,
M/s.MALLIKA ROUGH STONE QUARRY,
5/20,Kairukaran Kottai,
Kerakodahalli Post,
Karimangalam Taluk,
Dharmapuri District.,
Pin: 635111

Copy to:

- 1.The Commissioner, KARIMANGALAM-Panchayat Union, Karimangalam Taluk, Dharmapuri District .
2. Copy submitted to the Member Secretary, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.
3. Copy submitted to the JCEE-Monitoring, Tamil Nadu Pollution Control Board, Vellore for favour of kind information.
4. File

Category of the Industry :

RED



CONSENT ORDER NO. 2208147661077 DATED: 02/09/2022.

PROCEEDINGS NO.F.0551DMP/RS/DEE/TNPCB/DMP/W/2022 DATED: 02/09/2022

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT – M/s. MALLIKA ROUGH STONE QUARRY , S.F.No. 401 part, KALAPPANAHALLI village, Karimangalam Taluk and Dharmapuri District - Renewal of Consent for the operation of the plant and discharge of sewage and/or trade effluent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act 6 of 1974) – Issued- Reg.

REF: 1. Proc No. F.0551DMP/RS/DEE/TNPCB/DMP/W/2018 DATED: 12/09/2018
2. Units application dated 02.09.2022
3. IR.No : F.0551DMP/RS/AEE/DMP/2022 dated 02/09/2022

RENEWAL OF CONSENT is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act, 6 of 1974) (hereinafter referred to as “The Act”) and the rules and orders made there under to

The Proprietrix
M/s.MALLIKA ROUGH STONE QUARRY,
S.F.No. 401 part,
KALAPPANAHALLI Village ,
Karimangalam Taluk ,
Dharmapuri District .

Authorising the occupier to make discharge of sewage and /or trade effluent.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending February 11, 2023

**District Environmental Engineer,
Tamil Nadu Pollution Control Board,
DHARMAPURI**

SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products/byproducts (Col. 2) at the rate (Col 3) mentioned below. Any change in the product/byproduct and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
Product Details			
1.	Rough stone quarrying in an extent of 3.70.0 Ha at S.F.No.401 part, Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District.	482238	Cu.m/5years

2. This renewal of consent is valid for operating the facility with the below mentioned outlets for the discharge of sewage/trade effluent. Any change in the outlets and the quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Outlet No.	Description of Outlet	Maximum daily discharge in KLD	Point of disposal
Effluent Type : Sewage			
1.	Sewage	0.6	On Industrys own land
Effluent Type : Trade Effluent			

Special Additional Conditions:

The unit shall obtain No Objection Certificate (NOC) from the Tamil Nadu Bio Diversity Board /National Bio Diversity Authority if the unit is using any Biological resources or knowledge associated thereto as per the provisions of Biological Diversity Act 2002.

Additional Conditions:

1. The unit shall treat the sewage in septic tank with soak pit arrangement provided as reported.
2. The unit shall ensure that no trade effluent is generated at any point of its activity.
3. The unit shall comply with the conditions stipulated in the Environmental Clearance of DISTRICT LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, TAMILNADU vide Letter dated 31.10.2017
4. The unit shall comply all the conditions prescribed in the Mining Lease Agreement executed with the District Collector, Dharmapuri on 12.02.2018 valid for 10 years i.e., upto 11.02.2028.
5. The unit's operation/ activity for the mining shall not disturb the nearby agricultural land if any at any circumstances.
6. The operation of the unit shall not attract any public complaints.
7. The unit shall utilize only the earmarked & leased executed mining area only.
8. The unit shall collect & store the rejects of the mining activities within the unit's area.
9. The unit shall take effective measures to conserve top soil.
10. The unit shall not use 'use and throw away plastics' such as plastic sheets used for food wrapping, spreading on dining table etc., plastic plates, plastic coated tea cups, plastic tumblers, water pouches and packets, plastic straw, plastic carry bags and plastic flags irrespective of thickness, within the industry premises. Instead unit shall encourage use of eco friendly alternative such as banana leaf, arecanut palm plate, stainless steel, glass, porcelain plates/cups, cloth bag, jute bag etc.,
11. In case of revision of consent fee by the Government, the unit shall remit the difference in amount within one month from the date of notification, failing which this order will be withdrawn without any notice and further action will be initiated against the unit as per law.

**District Environmental Engineer,
Tamil Nadu Pollution Control Board,
DHARMAPURI**

To
The Proprietrix,
M/s.MALLIKA ROUGH STONE QUARRY,
5/20,Kairukaran Kottai,
Kerakodahalli Post,
Karimangalam Taluk,
Dharmapuri District.,
Pin: 635111

Copy to:

- 1.The Commissioner, KARIMANGALAM-Panchayat Union, Karimangalam Taluk, Dharmapuri District .
2. Copy submitted to the Member Secretary, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.
3. Copy submitted to the JCEE-Monitoring, Tamil Nadu Pollution Control Board, Vellore for favour of kind information.
4. File

**RAINWATER HARVESTING AND ARTIFICIAL RECHARGE STRUCTURES PROPOSED
IN THE KALAPPANAHALLI VILLAGE ROUGHSTONE PROJECT
KARIMANGALAM TALUK, DHARMAPURI DISTRICT, TAMILNADU**

1. INTRODUCTION

The proposed quarry project is located in Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District, Tamilnadu. The area lies between Latitudes from 12°14'53.30500"N to 12°15'00.92683"N and Longitudes from 78°10'20.33495"E to 78°10'27.16153"E. The rainwater harvesting techniques is adopted as per the as Dynamic Ground Water Resources of India (2017) of CGWB Regulations. Rainwater harvesting is a simple technique of catching and holding rainwater where its falls. Either, we can store it in tanks or we can use it to recharge groundwater depending upon the situation. The surface which directly receives the rainfall and provides water to the system is called catchment area. It can be a paved area like a terrace or courtyard of a building, or an un paved area like a lawn or open ground. A roof made of reinforced cement concrete (RCC), galvanized iron or corrugated sheets can also be used for water harvesting.

With the increase in demand of water, the water levels are bound to be affected; hence there is an urgent need to conserve the precious ground water resources by adopting rainwater harvesting & artificial recharge to ground water. This will help in maintaining the sustainability of existing tubewells & saving water for future generation. Due to increase in withdrawal of ground water from shallow aquifers than the natural recharge, the water levels in the area are being affected. In view of this there is an urgent need to conserve the precious ground water resources by artificial means adopting rainwater harvesting and artificial recharge to ground water. This will help in maintaining the sustainability of existing tubewells and also reduces the further decline in water levels of the area. In order to design best suitable artificial recharge structures, the proposal has been prepared. The management of project being environment conscious decided to adopt rain water harvesting and utilize the runoff generated due to rainfall for artificial recharge to ground water, by constructing recharge structures in the project area.

2. ESTIMATION OF RAINWATER COLLECTION AND RECHARGE:

The total water requirement for this project will be 3.0 KLD per day. The water will be sourced initially from outside agencies. Later based on the availability of rainfall conditions to collect rainwater

and design Artificial Recharge Structures like recharge pit, percolation pond, mine pit sump will be recommended to manage water management of this proposed project. There is no domestic effluent to be generated from the project. There is no major water seepage within the mine is expected as well as no waste dumps in this quarry. Based on the available information of the surrounding topography and availability of nearby area 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 Green belt development and natural drainage. The geophysical investigations carryout within the lease boundary site suitability of ARS is proposed within the lease area is considered to have poor groundwater potential. The availability of water only secondary fractures in moderate quantity. Hence, ARS structures implemented to store more water in the underground to manage water needs throughout the mining operation. After complete the project the mining pit also acted recharge pit to develop water level in the surrounding area. The advantages of implementation of ARS structures is here under.

- ❖ Reduces urban flooding.
- ❖ Ease in constructing system in less time.
- ❖ Economically cheaper in construction compared to other sources, i.e. dams, diversion, etc.
- ❖ Rainwater harvesting is the ideal situation for those areas where there is inadequate groundwater supply or surface resources.
- ❖ Helps in utilizing the primary source of water and prevent the runoff from going into sewer or storm drains, thereby reducing the load on treatment plants.
- ❖ Recharging water into the aquifers which help in improving the quality of existing groundwater through dilution.

3. MAXIMUM WATER REQUIREMENT OF THE PROJECT:

Table.1. Water Requirement for the Project

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

Maximum man power requirement of the project is = 20 Nos Employee + 5 Nos of daily visitors
(As per the mining plan)

Water requirement of daily mining activity is = 3.0 KLD (Per day requirement) X 270
(Total No. of working days) X (20 Nos Employee + 5 (No of daily visitors))
= 810 Cu.m/annum -270 Cu.m /annum (utilized drinking purpose)
= 540 Cu.m /annum is accessed from water vendors.

4. DETERMINATION OF RECHARGE QUANTITY:

The rooftop surface area is nothing but the catchment area which receives rainfall. Catchment areas of the different buildings are measured. This measurement was done manually with the help of reinforced fiber tape which is the simplest technique known as tape survey. As per Dynamic Ground Water Resources of India (2017) of CGWB Regulations. Rough stone and Gravel quarry located at Kalappanahalli Village, Karimangalam Taluk, Dharmapuri District falls under Semi critical category, and most of the area is underlain by moderate quantity of ground water. Implementation of recharge mechanism shall ensure the balance between the discharge vis-a-vis recharge relationships of the aquifer system and improve in the ground water quality. The normal annual rainfall for the said area is 981 mm. Rain water harvesting structures proposed in the project premises by diverting the runoff that is generated from the rooftops, Paved, unpaved and green areas for recharging into the ground water system. The calculated the rooftop of all the buildings suited inside project, roads, green belt area are given in Table .2.

Table.2 Land use area category of proposed project

Description	Present Area (ha)	Area at the end of life of quarry (ha)
Area under quarry	2.47.27	3.01.90
Infrastructure	Nil	0.03.00
Roads	0.03.00	0.05.00
Green Belt	Nil	0.35.02
Drainage & Settling Tank	Nil	0.07.73
Unutilized area	1.19.73	0.17.35
Total	3.70.00	3.70.00

At Present about 2.47.27 ha of land is used for quarrying, 1.19.73 ha of land is unutilized, Whereas, at the end of the mine life, about 0.17.35 ha of land is unutilized; about 0.35.02 ha of land is used for green belt and 0.05.0 will be used for roads and 0.03.0 is used for infrastructure. The calculated value of recharge components is given in Table.3.

Table.3. Estimation of Quantum of runoff available through Rain water harvesting within the proposed project area

Particulars	Area (Sq.m)	Rainfall (m)	Runoff Coefficient* (Cum/Year)	Quantum of Run off available (Cu.m/Year)
1	2	3	4	5 (2*3*4)
Roof Top of building/Shed/	300	0.981	0.85	250
Road/Paved area	500	0.981	0.65	319
Open Land	1735	0.981	0.20	347
Green Belt	3502	0.981	0.15	525
Total (sqm)	5837		Total Quantum of available runoff (cum/y)	1441

From the above computation, it is evident that a total quantum nearly of 1441 Cu.m/annum of rain water can be fruitfully harvested annually. The harvested rainwater from the rooftop area = 300 (Sq.m) x 0.981 (m) x 0.85 (R.Co) = 250 Cu.m/annum fully utilized for drinking and domestic purposes through storage tank.

The remaining quantity 1441 Cu.m/annum - 250 Cu.m/annum = 1191 Cu.m/annum used for recommendation of suitable recharge structures in the proposed project area.

5. IMPLEMENTATION RECHARGE STRUCTURES:

Rainwater Harvested can also be used for charging the groundwater aquifers through suitable structures like dug wells, borewells, recharge trenches and recharge pits. Various recharge structures are possible - some which promote the percolation of water through soil strata at shallower depth (e.g., recharge trenches, permeable pavements) whereas others conduct water to greater depths from where it joins the groundwater. At many locations, existing structures like dug wells, pits and tanks can be modified as recharge structures and also possible effective recharge structures constructed availability of topography conditions need to construct any fresh structures. Some of the few commonly used

recharging methods are recharging of dug wells and abandoned bore wells and availability empty land recommended percolation pond/pit, recharge troughs, recharge trenches, excess of runoff diverted in to nearest nallas and ponds in the down flow direction.

6. RAINWATER HARVESTING MEASURES

Following methods shall carry out the rainwater harvesting

1. Roof top & paved area rainwater harvesting through existing bore wells as well as recharge pit of the proposed project area.
2. Natural groundwater recharge through adjacent to the streams / Pond etc.,

6.1. Rooftop Rainwater Runoff

The industrial roofs are of RCC finished with cement sand mortar. Most of the water can be collected with roof drains hence 85% rainwater can be available. About 15% of water is lost in evaporation etc. The water is collected through rainwater drains from rooftop. The roof should be finished to avoid percolation and should be cleaned every year before rains. The roof top rainwater & surface runoff rainwater shall be collected through existing rainwater drains.

6.2. Surface Runoff of Rainwater

The subsurface reservoirs are technically feasible alternative for storing surplus monsoon runoff. Wide spectrums of techniques are in vogue to recharge ground water reservoir. The artificial recharge techniques vary widely depending upon hydro geological studies of the area.

The maximum rate at which water can enter the soil at particular point depends upon infiltration capacity. The infiltration capacity depends upon soil type, moisture content, organic matter, vegetative cover, season, air entrapment, etc. The infiltration and percolation capacity are closely related. The infiltration takes place due to gravity but capillary force divert gravity water. The infiltration capacity of land formation is not suitable for surface percolation system hence for recharge of ground water reservoir through injection well system has been implemented. This system has improve both quality & quantity of water.

Runoff coefficient for rooftop area can be taken as 85%. Similarly, for cemented area it has been taken as 65%, for open land it can be taken as 20% and for green belt is taken as 15%.

Average runoff coefficient taken for the area is as under:

- | | |
|--|-------|
| 1. Average runoff coefficient for rooftop | = 85% |
| 2. Average runoff coefficient for Paved area | = 65% |
| 3. Average runoff coefficient for open land (alluvium) | = 20% |
| 4. Average runoff coefficient for green belt | = 15% |

7. ROOF TOP RAINWATER RUNOFF

The Industrial area has different buildings with RCC and V shaped roof to collect water from flat RCC roof drain pipes has been constructed. These drain pipes are connected to main rainwater collection pipes, provided with collection chambers. In case of V shaped roof rainwater is collected through gutters attached at the end of the roof and these gutters are connected to rainwater pipes. Total rainwater thus available is being diverted to recharge tube in storage tank through PVC pipes and passing through the filter pit. This stored water in storage tank managed throughout the year for drinking purposes and domestic purposes.

Average Rainwater Runoff Availability:

$$= A \times R_f \times A_v R_c$$

Where,

A = Roof top area 300 Sq.m.

R_f = Rainfall = 0.981 m. (Average)

Average rainwater runoff available

$$= 300 \text{ (Sq.m)} \times 0.981 \text{ (m)} \times 0.85$$

$$= \mathbf{250 \text{ Cu.m. ----- (A)}}$$

8. BLACK TOPPED ROADS AND CEMENTED AREA

The project area has approach roads from entry gate to different buildings. The said roads are 8m, 6m, and 2m wide. The project area also has parking and other cemented portion. Slope of these cemented area and roads are maintained in such a way that the available runoff should move towards the open drains and this water is to be taken to the recharge tube wells. Total road and cemented area is about 200 sq.m. Taking 65% as runoff coefficient for paved area, the availability of water has been worked out as under

Average Rainwater Runoff Available from Paved Area:

$$= A \times R_f \times A_v R_c$$

Where,

A = Total Paved area = 500 Sq.m.

R_f = Rainfall = 0.981 m. (Average)

Average rainwater runoff available

$$= 500 \text{ (Sq.m)} \times 0.981 \text{ (m)} \times 0.65$$

$$= \mathbf{319 \text{ Cu.m. ----- (B)}}$$

9. OPEN LAND

The total area of proposed project area is 3700 Sq.m. Out of which rooftop area is 300 Sq.m., paved area is 500 Sq.m. & green belt area is 3502 Sq.m. Balance open land area is 1735 Sq. m. Taking 20% as natural recharge coefficient for surrounding sandy loam area the expected recharge to underground aquifers is:

$$\begin{aligned} &= 1735 \text{ (Sq.m)} \times 0.981 \text{ (m)} \times 0.65 \\ &= \mathbf{319 \text{ Cu.m.}} \text{ ----- (C)} \end{aligned}$$

10. GREEN BELT AREA

The total area of proposed project area is 3700 Sq.m. Out of which rooftop area is 300 Sq.m., paved area is 500 Sq.m. & green belt area is 3502 sq.m. Balance open land area is 1735 Sq. m. Taking 15% as natural recharge coefficient for surrounding sandy loam area the expected recharge to underground aquifers is:

$$\begin{aligned} &= 3502 \text{ (Sq.m)} \times 0.981 \text{ (m)} \times 0.15 \\ &= \mathbf{515 \text{ Cu.m.}} \text{ ----- (D)} \end{aligned}$$

Parks and gardens are abstracting huge quantity of groundwater for watering purpose and thus it should start harvesting rain water which would increase groundwater level.

11. TOTAL RAINWATER RECHARGE

$$\begin{aligned} &= (B) + (C) + (D) \\ &= 319 + 319 + 515 \\ &= \mathbf{1153 \text{ Cu.m}} \text{----- (D)} \end{aligned}$$

Availability of all types of rooftop rainwater in the proposed area is fully utilized daily usage purposes, The storage tank, one of the easiest and most effective means of harvesting rainwater, are generally not more than 12 m length x 5 m width x 4 m depth tank capacity is 240 Cu.m capacity of underground storage tank constructed reused for daily drinking purposes. During the rainy seasons this tank is filled rainwater filtered through settling tank. Artificial storage structure (drinking water storage tank) recommended for this project site is shown in Fig.1.

12. RAINWATER RECHARGE OUTSIDE THE PROPOSED LEASE AREA:

Three numbers of percolation recharge pit 10 m length x 10 m width x 3 m depth (300 x 3 = 900 Cu.m/annum) recommended three different locations within 2 Km radius of the proposed project. Through this artificial recharge structures rainwater collected and recharged in to the ground. Rainwater collected during the rainy seasons filtered through settling tank recharged specially designed

recharge structure make it layout using pebbles or brick jelly and river sand covered properly below the recharge pit. It is enable to effective recharge during the rainfall seasons. The effective recharge of the newly proposed three recharge pit capacity is $900 \text{ Cu.m} \times 0.4 \text{ runoff coefficient} \times 2 \text{ depth} = 720 \text{ Cu.m/annum}$ of rainwater recharged in to the ground. The designed recharge pit and cross section view is shown Fig.2.

Available rainwater quantity to recharge = 1153 Cu.m/annum -

Recharge pit Capacity is = 720 Cu.m/annum

433 Cu.m/annum is diverted nearby formers dug wells to recharge through settling tank recommended recharge pit in three different suitable recharge site locations and open land/Lake/Pond recharge site of the buffer zone area is given in Table.4 and Google image Fig.3.

Table.4. Recommended recharge pit and open land/Lake outside the lease area

I S.No	Name of the ARS	Latitude/Longitude	Capacity of recharge pit	Distance and Direction
1	Recharge Pit -I	12°14'40.04''N	10 m x 10 m x 3 m =300 cu.m/annum	South
		78°10'22.01''E		0.39 Km
2	Recharge Pit -II	12°15'4.83''N	10 m x 10 m x 3 m =300 cu.m/annum	Northwest
		78°10'19.31''E		0.13 Km
3	Recharge Pit -III	12°14'32.26''N	10 m x 10 m x 3 m =300 cu.m/annum	Southwest
		78°10'27.60''E		0.13 Km
		Total	= 900 cu.m/annum	-
Quantum of Recharge =900 Cu.m x 0.4 runoff coefficient x 2 depth			= 720 cu.m/annum	-
II	Open land/Lake/Pond Recharge			
1	Lake	12°14'17.98''N	9.37 Hectare area = 93744 Sq.m	South-Southeast
		78°10'33.70''E		1.08 Km

13. PIT WATER MANAGEMENT

Proposed quarry is existing quarry the rainwater accumulation due to monsoon rainfall over the mine lease area can be worked out based on actual size of mine pit taken from working mine plan and study year rainfall for the area. Out of total rainfall accumulation of rainwater 30% evaporates and 20% is probable recharge to groundwater storage. Total amount of pit water received through rainfall during the rainy seasons is 23,887 cubic meter/annum. Of which, about 50 % of total pit water will be utilized by evaporation and recharge processes. The balance will be available for other use such as dust suppression, green belt development and artificial recharge.

Table.5. Existing Pit Water Evaporation and Recharge

Ex.Pit. No	Pit Dimension		Rainfall (m)	Quantum of water stored (Cum/Year)	Quantum of water for Evaporation @ 30% (Cum/Year)	Quantum of water for Recharge @ 20% (Cum/Year)
	Length (m)	Width (m)				
Pit-I	64	75	0.981	4709	1412	942
Pit-II	55	35	0.981	1888	566	378
Pit-III	130	120	0.981	15304	4591	3061
Pit-IV	45	45	0.981	1986	596	397
Total				23887	7165	4778

Considering 1 to 2 storms per seasons these ponds can hold the available runoff. Total catchments area from which these ponds received the runoff has been calculated & it works out to be 23,887 Cu.m/annum. Taking 20% as the runoff coefficient average runoff available has been calculated as under:

$$\text{Catchments pit area} = 23,887 \text{ Cu.m/annum}$$

$$\text{Runoff coefficient} = 20\%$$

$$\text{Available runoff} = 23,887 \times 0.20 \times 1.00$$

$$= 4,777 \text{ Cu.m/annum}$$

$$\text{Total water holding capacity of ponds} = 4,777 \text{ Cu.m}$$

$$\text{Considering 2 fill per season these ponds/Lake can hold} = 4,777 \times 2 = 9554 \text{ Cu.m.}$$

$$\text{Anticipated Recharge} = 9554 \times 0.0041 = \mathbf{39 \text{ Cu.m./annum}} \text{----- (i)}$$

Pit water received from the rainfall season directly stored pit inside the quarry. this water pumped and stored in Garland drainage structures constructed around the lease area to used dust suppression and green belt development activity. The excess of rainwater filtered through settling tank and diverted to the northeastern part of the streams/nallas lease area.

14. OPEN LAND/LAKE/POND RECHARGE:

Thathappanakkanpatty Kanmai located 3.21 km east of the proposed project a huge amount of runoff received rainfall. Looking in the close proximity Kalapanahalli village and Vaigai River located 10.72 km south and Sathiar Dam located 8.19 km east from the proposed project area. As pert the surface and ground water movement towards southern side of the proposed project. The recharge possibility through recharge pit and open land/pond/lake. The area of the pond/Lake is 23500 Sq.m. with 3 m depth. Hence total water holding capacity of the pond/Lake works out to be 70,500 Cu.m.

Considering 1 to 2 storms per seasons these ponds can hold the available runoff. Total catchments area from which these ponds received the runoff has been calculated & it works out to be 50,000 Sq.m. Taking 20% as the runoff coefficient average runoff available has been calculated as under:

$$\begin{aligned} \text{Catchments area} &= 50,000 \text{ Sq.m.} \\ \text{Runoff coefficient} &= 20\% \\ \text{Available runoff} &= 50,000 \times 0.20 \times 1.00 \\ &= 10,000 \text{ Cu.m.} \end{aligned}$$

$$\text{Total water holding capacity of ponds} = 70,500 \text{ Cu.m.}$$

$$\text{Considering 2 fill per season these ponds/Lake can hold} = 70,500 \text{ Cu.m.} \times 2 = 1,41,000 \text{ Cu.m.}$$

$$\text{Anticipated recharge} = 1,41,000 \text{ Cu.m.} \times 0.0041 = 578 \text{ Cu.m./annum} \text{----- (ii)}$$

15. TOTAL RECHARGE BY THE PROPOSED PROJECT

$$\begin{aligned} \text{Recharge Inside the Lease area + Recharge pit + Existing mine pit+ Open land/Lake area} \\ 250 \text{ Cu.m (Rooftop water used drinking purpose)} &= 720 \text{ Cu.m} + 39 \text{ Cu.m} + 578 \text{ Cu.m} \\ &= 1337 \text{ Cu.m/annum.} \end{aligned}$$

$$\text{(Total recharge of the proposed project is} = 1337 \text{ Cu.m/annum.}$$

$$\begin{aligned} \text{Annual withdrawal of the project is} &= 810 \text{ Cu.m/annum.} \\ &= \mathbf{527 \text{ Cu.m/annum.}} \end{aligned}$$

Total extraction of groundwater always less than the recharge through this project. The excess of 527Cu.m/annum quantity of rainwater recharged through this project.

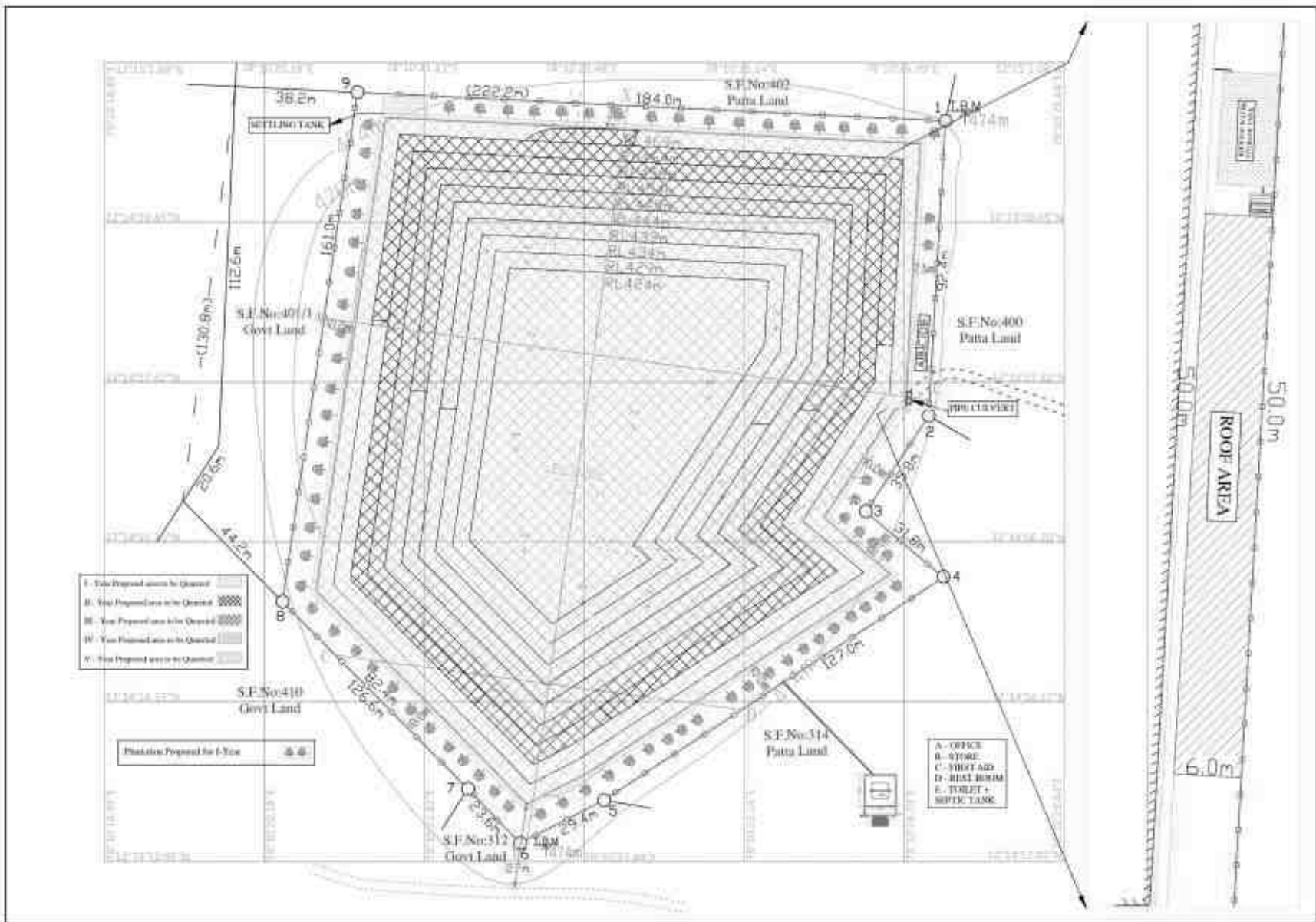


Fig.1 Artificial recharge structure (drinking water storage tank) recommended for the proposed project site.

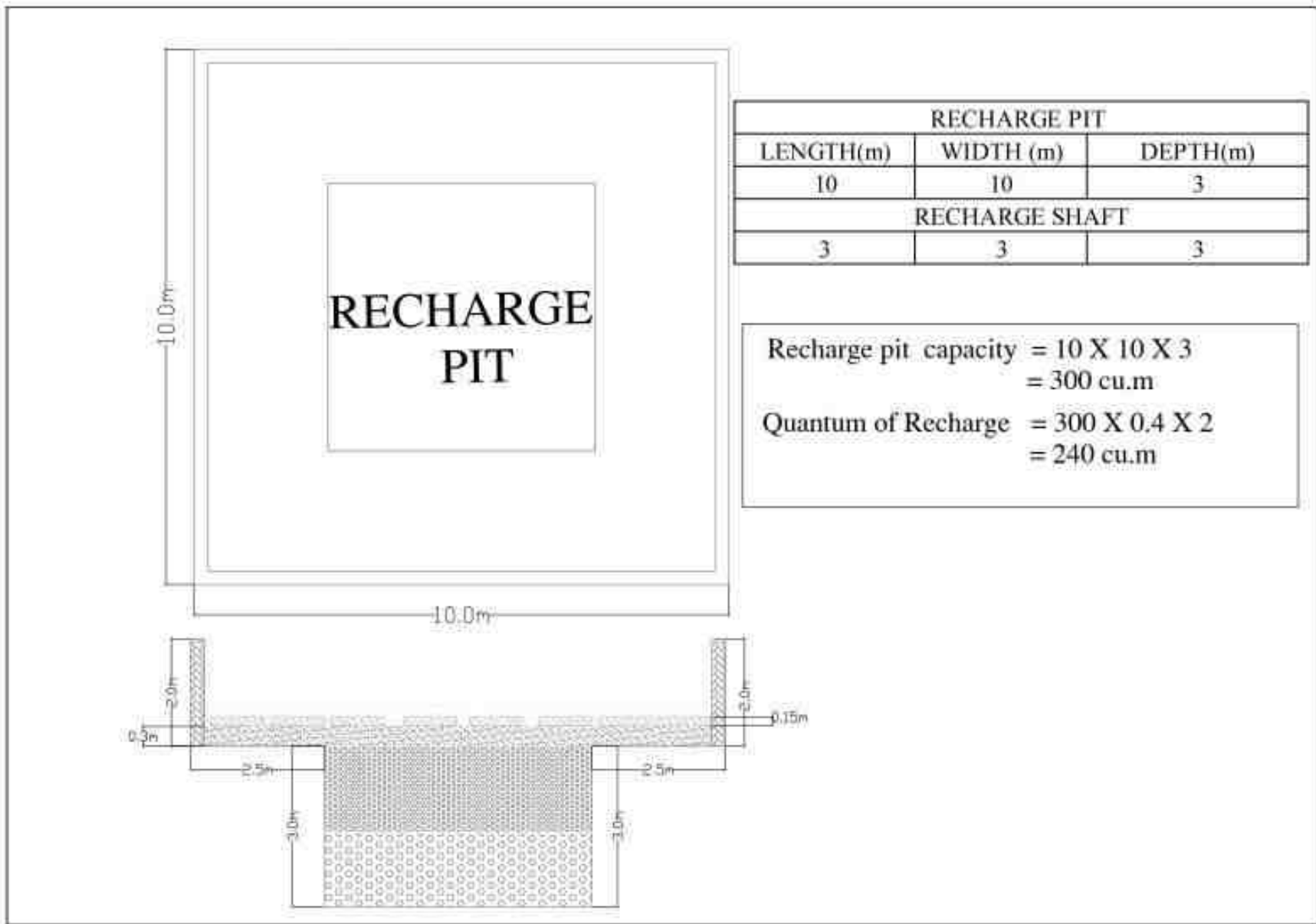


Fig.2 Recommended recharge pit dimension and cross section view of the recharge structures

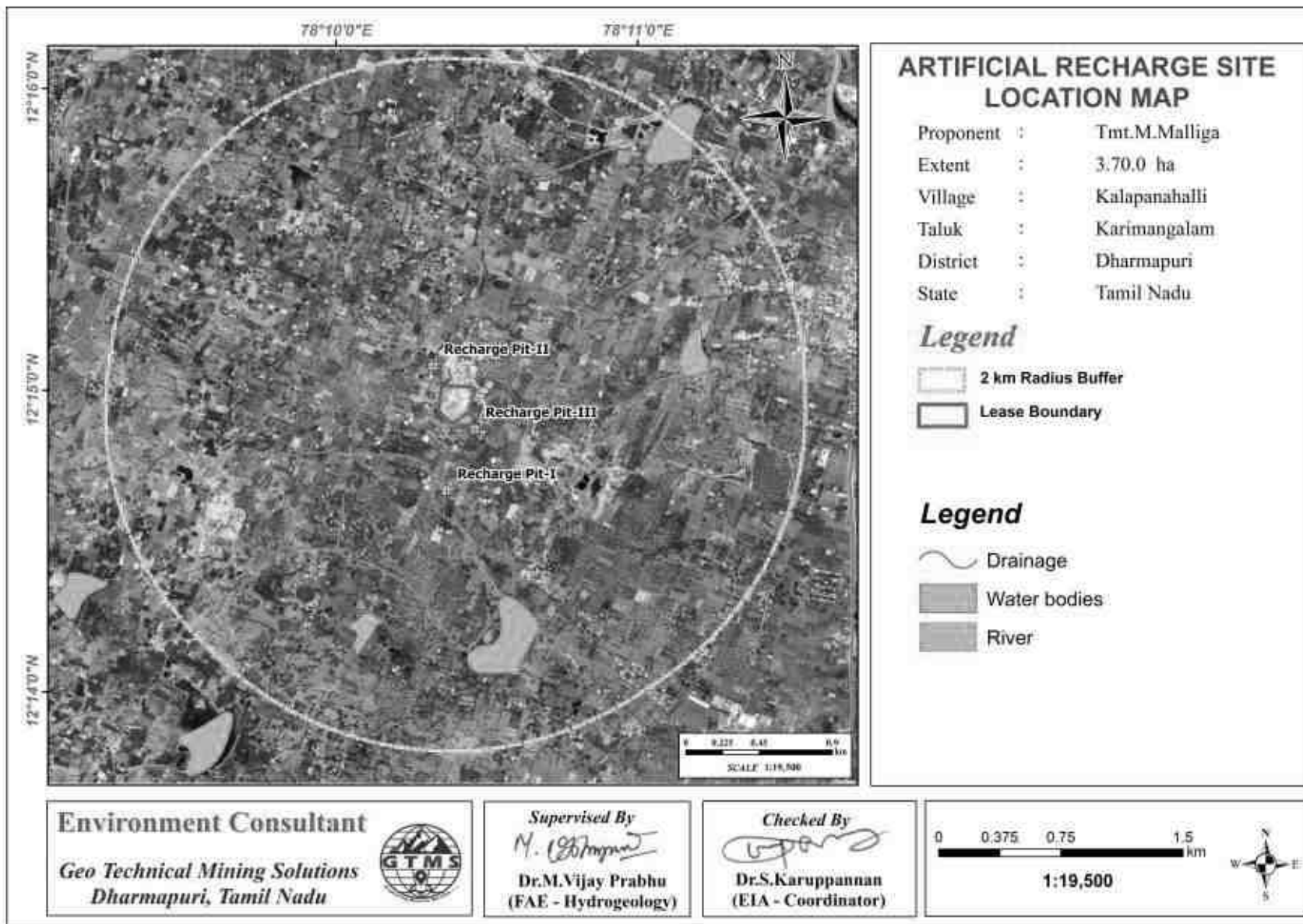


Fig.3 Google image showing recommended artificial recharge pit and open land/Lake locations around the proposed project

Conclusion:

- ❖ Ground water extraction due this proposed project is only 3.0 KLD per day of ground water. Which is negligible when compared with the draft due to irrigation or other domestic use of the buffer zone.
- ❖ The study area mainly comprises of rough stone and gravel constitutes 80 % of the total lease area. The average annual rainfall is recorded in 2023 is 981 mm.
- ❖ Ground water in and around the study area occurs under semi confined and confined conditions. The movement of ground water is mainly controlled by primary porosity of inter granular spaces.
- ❖ Total gross dynamic reserves calculated from rooftop area, paved area and green belt area is = 810 Cu.m/annum- Rain water collected 300 sq.m x 0.981 m x 0.85 is =250 Cu.m/annum of rainwater utilized drinking and domestic purpose.
- ❖ This mining activity extraction of groundwater = 810 Cu.m/annum – (3 numbers of Recharge pit capacity is = 720 Cu.m/annum + 39 Cu.m/annum Existing mine pit+ 578 Cu.m/annum Open land/Lake area) = 1337 Cu.m/annum of rainwater is recharged through this project.
- ❖ The excessive quantity availability rainfall 527 Cu.m/annum of rainwater is recharged through this project.
- ❖ This is existing quarry nearly 39 Cu.m/annum of water directly store mining pit during the rainy seasons. Mining pit water fully utilized for dust suppression and green belt development purposes.
- ❖ Three number of recharge pits and one number of open land/Lake recharge recommended through is project to manage water requirement and also excess of 527 Cu.m/annum recharged through ground.
- ❖ Moreover, project area has implemented above said methods rainwater-harvesting measures, to mitigate any negative impact if any.



**National Accreditation Board
for Education and Training**



Certificate of Accreditation

Geo Technical Mining Solutions

1/213B, Natesan Complex, Dharmapuri Salem Main Road, Oddapatti, Collectorate post office,
Dharmapuri, Tamil Nadu-636705

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1	Mining of minerals including opencast/ underground mining	1	1 (a) (i)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated September 13, 2022 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/23/2641 dated January 19, 2023. The accreditation needs to be renewed before the expiry date by Geo Technical Mining Solutions following due process of assessment.

Sr. Director, NABET
Dated: January 19, 2023

Certificate No.
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