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

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

**THIRU. C. AMMAVASAI ROUGH STONE QUARRY
IN CLUSTER OVER AN EXTENT OF 7.52.5 Ha**

At

Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu State

For Obtaining

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

Project Proponent	Proposed Project	Extent
THIRU. C. AMMAVASAI, S/o. Chinnaiah, No.564, Minnalkudi, Thirukolakudi, Kuruvikondanpatti Thiruppattur Taluk, Sivagangai District – 622 409	S.F.Nos. 118/4, 118/5, 118/6A & 119/3 Sevvur Village, Thiruppattur Taluk, Sivagangai District	0.98.0 ha
ToR obtained vide Lr No.SEIAA-TN/F.No.9938/ToR-1481/2023 Dated :22.06.2023.		

Environmental Consultant	Laboratory
 GEO EXPLORATION AND MINING SOLUTIONS Old No. 260-B, New No. 17, Advaitha Ashram Road, Alagapuram, Salem – 636 004, Tamil Nadu, India  Accredited for sector 1 Category ‘A’31 & 38 Category ‘B’ Certificate No : NABET/EIA/2225/RA 0276 Phone: 0427-2431989, Email: ifthiahmed@gmail.com, geothangam@gmail.com Web: www.gemssalem.com	 CHENNAI METTEX LAB PRIVATE LIMITED  (ISO/IEC 17025:2017) No.83, M.K.N. Road, Jothi Complex, Guindy, Chennai – 600 032 Tamilnadu, INDIA.

BASELINE MONITORING SEASON – MARCH 2023 to MAY 2023

OCTOBER - 2023

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

PROPOSED QUARRY				
CODE	Name of the Proponent and Address	S.F.Nos ,Village & Taluk	Extent in Ha	Status
P1	Thiru. C. Ammavasai,	118/4, 118/5, 118/6A & 119/3 Sevvur Village	0.98.0	Tor Obtained Lr No.SEIAA- TN/F.No.9938/ToR-1481/2023 Dated :22.06.2023.
Total			0.98.0 Ha	
EXISTING QUARRIES				
CODE	Name of the Proponent and Address	S.F.Nos	Extent in Ha	Lease Period
E-1	Thiru.A.Selvam	113/4A,4B,3A,3B etc	1.69.0	08.09.2020 to 07.09.2025
E-2	Thiru.S.Vairavan	81/1, 2,3,4,5, etc	3.43.0	10.11.2020 to 09.11.2026
E-3	Thiru.R.M.Alagappan	116/3B, 116/3C, 116/3E &116/3G	1.42.5	23.11.2021 to 22.11.2026
Total			6.54.5 Ha	
ABANDONED QUARRY				
A-1	Thiru.Arumugam	118/3	0.68.0	30.11.2005 to 29.11.2010
Total			0.68.0	
TOTAL CLUSTER EXTENT			7.52.5 Ha	

Note:-

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

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

TERMS OF REFERENCE (ToR) COMPLIANCE

Thiru. C. AMMAVASAI,

Lr No.SEIAA-TN/F.No.9938/ToR-1481/2023 Dated :22.06.2023.

ADDITIONAL CONDITIONS		
1	The PP shall submit photographs of fencing, greenbelt and garland drain.	Noted and agreed
2	AD mines letter for the existing pit with details of earlier lease period and pit dimension.	Noted and agreed
3	The structures within the radius of (i) 50 m. (ii) 100 m. (iii) 200 m and (iv) 300 m shall be enumerated with details such as dwelling houses with number of occupants. Whether it belongs to the owner (or) not, places of worship. industries. factories. sheds. etc.	Attached 500m and 300m radius VAO letter copy
4	The study on impact of the dust & other environmental impacts due to proposed quarrying operations on the Rose flowers being cultivated through greenhouse nearby.	Noted and agreed
5	The Proponent shall furnish photographs of greenbelt, fencing and garland drain around the boundary of the proposed quarry.	Noted and agreed
6	The proponent shall furnish a revised EMP budget for entire life of proposed mining.	Discuss with chapter-2 and 8 Project Benefits
7	The revised and corrected version of the Production & Development Plan shall be produced with showing the safety berm width of 2m is maintained for the bench height of 2m distinctly in the gravel information and it shall be duly signed by the concerned QP & approved by the concerned AD (Geology & Mining).	Noted and agreed
8	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease after it is approved by the concerned Asst. Director of Geology and Mining during the time of appraisal for obtaining the EC.	Noted and agreed
9	The Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30m Bgl..	Noted and agreed
10	The Proponent 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 directly employed on fulltime basis only by the proponent.	Noted and agreed

11	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.	Noted and agreed
12	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past either in the same location or elsewhere in the State with video and photographic evidences.	Noted and agreed
13	<p>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,</p> <ul style="list-style-type: none"> 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 lease area g) If EC and CTO already obtained, the copy of the same shall be submitted h) Whether the mining was carried out as per the approved mining plan (or EC if issued with stipulated benches) 	<p>Noted and agreed It is a Proposed Quarry</p>
14	All corner coordinates of the mine lease area, superimposed on a High-Resolution imagery/ Topo sheet, topographic sheet, Geomorphology, Lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	<p>Satellite imagery of the project area along with boundary coordinates is given in the Chapter No 1 Figure No .1.1 Page No.2 Geomorphology of the area is given in Chapter No 2 Figure No 2.10. Page No.23</p> <p>Land use pattern of the project area is tabulated in the Chapter No.2. Table No.2.3 Page No.18</p> <p>Land use pattern of the Study area is tabulated in the Chapter No.3 Table No 3.2 Page No.33.</p>
15	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.,	Noted and agreed
16	The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the proposed quarry based on the volume of rock handled & area of excavation.	

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17	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	Noted and agreed
18	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	Details of Geological Resources and Proposed reserves are discussed under Chapter No. 2.
19	The Project Proponent shall provide the organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Discussed about Organization chart in Chapter 6,
20	The project proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc., within 1 Km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD/ TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect ground water. Necessary data and documentation in this regard may be provided.	The hydro-geological study was conducted to evaluate the possible impact on the ground water table. No significant impacts are anticipated on the water bodies around the project area. Details are discussed under Chapter No. 3, Page No 45 No of Ground water pumping wells, Open wells within radius of 1km along with Contour map is given in the Chapter No.3 Page No.46-49 Table No. 3.11 & 3.12. Figure No. 3.6 & 3.7.
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/ vehicular movement study.	Baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality, & flora/fauna including traffic/vehicular movement study to assess the cumulative impact of the proposed project on the environment is prepared as Final EIA EMP Report along with public hearing response.
22	The Proponent shall carry out the cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts and its mitigation measures. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	There are no trees within the lease applied area and no cutting down of trees are anticipated as it's an existing quarry. There are few trees in buffer zone of 300m from the proposed lease area and it shall not be cut down or have any impact due to the mining activities and project proponent ensures to carrying out activities like watering for preserving the green cover around 300 m from proposed project site. The detailed Greenbelt Development Plan is discussed in Chapter No. 4, Table No 4.12, Page No 101.
23	Rain water harvesting management with recharging	Detailed discussed in chapter 3

	details along with water balance (both) monsoon & non-monsoon) be submitted.	
24	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted- impact, if any. Of change of land use should be given.	Details discussion Land environment in chapter 3
25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use. R&R issues, if any, should be provided.	No overburden waste dump present in this quarry
26	Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	Noted and agreed
27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	Detailed discussed in chapter 4.
28	Impact on local transport infrastructure due to the Project should be indicated.	Detailed discussed in chapter 2 Transport density.
29	A tree survey study shall be carried out (nos., name of the species, age, diameter etc..) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	There are few trees within the lease applied area. There are few trees in buffer zone of 300 m from the proposed lease area and it shall not be cut down or have any impact due to the mining activities and project proponent ensures to carrying out activities like watering for preserving the green cover around 300 m from proposed project site. The detailed Greenbelt Development Plan is discussed in Chapter No. 4.
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Detailed under Chapter 4
31	Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.	Details will be provided in Final EIA/EMP report after the completion of public hearing
32	The Public hearing advertisement shall be published in one major National daily and one most circulated	Public hearing advertisement will be made as per the Tor Recommendations

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	vernacular daily.	
33	The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.	Noted & agreed.
34	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	Noted & agreed.
35	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO. State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner	Noted & agreed. It is proposed to plant a 490nos of trees in the 7.5m safety barrier and approach roads
36	Taller/one year old Saplings raised in appropriate size of bags preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner	Noted & agreed.
37	A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Detailed under Chapter 7,
38	A Risk Assessment and management Plan shall be prepared and included in the ELA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	Detailed under Chapter 7,
39	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Detailed discussed in the chapter 4.
40	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Detailed discussed in the chapter 10.
41	The Socio-economic studies should be carried out	Socio Economic study has been carried out the

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	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.	details are given in the Chapter No.3.
42	Details of litigation pending against the project, if any, with direction /Order passed by any Court of Law against the Project should be given.	No litigation pending cases
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.	Detailed discussed in the chapter 8.
44	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC. Regional Office, Chennai (or) the concerned DEE/TNPCB.	Noted & and the compliance report will be submitted along with Final EIA report.
45	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine	Detail discussed in chapter 10.
46	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.	Noted & agreed
ADDITIONAL CONDITIONS-Annexure-B		
<i>Cluster Management committee</i>		
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.	Details in 7 salient features of quarry with existing 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..	Noted & agreed
3	The List of members of the committee formed shall be submitted to AD/Mines before the execution of mining lease and the same shall be updated every year to the AD/Mines.	Noted & agreed
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.	Transport details in chapter-2
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	Noted & agreed

	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.	Noted & agreed
7	The committee shall furnish action plan regarding the restoration strategy with respect to the individual quarry falling under the cluster in a holistic manner.	Noted & agreed
8	The committee shall furnish the Emergency Management plan within the cluster.	Details discussed in chapter 7.
9	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.	Details discussed in chapter 10.
10	The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.	Noted & agreed
11	The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.	Detailed discussed in chapter 7.
<i>Impact study of mining</i>		
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 arca communication order issued from reputed research institutions on the following a) Soil health & bio-diversity 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. 1) 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 steams.	Species Recommended for Plantation in chapter 3&10.
<i>Agriculture & Agro-Biodiversity</i>		
13	Impact on surrounding agricultural fields around the proposed mining Area.	Detailed discussed in chapter 4.
14	Impact on soil flora & vegetation around the project site.	Detailed discussed in chapter 4.
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 commit mentioned in EMP.	Details in Chapter 2,3 and 7

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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.	Details in Chapter 3
17	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted & agreed
18	The project proponent shall study and furnish the impact of project on plantations in adjoining govt lands. Horticulture, Agriculture and livestock.	The project area is bounded by Existing quarries on the East and west side. Proponent proposed to erect green mesh along with fencing on the South side besides, Budgetary allocation given in the Chapter No. 10.
Forest		
19	The project proponent shall detail study on impact of mining on Reserve forests free ranging wildlife.	Velangudu R.F 2.5km-SW Usilamalai R.F 2.51km-NW
20	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	Ecology and Biodiversity environment deals in Chapter-3
21	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Ecology and Biodiversity environment deals in Chapter-3
22	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	Anticipated Environment Impact and Mitigation measures are detailed in Chapter No.4
Water Environment		
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.	Hydro-geological study considering the contour map of the water table detailing Chapter-3
24	Erosion Control measures.	Noted & agreed
25	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby villages, water-bodies/ Rivers. & Any ecological fragile areas.	Details in Chapter 2
26	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	Details in Chapter 2 and 4 impact of bio diversity
27	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment by the	Noted & agreed

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	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.	Noted & agreed. Detailed under Chapter 3.
29	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil, physical, chemical components and microbial components.	Details in Chapter 3 soil environment.
30	The Environmental impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	Nearest agriculture activity is coconut plantation located North side of the project area. Proponent erected fencing in the previous lease period. The same will be reconstructed around the quarry pits
Energy		
31	The measures taken to control Noise. Air, Water. Dust Control and steps adopted to efficiently utilize the Energy shall be furnished.	Details in Chapter 3 environmental monitoring details.
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.	Details of carbon emission and mitigation activities are given int the Chapter No.4
33	The Environmental impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	Details in Chapter-3 for meteorological and climate/weather data representation of graphs.
Mine Closure Plan		
34	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Details in Chapter 2 mine closure plan
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.	Detailed under Chapter 10
36	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.	Details in Green belt development in chapter 4
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	Details study 7.3 Disaster Management Plan in Chapter -7

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	lease period as per precise area communication order issued.	
Others		
39	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations. schools. Archaeological sites. Structures. railway lines, roads. Water bodies such as streams, odai, vaari, canal, channel. river, lake pond, tank etc.	Noted & agreed. Detailed under Chapter 4
40	As per the MoEF& CC office memorandum tr.No.22-651201 7-1A.III dated: 30.09.2020 and 20.10.2020 the Proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.	Noted and agreed
41	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	Details of carbon emission and mitigation activities are given int the Chapter No.4

STANDARD TERMS OF REFERENCE

1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	Not applicable. The projects are Not a violation category. This proposal falls under B1 Category (Cluster situation)
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	Document is enclosed along with Approved Mining Plan as Annexure Volume 1 for the respective projects.
3	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	Noted & agreed.
4	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Satellite imagery of the project area along with boundary coordinates is given in the Chapter No 1 Figure No .1.1 Page No.2 Geomorphology of the area is given in Chapter No 2 Figure No 2.10. Page No.23 Land use pattern of the project area is tabulated in the Chapter No.2. Table No.2.3 Page No.18 Land use pattern of the Study area is tabulated in the Chapter No.3 Table No 3.2 Page No.33.
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	Map showing – Geology map of the project area covering 10km radius - Figure No. 2.9, Page No. 22 Geomorphology of the area is given in Chapter No 2 Figure No 2.10. Page No.23

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	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.	The applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	The proponent has framed their Environmental Policy and the same is discussed in the Chapter No 10.1, Page No 110.
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	It is an opencast quarrying operation proposed to operate in Mechanized method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90 ⁰ bench angles. Quarrying activities will be carried out under the supervision of Competent Persons like Mines Manager, Mines Foreman and Mining Mate. Necessary permissions will be obtained from DGMS after obtaining Environmental Clearance.
9	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period.	Noted & Agreed. The study area considered for this study is 10 km radius and all data contained in the EIA report such as waste generation etc., is for the Life of the Mine / lease period.
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use and land cover of the study area is discussed in Chapter No. 3, Page No. 33. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2, Table No 2.3, Page No 18.
11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given	Not Applicable. There is no waste anticipated during this quarry operation. The entire quarried out Rough stone will be transported to the needy customers. No Dumps is proposed outside the lease area.

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12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	Not Applicable. There is no Forest Land involved in the proposed project area. The proposed project area is a Patta land. Approved Mining Plan is enclosed as Annexure Volume 1.
13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	Not Applicable. The proposed project area does not involve any Forest Land.
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.	Not Applicable. The project doesn't attract Recognition of Forest Rights Act, 2006.
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	No Reserve Forest within the Study Area.
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	Not Applicable. There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 KM of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished	Not Applicable. There are No National Parks, Biosphere Reserves, Wildlife Corridors, and Tiger/Elephant Reserves within 10 km Radius from the periphery of the project area.
18	A detailed biological study of the study area [core zone and buffer zone (10 KM radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan	Detailed biological study of the study area core zone and buffer zone (10 km radius of the periphery of the mine lease) was carried out and discussed under Chapter No. 3, Page No. 77. 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

	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.	study area. Detailed in Chapter No. 3, Page No 77.
19	Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.	Not Applicable. Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range'.
20	Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).	Not Applicable. The project doesn't attract The C. R. Z. Notification, 2018.
21	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need-based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.	Not Applicable. There are no approved habitations within a radius of 300 meters. Therefore, R&R Plan / Compensation details for the Project Affected People (PAP) is not anticipated and Not Applicable for this project.
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	Baseline Data were collected for One Season (March-May (Summer Season) 2023 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3, Page No. 53-72.

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	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 modelling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Air Quality Modelling for prediction of incremental GLC's of pollutant was carried out using AERMOD view Model. Details in Chapter No. 4, Page No. 90 - .95
24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	Total Water Requirement for this project is given in the chapter No 2, Table No 2.14, Page No 29.
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water for dust suppression, greenbelt development and domestic use will be obtained from accumulated rainwater/seepage water in mine pits. Drinking water will be sourced from the approved water vendors, chapter No 2, Table No 2.14, Page No 29
26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The rain water collected in the pits after spell of rain will be used for greenbelt development and dust suppression.
27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact Studies and Mitigation Measures of Water Quality discussed in Chapter No. 4, Page No. 89.
28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	The ground water table is at 64m below ground level. In these projects, ultimate depth is 16m It is inferred the quarrying activities in the Cumulative EIA project (Quarries) will not intersect the Ground water table.
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	Highest elevation of the project area is 137m AMSL Ultimate depth of the mine is 16m AMSL Water level in the area is 64m BGL
30	Information on site elevation, working depth,	Progressive greenbelt development plan has been

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	groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.	prepared and discussed along with Recommended Species details are given in the Chapter 10, Table No.10.8 Page No 164.
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	Traffic density survey was carried out to analyse the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no much significant impact due to the proposed transportation from the project area. Details in Chapter 2, Page No 27.
32	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.	Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2. Page No. 29.
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Discussed in chapter No 2, Page No 29
34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Details in Chapter 4, Page No. 105.
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational health impact and details of the medical examination to the workers given in the Details in Chapter 4, Page No. 104.
36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Details in Chapter No. 4
37	Measures of socio economic significance and	Details of Socio Economic is given in the Chapter

	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 3,
38	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Environment Management Plan Chapter 10
39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	Public hearing points raised and commitment of the project proponent is discussed in the Chapter No 10, Page No. 159.
40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this project.
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost is given in the Chapter No 2, Table No 2.15, page No 30.
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Detailed under Chapter 7, Page No 134.
43	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Total Water Requirement for this project is given in the chapter No 2, Table No 2.14, Page No 29
44	Besides the above, the below mentioned general points are also to be followed:-	
A	Executive Summary of the EIA/EMP Report	Given as Page No i to xxiv
B	All documents to be properly referenced with index and continuous page numbering.	All the documents are properly referenced with index and continuous page numbering.
C	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	List of Tables and source of the data collected are given properly.
D	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC / NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project	Copy of Baseline monitoring reports are enclosed with this draft as annexure
E	Where the documents provided are in a language other than English, an English translation should be provided.	Not Applicable.
F	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Questionnaire of the project is enclosed as Annexure
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,	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) Dated: 4th August, 2009 are followed.

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	should be followed.	
H	Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF & CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation	There are no changes in Form-I, Mining plan and Pre-feasibility report for all the projects.
I	As per the circular no. J-11011/618/2010-IA.II(I) Dated: 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.	Not applicable.
J	The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.	Satellite imagery of the project area along with boundary coordinates is given in the Chapter No 1 Figure No .1.1 Page No.2 Geomorphology of the area is given in Chapter No 2 Figure No 2.10. Page No.23

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CHAPTER – 1: INTRODUCTION

1.0 *Preamble*

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

Rough Stone is the major requirement for construction industry. This EIA Report is prepared for Thiru. C. Amavasai Rough stone quarry project Over an Extent of 0.98.0 Ha in S.F. No 118/4, 118/5, 118/6A & 119/3, Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu State considering Cumulative impact from the Cluster quarries,

Cluster Quarries consisting of four (4) quarries total **Cluster extent of 7.52.5 ha**

- (1) Proposed quarry {0.98.0 ha},
- & (3) Existing quarries under operation {6.54.5 ha}
- (1) Abandoned quarry (0.68.0 Ha)

Total extent of Cluster of 7.52.5 Ha in Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu, cluster area calculated as per MoEF & CC Notification S.O. 2269 (E) Dated 1st July 2016.

Initially the mining plan was prepared over an extent of 0.98.0 Ha in S.F.No 118/4, 118/5, 118/6A & 119/3, and the same has been approved. Proponent applied for Environmental Clearance in SEIAA, Tamil Nadu vide online proposal No SIA/TN/MIN/422613/2023 dated 13.03.2023. The proposal was placed in the 382nd SEAC Meeting and issued ToR vide Lr No.SEIAA-TN/F.No.9938/ToR-1481/2023 Dated :22.06.2023.

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

1.1 **Purpose of the report**

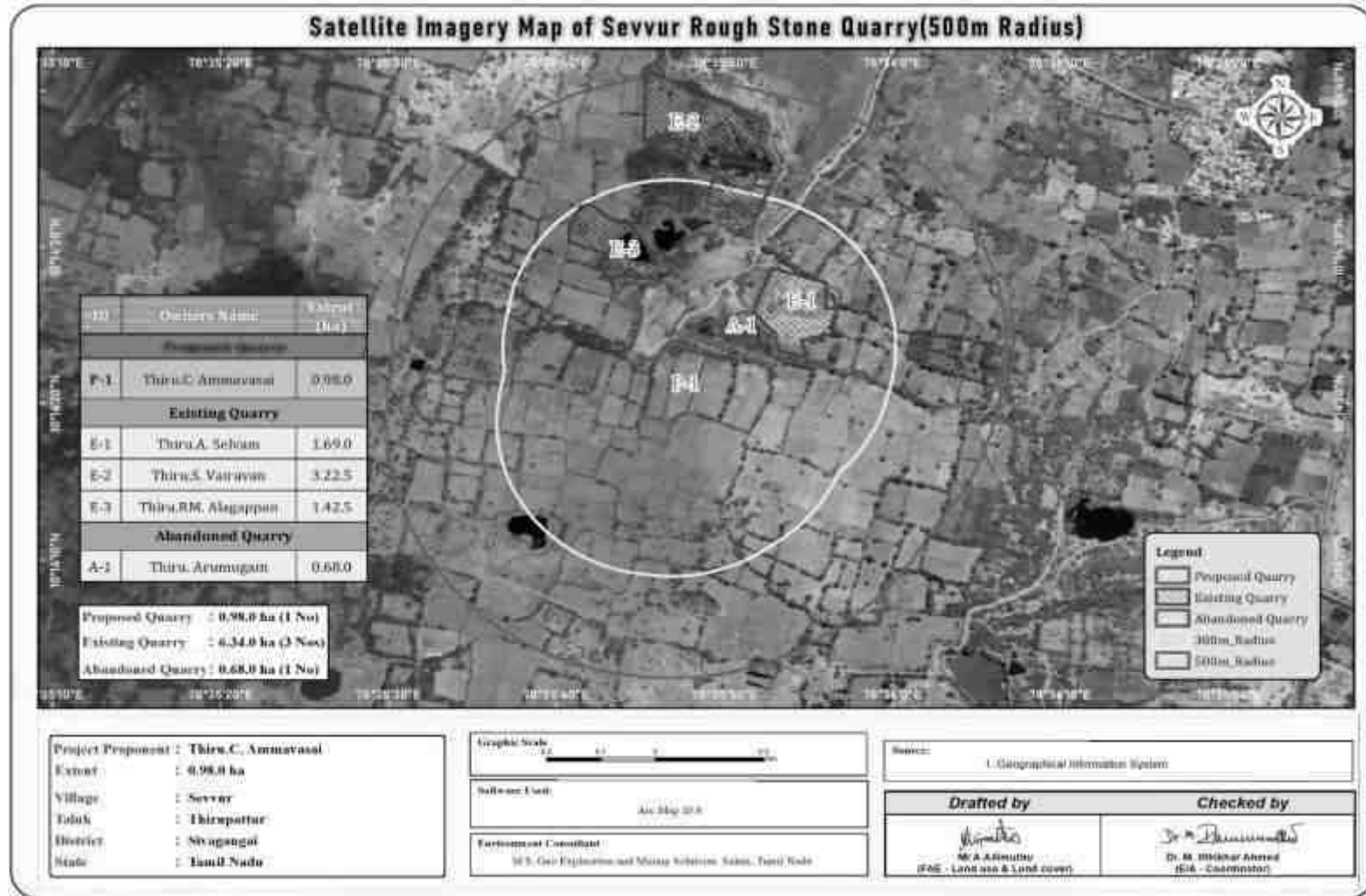
The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 1889 of 20th April 2022, Mining Projects are classified under two categories i.e. A (> 250 Ha) and B (\leq 250 Ha), and Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation in Appendix – XI.

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

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

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

FIGURE 1.1 SATELLITE IMAGERY CLUSTER QUARRIES



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

Note: As per above notification S.O.2269(E) dated: 01.07.2016 in para (b) in Appendix XI, - (i) (6) A cluster shall be formed when the distance between the peripheries of one lease is less than 500 meters from the periphery of other lease in a homogeneous mineral area which shall be applicable to the mine lease or quarry licenses granted on and after 9th September, 2013

1.2 Identification of Project and Project Proponent

1.2.1 Identification of Project

TABLE 1.1: SALIENT FEATURES OF THE PROPOSAL

Name of the Project	Thiru. C. Amavasai, Rough Stone Quarry
S.F. No.	118/4, 118/5, 118/6A & 119/3
Extent & Classification	0.98.0 ha – Patta Land
Village Taluk	Sevvur Village, Thiruppattur Taluk,
District	Sivagangai District

Source: Approved Mining Plan

1.2.2 Identification of Project Proponent

TABLE 1.2: DETAILS OF PROJECT PROPONENT

Name of the Project	Thiru. C. Amavasai, Rough Stone Quarry
Address	S/o. Chinnaiah, No.564, Minnalkudi, Thirukolakudi, Kuruvikondanpatti, Thiruppattur Taluk, Sivagangai District – 622 409,
Mobile	+91 95857 88845 & 63792 43729
Status	Individual
Email	suriyakanna4@gmail.com

Source: Approved Mining Plan

1.3 Brief description of the project

1.3.1 Nature and size of the Project

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

TABLE 1.3: SALIENT FEATURES OF THE PROJECT

Name of the Mine	Thiru. C. Amavasai, Rough Stone Quarry	
Land Type	It is a Patta land – Non-Forest	
Land use classification	It is a Patta land, Registered in the name of the applicant (Thiru. C. Amavasai), vide Patta Nos. 901 & 916	
S.F. Nos	118/4, 118/5, 118/6A & 119/3	
Extent	0.98.0 ha	
Proposed depth of mining As per Mining plan	16m (1m Topsoil + 15m Rough Stone) below ground level	
Geological Resources in m ³	Rough Stone	Topsoil
	1,47,000	9,800
Mineable Reserves	Rough Stone	Topsoil
	48,910	5,837
Year wise production for Ten years	Rough Stone	Topsoil
	48,910	5,837
Mining Plan Period / Lease Period	10 Years	
Ultimate Pit Dimension	Pit I - 25m (L) x 94 m(W) x 16m (D) BGL Pit II - 133m (L) x 33 m(W) x 16m (D) BGL	
Toposheet No	58-J/12	
Latitude between	10° 14' 18.68" N to 10° 14' 24.49" N	

Longitude between	78° 35' 46.28" E to 78° 35' 50.35" E																	
Topography	The lease applied area is exhibits plain terrain. The gradient is gentle towards South side and altitude of the area is 137m above from Mean Sea level. The area is covered by 1m thickness of Topsoil and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pits.																	
Machinery proposed	Jack Hammer	2																
	Compressor	1																
	Excavator with Bucket and Rock Breaker	1																
	Tipper	1																
Blasting	Usage of Slurry Explosive with MSD detonators																	
Manpower Deployment	15Nos																	
Water table	64m Bgl																	
Water Bodies	<table style="margin-left: auto; margin-right: auto;"> <tr><td>Odai</td><td>100m West</td></tr> <tr><td>Tank</td><td>230m North</td></tr> <tr><td>Tank</td><td>420m NW</td></tr> <tr><td>Tank</td><td>570m SW</td></tr> <tr><td>Tank</td><td>680m SE</td></tr> <tr><td>Tank</td><td>7km West</td></tr> <tr><td>Tank</td><td>8.2km North</td></tr> <tr><td>Tank</td><td>9.2km East</td></tr> </table>		Odai	100m West	Tank	230m North	Tank	420m NW	Tank	570m SW	Tank	680m SE	Tank	7km West	Tank	8.2km North	Tank	9.2km East
Odai	100m West																	
Tank	230m North																	
Tank	420m NW																	
Tank	570m SW																	
Tank	680m SE																	
Tank	7km West																	
Tank	8.2km North																	
Tank	9.2km East																	
Water requirements	2.0 KLD																	
Total Project Cost	Project cost	Rs 19,82,000/-																
	EMP Cost	Rs 7,60,000/-																
	Total	Rs 27,42,000/-																
Proposed CER Cost	Rs. 5,00,000/-																	
Nearest Habitation	800m-NE																	

Source: Approved Mining Plan

1.3.2 Location of the project

The lease applied area is located about 45km North-eastern side of Sivagangai town, 14km North side of Tiruppattur town and 1km Southwest side of Sevvur Village.

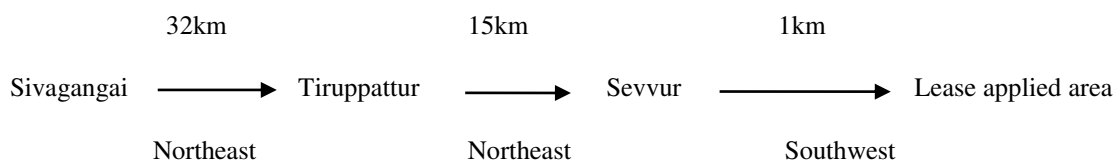


FIGURE 1.1A KEY MAP SHOWING THE LOCATION OF THE PROJECT SITE

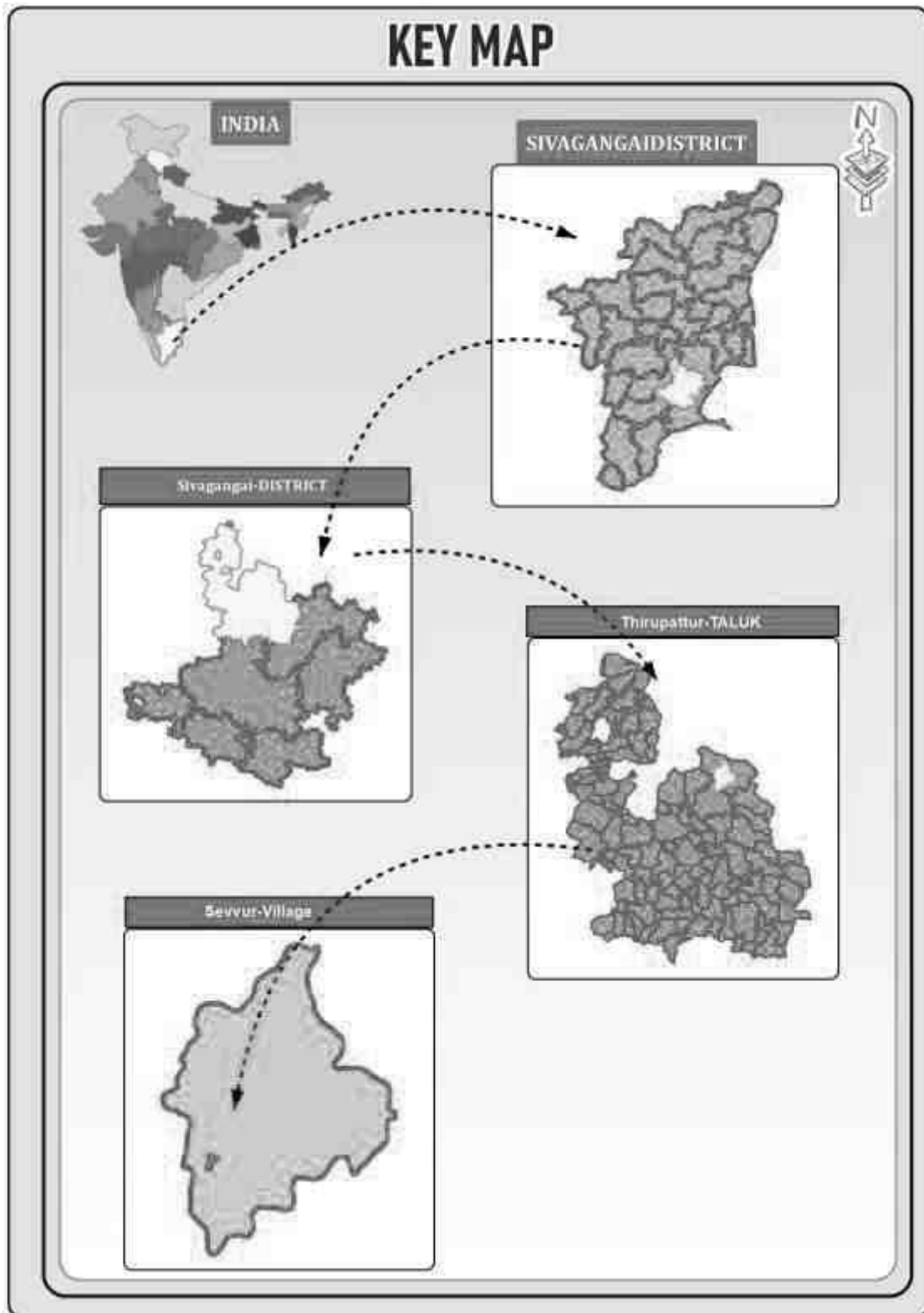


FIGURE 1.2: TOPOSHEET SHOWING LOCATION OF THE PROJECT SITE AROUND 10 KM RADIUS

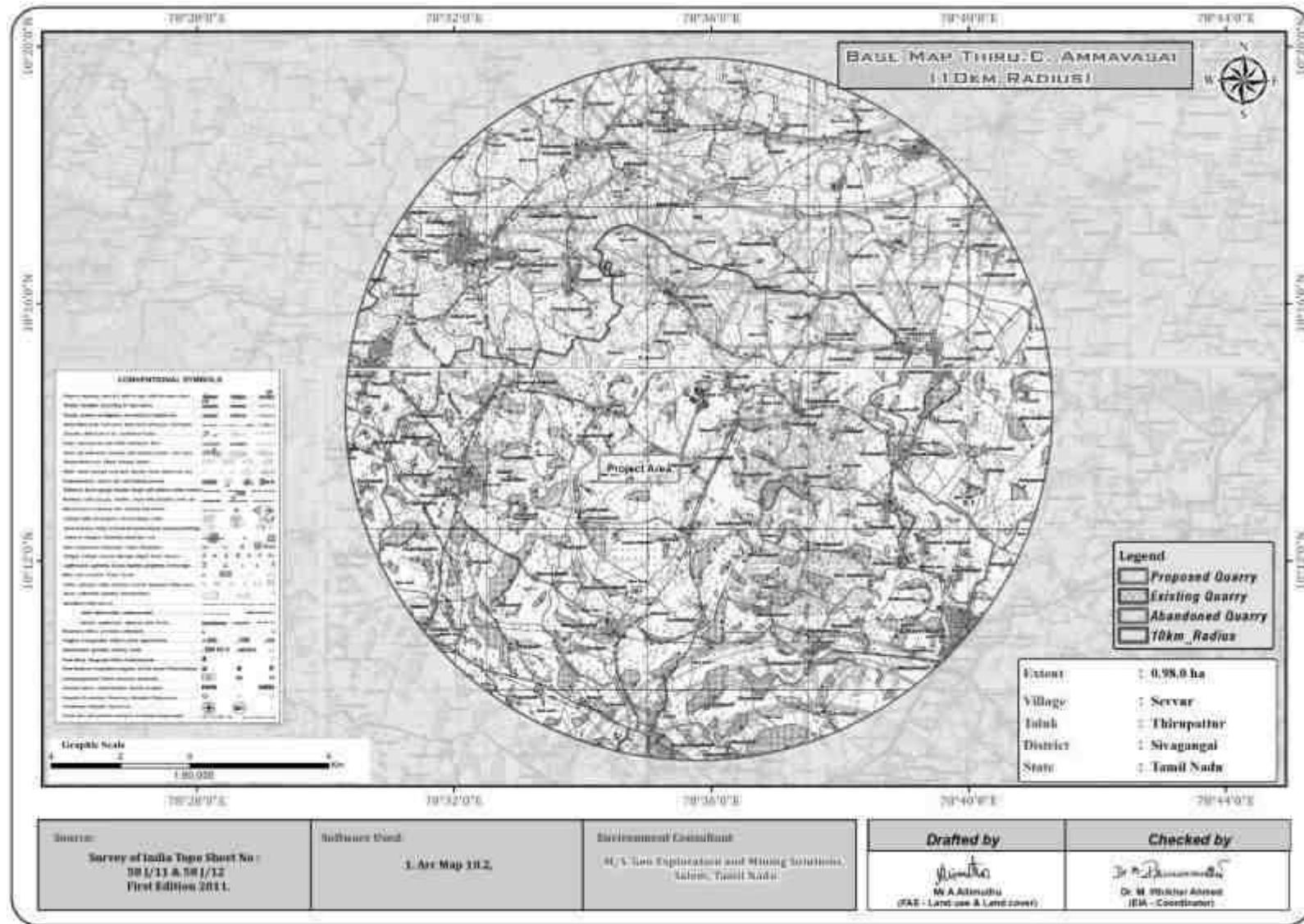
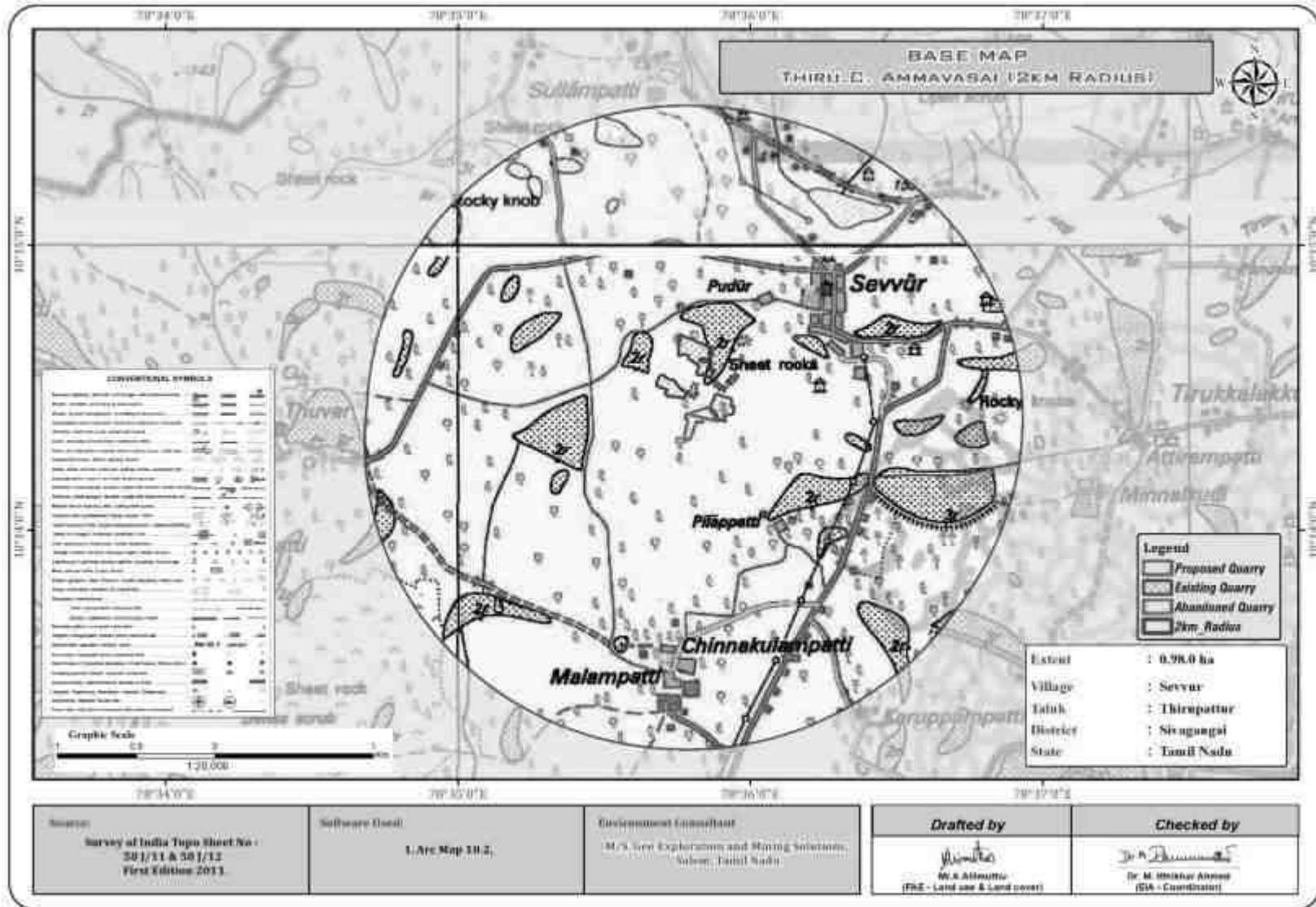


FIGURE 1.3: TOPOSHEET SHOWING LOCATION OF THE PROJECT SITE AROUND 2 KM RADIUS



1.4 Environmental Clearance

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

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

SCREENING –

- The proponent applied for Rough Stone Quarry Lease Dated: 07.09.2022.
- Precise Area Communication Letter was issued by the Assistant Director / Deputy Director (i/c), Department of Geology and Mining, Sivagangai District vide Rc.No.714/Mines/2022, Dated: 29.12.2022.
- The Mining Plan was prepared by Qualified Person and approved by Assistant Director / Deputy Director (i/c), Department of Geology and Mining, Sivagangai District vide Rc.No.714/Mines/2022, Dated: 02.02.2023
- Proponent applied for ToR for Environmental Clearance vides online Proposal No. SIA/TN/MIN/422613/2023, Dated:18.03.2023.

SCOPING –

- The proposal was placed in 382nd SEAC meeting held on 09.06.2023 and the committee recommended for issue of ToR.
- The proposal was considered in 632nd SEIAA meeting held on 21.06.2023/22.06.2023 and issued ToR vide Lr No.SEIAA-TN/F.No.9938/ToR-1481/2023 Dated :22.06.2023

Public Consultation

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district was submitted reference Dated - Nil.

Appraisal –

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

The report has been prepared using the following references:

- Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, 2010
- EIA Notification, 14th September, 2006
- TOR Lr No.SEIAA-TN/F.No.9938/ToR-1481/2023 Dated :22.06.2023.
- Approved Mining plan

1.5 Post Environment Clearance Monitoring

The Project Proponents in the Cluster will submit a half-yearly compliance report in respect of stipulated Environmental Clearance terms and conditions to MoEF & CC Regional Office & SEIAA after grant of EC on 1st June and 1st December of every year.

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. A brief description of each Chapter is presented in Table No. 1.5.

TABLE 1.4 – STRUCTURE OF THE EIA REPORT

S. No	Chapters	Title	Particulars
1	Chapter 1	Introduction	Presents, an Introduction along with Scope and Objective of this EIA/EMP Studies
2	Chapter 2	Project Description	Presents the Technical Details of the Project
3	Chapter 3	Description of Environment	Presents the Baseline Status for various Environmental Parameters in the Study Area for One Season (3 Months)
4	Chapter 4	Anticipated Environmental Impacts and Mitigation Measures	Presents the Identification, Prediction and Evaluation of overall Environmental Impacts due to the Proposed Projects Activities. Also presents Proposed Mitigation Measures.
5	Chapter 5	Analysis of Alternatives (Technology & Site)	Presents Analysis of alternatives with respect to site
6	Chapter 6	Environment Monitoring Programme	Present details of post project environment monitoring
7	Chapter 7	Additional Studies	Presents Public Consultation, Risk Assessment and Disaster Management Plan
8	Chapter 8	Project Benefits	Presents project benefits as: Improvements in the Physical Infrastructure, Social Infrastructure Employment Potential –Skilled; Semi-Skilled and Unskilled etc.,
9	Chapter 9	Cost Benefit Analysis	Environmental Cost Benefit Analysis has not been recommended at Scoping Stage – thus no analysis carried out separately in this EIA/EMP Report
10	Chapter 10	Environmental Management Plan	Description of the administrative aspects to ensure the Mitigation Measures are implemented and their effectiveness monitored, after approval of the project.
11	Chapter 11	Summary & Conclusion	Summary of the EIA Report
12	Chapter 12	Disclosure of Consultants Engaged	Disclosure of the Consultants

1.7 Scope of the Study

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for 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, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out considering all the proposed and existing quarries falls within the cluster during the summer season (March 2023 – May 2023) for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project.

TABLE 1.5 – ENVIRONMENT ATTRIBUTES

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

Source: Field Monitoring Data

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

1.7.1 Regulatory Compliance & Applicable Laws/Regulations

- Application for Quarrying Lease as per Tamil Nadu Minor Mineral Concession Rules, 1959
- Obtained Precise Area Communication Letter as per Tamil Nadu Minor Mineral Concession Rules, 1959 for Preparation of Mining Plan and obtaining Environmental Clearance
- The Mining Plan of Rough Stone quarry has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959
- Lr No. SEIAA-TN/F.No.9938/ToR-1481/2023 Dated :22.06.2023– **Thiru. C. Amavasai -P1**

CHAPTER – 2: PROJECT DESCRIPTION

2.0 General

This EIA & EMP report prepared for **Thiru. C. Amavasai**, Rough Stone Quarry (0.98.0Ha) in Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu State. The Proposed Rough Stone Quarry requires Environmental Clearance.

There are 1 proposed and 3 existing quarry forming a cluster; Cluster Quarries consisting of four (4) quarries total **Cluster extent of 7.52.5 ha**

- (1) Proposed quarry {0.98.0 ha},
- & (3) Existing quarries under operation {6.54.5 ha}
- (2) Abandoned quarry (0.68.0 Ha)

Total extent of Cluster of 7.52.5 Ha in Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu, cluster area calculated as per MoEF & CC Notification S.O. 2269 (E) Dated 1st July 2016.

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

2.1 Description of the Project

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

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

2.2 Location of the Project

- The Cluster quarries are located in Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu State.
- The project falls in Toposheet No: 58 J/12
- The project area Falls in the Latitude between 10° 14' 18.68" N to 10° 14' 24.49" N and Longitude between 78° 35' 46.28" E to 78° 35' 50.35" E
- It is a Patta land – Non-Forest & does not fall within 10 km radius of any Eco – sensitive zone, Wild life Sanctuary, National Park, Tiger Reserve, Elephant Corridor and Biosphere Reserves.

TABLE 2.1: SITE CONNECTIVITY TO THE CLUSTER QUARRIES

Nearest Roadway	Nearest National Highway – Tiruppattur to Dindigul (NH-383) – 11km – SW Nearest State Highway – Namasamudram to M. Kovilpatti Road (SH-201) – 6km – W
Nearest Village	Sevvur - 800m-NE
Nearest Town	Ponnamaravathi – 8.0km-NW
Nearest Railway	Tirumayam – 18.0km-E
Nearest Airport	Trichy – 58.0km – NE
Seaport	Thoothukudi 171km-SW

Source: Survey of India Toposheet

The Proposed quarry coners coordinates are given below.

TABLE 2.2 – BOUNDARY CO-ORDINATES OF PROJECT AREA

Corner Nos.	Latitude	Longitude
1	10°14'18.75"N	78°35'46.28"E
2	10°14'23.33"N	78°35'47.17"E
3	10°14'23.47"N	78°35'46.65"E
4	10°14'24.29"N	78°35'46.85"E
5	10°14'23.61"N	78°35'50.35"E
6	10°14'22.69"N	78°35'50.12"E
7	10°14'22.87"N	78°35'48.88"E
8	10°14'19.26"N	78°35'47.70"E
9	10°14'19.23"N	78°35'47.21"E
10	10°14'18.68"N	78°35'46.86"E

Datum: UTM-WGS84 Zone 44P

Source: Quarry Lease Plan of the respective proposals

FIGURE 2.1: TOPOGRAPHICAL VIEW OF THE PROJECT SITE



FIGURE 2.2: GOOGLE IMAGE ROUGH STONE QUARRY PROJECT AREA



FIGURE 2.3: QUARRY LEASE PLAN

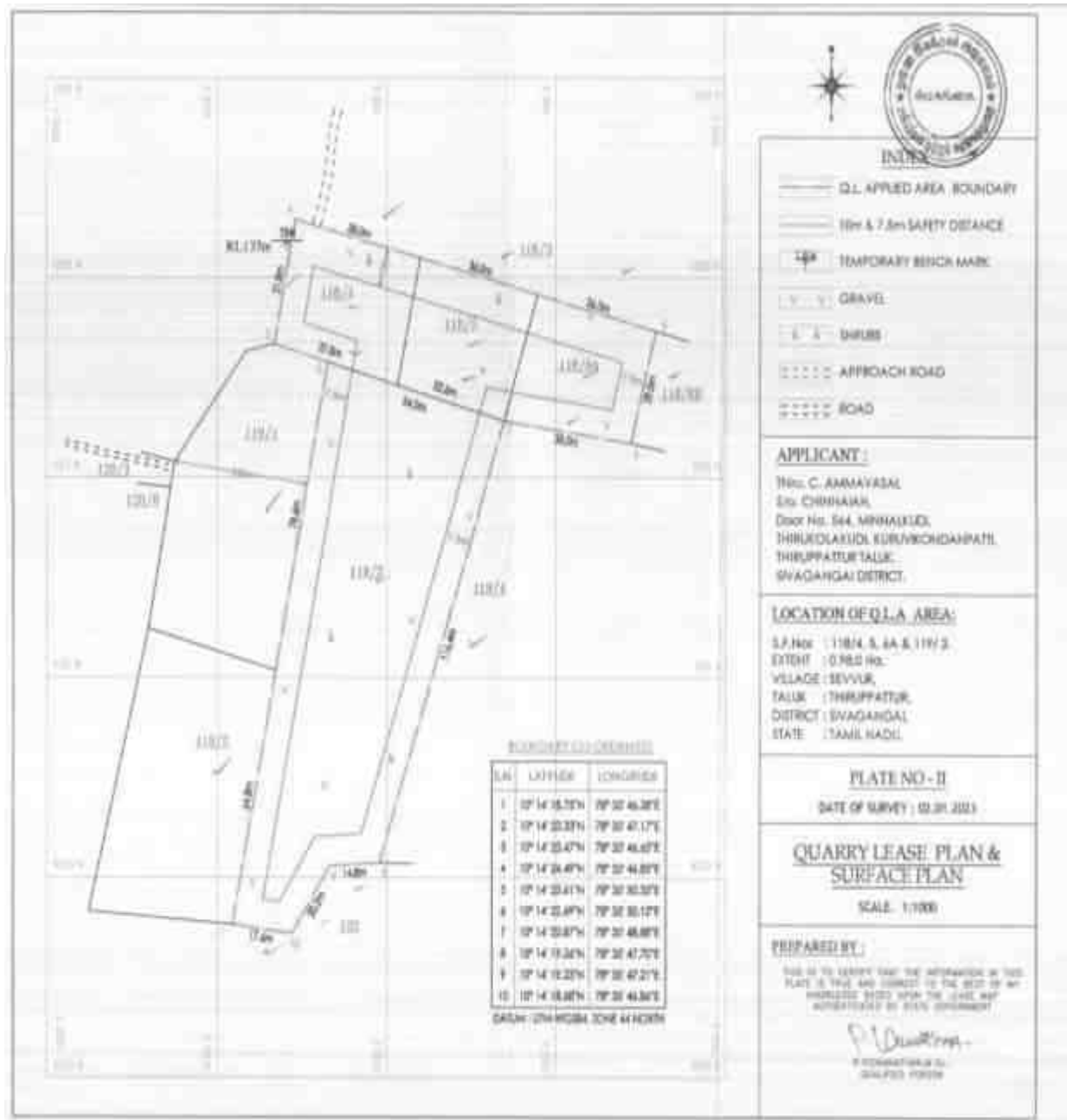


FIGURE 2.4: VILLAGE MAP SUPERIMPOSED ON GOOGLE EARTH IMAGE

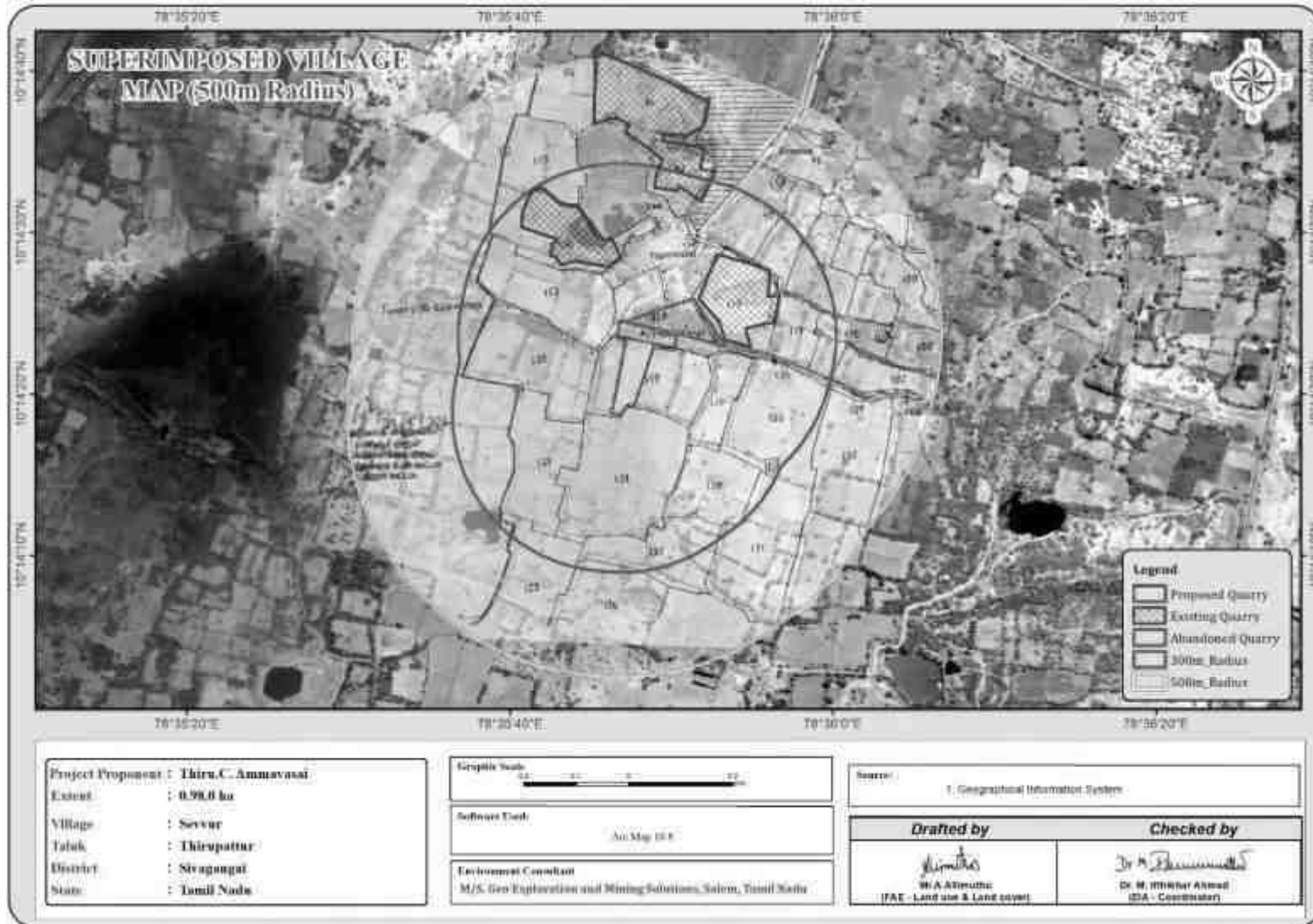


FIGURE 2.5: DIGITIZED MAP OF THE STUDY AREA (10 KM RADIUS FROM PROJECT SITE)

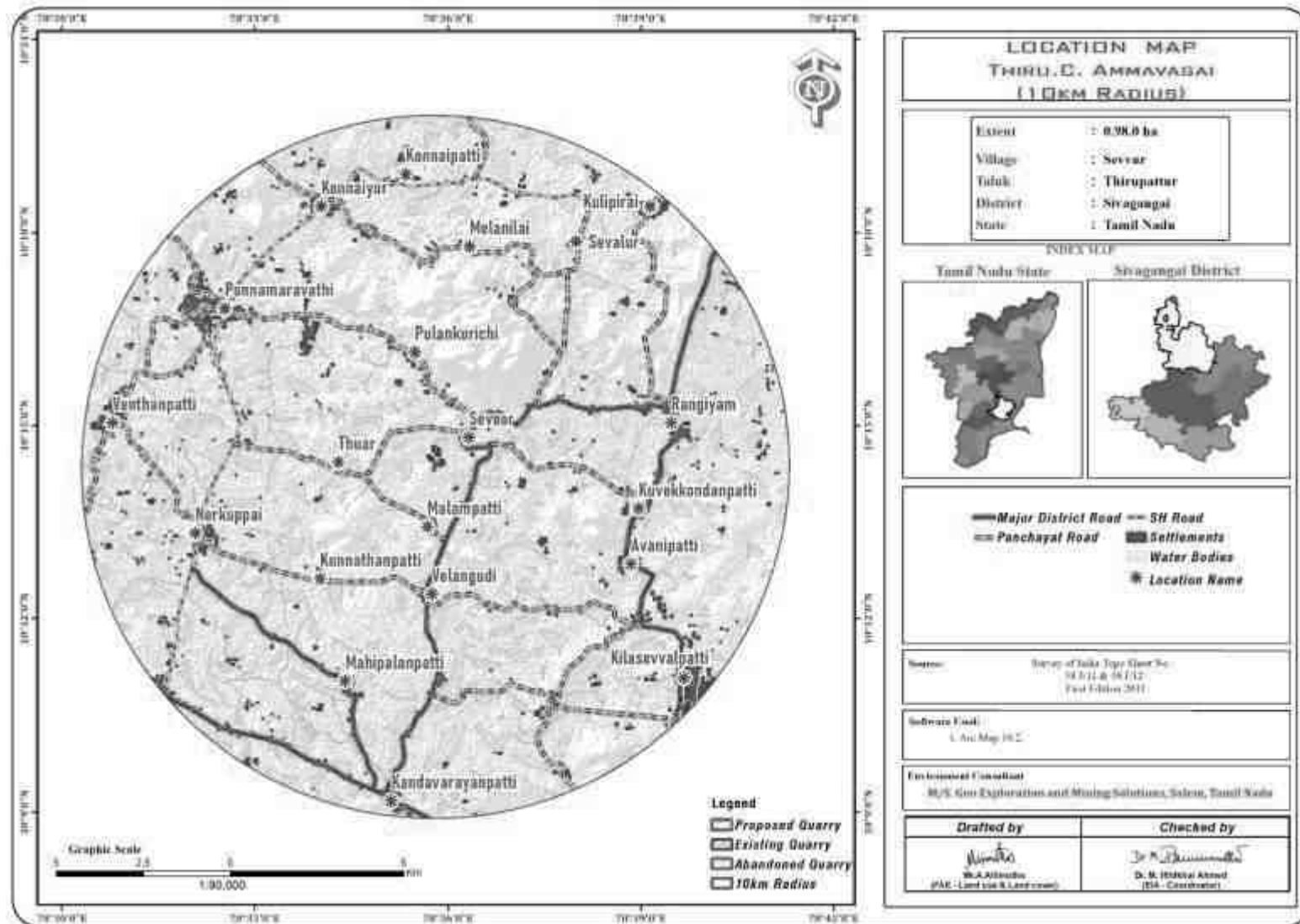


FIGURE 2.6: DIGITIZED MAP OF THE STUDY AREA (5 KM RADIUS FROM PROJECT SITE)

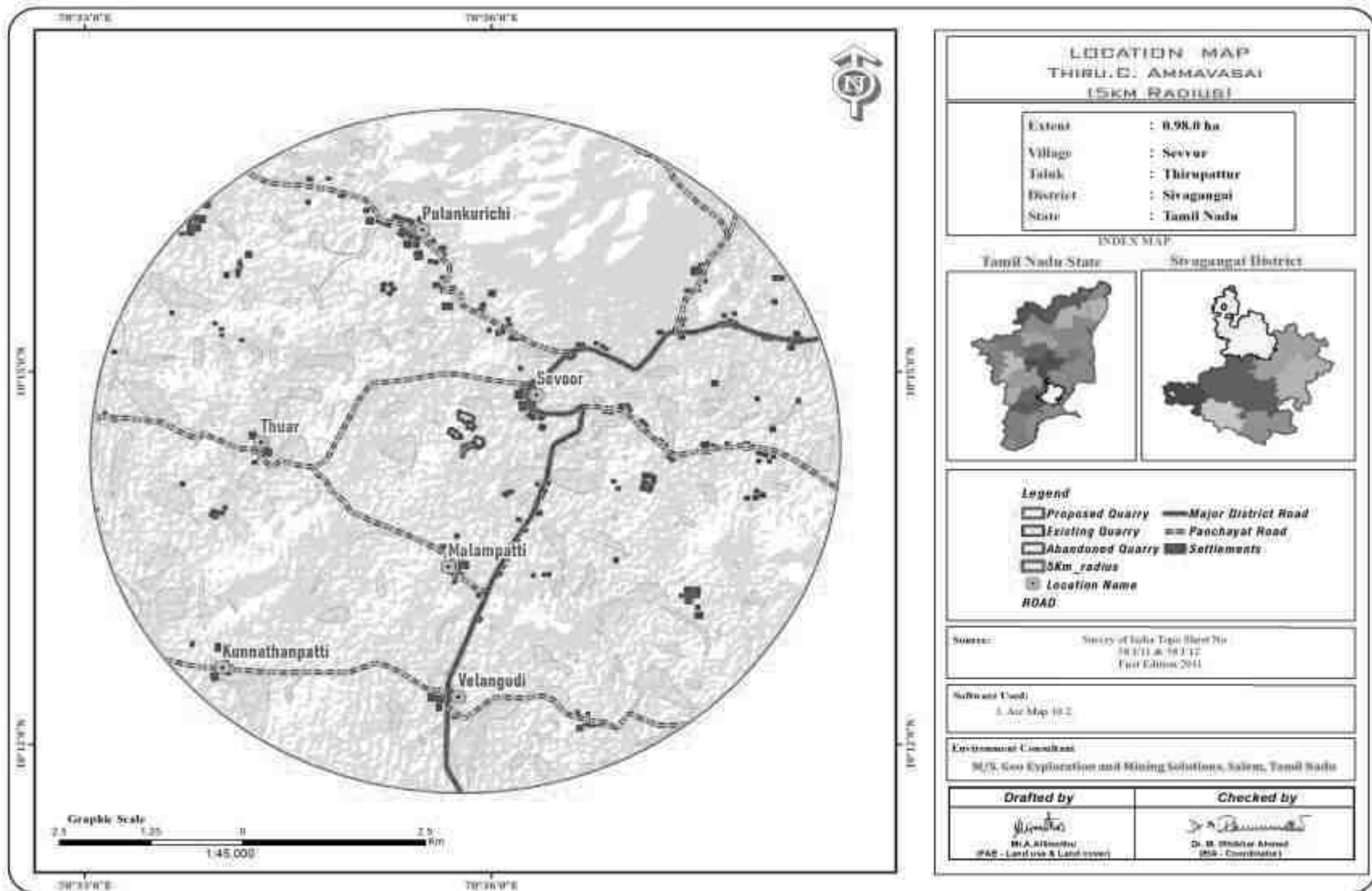
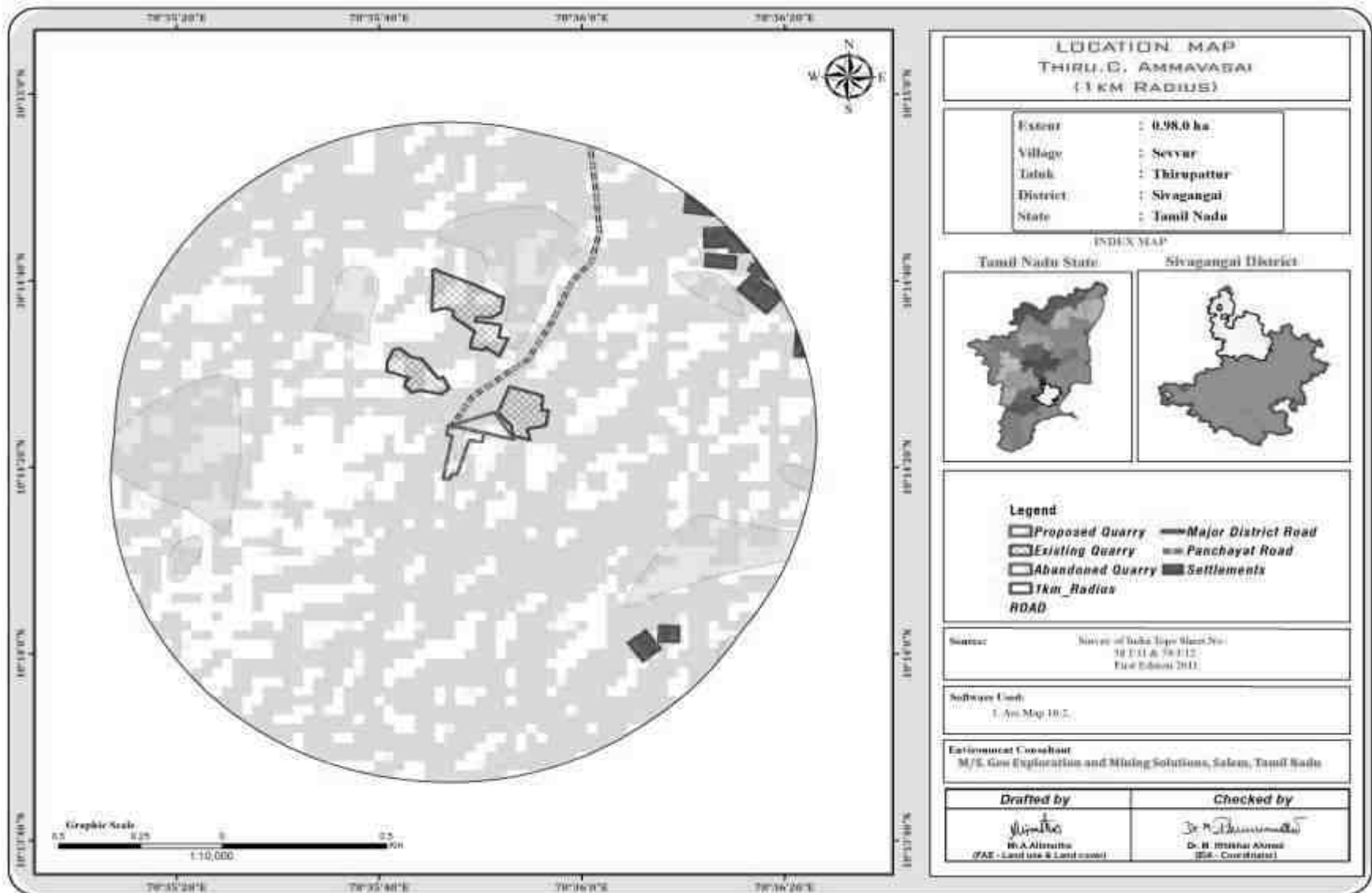


FIGURE 2.7: DIGITIZED MAP OF THE STUDY AREA (1 KM RADIUS FROM PROJECT SITE)



2.2.1 Project Area

- The Rough Stone quarry is proposed to operate by opencast mechanized method of mining and the project is site specific
- There is no beneficiation or processing proposed inside the project area.
- Highest elevation is 193m AMSL.
- The lease applied area classified as Government Land and exhibits Undulated topography. The area has gentle sloping towards Southeastern side. The altitude of the area is 193m (max) above Mean Sea level. The area is covered by 1m thickness of Topsoil and followed by Massive Charnockite which is clearly inferred from the existing quarry pits.
- Peninsular gneiss forms the oldest rock formations, in which the massive formation of charnockite body N45 °E – S45 °W with dipping towards SE70°
- There is no forest land involved in the proposed project area and the area is devoid of major cultivation and trees.

TABLE 2.3 – LAND USE PATTERN OF THE PROPOSED PROJECT

Description	Present area (Ha)	Area required first five year plan period (Ha)	At the end of lease period (Ha)
Quarry Pit	Nil	0.55.0	0.55.0
Infrastructure	Nil	0.01.0	0.01.0
Roads	Nil	0.02.0	0.02.0
Green Belt	Nil	0.12.0	0.22.0
Unutilized Area	0.98.0	0.28.0	0.18.0
Grand Total	0.98.0	0.98.0	0.98.0

Source: Approved Mining Plan

2.2.2 Size or Magnitude of Operation

TABLE 2.4: OPERATIONAL DETAILS FOR PROPOSED PROJECT

PARTICULARS	DETAILS	
	Rough Stone (10Year Plan period)	Top soil (5 years)
Geological Resources	1,47,000	9,800
Mineable Reserves	48,910	5,837
Production for Ten year plan period	48,910	5,837
Mining Plan Period	10Years	
Number of Working Days	300 Days	
Production per day	16	4
No of Lorry loads (6 m ³ per load)	3	1
Total Depth of Mining proposed as per Mining plan	16m (1m Topsoil + 15m Rough Stone) below ground level	

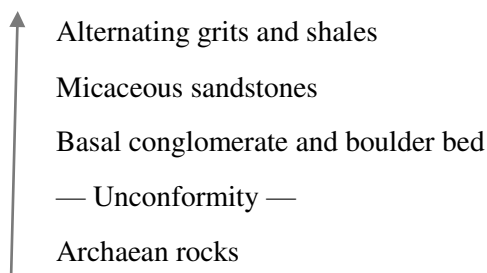
Source: Approved mining plan

2.3 Geology

2.3.1 Regional Geology

The northern part of Sivaganga and Tirupattur taluk are made up of rocks of chornockite – Kondalite groups and migmatite of archaean age comprises chornockite, garnet Sillimanite gneiss, Hornblende biotite gneiss. In gneiss rock quartz – feldspathic band and mafic enclaves are observed due to segregation by differential composition. Numerous band and lenses of metabasic rocks i.e amphibole, pyroxinite and biotite, schist, quartzite, calc granulite and grey and pink granite occur within the group. Hornblende biotite gneiss, garniferous quartz feldspathic gneiss is the major lithological unit in north and west. They are very coarse grained and highly feldspathic. Sillimanite bearing gneiss is seen in association with quartzite. The gneiss occurs at places as residual hillocks and knolls with gneissosity trending NE to N-S having steep dip. The quartzite forms long ridges and folds. Calc gneiss and calc granulite occurs as thin bands within the garnet sillimanite gneiss and hornblende biotite gneiss and intensely folded. The geological sequence of rocks around Sivaganga district is as follows. Recent alluvium of the Vaigai river and Upper Laterite and lateritic soils. It is followed by basal Gondwana Formation,

Showing the following sequence:



The Archaean Rocks They are found on the western side of the Sivaganga town. The rocks consist of quartzites, mica-gneisses, pink and gray granite. These rock types occur as parallel bands between ENEWSW and E-W with steep southward dips of 60° to 90°. A small inlier of one square mile of the gneissic rocks is seen in the Gondwana Formation.

Gondwana Formation The western boundary between the Archaean rocks and Gondwana Formation runs in roughly NE to SW line from near Kallal in the north to Sivaganga Railway station. The Gondwana formation extends over a large area of 160 Square Km. They comprise a basal conglomerates and boulder-beds followed by sandstones, shales and grits. The plant fossils were collected from these shales. The Gondwana rocks have very low and irregular dips.

Dimension Stones (Granite) The district is occupied by hard crystalline rocks like leptynite, gneissic rock. These rocks are normally used as building materials purposes. The area is famous for multi coloured granite (leptynite), commercially known as “Kashmir White”.

2.3.2 Local Geology:

The district of Sivagangai is not very much rich in mineral resources. Among the known resources, only minor minerals are mostly found. Mineral of economic importance found in Sivagangai district are mainly placer deposits like beach sand carrying garnet and limonite. Rough stone, granite, graphite, savudu and gravel/laterite. Mining activities based on these minerals are very less. However, numerous rough stone quarries are operational for above. ‘Brick clay’ mining is also active in this district.

The department of geology and mining (DGM) is functioning in Sivagangai district under the control of the district collector, Sivagangai. The DGM is looking after the work of granting leases for minor minerals (Savudu, gravel/Laterite, brick clay, etc) dimensional stones and rough stones. DGM is also curbing illicit trading in the district.

Source: <https://sivaganga.nic.in/document/district-mineral-survey-report/>

2.3.3 Hydrogeology

The district is underlined by the formations of quaternary, tertiary, mesozoic and zoic area. The western and north western part of the district comprising the western part of the Sivagangai taluk and major part of Thirupathur taluk are occupied by crystalline rocks of Archaean age which includes number of rock types namely feldspathic and mica gneiss, charnockites, quartzites, pegmatites and granitic intrusions.

The formation suggestive of Eocene or Palaeocene occurs in the eastern part of the district and are encountered in the bore holes drilled at Sathanaikottai, Kappalur, Devandathavu and at Neyvayal occurring between depth ranges 77m and 190 m BGL with maximum thickness of 82 m and consist mainly of clay and shale, dark greenish to black with shale or sand and sand stone lenses. Exposures of tertiary (Mio-pliocene age) formations are seen around Karaikudi, Sengarai, Sakkottai, Kottaiyur, Kalayarkoil and ManaSivagangai. The alluvial formation brought down by the river draining the district are found in major part of Karaikudi and to a smaller extent along the river course in Thirupattur taluk. It consists of clay, sandy clay, silky clays, sand and gravel with thickness ranging between 6m and 40m.

Sl.No	Formation	Area covered in Sq.Km.
1	Alluvium	1384
2	Tertiary	1165
3	Gondwana	302
4	Hard Rock	1338
	Total area	4189

Aquifer Parameters

- Hard rock the thickness of aquifer in this district is highly erratic and varies between 20m and 50m below ground level. The inter granular porosity is essentially depending upon the intensity and degree of weathering and fracture development in the bed rock. The range of aquifer parameters in hard rock regions are given below.:
- Sedimentary formation the sedimentary formation in Sivagangai district comprises of Alluvium, tertiary and Gondwana. The range of aquifer parameters for alluvium are furnished below.

TABLE 2.5: RANGE OF AQUIFER PARAMETERS

Type of Aquifer	Water Table conditions
Hard rock areas	
Permeability (K)	1.02-2.54 m/day
Transmissivity (T) m ² /day	20-70 m ² /day
Well yield in LPM	50-150 lpm
Sedimentary areas	
Permeability	20.45-64.45 m/day
Transmissivity (T) m ² /day	300-2500 m ² /day
Well yield in LPM	400-2200 lpm

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

TABLE 2.6: GROUND WATER LEVEL VARIATIONS OF SIVAGANGAI DISTRICT

Jan 2017	May 2017	Jan 2018	May 2018	Jan 2019	May 2019	Jan 2020	May 2020	Jan 2021	May 2021	5 Years Pre-Monsoon Average	5Years Post Monsoon Average
20.7	25.7	23.6	25.5	24.5	26.3	16.6	17.3	13.07	14.7	18.7	17.0

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

FIGURE 2.8: REGIONAL GEOLOGY MAP

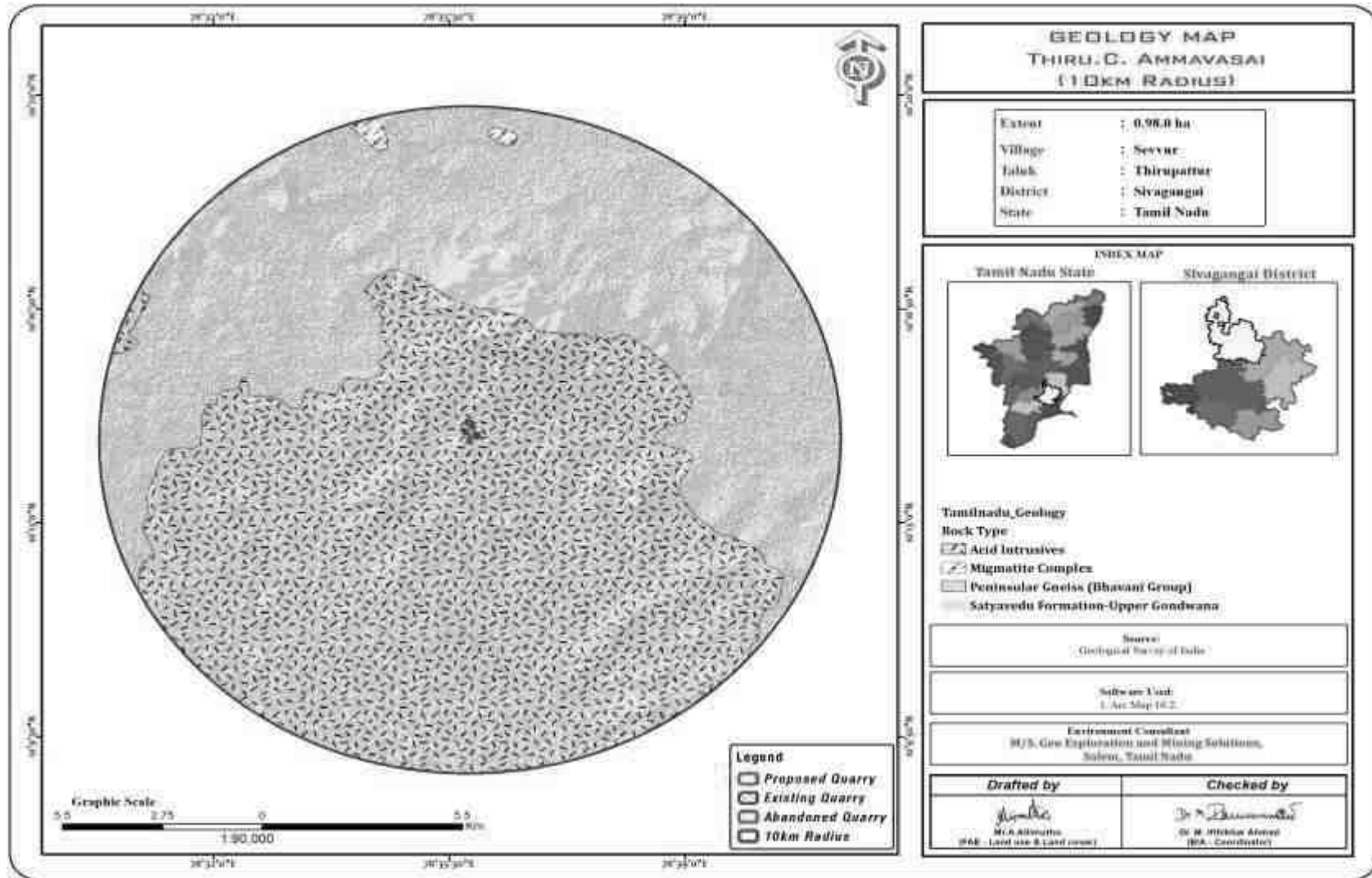


FIGURE 2.9: GEOMORPHOLOGY MAP

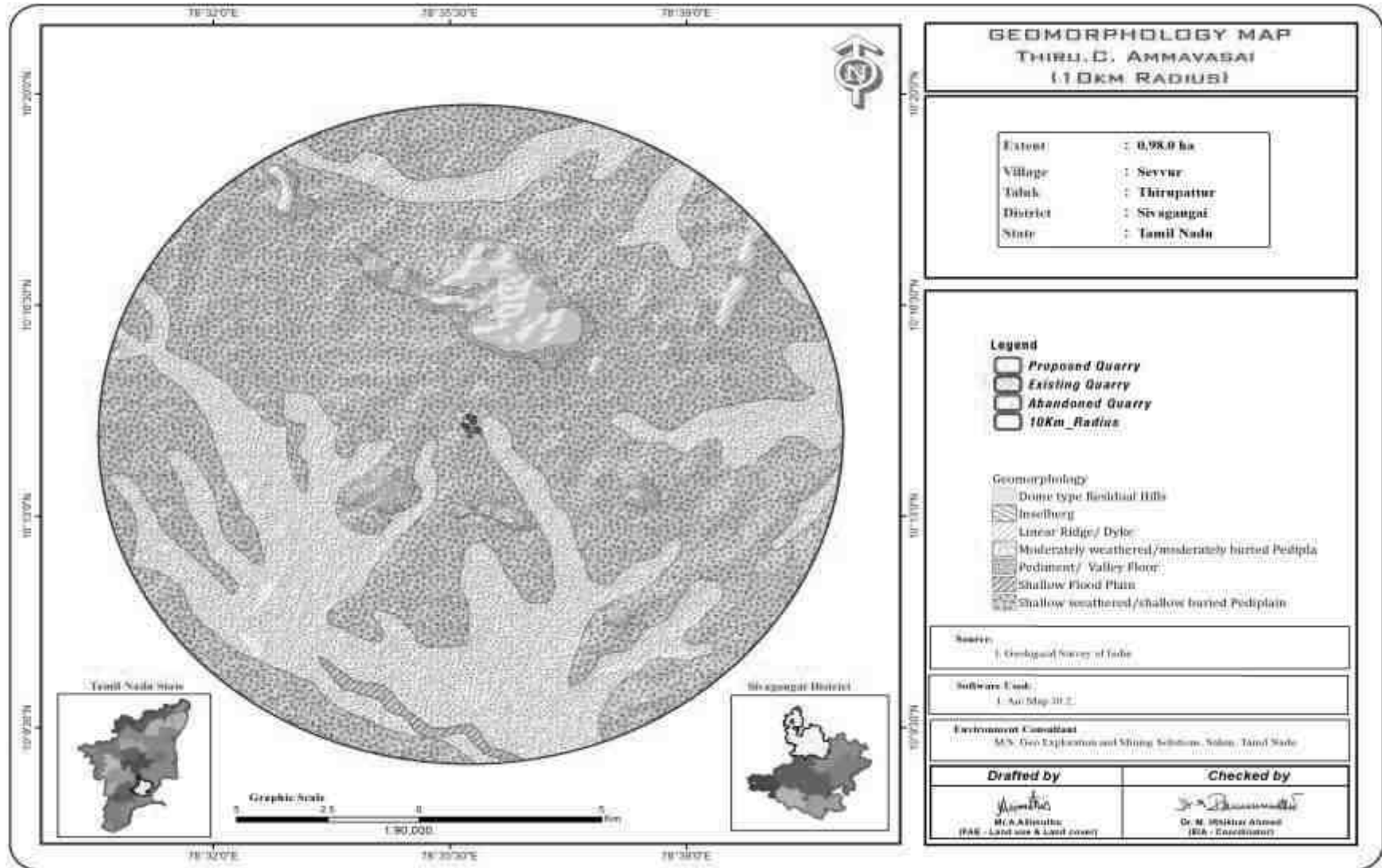


FIGURE 2.10 A: FIRST FIVE -YEAR DEVELOPMENT PRODUCTION PLAN AND SECTION

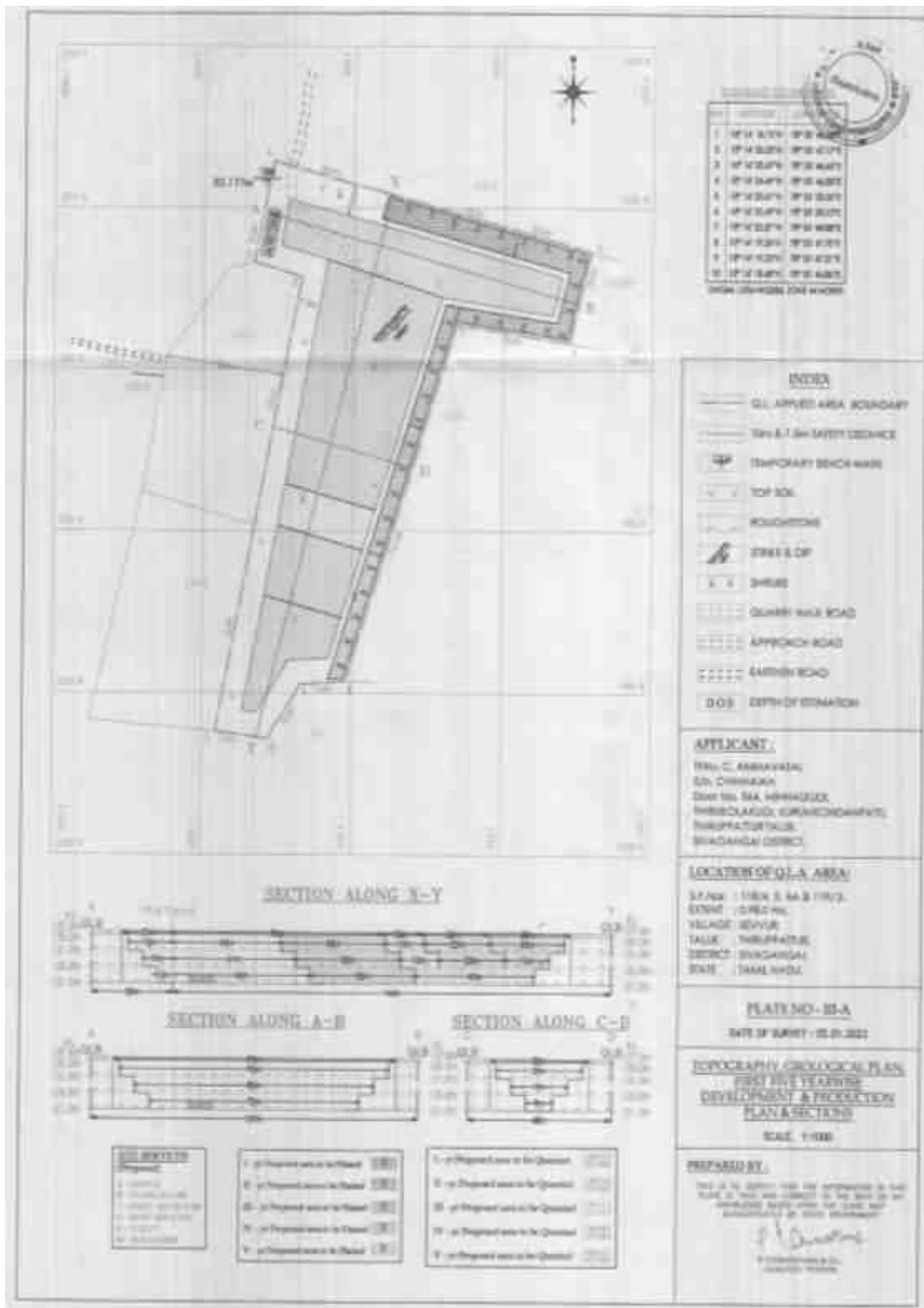
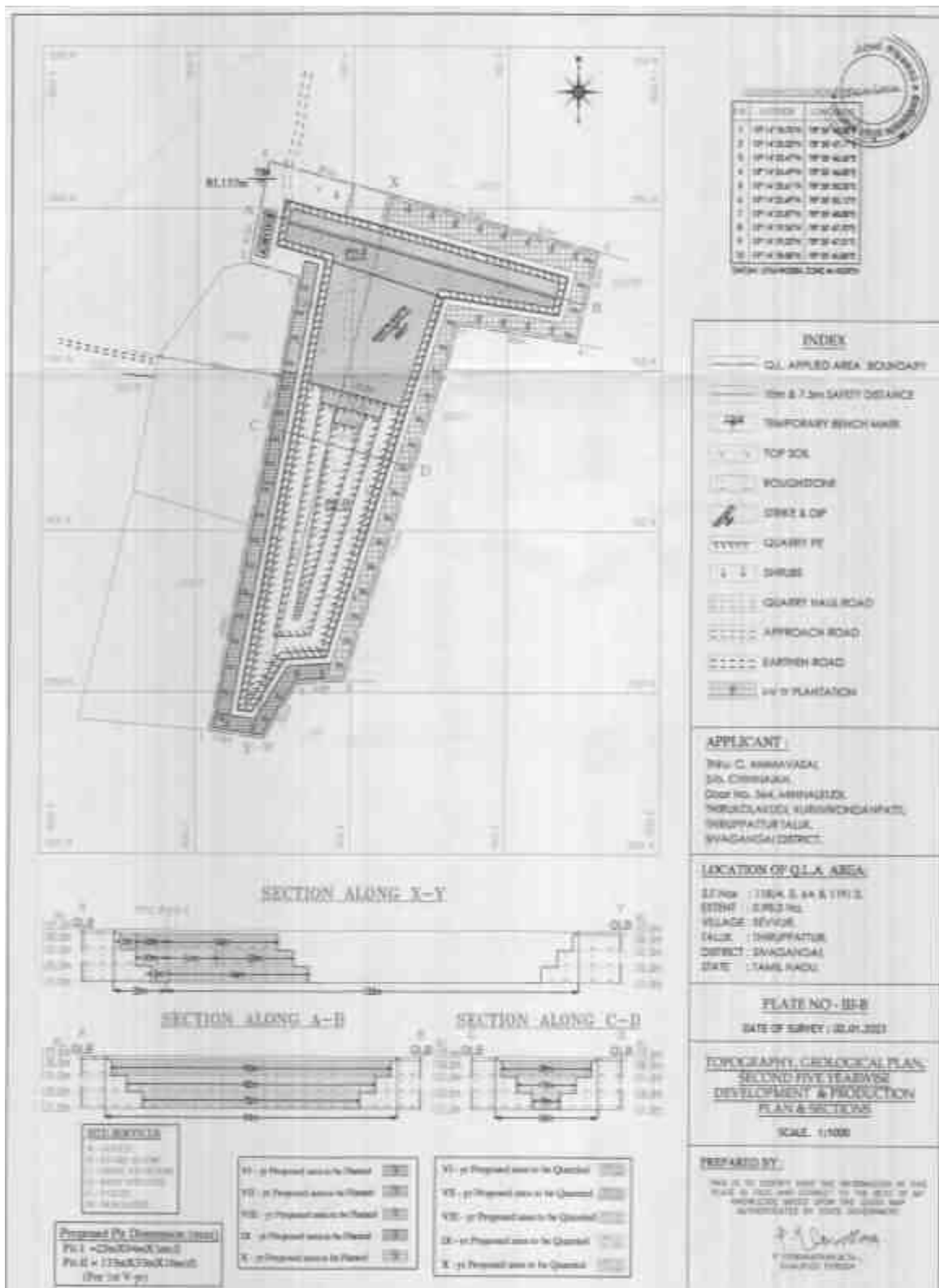


FIGURE 2.10 B: NEXT FIVE-YEAR DEVELOPMENT PRODUCTION PLAN AND SECTION



2.4 Resources and Reserves of the Cluster quarries

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

TABLE 2.7: RESOURCE AND RESERVES

Description	Rough Stone in m ³	Top soil in m ³
Geological Resource in m ³	1,47,000	9,800
Mineable Reserves in m ³	48,910	5,837
Proposed production for ten years plan	48,910	5,837

Based on the availability of Geological Resources, the Mineable Reserves are calculated by considering excavation system of bench formation and leaving essential safety distance of 7.5 m (Safety Barrier all around the applied area), 10m safety distance to the road and 50m safety distance to the EB Line and deducting the locked-up reserves during bench formation. (Also called as Bench Loss). The Mineable Reserves is calculated considering that there is no waste / overburden / side burden (100% Recovery Anticipated).

The above calculated Mineable Reserves is further divided for tentative excavation plan period of the Lease Applied Period for 5 Years.

TABLE 2.8A: FIRST FIVE YEAR-WISE PRODUCTION PLAN

YEAR	ROUGH STONE (m ³)	Top soil (m ³)
I	5050	896
II	5280	704
III	4920	416
IV	5075	2240
V	4900	1581
TOTAL	25225	5837

TABLE 2.8B: NEXT FIVE YEAR-WISE PRODUCTION PLAN

YEAR	ROUGH STONE (m ³)	Top soil (m ³)
VI	5220	-
VII	4500	-
VIII	4625	-
IX	5520	-
X	3820	-
TOTAL	23685	-

Source: Approved Mining Plan

Disposal of Waste

There is no waste anticipated in these Rough Stone quarrying operation. The entire quarried out materials will be utilized (100%). Top layer of Topsoil formation will be removed and sold to needy customers directly.

Conceptual Mining Plan/ Final Mine Closure Plan

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

TABLE 2.9: ULTIMATE PIT DIMENSION OF PROPOSED PROJECT

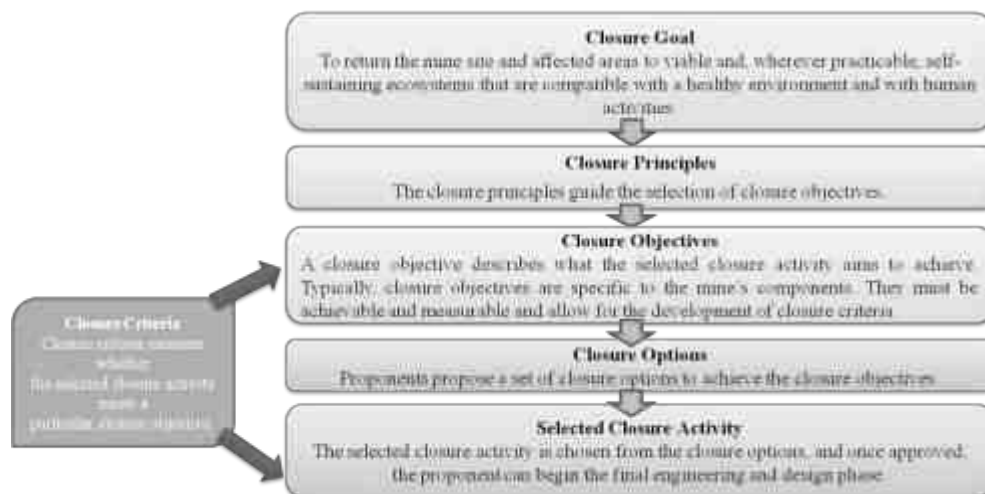
Pit I - 25m (L) x 94 m(W) x 16m (D) BGL
 Pit II - 133m (L) x 33 m(W) x 16m (D) BGL

Source: Approved Mining Plan

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

Closure Objectives –

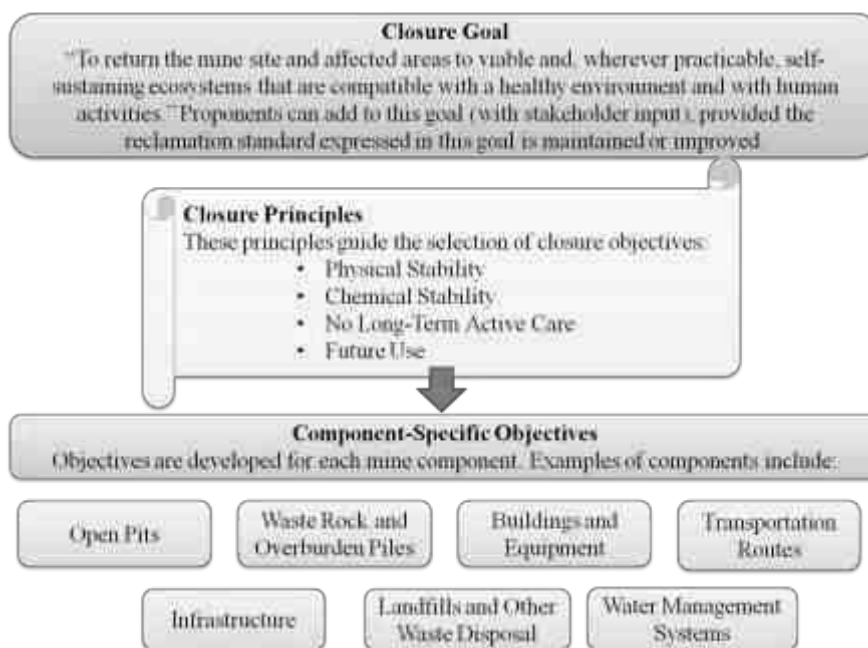
- Access to be limited, for the safety of humans and wildlife.
- The open pit mine workings and pit boundary are physically and geo-technically stable.
- Water quality in flooded pits is safe for humans, aquatic life, and wildlife.
- Discharge of contaminated drainage has been minimized and controlled.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



Closure Planning & Options Considerations in Mine Design –

- The closure of mine is well planned at the initial stage of planning & design consideration by the internal and external stake holders
- Construction of 2m height bund all along the mine pit boundary and ensure its stability all time & construction of garland drain along the natural slope to avoid sliding and collection of soil to the pit & surface runoff during rainfall
- After complete exploitation of mineral, the lowest bench foot wall side will be maintained as plain surface without any sump pits to avoid any accidents
- All the sharp edges will be dressed to smoother face before the closure of mine and ensure no loose debris on hanging wall side
- There is a river on southern side of the project area. The river will not be hindered by any of mine closure activities

- The project proponent as a part of social responsibilities assures to supply the stored mine pit water to the nearby villages after effective treatment process as per the standards of TNPCB & TWAD
- Native species will be planted in 3 row patterns on the boundary barriers and 1st bench, a full-time sentry will be appointed at the gate to prevent inherent entry of public & cattle.
- The access road to the quarry will be cut-off immediately after the closure
- The layout design shall be prepared and get approved from Department of Geology and Mining.
- The proponent is instructed to construct as per the layout approved
- Physical and chemical stability of structures left in place at the site, the natural rehabilitation of a biologically diverse, stable environment, the ultimate land use is optimized and is compatible with the surrounding area and the requirements of the local community, and taking the needs of the local community into account and minimizing the socio-economic impact of closure
- There will be a positive change in the environmental and ecology due to the mine closure



Post-Closure Monitoring

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

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

TABLE 2.10: MINE CLOSURE BUDGET FOR THE PROPOSED PROJECT

ACTIVITY		YEARS										RATE	COST (Rs./-)
		I	II	III	IV	V	VI	VII	VIII	IX	X		
Plantation under safety zone	Nos	30	30	30	30	30	20	20	20	20	20	@ 100 Rs Per sapling	25000
	Cost	3000	3000	3000	3000	3000	2000	2000	2000	2000	2000		
Plantation in quarried out benches and approach road	Nos	25	25	25	25	25	25	25	25	25	25	@ 300 Rs Per Meter	25000
	Cost	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500		
Barbed Wire Fencing (In Mtrs) 510 Mtrs		153000	-	-	-	-	-	-	-	-	-	@ 300 Rs Per Meter	153000
Garland drain (In Mtrs) 410 Mtrs		123000	-	-	-	-	-	-	-	-	-	@ 300 Rs Per Meter	123000
TOTAL													326000

Source: Proposed by FAE's and EC

2.5 Method of Mining

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

The top layer of overburden (Topsoil) will be Excavate directly by Hydraulic Excavators and loaded into tippers directly and sold to needy customers. The Rough Stone is a batholith formation and the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling and Slurry Explosives will be used for blasting.

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

2.5.1 Drilling

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

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

2.5.2 Blasting

Blasting will be done as per details below: -

- Controlled blasting parameter: -

Spacing – 1.2m

Burden – 1.0 m

Depth of hole – 1.5m

Charge per hole – 0.5Kg

Powder factor – 6.0 tonnes/kg

Dia of hole – 30-32 mm

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

Volume of Rough Stone will be excavated from one hole	=	3 Tonnes
Total Volume from proposed quarry	=	48,910m³
	=	48,910/10
	=	4891/300
	=	16* 2.6
	=	42 Tonnes per day
Therefore, Number of Holes per day	=	42/3
	=	14 Holes per day

Type of Explosives to be used –

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

2.5.3 Extent of Mechanization

TABLE 2.11. PROPOSED MACHINERY DEPLOYMENT

PROPOSAL – P1				
S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	2	1.2m to 2.0m	Compressed air
2	Compressor	1	400psi	Diesel Drive
3	Excavator with Bucket / Rock Breaker	1	300 HP	Diesel Drive
4	Tippers	1	20 Tonnes	Diesel Drive

Source: Approved Mining Plan

2.6 General Features

2.6.1 Existing Infrastructures

Infrastructures like Mine office, Temporary Rest shelters for workers, Latrine and Urinal Facilities are available in the Existing quarries and the same infrastructure as per the Mine Rule will be arranged.

2.6.1 Drainage Pattern

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

2.6.2 Traffic Density

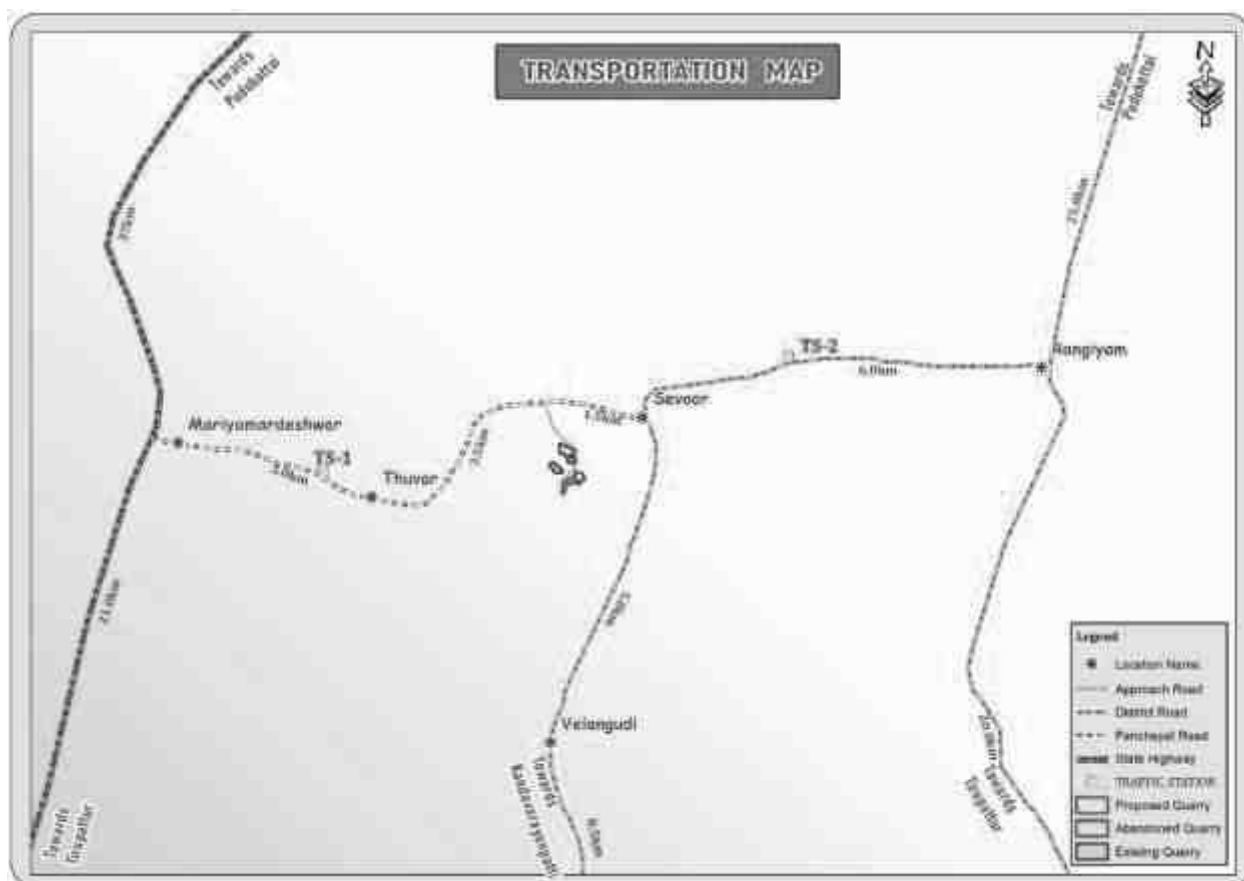
Traffic density measurements were performed as per IRC 1960 Guidelines at three locations based on the transportation route. The monitoring was carried out on 16-4-2023. Traffic density measurement were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift- one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

TABLE 2.12 – TRAFFIC SURVEY LOCATION'S

Station code	Station location	Distance and Direction	Type of Road
TS1	Sevur to Mariyamardheshwar	4km-W	Panchayat Road
TS2	Rangiyam to Tirupattur	4km-NE	District Road

Source: On-site monitoring by GEMS FAE & TM

FIGURE 2.11: TRAFFIC SURVEY LOCATIONS & TRANSPORTATION ROUTE MAP



(Source: Survey of India Toposheet)

TABLE 2.13 – EXISTING TRAFFIC VOLUME

Station code	HMV (Hourly Average)		LMV hourly average		2/3 Hourly average		Total PCU per hour
	No	PCU	No	PCU	No	PCU	
TS1	20	60	10	10	50	25	95
TS2	130	390	150	150	200	100	640

Source: On-site monitoring by GEMS FAE & TM

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

TABLE 2.14 – ANTICIPATED TRAFFIC DUE TO THIS PROPOSED PROJECTS

Transportation of Rough stone per day		
Capacity of trucks	Cumulative Trips	Volume in PCU
10/20 tonnes	20per day (3Trips of Rough stone)	60

Source: Anticipated based on Approved Mining Plan Production

TABLE 2.15 – SUMMARY OF TRAFFIC VOLUME

Route	Existing traffic value in PCU	Incremental traffic from the quarry in PCU	Total traffic volume	Hourly Capacity in PCU as per IRC guidelines
Village road	95	60	155	500
Major District Road	640	60	700	1200

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

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

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

As per the IRC 1960 this existing road can handle 1,200 PCU in hour and Major district road can handle 1500 PCU in hour hence there will not be any conjunction due to this transportation.

2.6.3 Mineral Beneficiation and Processing

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

2.6.4 Existing Infrastructure

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

2.6.2 Drainage Pattern

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

2.7 Project Requirement

2.7.1 Water Source & Requirement

Detail of Total water requirements in KLD as given below:

TABLE 2.16 – WATER REQUIREMENT FOR THE INDIVIDUAL PROJECT

*Purpose	Quantity	Source
Domestic & Drinking purpose	1.0KLD	From Existing bore wells from nearby area
Green Belt	0.7 KLD	From Existing bore wells from nearby area
Sanitation & Drinking	0.3 KLD	From existing, bore wells and drinking water will be sourced from Approved water vendors.
Total	2.0 KLD	

Source: Prefeasibility Report

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

2.7.2 Power and Other Infrastructure Requirement

The project does not require power supply for the quarry operation. The quarrying activity is proposed during day time only (General Shift 8 AM – 5 PM, Lunch Break 1 PM – 2 PM). Electricity for use in office and other internal infrastructure will be obtained from TNEB. For the quarrying operation like compressor for drilling Diesel will be utilized.

The temporary infrastructures such as Mine Office, First Aid Room, Rest Shelter etc., will be constructed within the project area before commencing the quarry operation. No workshops are proposed inside the project area hence there will not be any process effluent generation from the project area. Domestic effluent from the mine office will be discharged to septic tank and soak pit. There is no toxic effluent expected to generate in the form of solid, liquid or gaseous form hence there is no requirement of waste treatment.

2.7.3 Fuel Requirement

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

Top soil:

Per hour Excavator will consume = 10 liters / hour

Per hour Excavator will excavate	=	60m ³ of Top soil
Top soil quantity	=	5,837/60 = 97hours
Diesel consume	=	97hours x 10 liters
Total diesel consumption	=	970Liters of HSD will be utilized for Top soil

Rough stone for first five years:

Per hour Excavator will consume	=	16 liters / hour
Per hour Excavator will excavate	=	20m ³ of Rough stone
Rough stone quantity	=	25,225/20 = 1,261hours
Diesel consume	=	1,261hours x 16 liters
Total diesel consumption	=	20,176Liters of HSD will be utilized for Rough stone
Total diesel consumption	=	21,146Liters of HSD will be utilized for first five years.

2.7.4 Employment Requirement:

The skilled, competent qualified statutory persons will be engaged for quarrying operation, preference will be given to the local community. For this project it is proposed to deploy 15 employees. Besides about 5 -10 peoples will be getting indirect employment through this project.

a.	<u>Skilled labour:</u>		
	Mine Foreman	:	1
	Blaster/mate	:	1
	Excavator – Operator	:	1
	Drivers	:	1
	Jack hammer operator	:	4
b.	<u>Semi-skilled:</u>		
	Security	:	1
c.	<u>Unskilled:</u>		
	Labour & Helper	:	3
	Co-operator and Cleaner	:	3
	Total	:	15

2.7.5 Project Cost**TABLE 2.17 PROJECT COST OF PROPOSED PROJECT**

Description	Project Cost
Project Cost	Rs 19,82,000/-
Environmental Management Plan Cost	Rs 7,60,000/-
CER Cost	Rs 5,00,000/-

Source: Approved Mining Plan & Prefeasibility Report of the respective projects

2.8 Project Implementation Schedule

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

TABLE 2.18 EXPECTED TIME SCHEDULE FOR THE PROPOSED QUARRIES

S.No	Particulars lease execution	Time schedule (in month)					Remarks if any
		1 st	2 nd	3 rd	4 th	5 th	
1	Environmental Clearance						
2	Consent to operate						Production start period

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

CHAPTER – 3: DESCRIPTION OF ENVIRONMENT

3.0 General

This chapter presents a regional background to the baseline data at the very onset, which will help in better appreciation of micro-level field data, generated on several environmental and ecological attributes of the study area. The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions.

As per the MoEF & CC Office Memorandum F. No IA3-22/10/2022.IA.III (E 177258) Dated 8th June, 2022 the baseline data is utilized for this proposal.

The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering March 2023, April & May 2023 with CPCB guidelines. Environmental data has been collected with reference to cluster quarries by Chennai Mettex Lab Private Limited, accredited by ISO/IEC-17025:2017 (NABL) for the below attributes-

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

Study Area

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

Study Period

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

Study Methodology

Baseline data was generated for various environmental parameters including Land, Soil, Water (surface and groundwater), Air, Noise, Ecology & Biodiversity and Socio-economic status to determine the quality of the prevailing environmental settings. An MoEF accredited Laboratory was used for generating the baseline data.

1. The project area (Core zone) was surveyed in detail with the help of Total Station survey instrument and the boundary pillars were picked up with the help of handheld GPS. The boundary coordinates were superimposed on the satellite imagery to understand the relief of the area, besides Land use pattern of the area was studied through the Bhuvan (ISRO).
2. Soil samples were collected and analysed for relevant physio-chemical characteristics, exchangeable cations, nutrients & micro nutrients etc., in order to assess the impact of mining activities and proposed greenbelt development
3. Ground water samples were collected during the study period from the open wells and bore wells, while surface water was collected from river and lake in the buffer zone. The samples were analysed for parameters necessary to determine water quality (based on IS: 10500:2012 criteria) and those which are relevant from the point of view of environmental impact of the proposed project.

4. A meteorological station was setup in Sevvur village. Wind speed, Wind direction, Dry and wet bulb temperature, Relative humidity, Rainfall with cloud cover and general weather conditions were recorded throughout the study period.
5. In order to assess the Ambient Air Quality (AAQ), samples of Ambient Air were collected by installation of Respiratory Dust Samplers (RDS) for Fugitive dust, PM₁₀ and SO₂, NO_x with gaseous attachments & Fine Dust Samplers (FDS) for PM_{2.5} and other parameters as per NAAQ norms and analysed for primary air pollutants to work out the existing status of air quality.
6. The noise level measurements were also made at various locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone.
7. Baseline Ecology and Biodiversity studies were carried out to assess the ecology of the study area to study the existing flora and fauna pattern of the area.
8. Socio-Economic survey was conducted at village and household level in the study area to understand the present socio-economic conditions and assess the extent of impact due to the proposed mining project.

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

TABLE 3.1 – ENVIRONMENTAL MONITORING ATTRIBUTES AND FREQUENCY OF MONITORING

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

Source: On-site monitoring/sampling by Chennai Mettex Lab Private Limited in association with GEMS

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

3.1 Land Environment

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

3.1.1 Study of Land Use/ Land Cover

Indian Remote Sensing satellite IRS-P6, LISS III of Bhuvan (ISRO), multi-spectral digital data has been used for the preparation of land use/ land cover map of present study.

A visual interpretation technique has been adopted for land use classification based on the keys suggested in the chapter – V of the guidelines issued by NNRMS Bangalore & Level III classification with 1:50,000 scale for the preparation of land use mapping.

An image interpretation keys were developed based on such image characteristics, which enable interpretation of satellite images for land use/land cover features. Further, the land use / land cover and other baseline layers was put in GIS database for integration, analysis, statistics generation and final out in the form of land use land cover map.

Interpreted thematic details were transferred on the base map. Besides, other supporting data like project reports and statistical data published by various Government departments have also been used.

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

S.No	CLASSIFICATION	AREA_HA	AREA_%
BUILTUP			
1	URBAN	496.80	1.56
2	RURAL	721.34	2.26
3	MINING	54.00	0.17
AGRICULTURAL LAND			
4	CROP LAND	22351.35	69.98
5	PLANTATION	2303.07	7.21
BARREN/WASTE LANDS			
6	SCRUB LAND	1877.71	5.88
7	SALT AFFECTED LAND	326.57	1.02
WETLANDS/ WATER BODIES			
8	WATER BODIES/LAKE/RIVER	3806.92	11.92
TOTAL		31937.76	100.00

FIGURE 3.2: LAND USE LAND COVER MAP 10KM RADIUS

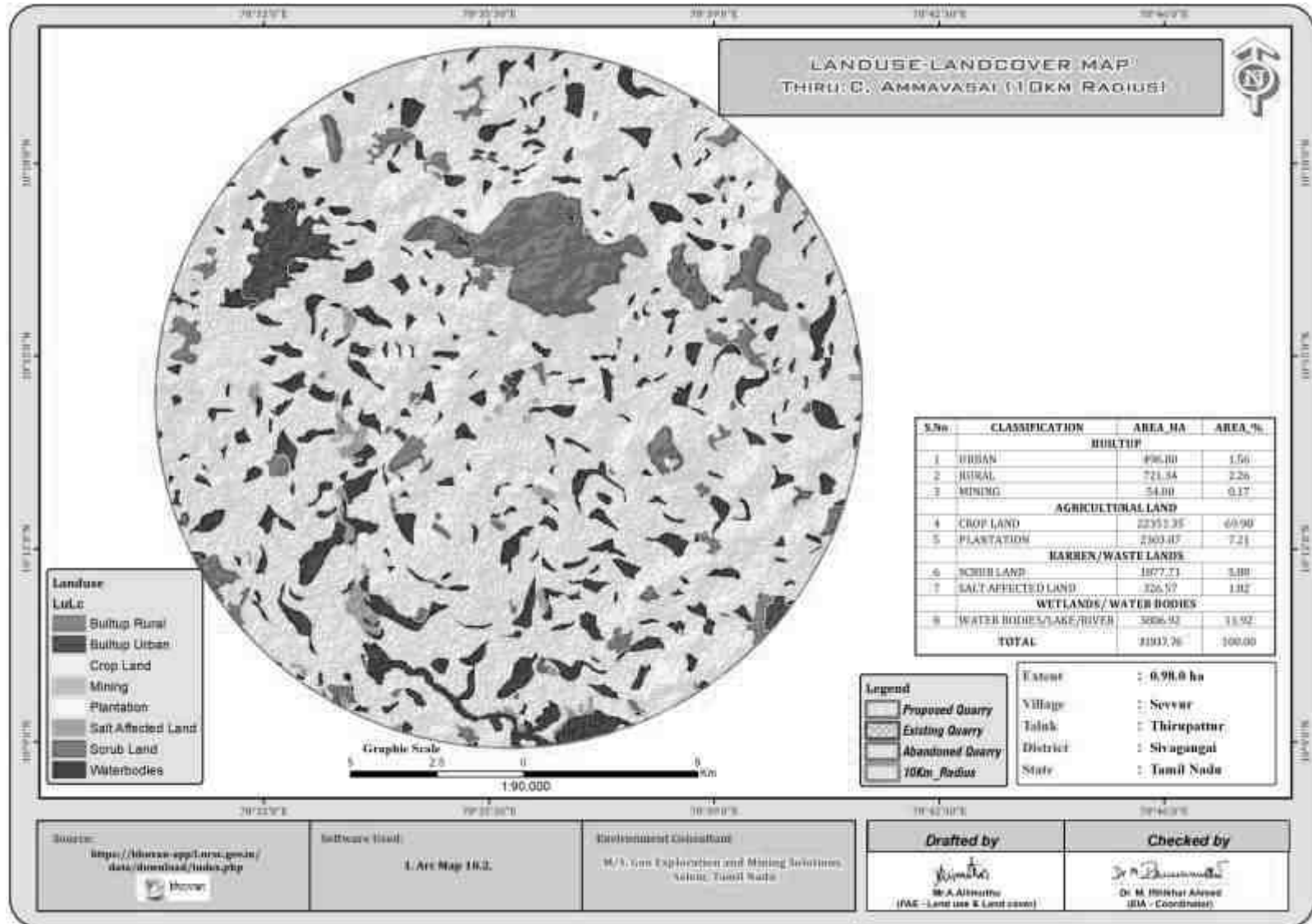
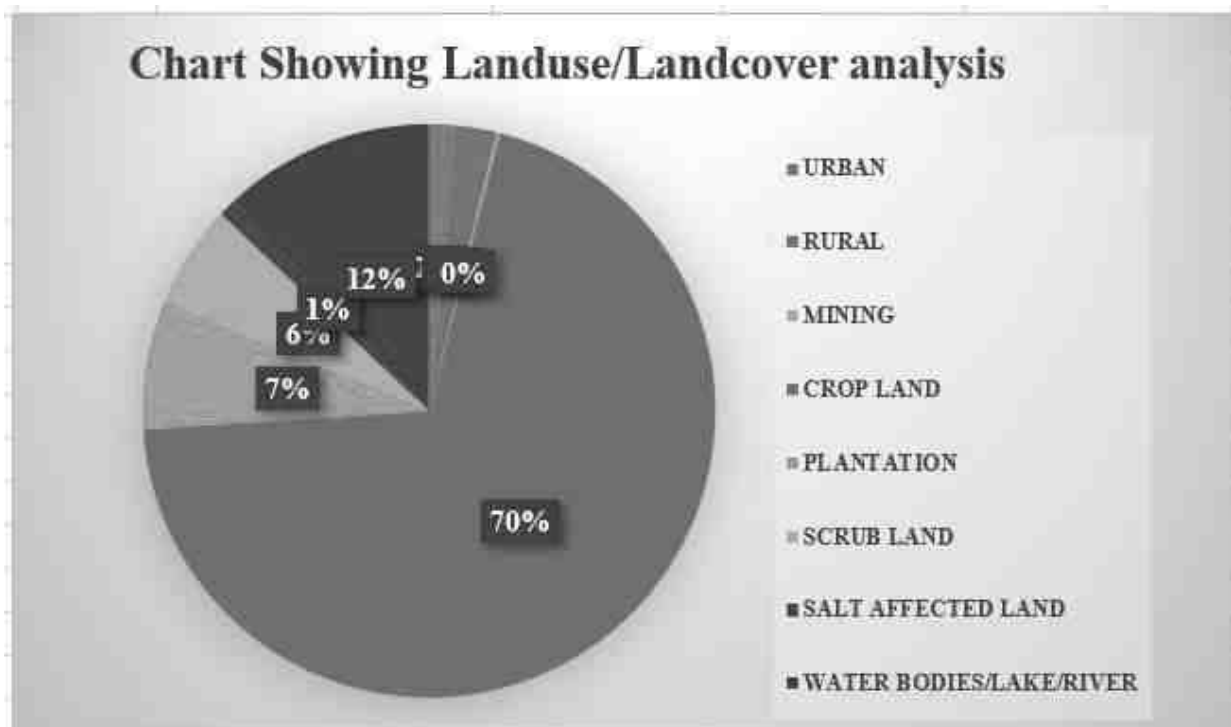


FIGURE 3.3: LAND USE AND LAND COVER CHART

Source: Table 3.2

Interpretation:

Total area of landuse is about 31937.76 Ha

Built-up area	=	1218.13 ha ie.,	3.82 %
Agriculture land	=	22351.35 ha ie.,	69.98 %
Plantation land	=	2303.07 ha i.e.	7.21%
Salt Affected Land	=	326.57 ha ie.,	1.02%
Mining area	=	54.00ha ie.,	0.17%
Water bodies	=	3806.92 ha ie.	11.92%
Scrub Land	=	1877.71	5.88%

Cluster of quarries within 500m radius is 7.52.5 ha of the total Mining areas within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

3.1.2 Topography

The cluster areas are almost plain terrain with gentle gradient towards South maximum elevation of the area is 137m above from MSL. There are no hilly regions in and around the area.

3.1.3 Drainage Pattern of the Area

There are no developed surface drainage channels in the study area. The area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks. The area is mostly dry in all seasons except rainy seasons.

The general drainage pattern of the area is of sub dendritic and dendritic pattern. During rainy season the surface runoff flows in W to E direction. The drainage pattern of the study area is given in Fig. 3.5. The quarrying activity will not hinder the natural flow of rainwater.

3.1.4 Environmental Features in the Study Area

There is no Wildlife Sanctuaries, National Park and Archaeological monuments within the study area. No Protected and Reserved Forest area is involved in the project area. Therefore, there will be no need to acquisition/diversion of forest land. The details related to the environment sensitivity around the mine lease area i.e. 10 km radius of the mine lease area, are given in the below Table 3.3.

3.1.5 Seismic Sensitivity

The proposed project site falls in the seismic Zone II, low damage risk zone as per BMTPC, Vulnerability Atlas of Seismic zone of India IS: 1893 – 2002. The project area falls in the hard rock terrain on the peninsular shield of south India which is highly stable.

TABLE 3.3 – DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE PROJECT AREA

Sl.No	Sensitive Ecological Features	Name	Arial Distance in km from Mine Lease Boundary
1	National Park / Wild life Sanctuaries	Vettangudi Birds Sanctuary	16.5km-SW
2	Reserve Forest	Usilamalai VelangudiR.F	2.50Km -N 2.53 Km – SW
3	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	None	Nil within 10KM Radius
4	Critically Polluted Areas	None	Nil within 10KM Radius
5	Mangroves	None	Nil within 10KM Radius
6	Mountains/Hills	None	Nil within 10KM Radius
7	Notified Archaeological Sites	None	Nil within 10KM Radius
8	Defence Installation	None	Nil within 10KM Radius

Source: Survey of India Toposheet, Village Cadastral Map& Google Earth/Maps

TABLE 3.4 – WATER BODIES WITHIN THE CLUSTER FROM PROPOSED QUARRIES

S.No	NAME	DISTANCE & DIRECTION
1	Odai	100m West
2	Tank	230m North
3	Tank	420m NW
4	Tank	570m SW
5	Tank	680m SE
6	Tank	7km West
7	Tank	8.2km North

Source: Village Cadastral Map and Field Survey

3.1.6 Soil Environment

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

TABLE 3.5 – SOIL SAMPLING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	S-1	Core Zone	Project Area	10°14'22.21"N 78°35'48.52"E
2	S-2	Sevoor	1.2km NE	10°15'0.79"N 78°36'9.85"E
3	S-3	Thuvar	2.6km SW	10°14'9.84"N 78°34'19.56"E
4	S-4	Thirukolakudi	4km NE	10°15'21.85"N 78°37'49.45"E
5	S-5	Chandiranpatti	5km SE	10°12'9.99"N 78°37'38.77"E
6	S-6	Vegupatti	5.5km NW	10°16'34.21"N 78°33'43.47"E

Source: On-site monitoring/sampling by Chennai Mettex Lab Private Limited in association with GEMS

The objective of the soil sampling is -

1. To determine the baseline soil characteristics of the study area;
2. To determine the impact of proposed activity on soil characteristics and;

To determine the impact on soil more importantly agriculture production point of view.

Methodology –

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

TABLE 3.6 – METHODOLOGY OF SAMPLING COLLECTION

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

Source: On-site monitoring/sampling by Chennai Mettex Lab Private Limited in association with GEMS

Soil Testing Result –

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

FIGURE 3.4: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS

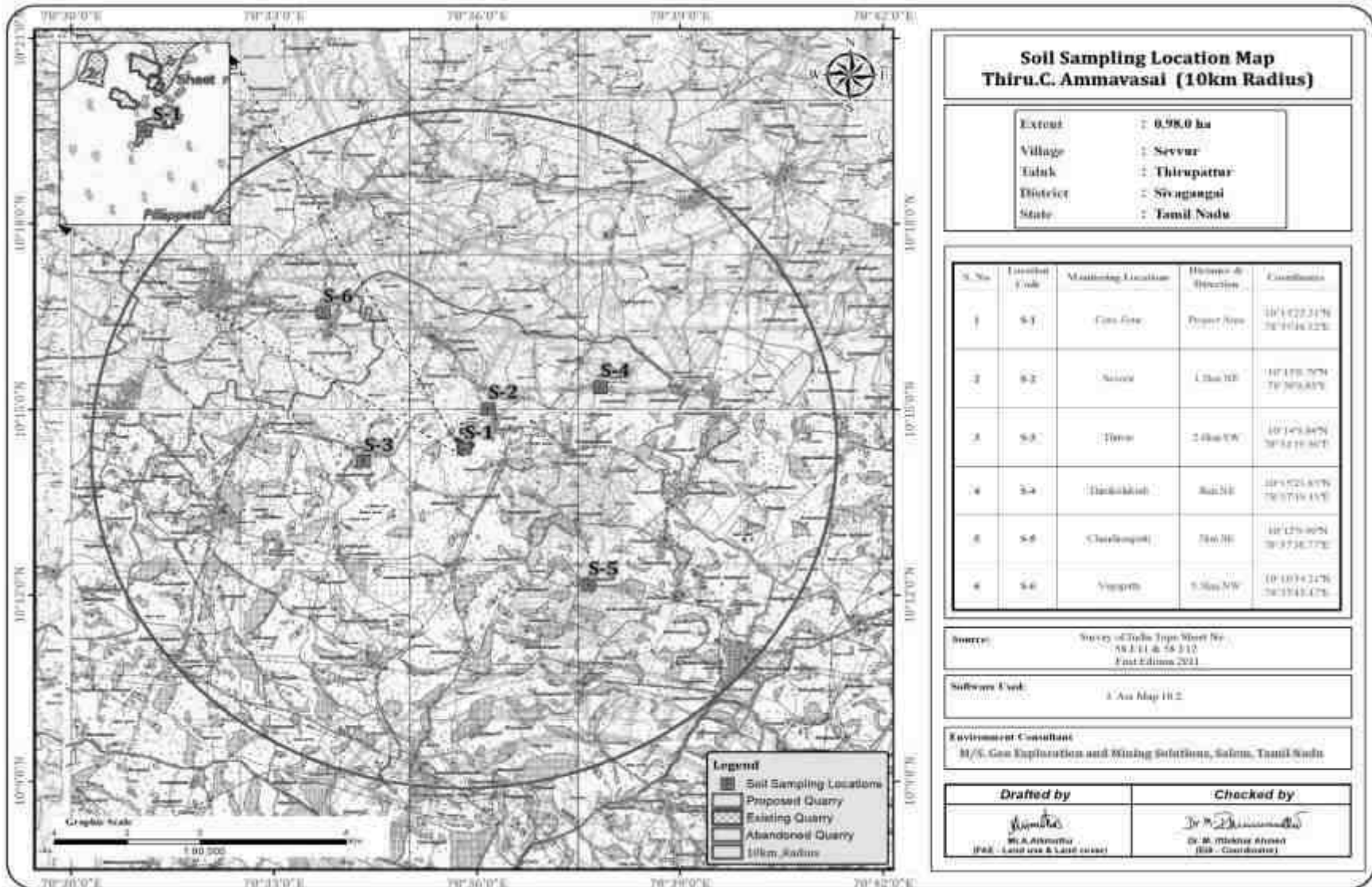


FIGURE 3.5: SOIL MAP

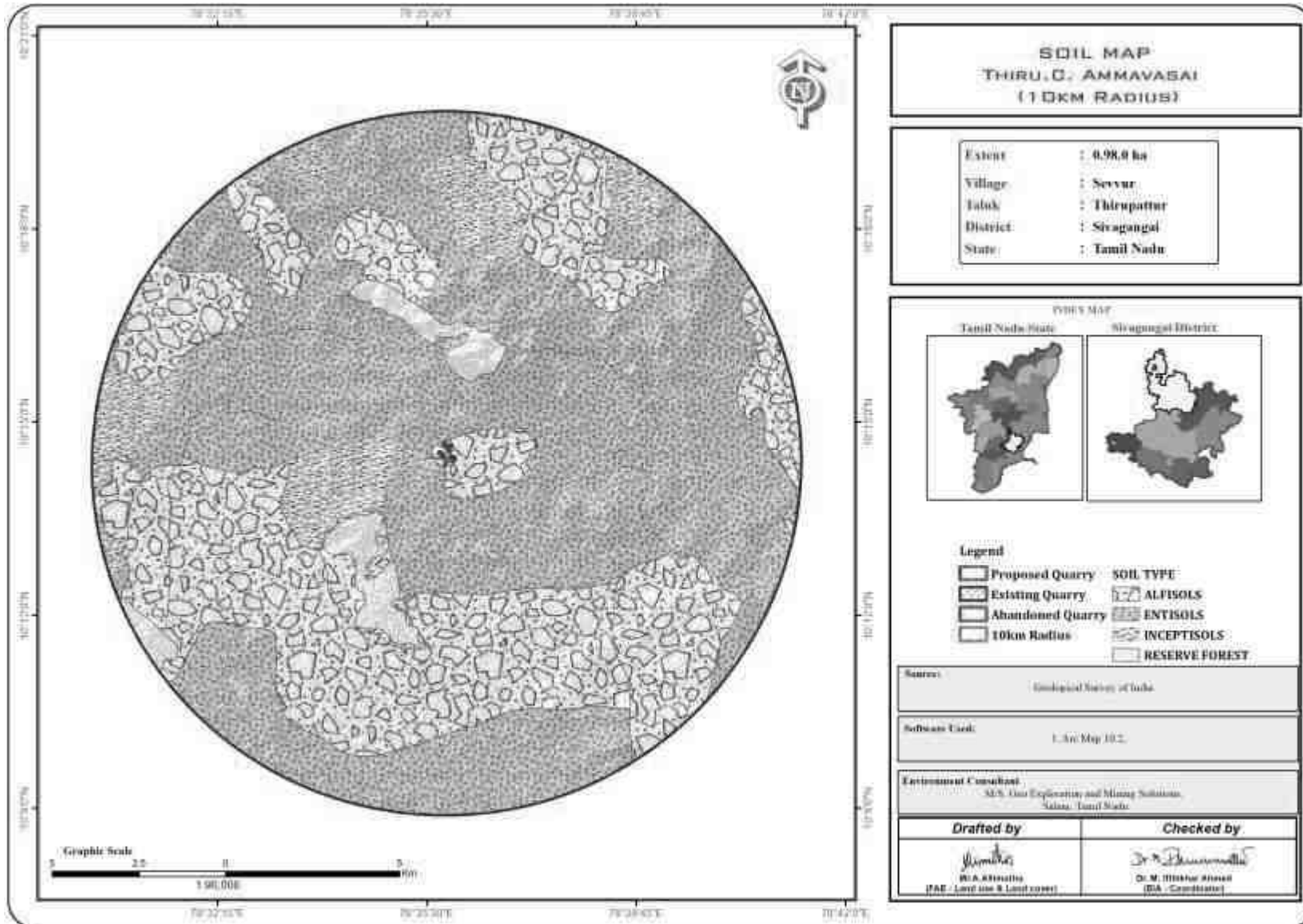


TABLE 3.7 – SOIL QUALITY MONITORING DATA

S. No	Test Parameters	Protocols	S1-Core Zone	S2-Sevoor	S3- Thuvur	S4- Thirukolakudi	S5- Chandiranpatti	S6- Vegupatti
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.33	8.98	8.10	8.27	7.69	7.90
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	455 µmhos/cm	550 µmhos/cm	560 µmhos/cm	467 µmhos/cm	480 µmhos/cm	528 µmhos/cm
03	Texture :							
	Clay	Gravimetric Method	33.6 %	39.4 %	37.8 %	37.5 %	35.5 %	40.1 %
	Sand		38.7 %	36.2 %	38.5 %	34.7 %	33.9 %	32.2 %
	Silt		27.7 %	24.4 %	23.7 %	27.8 %	30.6 %	27.7 %
04	Water Holding Capacity	By Gravimetric Method	46.1 %	46.3 %	45.9 %	47.4 %	46.4 %	48.5 %
05	Bulk Density	By Cylindrical Method	1.05 g/cm ³	1.01 g/cm ³	0.94 g/cm ³	1.03 g/cm ³	1.08 g/cm ³	1.10 g/cm ³
06	Porosity	By Gravimetric Method	41.4 %	48 %	42.9 %	46.5 %	45.5 %	47.6 %
07	Calcium as Ca	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	153.5 mg/kg	169.5 mg/kg	270 mg/kg	150 mg/kg	158 mg/kg	130 mg/kg
08	Magnesium as Mg		66.7 mg/kg	130 mg/kg	76 mg/kg	133.5 mg/kg	129 mg/kg	96.7 mg/kg
09	Manganese as Mn		3.6 mg/kg	24 mg/kg	24.5 mg/kg	40.1 mg/kg	21.8 mg/kg	22.5 mg/kg
10	Zinc as Zn		2.7 mg/kg	1.71 mg/kg	4.1 mg/kg	2.6 mg/kg	1.64 mg/kg	4.4 mg/kg
11	Boron as B		1.2 mg/kg	1.6 mg/kg	1.6 mg/kg	1.9 mg/kg	1.9 mg/kg	0.91 mg/kg
12	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	133 mg/kg	203.5 mg/kg	140 mg/kg	90.4 mg/kg	179 mg/kg	130.7 mg/kg
13	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.012 %	0.0045 %	0.012 %	0.011 %	0.0011 %	0.015 %
14	Potassium as K	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	18.2 mg/kg	51 mg/kg	35 mg/kg	32 mg/kg	65.5 mg/kg	44 mg/kg
15	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	1.26 mg/kg	2.2 mg/kg	1.06 mg/kg	1.9 mg/kg	2.37 mg/kg	2.8 mg/kg
16	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	450 mg/kg	530 mg/kg	463 mg/kg	374.1 mg/kg	450 mg/kg	477.1 mg/kg
17	Cadmium as Cd	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)
18	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	1.07 mg/kg	1.31 mg/kg	BDL (DL : 1.0 mg/kg)	1.55 mg/kg
19	Copper as Cu		BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)	BDL (DL : 1.0 mg/kg)
20	Lead as Pb		0.71 mg/kg	0.67 mg/kg	0.31 mg/kg	0.88 mg/kg	0.16 mg/kg	0.76 mg/kg
21	Iron as Fe		17.2 mg/kg	2.8 mg/kg	1.86 mg/kg	2.9 mg/kg	2.29 mg/kg	2.13 mg/kg
22	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.48 %	2.77 %	2.22 %	3.25 %	2.67 %	1.83 %
23	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.44 %	1.61 %	1.29 %	1.89 %	1.55 %	1.06 %
24	Cation Exchange Capacity	USEPA 9080 - 1986	46.8 meq/100g of soil	38.6 meq/100g of soil	42.8 meq/100g of soil	45.5 meq/100g of soil	45.8 meq/100g of soil	40.1 meq/100g of soil

Source: Sampling Results by Chennai Mettlex Lab Private Limited

- This proposed mining activity is for Rough Stone Quarry by opencast mechanized mining method involving occasional drilling & blasting activities on the weathered formation and removal of topsoil and preserving in safety barrier of the lease area to facilitate greenbelt development and winning of rough stone by eco-friendly wire-saw cutting method.
- Dust generation due to this quarrying activity becomes air borne and gets carried away to surrounding areas which may retard the photosynthesis activities of plants and heavy metals naturally occur in soil, but additional pollution come from anthropogenic activities such as agriculture, urbanisation, industrialisation, and mining.
- The proposed rough stone project is a Charnockite formation which does not source to heavy metal contamination.
- This proposed mining is a small-scale activity and in order to mitigate the impact of mining around the proposed mine lease area on Soil Health and Biodiversity its proposed by ways of daily three times water sprinkling by own water tanker and water sprinkling arrangements and greenbelt development all along the mine lease boundary
- Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding Soil Health and Biodiversity.

Interpretation & Conclusion

Physical Characteristics –

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay to Sandy Soil and Bulk Density of Soils in the study area varied between 0.94 – 1.10 g/cc. The Water Holding Capacity is 46.1% to 48.5% and Porosity of the soil samples is found to be medium i.e. ranging from 41.4 – 48.0 %.

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline in nature with pH range 7.69 to 8.98
- The available Nitrogen content range between 374.1 mg/kg -530 mg/kg
- The available Phosphorus content range between 1.06 mg/kg to 2.8 mg/kg
- The available Potassium range between 18.2mg/kg to 65.5 mg/kg

Whereas, the micronutrient as zinc (Zn), iron (Fe) and copper (Cu) were found in the range of 1.64mg/kg to 4.4 mg/kg, 1.86 mg/kg to 17.2 mg/kg and ND

Wilting co efficient in significant level would mean that the soil would support the vegetation. The soil properties in the buffer zone reveal that the soil can sustain vegetation. If amended suitability the core area can also withstand plantation.

3.2 Water Environment

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

3.2.1 Surface Water Resources:

The buffer area is studded with few tanks that serve as the source for agriculture and also their surplus feeds adjoining tanks. The rainfall over the area is moderate, the rainwater storage in open wells, trenches is in practice over the area and the stored water acts as source of freshwater for couple of months after rainy season.

3.2.2 Ground Water Resources:

The terrain is underlain by hard rock formations, Fissured and fractured crystalline rocks constitute the important aquifer systems in the Sivagangai region. Ground water occurs under phreatic to semi-confined conditions

in these formations and is being developed by means of dug wells and filter points. Proterozoic formation is the basement rocks which consist of quartzite, crystalline limestone, calc-granulite, hornblende – biotite gneiss, charnockite or pyroxene granulite, granite and pegmatite. Weathered, a fissured crack, shear zones and joints in the basement rock act as a good groundwater potential zone in the study area.

The study area falls in the Thiruppattur block which is categorized as over-exploited zone as per G.O (MS) No.113 dated 09.06.2016.

3.2.3 Methodology

Reconnaissance survey was undertaken to collect the sampling and locations were finalized based on;

1. Drainage pattern;
2. Location of residential areas representing different activities/likely impact areas; and
3. Likely areas, which can represent baseline conditions

Two (2) surface water and four (4) ground water samples were collected in the study area and physico-chemical, heavy metals and bacteriological parameters were analysed. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and 'Standard methods for the Examination of Water and Waste water' published by American Public Health Association (APHA). The water sampling locations are given in Table 3.8 and shown as Figure 3.5.

TABLE 3.8 – WATER SAMPLING LOCATIONS

S. No	Location code	Monitoring Locations	Distance & Direction from the cluster	Coordinates
1	SW-1	Tank Near Sevoor	750m NE	10°14'44.51"N 78°36'1.83"E
2	SW-2	Tank Near Thuvar	2.5km SW	10°14'18.20"N 78°34'25.61"E
3	WW-1	Near Project Area	350m NE	10°14'32.97"N 78°35'56.97"E
4	WW-2	Kunnathanpatti	4.3km SW	10°12'38.58"N 78°34'10.22"E
5	BW-1	Vegupatti	5.5km NW	10°16'11.97"N 78°33'51.95"E
6	BW-2	Chandiranpatti	5km SE	10°12'11.60"N 78°37'39.66"E

Source: On-site monitoring/sampling by Chennai Mettex Lab Private Limited in association with GEMS

Note: SW- Surface water, WW – Well Water, BW – Bore well

FIGURE 3.6: WATER SAMPLING LOCATIONS AROUND 10 KM RADIUS

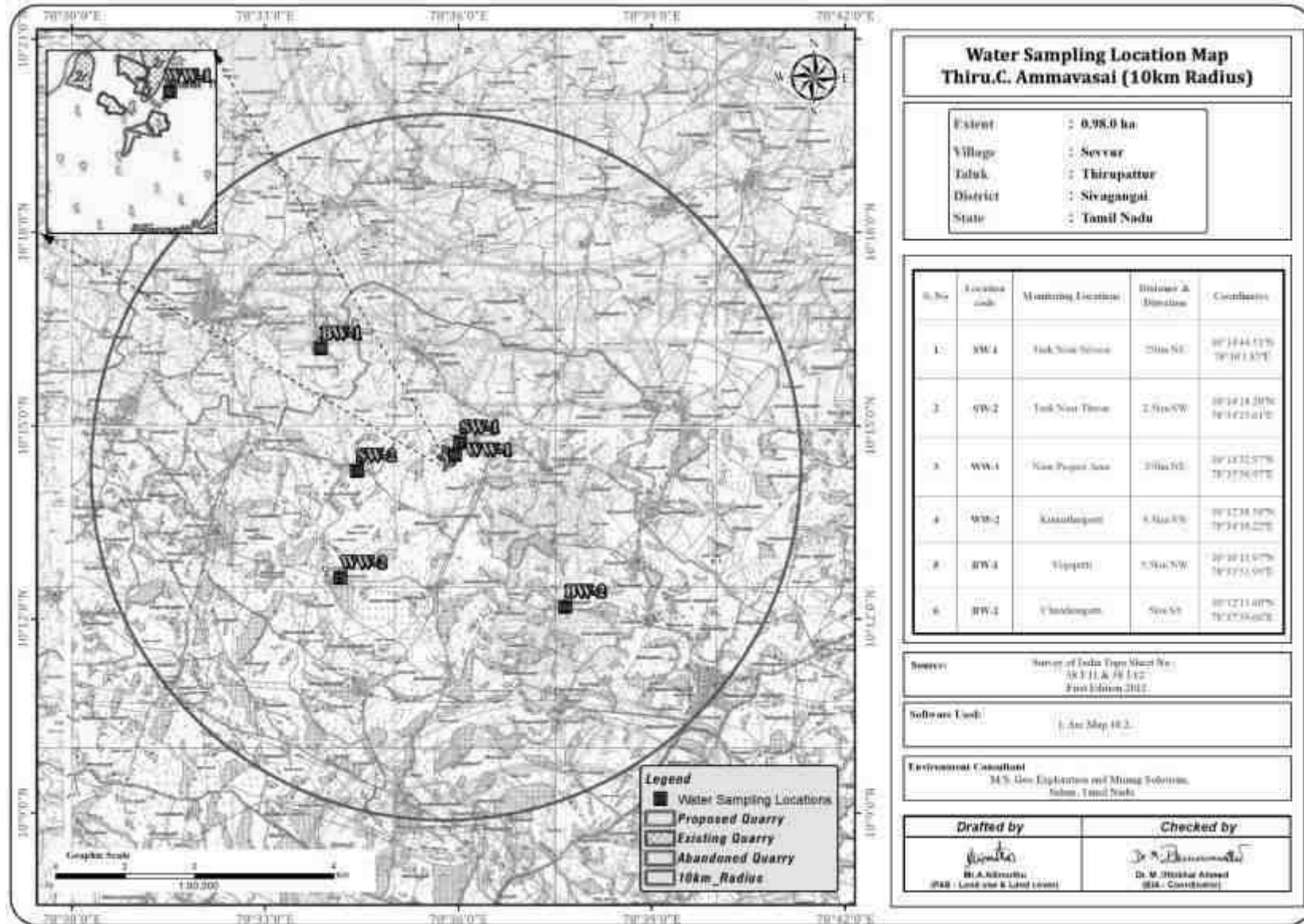


TABLE 3.9 – SURFACE WATER ANALYSIS RESULTS

S.NO	Parameter	UNIT	Surface Water (SW-1) - Tank Near Sevoor	Surface Water (SW-2) – Tank Near Thuvar
1	Color	Hazen	10 Hazen	5 Hazen
2	Odour	-	Agreeable	Agreeable
3	pH@ 25°C	-	7.55	7.02
4	Electrical Conductivity @ 25°C	µs/cm	1053 µmhos/cm	1281 µmhos/cm
5	Turbidity	NTU	5.1 NTU	2.2 NTU
6	Total Dissolved Solids	mg/l	621 mg/l	455 mg/l
7	Total Hardness as CaCO ₃	mg/l	192.74 mg/l	133.34 mg/l
8	Calcium as Ca	mg/l	32.1 mg/l	25.1 mg/l
9	Magnesium as Mg	mg/l	27.4 mg/l	17.2 mg/l
10	Total Alkalinity as CaCO ₃	mg/l	277 mg/l	197 mg/l
11	Chloride as Cl ⁻	mg/l	135.5 mg/l	80.6 mg/l
12	Sulphate as SO ₄ ⁻	mg/l	76.1 mg/l	57.5 mg/l
13	Iron as Fe	mg/l	0.16 mg/l	0.14 mg/l
14	Free Residual Chlorine	mg/l	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)
15	Fluoride as F	mg/l	0.55 mg/l	0.22 mg/l
16	Nitrates as NO ₃	mg/l	17.2 mg/l	11.5 mg/l
17	Copper as Cu	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	mg/l	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	mg/l	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	mg/l	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)
21	Selenium as Se	mg/l	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	mg/l	BDL (DL: 0.03)	BDL (DL:0.005 mg/l)
23	Lead as Pb	mg/l	BDL (DL:0.01)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	mg/l	BDL (DL:0.02)	BDL(DL : 0.05 mg/l)
25	Total Chromium	mg/l	BDL (DL: 0.05)	BDL(DL : 0.02 mg/l)
26	Boron as B	mg/l	BDL (DL:0.1)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	mg/l	BDL (DL:1.0)	BDL(DL : 0.01 mg/l)
28	Phenolic Compunds as	mg/l	Absent	BDL (DL:0.0005 mg/l)
29	Anionic Detergents as	mg/l	BDL (DL:0.1)	BDL (DL:0.01 mg/l)
30	Cynaide as CN	mg/l	Absent	BDL (DL:0.01 mg/l)
31	Biological Oxygen	mg/l	6.2 mg/l	2.8 mg/l
32	Chemical Oxygen	mg/l	36 mg/l	24 mg/l
33	Dissolved Oxygen	mg/l	5.3 mg/l	5.6 mg/l
34	Total Coliform	Per 100ml	410 MPN/100ml	360 MPN/100ml
35	E-Coli	Per 100ml	130 MPN/100ml	110 MPN/100ml
36	Barium as Ba	mg/l	BDL (DL:0.5)	BDL(DL:0.05 mg/l)
37	Ammonia-n (as Total	mg/l	1.2 mg/l	BDL (DL:1 mg/l)
38	Sulphide as H ₂ S	mg/l	BDL (DL:0.05)	BDL (DL:0.01 mg/l)
39	Molybdenum as Mo	mg/l	BDL (DL:0.5)	BDL (DL:0.02 mg/l)
40	Total Arsenic as As	mg/l	BDL (DL:0.01)	BDL (DL:0.005 mg/l)
41	Total Suspended Solids	mg/l	15.5 mg/l	13.3 mg/l

TABLE 3.10 – GROUND WATER ANALYSIS RESULTS

S.NO	Parameter	Unit	WW1 Near Project Area	WW2 Kunnathanpatti	BW1 Vegupatti	BW2 Chandiranpatti
1	Color	Hazen	10 Hazen	5	5	5
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable
3	pH@ 25°C	-	7.97	7.73	7.06	7.88
4	Electrical Conductivity	µs/cm	1203 µmhos/cm	831 µmhos/cm	925 µmhos/cm	969 µmhos/cm
5	Turbidity	NTU	3.9 NTU	1.2 NTU	1.9 NTU	1.2 NTU
6	Total Dissolved Solids	mg/l	710 mg/l	490 mg/l	546 mg/l	572 mg/l
7	Total Hardness as CaCO ₃	mg/l	234.3 mg/l	154.04 mg/l	196.44 mg/l	179.29 mg/l
8	Calcium as Ca	mg/l	40.2 mg/l	27.3 mg/l	34.9 mg/l	30.5 mg/l
9	Magnesium as Mg	mg/l	32.6 mg/l	20.9 mg/l	26.6 mg/l	25.1 mg/l
10	Total Alkalinity	mg/l	274 mg/l	171.5 mg/l	194.6 mg/l	210.1 mg/l
11	Chloride as Cl ⁻	mg/l	134.5 mg/l	120 mg/l	119 mg/l	133 mg/l
12	Sulphate as SO ₄ ⁻	mg/l	110 mg/l	55 mg/l	65.7 mg/l	64.5 mg/l
13	Iron as Fe	mg/l	0.29 mg/l	0.11 mg/l	0.29 mg/l	0.22 mg/l
14	Free Residual Chlorine	mg/l	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)	BDL (DL:0.1 mg/l)
15	Fluoride as F	mg/l	0.32 mg/l	0.26 mg/l	0.21 mg/l	0.27 mg/l
16	Nitrates as NO ₃	mg/l	27.3 mg/l	5.5 mg/l	8.7 mg/l	7.7 mg/l
17	Copper as Cu	mg/l	BDL (DL:0.2)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
18	Manganese as Mn	mg/l	BDL (DL:0.05)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)
19	Mercury as Hg	mg/l	(BDL (DL: 0.0005)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)	BDL (DL:0.0005 mg/l)
20	Cadmium as Cd	mg/l	BDL (DL:0.01)	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)	BDL (DL:0.001 mg/l)
21	Selenium as Se	mg/l	BDL (DL: 0.05)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
22	Aluminium as Al	mg/l	BDL (DL: 0.03)	BDL (DL:0.005 mg/l)	BDL (DL: 0.03)	BDL (DL:0.005 mg/l)
23	Lead as Pb	mg/l	BDL (DL:0.01)	BDL (DL:0.005 mg/l)	BDL (DL:0.01)	BDL (DL:0.005 mg/l)
24	Zinc as Zn	mg/l	BDL (DL:0.02)	BDL (DL : 0.05 mg/l)	BDL (DL:0.02)	BDL (DL : 0.05 mg/l)
25	Total Chromium	mg/l	BDL (DL: 0.05)	BDL(DL : 0.02 mg/l)	BDL (DL: 0.05)	BDL(DL : 0.02 mg/l)
26	Boron as B	mg/l	BDL (DL:0.1)	BDL(DL : 0.05 mg/l)	BDL (DL:0.1)	BDL(DL : 0.05 mg/l)
27	Mineral Oil	mg/l	BDL (DL:1.0)	BDL(DL : 0.01 mg/l)	BDL (DL:1.0)	BDL(DL : 0.01 mg/l)
28	Phenolic Compunds	mg/l	Absent	BDL (DL:0.0005 mg/l)	Absent	BDL (DL:0.0005 mg/l)
29	Anionic Detergents	mg/l	BDL (DL:0.1)	BDL (DL:0.01 mg/l)	BDL (DL:0.1)	BDL (DL:0.01 mg/l)
30	Cynaide as CN	mg/l	Absent	BDL (DL:0.01 mg/l)	Absent	BDL (DL:0.01 mg/l)
31	Total Coliform	Per 100ml	470 MPN/100ml	170 MPN/100ml	120 MPN/100ml	110 MPN/100ml
32	E-Coli	Per 100ml	120 MPN/100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml	< 1.8 MPN/100ml
33	Barium as Ba	mg/l	BDL(DL:0.05 mg/l)	BDL(DL:0.05 mg/l)	BDL (DL:0.5)	BDL (DL:0.5)
34	Ammonia (as Total	mg/l	1.5 mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
35	Sulphide as H ₂ S	mg/l	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)	BDL (DL:0.01 mg/l)
36	Molybdenum as Mo	mg/l	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)	BDL (DL:0.02 mg/l)
37	Total Arsenic as	mg/l	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)	BDL (DL:0.005 mg/l)
38	Total Suspended Solids	mg/l	BDL(DL:1.0)	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)	BDL (DL:1.0 mg/l)

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

Source: Sampling Results by Chennai Mettlex Lab Private Limited

3.2.4 Interpretation & Conclusion

Surface Water

The pH of surface 7.02-7.55 while turbidity found within the standards. Total Dissolved Solids 455-621mg/l and Chloride 80.6-135.5 mg/l. Nitrates 11.5-17.2 mg/l, while sulphates 57.5-76.1mg/l.

Ground Water

The pH of the water samples collected ranged from 7.06 to 7.97 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. on Turbidity, the water samples meet the requirement. Total Dissolved Solids were found in the range of 490 - 710mg/l in all samples. Total hardness varied between 154.04 mg/l – 234.3 mg/l for all samples.

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

3.2.5 Hydrology and Hydrogeological studies

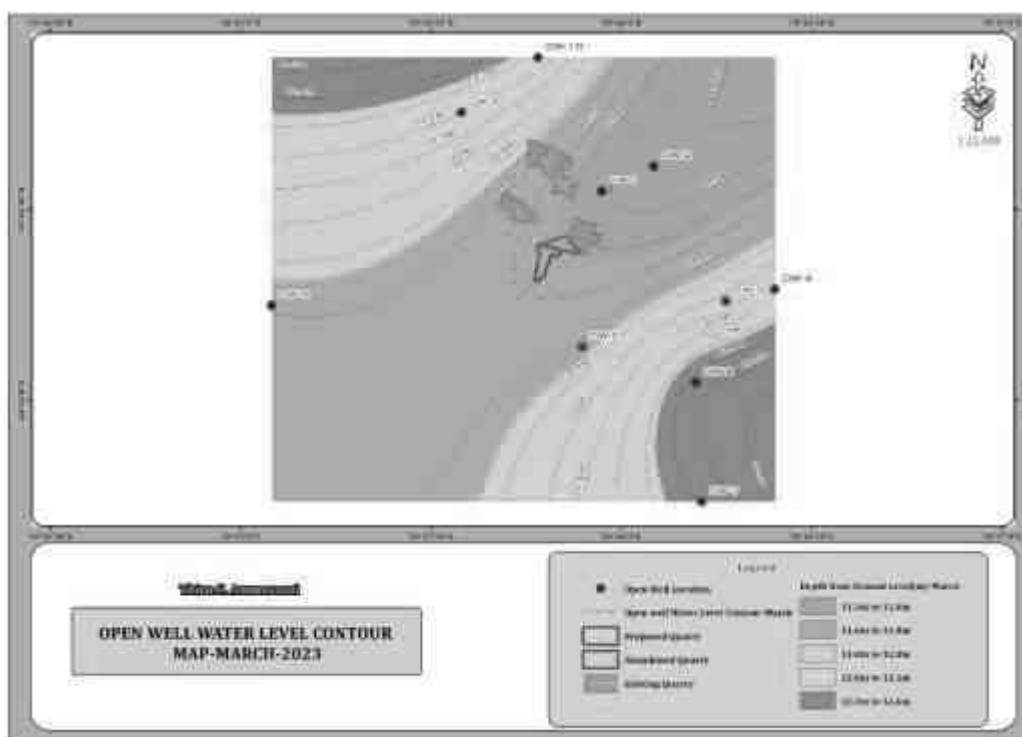
The district is underlain by hard rock formation Fissured and Fractured crystalline rocks constitute the important aquifer systems in the district. Geophysical prospecting was carried out in that area by SSRMP-80 Instrument by qualified Geo physicist with the help of IGIS software and it was inferred that the low resistance encountered at the depth between 64m. The Maximum depth of the quarrying operation in this proposal is 16m hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area. There is no necessity of stream, channel diversion due to this upcoming project.

During the rainy season there is a possibility of collection of seepage water from the subsurface levels this is due to the high intensity of fracture and weathered portion up to a depth of 10m thus the collected seepage water will be stored in the mine sump pits and will be used for dust suppression and greenbelt development and during the end of the life of the mine this collected water will be as a temporary reservoir in that area.

TABLE 3.11: WATER LEVEL OF OPEN WELLS 1 KM RADIUS

S.No	Name	LATITUDE	LONGITUDE	MARCH23	APRIL23	MAY23
1	OW-1	78° 35' 56.9330" E	10° 14' 32.9632" N	11.5	12.1	12.7
2	OW-2	78° 36' 05.1391" E	10° 14' 36.8958" N	11.4	12	12.6
3	OW-3	78° 36' 16.4672" E	10° 14' 15.6585" N	12	12.6	13.2
4	OW-4	78° 36' 24.1987" E	10° 14' 17.5030" N	12.2	12.8	13.4
5	OW-5	78° 35' 53.8617" E	10° 14' 08.4196" N	11.8	12.4	13
6	OW-6	78° 36' 11.8103" E	10° 14' 02.8110" N	12.5	13.1	13.7
7	OW-7	78° 36' 12.6726" E	10° 13' 44.0356" N	12.4	13	13.6
8	OW-8	78° 35' 04.8403" E	10° 14' 14.9547" N	11.8	12.4	13
9	OW-9	78° 35' 34.7641" E	10° 14' 45.3580" N	12.2	12.8	13.4
10	OW-10	78° 35' 46.8638" E	10° 14' 53.9901" N	12.3	12.9	13.5

FIGURE 3.7: CONTOUR MAP OF OPEN WELL WATER LEVEL



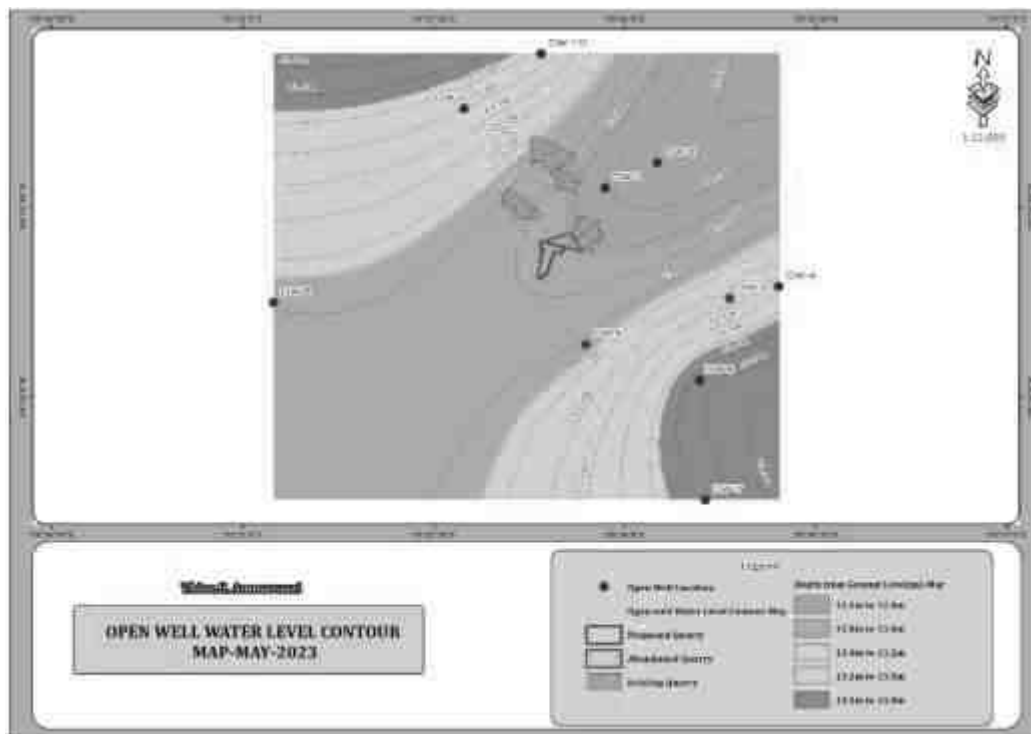
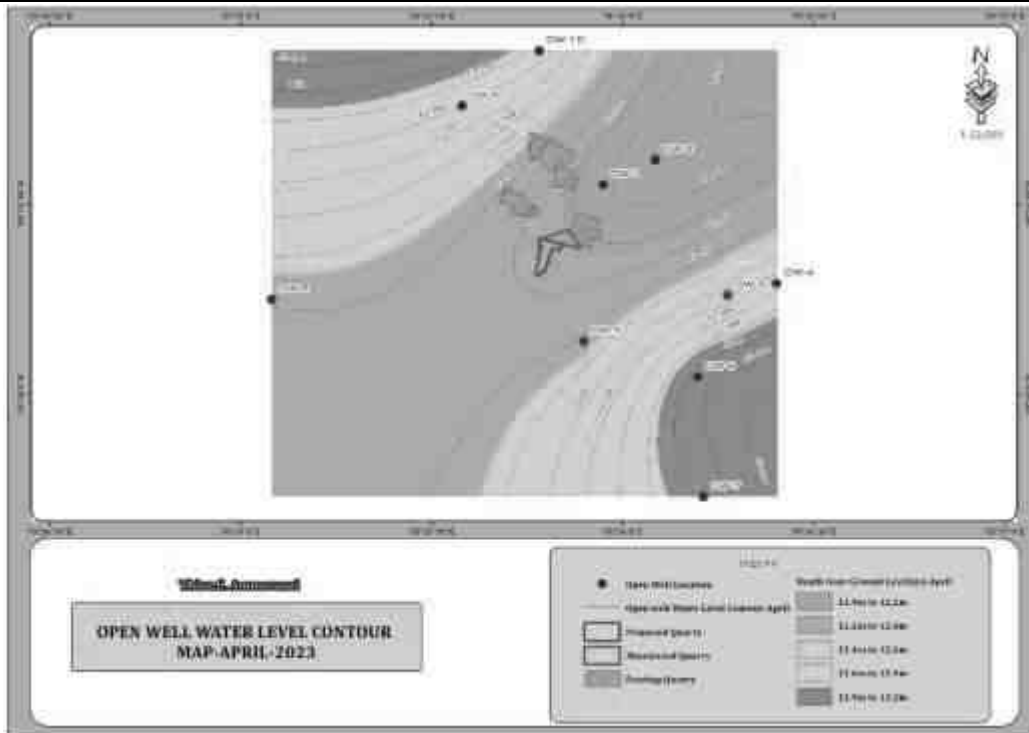
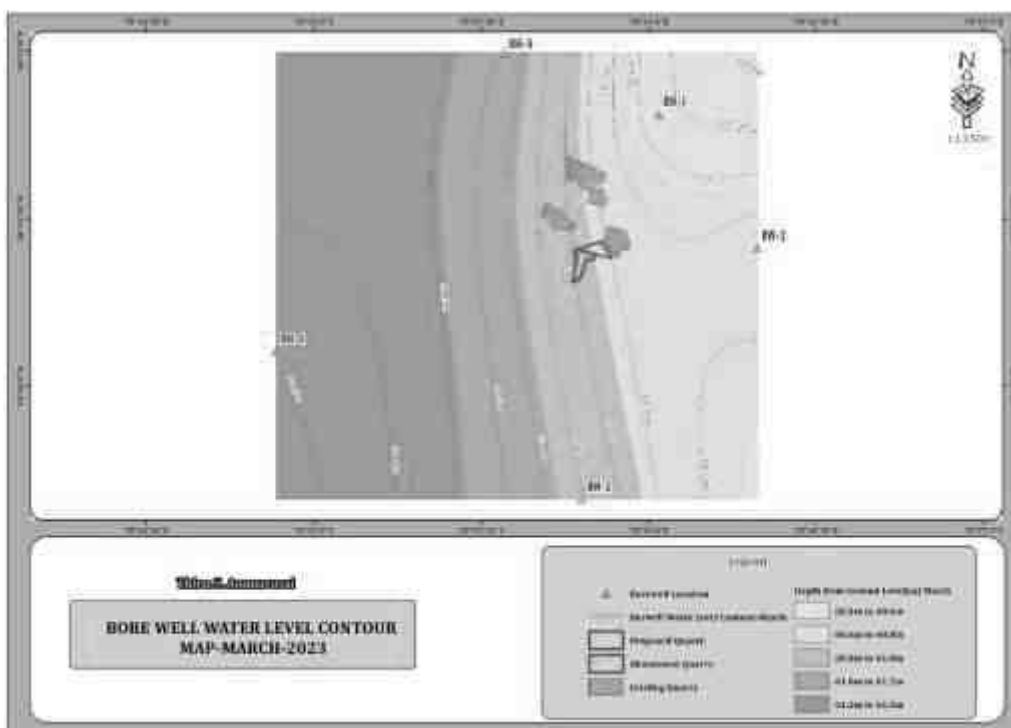


TABLE 3.12: WATER LEVEL OF BOREWELLS 1 KM RADIUS

S.No	Name	LATITUDE	LONGITUDE	MARCH-23	APRIL-23	MAY-23
1	BW-1	78° 36' 01.8422" E	10° 14' 48.7129" N	60.5	61.1	61.7
2	BW-2	78° 36' 19.4972" E	10° 14' 24.7666" N	60.8	61.4	62
3	BW-3	78° 35' 48.1367" E	10° 13' 39.7472" N	61	61.6	62.2
4	BW-4	78° 34' 53.1584" E	10° 14' 06.2521" N	61.5	62.1	62.7
5	BW-5	78° 35' 34.1265" E	10° 14' 59.8008" N	61.2	61.8	62.4

FIGURE 3.8: CONTOUR MAP OF BORE WELL WATER LEVEL



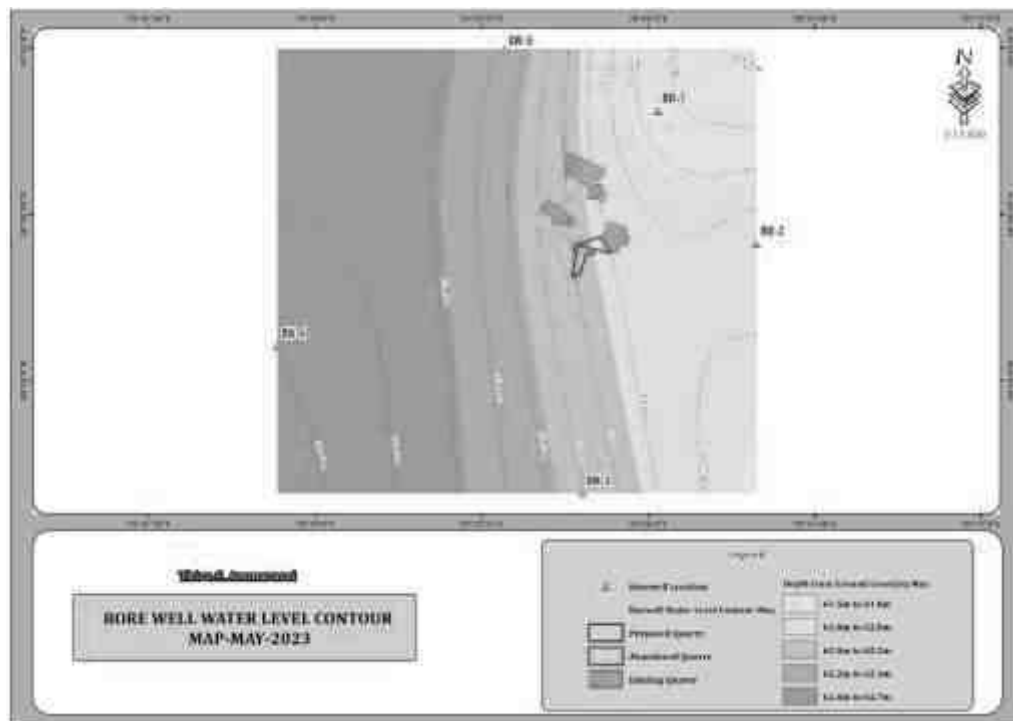


FIGURE 3.9: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE

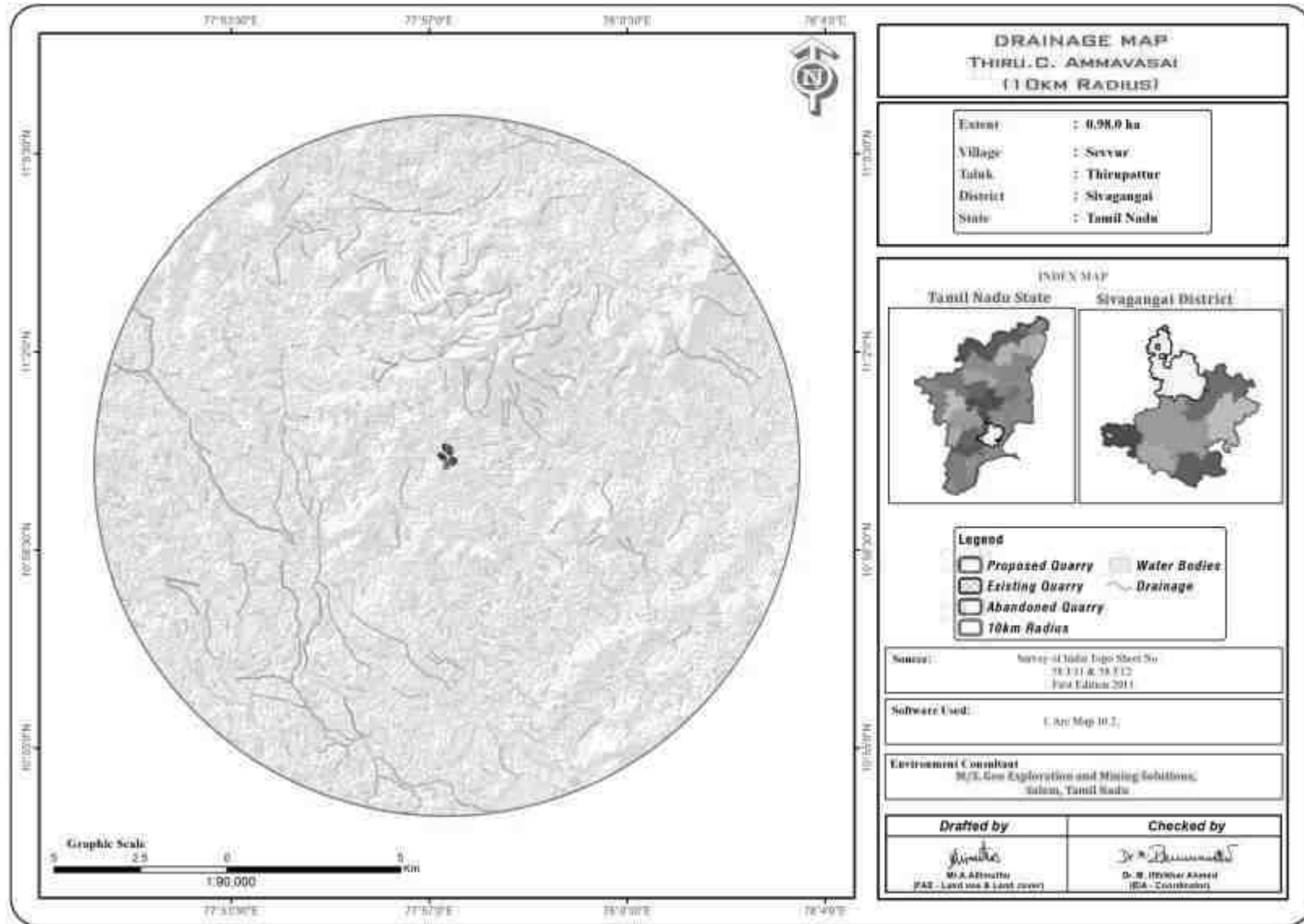
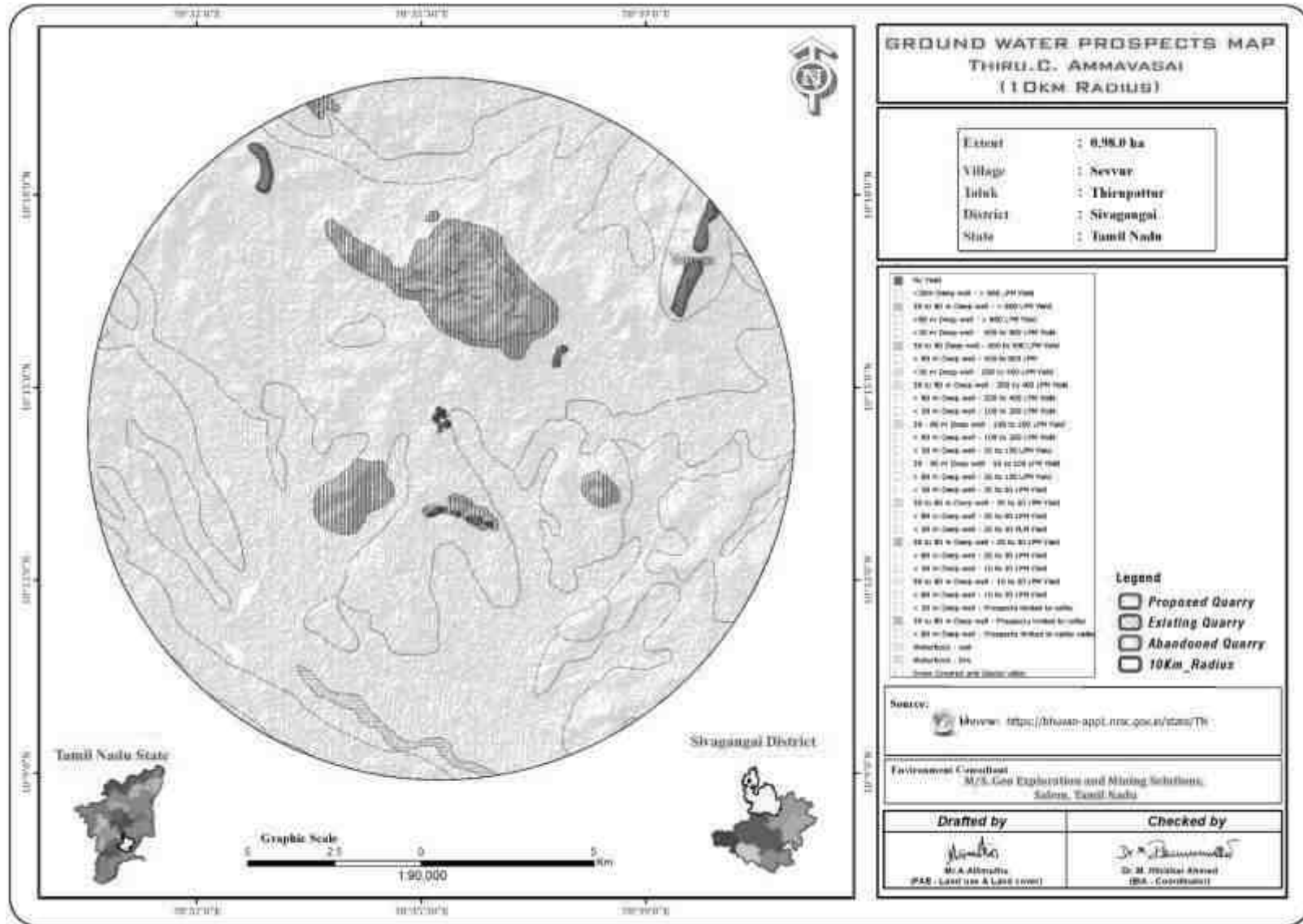


FIGURE 3.10: GROUND WATER LEVEL MAP



3.2.5.1 Methodology and Data Acquisition

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

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

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

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

ΔV = potential difference between receiving electrodes

G = Geometric Factor.

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

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

ρ_r = Resistivity of Rocks

ρ_w = Resistivity of water in pores of rock

F = Formation Factor

\emptyset = Fractional pore volume

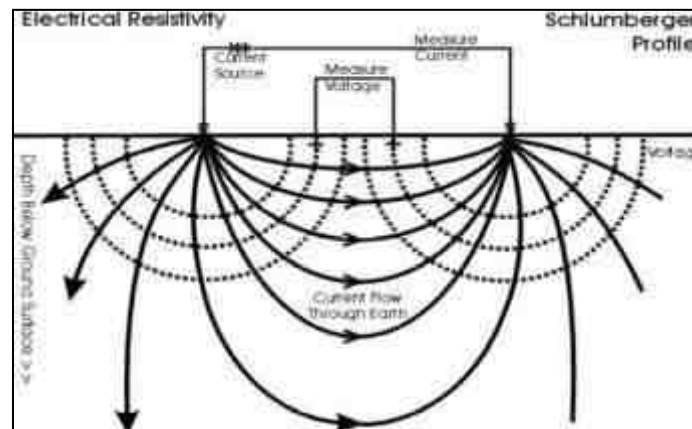
A = Constants with values ranging from 0.5 to 2.5

3.2.5.2 Survey Layout

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

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

RESISTIVITY SURVEY PROFILE



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

3.2.5.3 Data Presentation

It was inferred that the low resistance encountered at the depth between 64m. The maximum depth proposed in this cluster quarry 16 m BGL. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

3.2.5.4 Geophysical Data Interpretation and Conclusion

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

Based on the Geophysical interpretation water table fracture zone is expected above 64m bgl, Water level in the open well is ranges from 11.4m to 13.7m bgl it is only collected from the seepage water in shallow depth open wells are selected on the basis of suitable lineament and hydro fractures environment in shallow depth. Water level in the bore well is ranges from 60.5 to 62.4m bgl which will clearly evidence that the potential aquifer in the area is above 64m bgl. The depth of the mining operation is 16m bgl **hence this mining operation will not intersect the Ground water table**. Seepage water will be collected in the mine pit will be utilized for greenbelt development and dust suppression.

3.3 Air Environment

The ambient air quality with respect to the study area of 10 km radius including the cluster quarries forms the baseline information. The prime objective of baseline air quality monitoring is to assess existing air quality of the area. This will also be useful in assessing the conformity to standards of the ambient air quality during the operations.

The existing ambient air quality of the area is important for evaluating the impact of mining activities on the ambient air quality. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of Existing and proposed quarries within the radius of 500m.

The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities. This section describes the identification of sampling locations, methodology adopted during the monitoring period and sampling frequency.

The baseline status of the ambient air quality has been assessed through scientifically designed ambient air quality network. The design of monitoring network in the air quality surveillance program has been based on the following considerations:

- Meteorological conditions.
- Topography of the study area.
- Likely impact area.

3.3.1 Meteorology & Climate

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

A temporary meteorological station was installed at project site. The station was installed at a height of 4 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis.

Climate

- ✓ In Sivaganga, the wet season is overcast, the dry season is partly cloudy, and it is hot and oppressive year-round. Over the course of the year, the temperature typically varies from 71°F to 97°F and is rarely below 68°F or above 102°F.
- ✓ The hot season lasts for 3.6 months, from March 28 to July 16, with an average daily high temperature above 94°F. The hottest month of the year in Sivaganga is May, with an average high of 97°F and low of 80°F.
- ✓ The cool season lasts for 2.7 months, from November 3 to January 27, with an average daily high temperature below 86°F. The coldest month of the year in Sivaganga is December, with an average low of 73°F and high of 84°F.

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

Rainfall

The average annual rainfall and the 5 years rainfall is as follows:

TABLE 3.13 – RAINFALL DATA

Actual Rainfall in mm					Normal Rainfall in mm
2017	2018	2019	2020	2021	
967.5	932.6	966.4	1112.0	1270.8	985

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

TABLE 3.14 – METEOROLOGICAL DATA RECORDED AT SITE

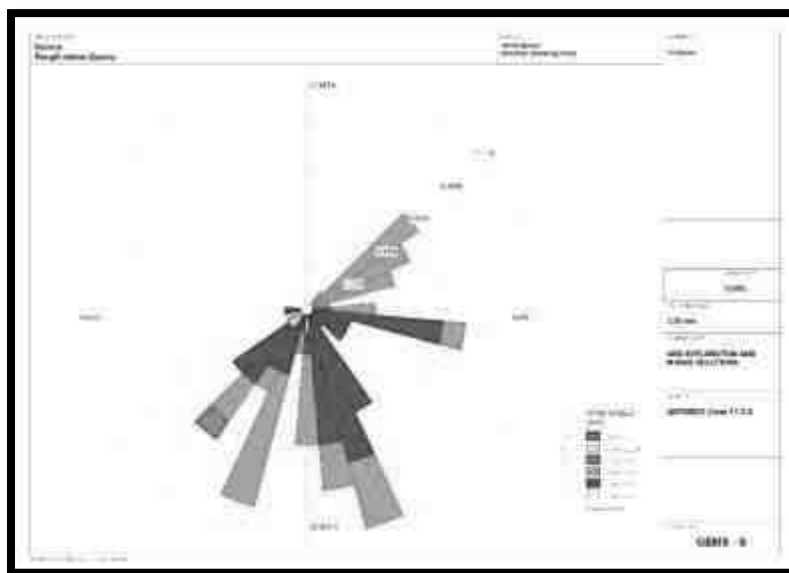
S.No	Parameters		Mar-2023	Apr-2023	May-2023
1	Temperature (⁰ C)	Max	31.19	32.8	31.56
		Min	26.33	28.86	26.5
		Avg	28.76	30.83	29.03
2	Relative Humidity (%)	Avg	66.03	64.47	77.09
3	Wind Speed (m/s)	Max	5.44	5.08	5.7
		Min	2.15	2.45	1.53
		Avg	3.79	3.76	3.61
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind Direction		NE,ENE	E,SSE	SSW, SW

Source: On-site monitoring/sampling by Chennai Mettex Lab Private Limited in association with GEMS.

Correlation between Secondary and Primary Data

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

- The average maximum and minimum temperatures of IMD, Sivagangai agro. Showed a higher in respect of on-site data i.e. in Sevvur village.
- The relative humidity levels were lesser at site as compared to IMD, Sivagangai agro.
- The wind speed and direction at site shows similar trend that of IMD, Sivagangai agro.
- Windrose diagram of the study site is depicted in Figure. 3.12. Predominant downwind direction of the area during study season is North East to South West.

FIGURE 3.11: WINDROSE DIAGRAM

Environmental In the abstract of collected data wind rose were drawn on presented in figure No.3.15 during the monitoring period in the study area

1. Predominant winds were from NE- SW
2. Wind velocity readings were recorded between 0.50 to 5.70km / hour
3. Calm conditions prevail of about 0.00% of the monitoring period

4. Temperature readings ranging from 26.33⁰ to 32.8⁰C
5. Relative humidity ranging from 66.03 to 77.09 %
6. The monitoring was carried out continuously for three months

3.3.2 Methodology and Objective

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

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

3.3.3 Sampling and Analytical Techniques

TABLE 3.15 – METHODOLOGY AND INSTRUMENT USED FOR AIR QUALITY ANALYSIS

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

Source: Sampling Methodology followed by Chennai Mettux Lab Private Limited & CPCB Notification

TABLE 3.16 – NATIONAL AMBIENT AIR QUALITY STANDARDS

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

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

*Annual Arithmetic mean of minimum 104 measurements in a year taken twice a Week 24 hourly at uniform interval,

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

3.3.4 Frequency & Parameters for Sampling

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

3.3.5 Ambient Air Quality Monitoring Stations

Eight (8) monitoring stations were set up in the study area as depicted in Figure 3.6.1 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

TABLE 3.17 – AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	AAQ-1	Core Zone	Project Area	10°14'21.24"N 78°35'48.06"E
2	AAQ-2	Near Existing Quarry	200m	10°14'29.79"N 78°35'52.12"E
3	AAQ-3	Sevoor	1.2km NE	10°14'58.07"N 78°36'13.42"E
4	AAQ-4	Thuvar	2.6km SW	10°14'14.50"N 78°34'19.97"E
5	AAQ-5	Kunnathanpatti	4.3km SW	10°12'38.61"N 78°34'6.39"E
6	AAQ-6	Thirukolakudi	4km NE	10°15'23.29"N 78°37'47.10"E
7	AAQ-7	Chandiranpatti	5km SE	10°12'11.23"N 78°37'31.07"E
8	AAQ-8	Vegupatti	5.5km NW	10°16'33.35"N 78°33'43.86"E

Source: On-site monitoring/sampling by Chennai Mettex Lab Private Limited in association with GEMS

FIGURE 3.12: SITE PHOTOGRAPHS OF AMBIENT AIR MONITORING

Source: Monitoring photographs from the FAE and Team Members

FIGURE 3.13 AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS

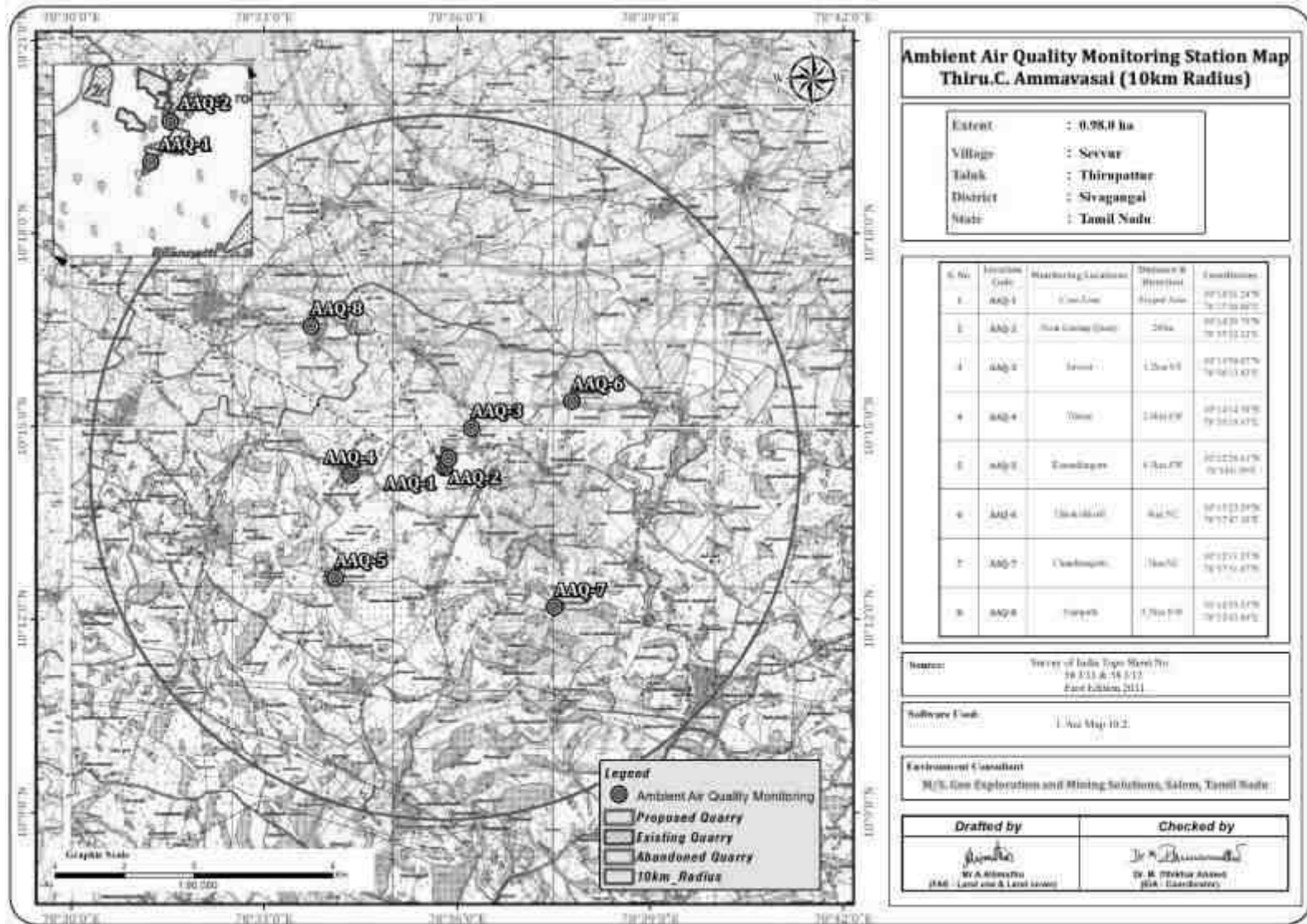


TABLE 3.18 – AAQ1- CORE ZONE

Period: March – May-2023

Location: AAQ1- Core Zone

Sampling Time: 24-hourly

Ambient AirMonitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	62.5	46.9	23.5	8.5	27.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	64.3	47.7	22.1	7.3	25.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	65.5	45.5	23.4	7.9	26.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	61.2	46.4	23.9	8.2	24.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	63.7	45.3	24.1	8.1	24.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	63.9	46.0	23.5	7.5	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	64.7	45.5	24.8	9.2	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	64.9	46.8	23.5	9.7	24.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	63.5	45.9	24.3	9.3	24.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	63.8	45.2	23.6	9.9	25.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	64.1	46.4	24.1	9.1	26.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	64.8	46.2	23.8	8.4	25.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	65.9	46.6	22.8	7.9	24.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	65.7	45.0	22.1	7.3	23.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	66.6	45.3	23.6	7.8	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	66.1	46.7	23.8	6.2	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	66.7	45.0	24.5	6.9	23.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	67.5	46.9	24.3	6.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	60.2	45.7	23.1	7.8	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	62.3	45.6	23.8	8.5	23.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	61.4	46.5	23.6	8.9	24.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	63.7	45.3	24.1	8.2	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	63.5	46.2	23.5	7.8	23.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	62.2	45.6	24.2	7.4	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	64.5	46.1	24.6	8.8	23.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	64.8	46.2	24.8	8.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note:BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.19 – AAQ2 - NEAR EXISTING QUARRY

Period: March – May-2023

Location: AAQ2- Near Existing Quarry

Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	68.5	40.5	21.7	6.7	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	67.2	41.4	21.1	6.5	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	68.6	41.1	22.3	6.5	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	67.2	41.6	22.7	6.7	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	65.5	41.2	21.4	6.2	21.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	66.8	42.5	21.4	6.8	20.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	64.2	41.2	22.4	7.1	21.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	65.2	42.7	23.1	7.3	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	65.9	43.5	21.7	7.4	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	64.7	42.4	21.1	6.9	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	64.9	42.6	20.3	6.2	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	65.2	42.3	23.0	7.1	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	65.1	42.8	21.5	6.5	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	68.4	41.9	22.1	7.8	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	68.9	41.2	21.4	7.1	22.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	69.1	42.7	23.1	6.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	69.2	40.5	21.7	6.4	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	67.2	41.4	22.1	6.2	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	68.2	41.1	20.3	7.2	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	68.1	41.6	22.7	7.0	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	67.7	41.2	22.4	6.2	19.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	67.2	42.5	21.4	6.8	20.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	65.2	41.2	22.4	7.1	21.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	68.1	42.7	20.1	6.3	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	68.9	41.2	21.4	6.1	21.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	65.2	42.7	23.1	6.3	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.20 – AAQ3 – SEVOOR

Period: March – May-2023

AAQ3- Sevoor

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	64.9	41.6	21.6	7.9	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	64.8	42.8	22.5	7.7	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	65.8	41.2	21.1	6.7	20.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	65.3	42.8	22.1	6.7	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	65.1	40.9	21.4	6.4	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	64.4	41.2	21.8	5.4	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	64.7	42.1	22.0	6.5	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	65.2	43.8	23.7	6.3	20.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	64.1	42.7	21.5	7.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	65.5	41.8	22.3	7.7	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	65.6	42.6	22.1	6.6	21.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	65.0	42.8	21.3	6.6	21.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	66.7	43.5	22.5	6.6	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	66.9	42.0	22.9	6.4	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	67.2	39.2	22.0	7.5	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	67.8	42.1	23.7	7.3	20.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	67.5	41.7	21.1	6.9	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	68.2	42.8	22.5	6.7	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	68.9	41.2	21.1	7.7	21.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	66.6	42.3	22.3	7.4	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	64.2	40.9	21.2	7.4	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	64.3	41.2	21.8	5.4	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	63.2	42.6	22.0	6.5	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	63.7	43.1	23.7	6.3	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	65.0	42.8	21.3	6.6	21.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	64.8	42.8	22.5	6.7	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.21– AAQ4 – THUVAR

Period: March – May-2023

Location: AAQ4 - *Thuvar*

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	63.9	42.5	22.6	7.1	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	63.7	42.7	23.0	7.2	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	61.2	41.8	21.6	6.6	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	64.5	43.4	22.4	6.1	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	65.8	42.6	22.9	6.5	22.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	63.7	42.8	22.1	6.8	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	64.6	41.5	21.2	6.1	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	65.8	42.6	22.6	6.3	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	65.9	41.2	22.1	7.1	21.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	66.5	42.7	21.1	7.1	22.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	64.1	43.4	20.3	7.6	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	61.2	42.1	21.8	6.6	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	62.6	41.6	21.6	6.1	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	62.7	42.5	21.1	7.2	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	63.9	41.5	22.3	7.5	23.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	62.4	40.2	21.3	7.6	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	62.7	42.2	22.8	7.1	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	65.8	43.5	23.3	7.5	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	64.5	41.8	21.6	6.6	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	68.5	43.1	22.8	6.8	20.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	64.2	42.9	22.1	6.1	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	64.1	42.8	22.1	6.8	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	65.5	41.4	21.3	6.4	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	66.2	42.9	22.5	6.2	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	64.5	43.0	20.3	7.3	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	63.7	42.7	23.0	7.2	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.22 – AAQ5 – KUNNATHANPATTI

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	65.4	45.6	20.1	7.6	20.	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	65.2	45.8	19.5	7.2	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	66.3	46.2	21.3	7.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	66.7	44.4	21.5	6.5	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	65.1	45.7	22.6	6.8	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	64.2	46.3	22.4	6.4	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	62.8	45.8	23.1	7.2	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	63.8	46.7	24.2	7.8	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	65.7	46.1	23.4	7.6	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	67.2	42.3	21.5	6.5	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	64.2	43.2	21.6	6.1	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	64.8	43.5	21.6	6.7	23.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	64.3	45.8	21.5	7.3	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	62.1	42.6	20.9	7.5	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	63.5	41.5	20.7	7.6	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	62.8	42.6	20.6	7.1	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	63.7	44.6	21.5	6.8	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	63.9	43.5	21.6	6.1	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	64.8	43.6	21.4	6.7	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	64.1	46.1	23.2	6.3	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	64.5	45.1	21.5	6.8	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	65.5	44.7	22.8	6.1	20.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	64.1	44.3	22.4	6.5	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	62.2	42.5	22.6	7.5	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	63.8	43.5	21.9	7.6	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	64.9	41.4	20.4	7.2	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

Period: March – May-2023

AAQ5- Kunnathanpatti

Sampling Time: 24-hourly

TABLE 3.23 – AAQ6 - THIRUKOLAKUDI

Period: March – May-2023

Location: AAQ6 – Thirukolakudi

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	65.2	45.2	21.5	7.9	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	66.4	45.9	20.9	6.5	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	68.1	46.2	21.6	7.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	67.7	47.1	22.1	7.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	67.5	45.5	21.4	6.7	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	68.9	43.1	20.8	7.5	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	69.4	48.9	23.5	6.8	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	69.2	46.1	23.6	7.2	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	67.1	46.8	23.1	7.2	22.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	67.5	47.5	21.5	6.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	68.2	46.2	22.6	6.2	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	68.0	46.9	22.1	7.7	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	67.2	48.1	21.8	7.6	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	67.4	47.2	23.2	6.5	23.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	68.2	43.5	21.5	7.2	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	68.9	43.9	21.1	7.4	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	67.2	46.2	23.6	6.1	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	67.7	46.9	21.8	5.7	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	66.2	47.1	22.5	6.2	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	66.4	45.8	21.9	6.2	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	66.8	46.5	22.5	6.5	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	67.2	47.1	22.1	6.6	21.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	69.1	46.6	21.9	6.9	21.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	68.8	46.1	20.4	6.1	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	67.5	46.5	21.9	6.9	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	65.1	46.9	22.7	5.6	22.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.24 – AAQ7 - CHANDIRANPATTI

Period: March – May-2023

Location: AAQ7– Chandiranpatti

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	69.2	42.2	21.2	6.9	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	68.5	41.5	22.3	6.7	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	68.8	42.9	21.6	6.6	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	67.4	43.7	21.9	6.4	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	68.8	41.5	22.4	7.3	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	69.7	44.6	22.5	7.5	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	68.9	42.2	21.3	7.1	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	67.8	44.3	21.3	7.5	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	66.1	44.5	21.8	4.1	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	65.7	43.3	20.6	5.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	68.2	44.5	21.9	7.8	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	67.7	45.6	21.6	7.9	22.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	68.5	41.9	19.4	6.4	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	66.1	43.7	19.2	6.9	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	69.8	41.6	20.3	6.7	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	67.9	42.3	21.3	6.8	24.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	68.5	42.3	22.6	6.1	24.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	65.7	45.8	21.2	6.4	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	66.7	45.7	18.4	7.3	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	65.0	44.6	20.3	7.3	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	65.5	43.2	22.4	7.6	23.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	66.8	44.3	21.6	7.1	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	64.9	46.9	22.5	7.4	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	66.7	45.7	22.3	7.2	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	65.8	43.9	22.5	7.5	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	67.4	44.5	22.9	7.8	23.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.25 – AAQ8 - VEGUPATTI

Period: March – May-2023

Location: AAQ8– Vegupatti

Sampling Time: 24-hourly

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	62.5	38.6	19.3	6.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	61.3	38.5	18.6	6.7	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	62.4	39.2	19.8	6.4	20.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	65.2	40.0	20.6	6.9	20.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	63.5	40.6	20.5	6.8	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	67.5	41.3	20.3	5.3	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	68.6	40.9	20.9	5.4	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	66.7	39.6	21.5	5.6	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	66.8	39.9	21.3	4.2	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	64.5	40.1	20.5	4.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	65.8	40.2	21.6	4.1	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	67.3	42.3	20.1	5.4	20.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	68.1	42.5	20.4	5.5	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	67.5	41.1	20.2	6.6	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	68.4	40.5	19.7	7.4	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	68.5	40.6	19.6	7.1	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	66.6	41.9	20.9	8.6	19.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	67.9	39.7	21.7	5.5	19.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	65.5	38.6	21.6	5.7	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	66.1	38.0	22.8	6.2	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	65.8	40.5	21.9	6.3	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	64.9	40.0	22.7	7.4	21.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	67.3	39.6	21.8	6.8	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	67.2	40.0	21.1	6.6	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	65.4	40.5	20.5	6.9	22.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	66.6	40.6	21.0	7.1	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:1.0); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1) **Remarks:** The values observed for the pollutants given above are within the CPCB standards.

TABLE 3.25 – ABSTRACT OF AMBIENT AIR QUALITY DATA (AAQ1-AAQ8)

1	Parameter	PM10	PM2.5	SO ₂	NO ₂
2	No. of Observations	260	260	260	260
3	10 th Percentile Value	40.5	20.4	6.1	20.3
4	20 th Percentile Value	41.2	21.1	6.3	21.0
5	30 th Percentile Value	41.9	21.4	6.5	21.3
6	40 th Percentile Value	42.5	21.6	6.7	21.6
7	50 th Percentile Value	42.8	21.9	6.8	21.8
8	60 th Percentile Value	43.5	22.1	7.1	22.1
9	70 th Percentile Value	44.6	22.5	7.3	22.5
10	80 th Percentile Value	45.8	22.8	7.5	22.9
11	90 th Percentile Value	46.5	23.6	7.8	23.6
12	95 th Percentile Value	46.9	23.8	8.2	23.9
13	98 th Percentile Value	47.5	24.5	8.8	24.8
14	Arithmetic Mean	44.0	22.3	7.2	22.3
15	Geometric Mean	43.9	22.3	7.1	22.3
16	Standard Deviation	2.4	1.2	0.8	1.4
17	Minimum	40.5	20.4	6.1	20.3
18	Maximum	47.5	24.5	8.8	24.8
19	NAAQ Norms*	100.0	60.0	80.0	80.0
	% Values exceeding Norms*	0.0	0.0	0.0	0.0

Legend:PM_{2.5}-Particulate Matter size less than 2.5 µm; PM₁₀-Respirable Particulate Matter size less than 10 µm; SO₂-Sulphur dioxide; NO₂-Nitrogen Dioxide; CO-Carbon monoxide; O₃-Ozone; NH₃-Ammonia; Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C₆H₆-Benzene & BaP- Benzo (a) pyrene in particulate phase levels were monitored below their respective detectable limits.

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

TABLE 3.26 – SUMMARY OF AMBIENT AIR QUALITY DATA (AAQ1-AAQ8)

PM10	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8
Arithmetic Mean	46.0	41.8	42.1	42.4	44.4	44.4	43.7	40.2
Minimum	45.0	40.5	39.2	40.2	41.4	43.1	41.5	38.0
Maximum	47.7	43.5	43.8	43.5	46.7	48.9	46.9	42.5
NAAQ Norms	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PM2.5	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8
Arithmetic Mean	23.7	21.8	22.1	22.0	44.4	46.3	21.4	20.8
Minimum	22.1	20.1	21.1	20.3	19.5	20.4	18.4	18.6
Maximum	24.8	23.1	23.7	23.3	24.2	23.6	22.9	22.8
NAAQ Norms	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
SO2	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8
Arithmetic Mean	8.1	6.7	6.8	6.8	7.0	6.8	6.9	6.2
Minimum	6.2	6.1	5.4	6.1	6.1	5.6	4.1	4.1

Maximum	9.9	7.8	7.9	7.6	7.8	7.9	7.9	8.6
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
NO2	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8
Arithmetic Mean	23.9	21.0	20.9	22.3	22.1	22.3	22.7	21.2
Minimum	21.5	19.5	19.2	20.5	20.0	20.6	21.3	19.6
Maximum	27.6	22.6	22.3	23.9	23.7	23.7	24.6	22.7
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0

FIGURE 3.14 : BAR DIAGRAM OF SUMMARY OF AIR QUALITY DATA(AAQ1-AAQ8)

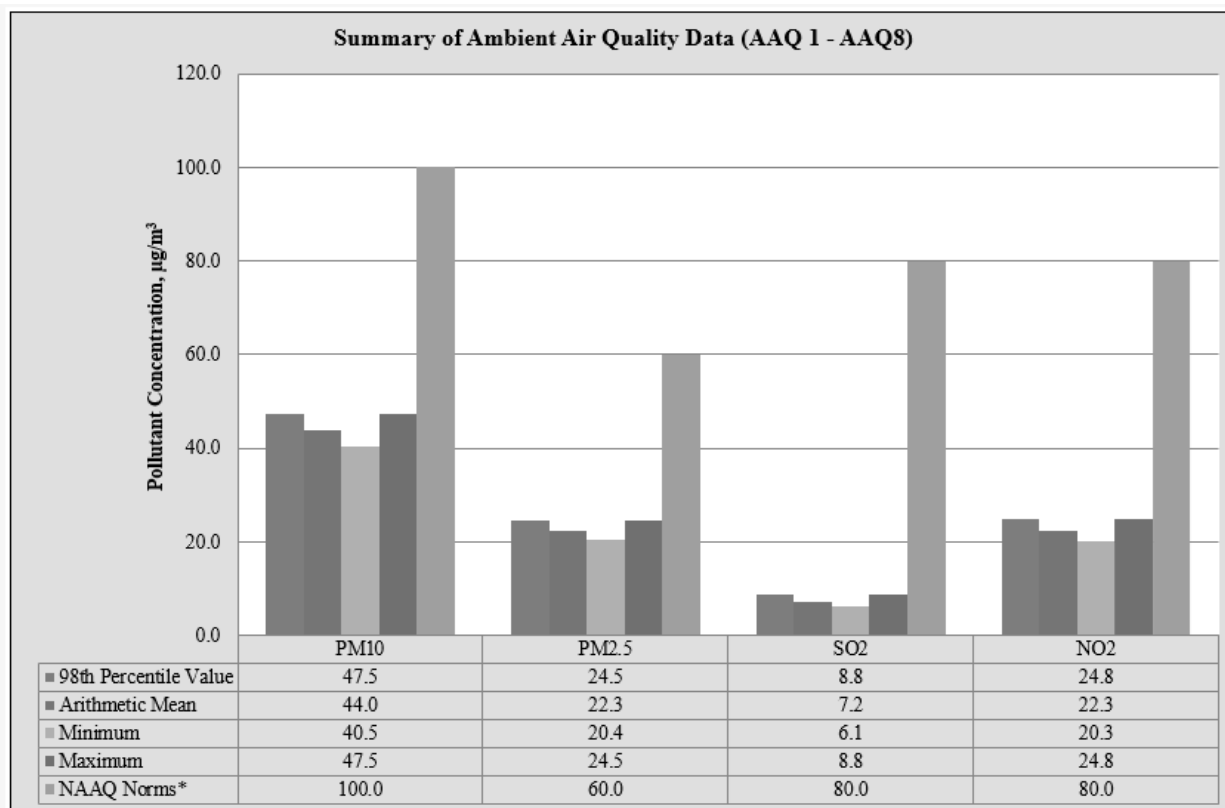


FIGURE 3.15 : BAR DIAGRAM OF PARTICULATE MATTER (PM10)

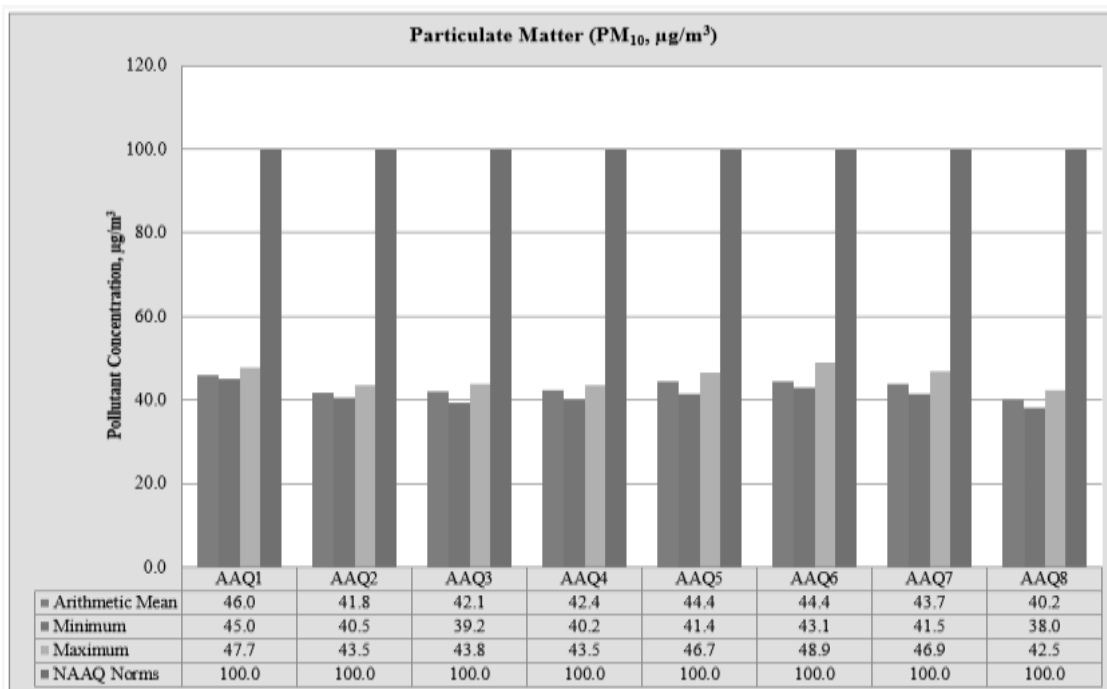


FIGURE 3.16 : BAR DIAGRAM OF PARTICULATE MATTER (PM2.5)

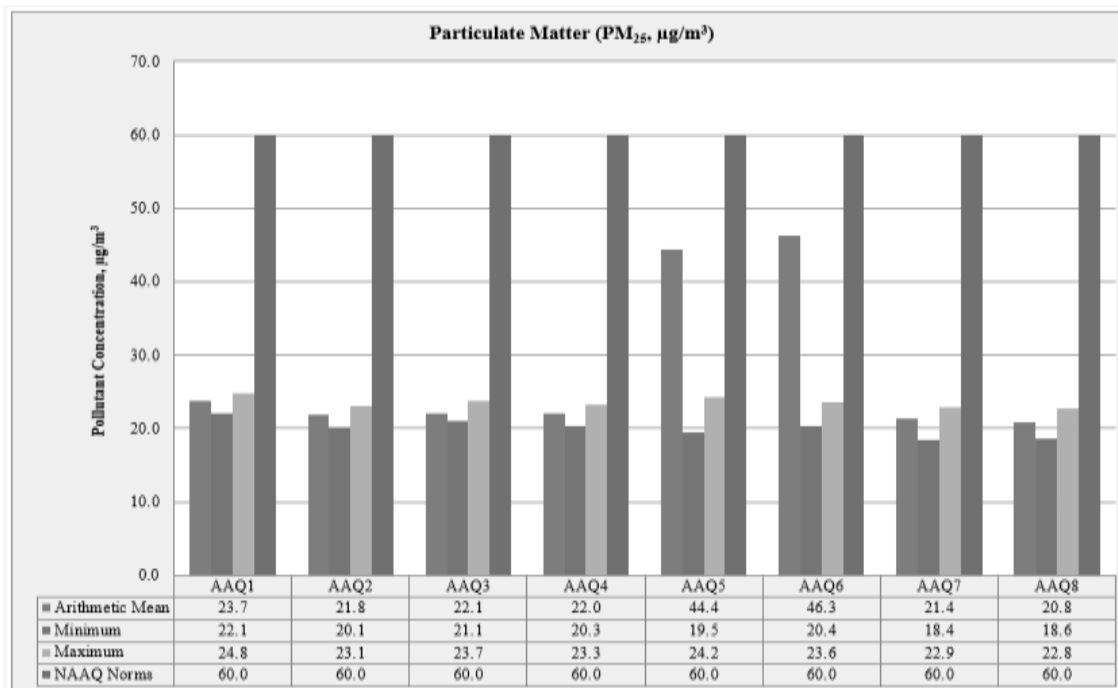


FIGURE 3.17: BAR DIAGRAM OF PARTICULATE MATTER (SO₂)

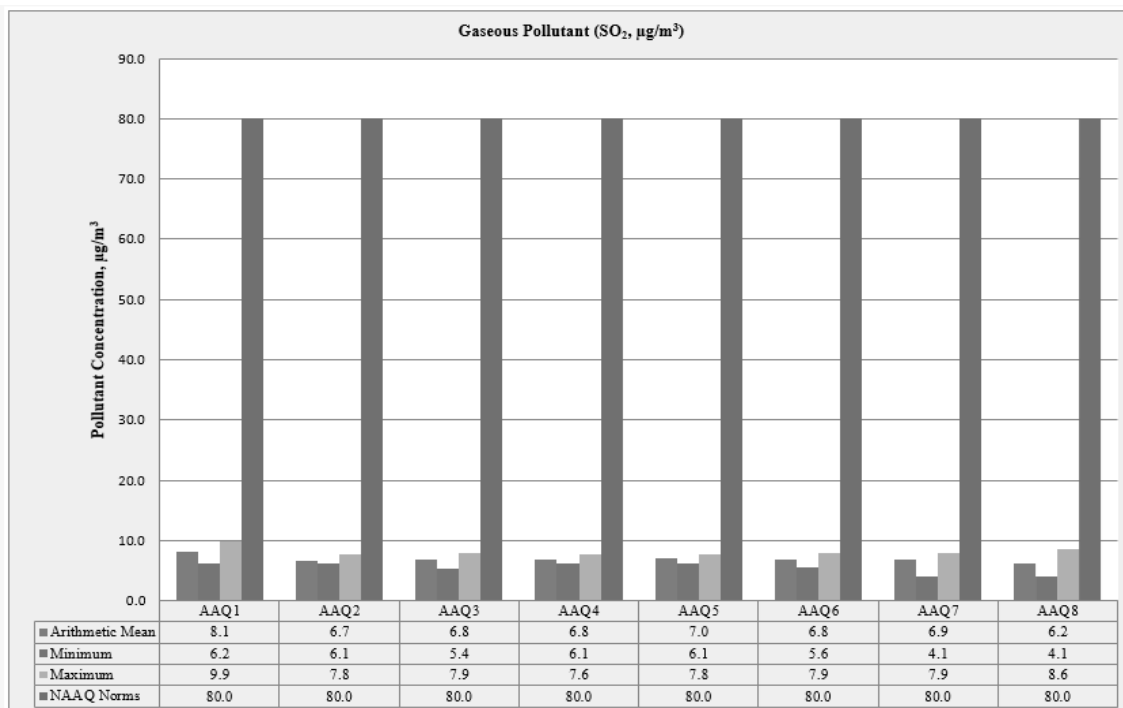
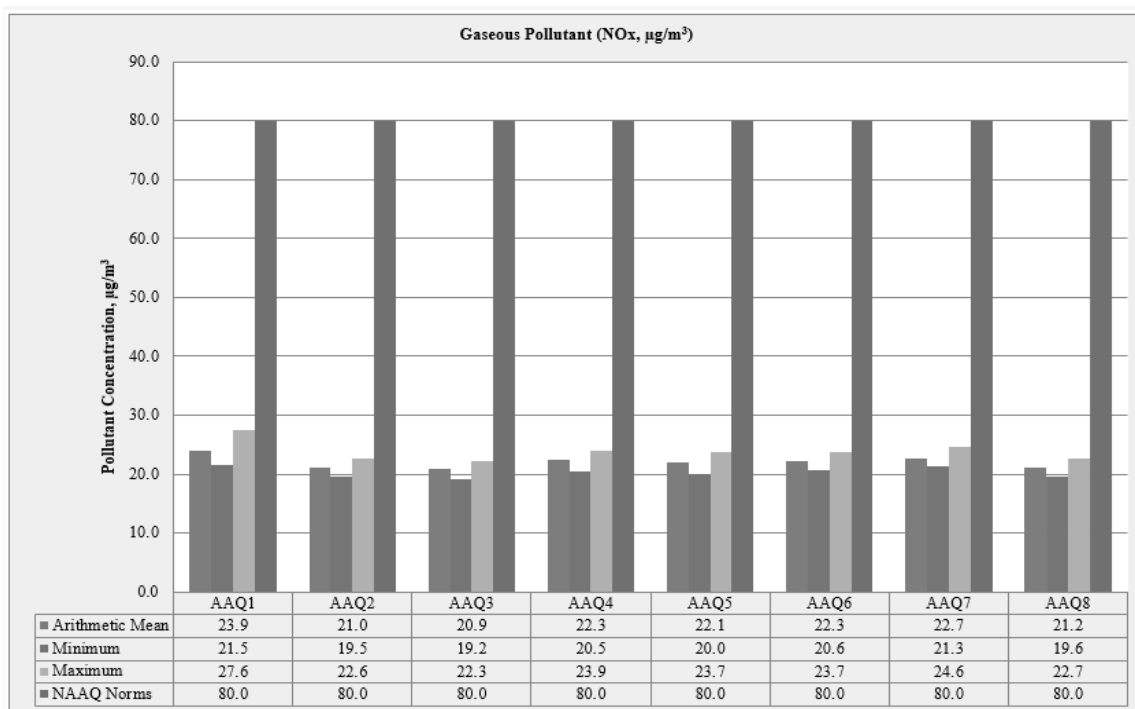


FIGURE 3.18: BAR DIAGRAM OF PARTICULATE MATTER (NO_x)



3.3.6 Interpretations & Conclusion

As per monitoring data, PM₁₀ ranges from 38 µg/m³ to 48.9 µg/m³, PM_{2.5} data ranges from 18.4 µg/m³ to 24.8 µg/m³, SO₂ ranges from 4.1 µg/m³ to 9.9µg/m³ and NO_x data ranges from 19.2 µg/m³ to 27.6 µg/m³. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

The minimum & maximum concentrations of PM₁₀ were found to be 38.0 µg/m³ in Vagupatti village & 48.9 µg/m³ in Thirukolakudi Village respectively. The minimum & maximum concentrations of PM_{2.5} were found to be 18.4 µg/m³ in Chandiranpatti village & 24.8 µg/m³ in Core zone area respectively. The maximum concentration in the core zone is due to the cluster of quarries situated within 500m radius.

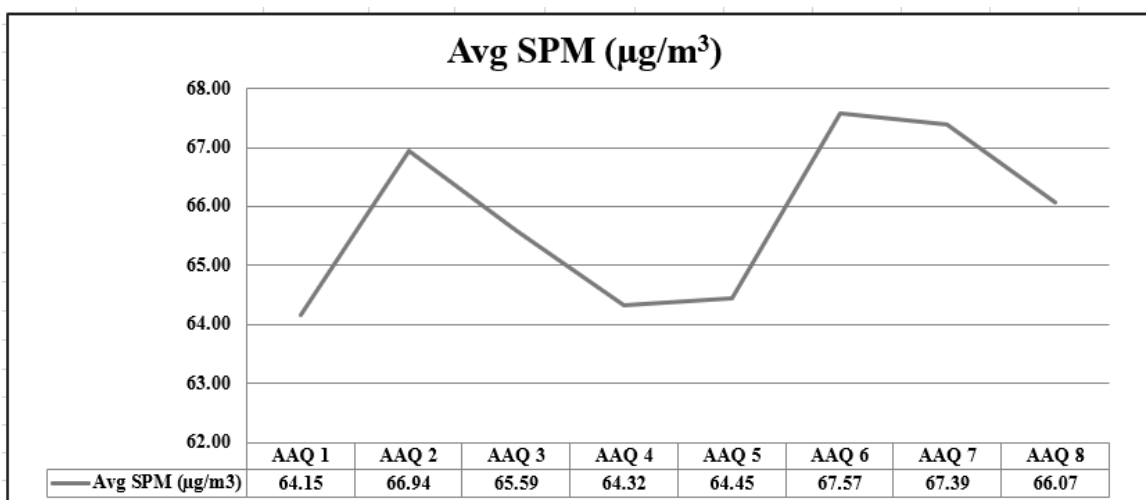
3.3.7 FUGITIVE DUST EMISSION –

Fugitive dust was recorded at 8AAQ monitoring stations for 30 days average during the study period.

TABLE 3.27– AVERAGE FUGITIVE DUST SAMPLE VALUES IN µg/m³

AAQ Locations	Avg SPM (µg/m ³)
AAQ 1	64.15
AAQ 2	66.94
AAQ 3	65.59
AAQ 4	64.32
AAQ 5	64.45
AAQ 6	67.57
AAQ 7	67.39
AAQ8	66.07

Source: Onsite monitoring/ sampling by Chennai Mettlex Laboratories

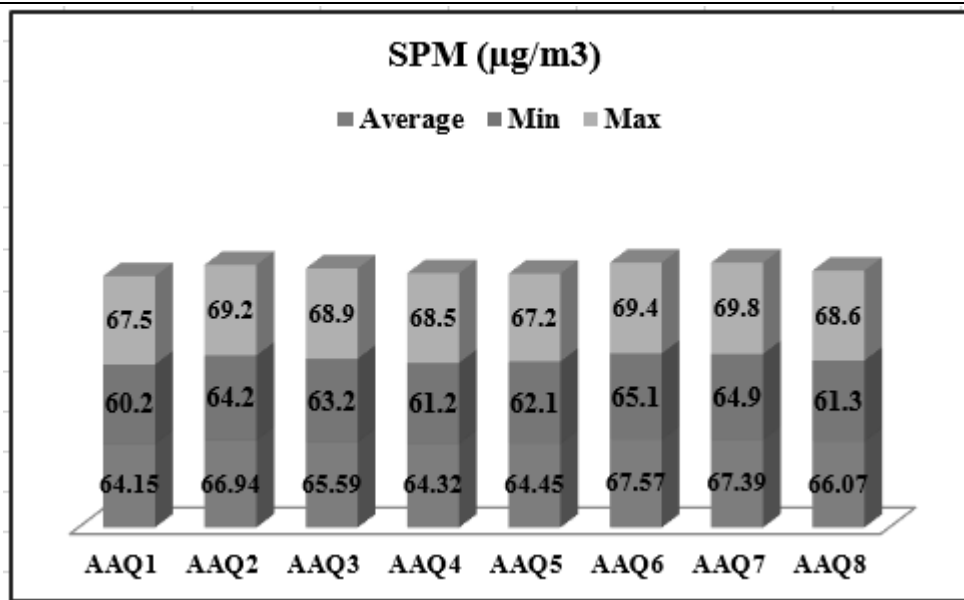


Source: Line Diagram of Table 3.20

TABLE 3.28– FUGITIVE DUST SAMPLE VALUES IN µg/m³ –

SPM (µg/m ³)	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8
Average	64.15	66.94	65.59	64.32	64.45	67.57	67.39	66.07
Max	60.2	64.2	63.2	61.2	62.1	65.1	64.9	61.3
Min	67.5	69.2	68.9	68.5	67.2	69.4	69.8	68.6

Source: Calculations from Lab Analysis Reports



Source: Bar Diagram of table 3.14

3.4 Noise Environment

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

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

3.4.1 Identification of Sampling Locations

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

TABLE 3.29 – DETAILS OF SURFACE NOISE MONITORING LOCATIONS

S. No	Location code	Monitoring Locations	Distance & Direction	Coordinates
1	N-1	Core Zone	Project Area	10°14'20.74"N 78°35'46.97"E
2	N-2	Near Existing Quarry	200m	10°14'29.93"N 78°35'51.69"E
3	N-3	Sevoor	1.2km NE	10°14'57.23"N 78°36'15.11"E
4	N-4	Thuvar	2.6km SW	10°14'14.20"N 78°34'21.58"E
5	N-5	Kunnathanpatti	4.3km SW	10°12'38.39"N 78°34'8.77"E
6	N-6	Thirukolakudi	4km NE	10°15'22.47"N 78°37'48.97"E
7	N-7	Chandiranpatti	5km SE	10°12'11.05"N 78°37'31.69"E
8	N-8	Vegupatti	5.5km NW	10°16'32.87"N 78°33'44.13"E

Source: On-site monitoring/sampling by Chennai Mettex Lab Private Limited in association with GEMS

3.4.2 Method of Monitoring

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

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

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

T = Time interval of observation

3.4.3 Analysis of Ambient Noise Level in the Study Area

An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in below Table 3.6

Day time : 6:00 hours to 22.00 hours.

Night time : 22:00 hours to 6.00 hours

TABLE 3.30 – NOISE MONITORING RESULTS IN CORE AND BUFFER ZONE

S. No	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
1	Core Zone	42.3	35.0	Industrial Day Time- 75 dB (A) Night Time- 70 dB (A)
2	Near Existing Quarry	41.9	38.7	
3	Sevoor	41.4	36.8	
4	Thuvar	40.3	36.2	
5	Kunnathanpatti	40.0	36.8	Residential Day Time- 55 dB (A) Night Time- 45 dB (A)
6	Thirukolakudi	38.5	35.2	
7	Chandiranpatti	39.7	36.5	
8	Vegupatti	39.7	37.9	

Source: On-site monitoring/sampling by Chennai Mettex Lab Private Limited in association with GEMS

FIGURE 3.19: NOISE MONITORING STATIONS AROUND 10 KM RADIUS

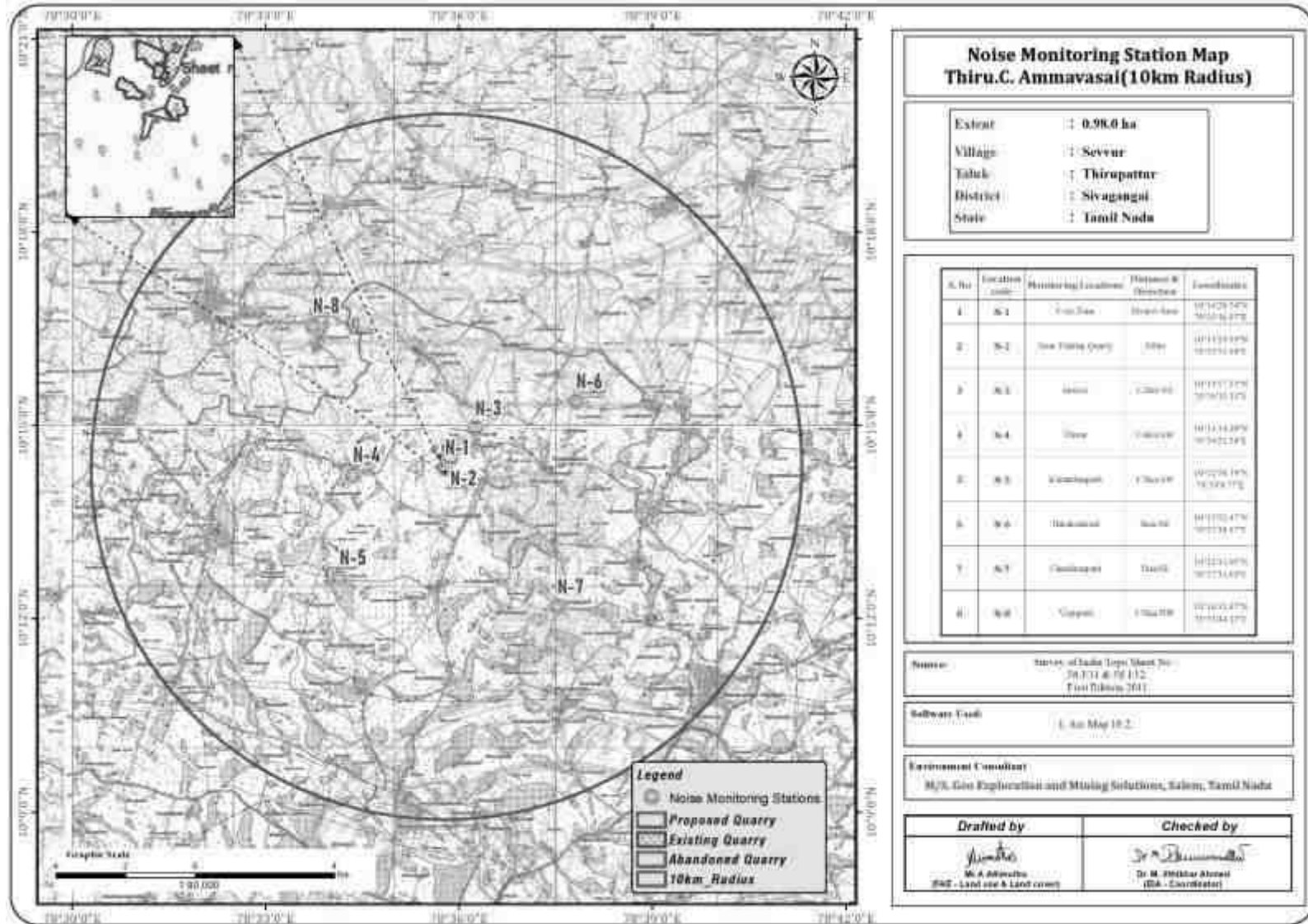
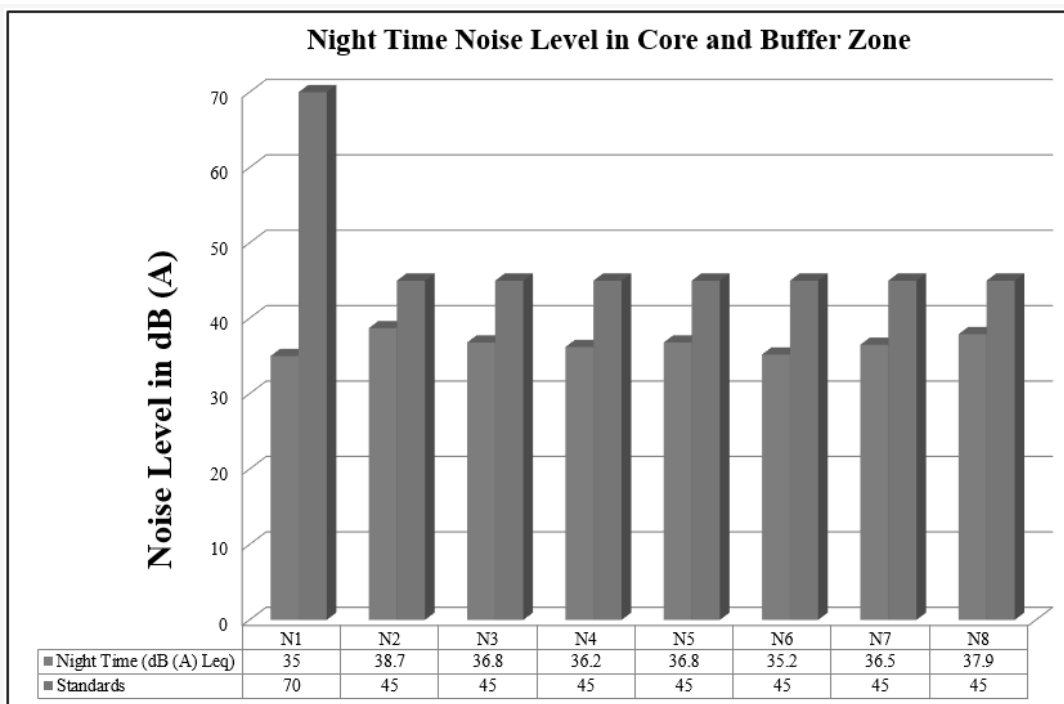
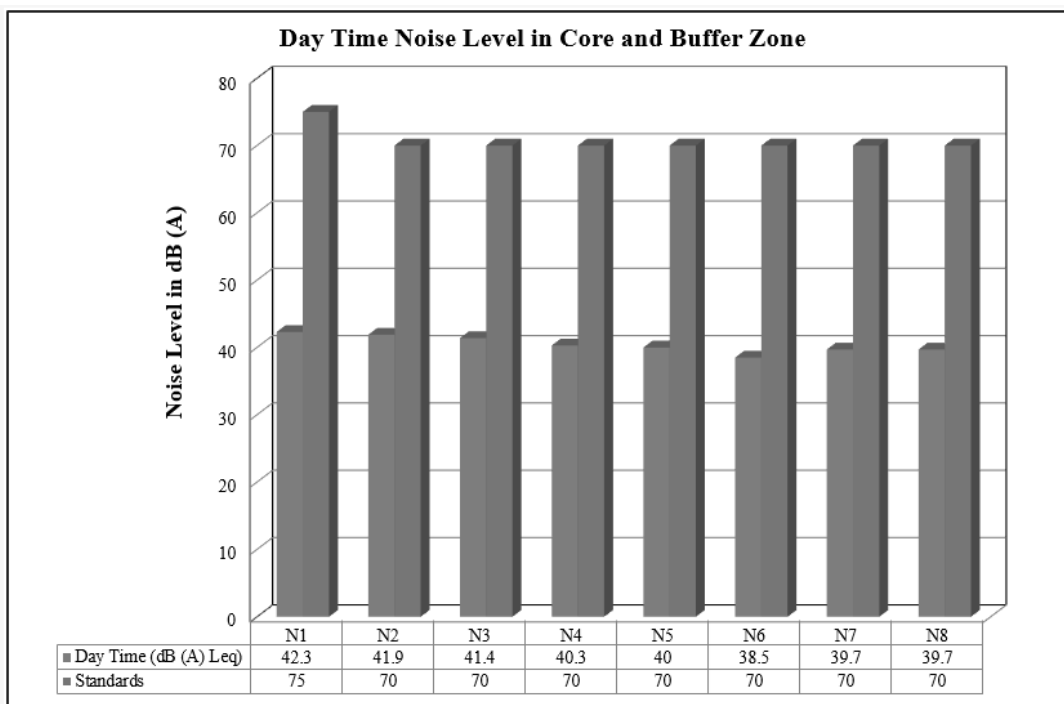


FIGURE 3.20: DAY & NIGHT TIME NOISE LEVELS IN CORE AND BUFFER ZONE



3.4.4 Interpretation & Conclusion

Ambient noise levels were measured at 8 (Eight) locations around the project area considering cluster quarries. Noise levels recorded in core zone during day time were from 42.3 dB (A) Leq and during night time were from 35.0 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 38.5– 41.9 dB (A) Leq and during night time were from 35.2– 38.7 dB (A) Leq.

The values of noise observed in some of the areas are primarily owing to quarrying activities due to cluster of quarries within 500m radius, movement of vehicles and other anthropogenic activities. Noise monitoring results reveal that the maximum & minimum noise levels at day time were recorded in the range of 49.7dB(A) in Sevoor Village and 31.2 dB(A) in Near Existing quarry and Kunnathanpatti Village respectively. 43.6 dB(A) in Sevoor Village & 31.3 dB(A) in Core zone, Chandiranpatti, Sevoor and Vegupatti Villages respectively in night time. Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

3.5 Ecological Environment

3.5.1. Study area Ecology

The core area extent of 0.98 Ha of Rough stone quarry has an impact on the diversity of flora and fauna of the surrounding area. But present work was carried out on the detailed study of the impacts of the Rough stone quarry on the ecology and biodiversity of the core lease area with the proper mitigation and sustainable management plan. The proposed applied lease area exhibits plain topography. The following methods were applied during the baseline study of flora, fauna, and diversity assessment.

3.5.2. Objectives of Biological Studies

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

3.5.3. Methodology of Sampling

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

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

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

Direct observations and bird calls were used for bird documentation. Same transects were used for counting butterflies. Opportunistic observations were made for Amphibians, reptiles and ordinates. Presence of mammals was recorded by direct and indirect signs. All possible transects were taken for birds and butterflies. Birds and butterflies

were classified into species level. Recorded bird species were identified to species level using standard books (Ali & Ripley 1987, Grimmett et al., 2016).

3.5.3.1. Sampling

A stratified simple random sampling procedure was employed to obtain a sample from study area. The study area was further stratified in different land use/ecosystems.

3.5.3.2. Sampling Size

Keeping in mind both random sampling technique and covering all land use patterns for the study following sampling locations were chosen depending up on the area of the proposed site.

3.5.3.3. Timing of Study

The study was carried out during morning and evening hours, to cover the different activity phases for important species such as time resting, feeding, hunting, and daily movements.

3.5.3.4. Observations from Sampling

The various observations relating to flora and fauna species are discussed in detail below, in separate sections.

3.5.3.5. Equipment/ References

- Canon Mark III Camera with 50-500mm lens– Snap shots taken
- Leica Binoculars (8x 20) to spot/identify species
- IUCN Red Data Book – <https://www.iucnredlist.org/species>

Ornithological/Entomological/Herpetological/Mammalian catalogues and pictorial descriptions from various authors and websites are followed for species identification.

3.5.4. Part I Field Sampling Techniques

3.5.4.1. Transect walk – Birds

Six no transect lines with varying length (100m-300m) and fixed width (2m) were laid which cuts through the core and buffer areas of proposed site. The transect surveys were conducted from 0700 to 1100Hrs and 1430 to 1730Hrs (Bibby et al. 2000). All avifauna found along these transects were recorded for analysing the data. Counts were conducted while there is no heavy rain, mist or strong wind.

3.5.4.2. Modified Pollard Walk – for Butterflies

The Modified Pollard Walk (Pollard 1977, 1993, Walpole 1999) using fixed width transect walk method were employed to investigate butterfly spatial distribution, diversity and abundance at the different survey sites.

3.5.4.3. Visual Encounter Survey (VES) - reptiles and amphibians

VES is a time-constrained sampling technique (Campbell and Christman, 1982; Corn and Bury, 1990). It needs a systematic search through an area or habitat for a prescribed time period (Campbell and Christman, 1982). The result of VES is measured against the time spent for search. VES technique is one of the simplest methods, and an appropriate technique for both inventory and monitoring Herpetofauna (Heyer et al. 1994).

3.5.4.4. Observational methods- Mammals

For the purpose of recording mammals, we used two different observational techniques: (1) direct observations, and (2) recording of occurrences like holes, markings, scats, hairs, and spines (Menon 2003). For identification confirmations, photographs with a scale reference were used, and locations were recorded using a portable GPS device. Indigenous knowledge particularly that of the locals, was occasionally employed to compile a preliminary list of species and/or aid in the recognition of indicators.

3.5.4.5. Multiple Stage Quadrat – Vegetation

A variety of habitat or vegetation structure variables were measured using the Multiple Stage Quadrat sampling protocol (Sykes and Horrill 1977). All of those areas were sampled, and the major corners were temporarily delineated with colored ribbons. Each site was identified in the field using a compass and clinometer, and the plot's latitude, longitude, and elevation were recorded using a handheld Global Positioning System (Garmin 12XL).

3.5.5. Flora

The quadrat sampling technique was used for sampling vegetation. Sampling quadrats of the regular shape of dimensions 10 × 10 m, 5 × 5 m, and 1 × 1 m, were nested within each other and were defined as the units for sampling the area and measuring the diversity of trees, Shrubs, and herbs respectively.

Table No: 3.31. Flora in the Core Zone of Thiru.C. Amavasai, Rough Stone quarry

Sl.No	English Name	Vernacular Name	Scientific Name	Family Name
Trees				
1.	Velvet mesquite	Mullu Maram	<i>Prosopis juliflora</i>	Fabaceae
2.	White Bark Acacia	Vela maram	<i>Vachellia leucophloea</i>	Fabaceae
3.	Neem or Indian lilac	Vembu maram	<i>Azadirachta indica</i>	Meliaceae
4.	Millettia Pinnata	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae
5.	Wild Date Palm	Icham	<i>Phoenix sylvestris</i>	Arecaceae
Shrubs				
1.	Avaram	Avarai	<i>Senna auriculata</i>	Fabaceae
2.	Devil's trumpet	Umathai	<i>Datura metel</i>	Solanaceae
3.	Castor oil plant	Amanakku	<i>Ricinus communis</i>	Euphorbiaceae
4.	Puriging nut	Kattamanakku	<i>Jatropha curcas</i>	Euphorbiaceae
5.	Triangular spruce	Chaturakalli	<i>Euphorbia antiquorum</i>	Euphorbiaceae
6.	Coromandel Boxwood	Karai	<i>Canthium coromandelicum</i>	Rubiaceae
7.	Milk Weed	Erukku	<i>Calotropis gigantea</i>	Apocynaceae
Herbs				
1.	Common leucas	Thumbai	<i>Leucas aspera</i>	Lamiaceae
2.	Fish poison	Kolinchi	<i>Tephrosia purpurea</i>	Fabaceae
3.	Coat buttons	Thatha poo	<i>Tridax procumbens</i>	Asteraceae
4.	Devil's thorn	Nerunji	<i>Tribulus terrestris</i>	Zygophyllales
5.	Asthma-plant	Amman pacharisi	<i>Euphorbia hirta</i>	Euphorbiaceae
6.	Indian doab	Arugampul	<i>Cynodon dactylon</i>	Poaceae
7.	Malabar catmint	Pie Viratti	<i>Anisomeles malabarica</i>	Lamiaceae
Grasses				
1.	Eragrostis	Pullu	<i>Eragrostis ferruginea</i>	Poaceae
2.	Great brome	Thodappam	<i>Bromus diandrus</i>	Poaceae
Cactus				
1.	Prickly pear	Nagathali	<i>Opuntia dillenii</i>	Cactaceae

Sources: Species observation in the field study

3.5.6. Flora Composition in the Core Zone

Taxonomically a total of 19 species belonging to 13 families have been recorded from the core mining lease area. The proposed applied lease area exhibits plain topography. This land is not fit for vegetation and cultivation. Based on the habitat classification of the enumerated plants the majority of species were Herbs 7 followed by Shrubs 7, Trees 5, Grasses 2, and Cactus 1. Details of flora with scientific names were mentioned in Table No. 3.31. The result of the core zone of flora studies shows that Fabaceae and Poaceae, Euphorbiaceae are the main dominating species in the study area mentioned in Table No.3.31 No species found as threatened category.



a. *Opuntia dillenii*



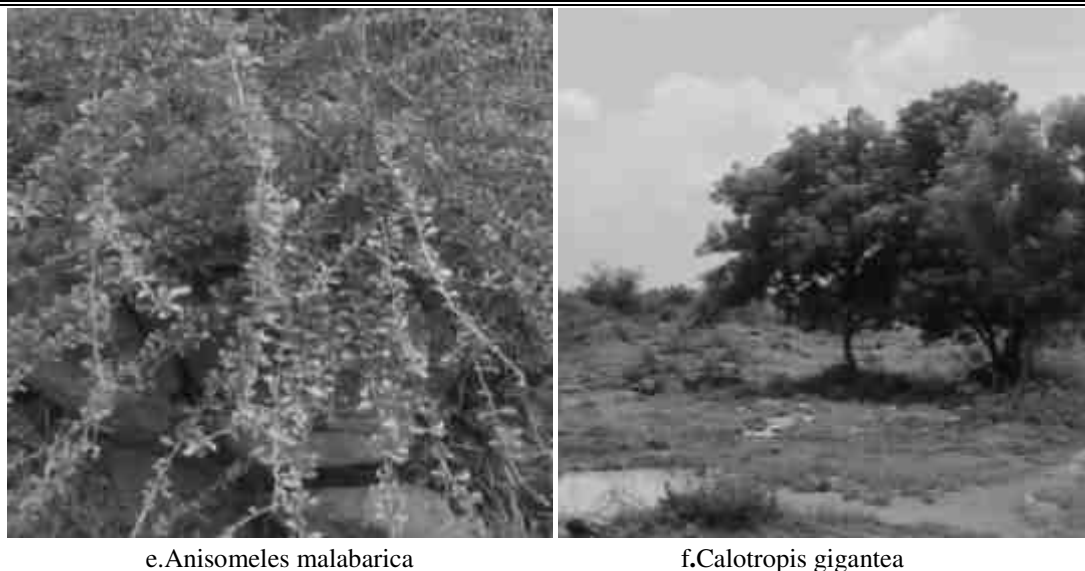
b. *Jatropha curcas*



c. *Calotropis gigantea*



d. *Borassus flabellifer*



e. Anisomeles malabarica

f. Calotropis gigantea

Fig No: 3.21. Flora species observation in the core zone area**3.6. Flora Composition in the Buffer Zone****3.6.1 Calculation of species diversity by Shannon – wiener Index, Evenness and richness**

The 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 the biodiversity index increases both when the number of types increases and when evenness increases. For a given number of types of species, the value of a biodiversity index is maximized when all types of species are equally abundant. Interpretation of Vegetation results in the study area is given below.

3.6.2. Species Diversity

Shannon Diversity Index has been used for estimating the diversity among the eight sampling sites to highlight the most diverse site, and calculate the Shannon Wiener diversity index of each site using the formula:

$$H = - \sum P_i \ln P_i$$

Where, H' = Shannon index of diversity

S = Number of individuals of one species

$$P_i = \frac{\text{Number of individuals of species } i}{N}$$

N = Total number of all individuals in the sample

Table No: 3.32 Trees

H (Shannon Diversity Index) = 3.27

Common Name	Scientific Name	No of Species	Pi	ln Pi	Pi x ln (Pi)
Vembu	<i>Azadirachta indica</i>	17	0.05704698	-1.243767343	-0.07095317
Vaagai	<i>Albizia lebbek (L.) Willd</i>	11	0.039007092	-1.408856423	-0.05495539
Manga	<i>Mangifera indica</i>	8	0.028368794	-1.547159121	-0.04389104
Malai vembu	<i>Melia azedarach L.</i>	6	0.021276596	-1.672097858	-0.03557655
Icham	<i>Phoenix sylvestris</i>	7	0.05704698	-1.243767343	-0.07095317
Mullu maram	<i>Prosopis juliflora</i>	18	0.039007092	-1.408856423	-0.05495539
Vaazhai	<i>Musa paradise</i>	8	0.028368794	-1.547159121	-0.04389104
Kudukapuli	<i>Pithecellobium dulce</i>	6	0.028368794	-1.547159121	-0.04389104

Shisham	<i>Dalbergia sissoo</i>	7	0.021276596	-1.672097858	-0.03557655
Cassia siamea	<i>ManjalKonrai</i>	9	0.053191489	-1.274157849	-0.06777435
Karuvelam	<i>Vachellia nilotica</i>	15	0.039007092	-1.408856423	-0.05495539
Porasu	<i>Butea monosperma</i>	5	0.028368794	-1.547159121	-0.04389104
Sarakkondrai	<i>Cassia fistula L.</i>	12	0.021276596	-1.672097858	-0.03557655
Bala maram	<i>Artocarpusintegrifolia</i>	17	0.053191489	-1.274157849	-0.06777435
Naval maram	<i>Syzygium cumini</i>	4	0.039007092	-1.408856423	-0.05495539
Neruppu Kondrai	<i>Royal poinciana</i>	3	0.028368794	-1.547159121	-0.04389104
Nochi	<i>Vitex negundo</i>	7	0.023489933	-1.629118224	-0.03826788
Panai maram	<i>Borassus flabellifer</i>	16	0.053691275	-1.270096281	-0.06819309
Moongil	<i>Bambusoideae</i>	7	0.039007092	-1.408856423	-0.05495539
Nuna maram	<i>Morinda tinctoria</i>	27	0.028368794	-1.547159121	-0.04389104
Thennai maram	<i>Cocos nucifera</i>	16	0.053691275	-1.270096281	-0.06819309
Savukku maram	<i>Casuarina equisetifolia</i>	16	0.053191489	-1.274157849	-0.06777435
Thailam maram	<i>Eucalyptus tereticornis</i>	5	0.039007092	-1.408856423	-0.05495539
Perunkondrai	<i>Peltophorum pterocarpum</i>	4	0.028368794	-1.547159121	-0.04389104
Pongam	<i>Millettia pinnata</i>	22	0.073825503	-1.131793583	-0.08355523
Alamaram	<i>Ficus benghalensis</i>	5	0.053191489	-1.274157849	-0.06777435
Nelli	<i>Phyllanthus emblica</i>	3	0.039007092	-1.408856423	-0.05495539
Puliyamaram	<i>Tamarindus indica</i>	11	0.028368794	-1.547159121	-0.04389104
Vazhaimaram	<i>Musa acuminata</i>	9	0.021276596	-1.672097858	-0.03557655
Seethapazham	<i>Annona reticulata</i>	5	0.053191489	-1.274157849	-0.06777435
Total		306			-1.6171096

Table No: 3.33. Shrubs

H (Shannon Diversity Index) =2.86

Common Name	Scientific Name	No of Species	Pi	ln Pi	Pi x ln (Pi)
Kattukodi	<i>Cocculus hirsutus</i>	8	0.03652968	-1.437354128	-0.052506087
Malaisundai	<i>Solanum pubescens Willd</i>	9	0.04109589	-1.386201605	-0.056967189
Umathai	<i>Datura metel</i>	14	0.063926941	-1.194316079	-0.076348973
Avarai	<i>Senna auriculata</i>	12	0.054794521	-1.261262869	-0.069110294
Kattumalli	<i>Jasminum trichotomum</i>	4	0.01826484	-1.738384124	-0.031751308
Neiveli Kattamani	<i>Ipomoea carnea</i>	8	0.03652968	-1.437354128	-0.052506087
Amanakku	<i>Ricinus communis</i>	9	0.04109589	-1.386201605	-0.056967189
Chemparuthi	<i>Hibiscu rosa-sinensis</i>	9	0.04109589	-1.386201605	-0.056967189
Erukku	<i>Calotropis gigantea</i>	31	0.141552511	-0.849082421	-0.120189749
Suraimullu	<i>Ziziphus oenoplia</i>	4	0.01826484	-1.738384124	-0.031751308
Kattamanakku	<i>Jatropha curcas</i>	18	0.082191781	-1.08517161	-0.089192187
Pei veratti	<i>Anisomeles malabarica</i>	16	0.073059361	-1.136324132	-0.083019115
Thottalchinungi	<i>Mimosa pudica</i>	11	0.050228311	-1.29905143	-0.065249159
Inki pazham	<i>Phyllanthus reticulatus</i>	10	0.0456621	-1.340444115	-0.061207494
Thuthi	<i>Abutilon indicum</i>	22	0.100456621	-0.998021434	-0.100257861
Sundaika	<i>Solanum torvum</i>	4	0.01826484	-1.738384124	-0.031751308

Marlumuttu	<i>Xanthium indicum</i>	5	0.02283105	-1.641474111	-0.037476578
Bramathndu	<i>Argemone mexicana</i>	3	0.01369863	-1.86332286	-0.025524971
Kundumani	<i>Abrus precatorius</i>	4	0.01826484	-1.738384124	-0.031751308
Arali	<i>Nerium indicum</i>	7	0.03196347	-1.495346075	-0.04779645
Unni chedi	<i>Lantana camara</i>	11	0.050228311	-1.29905143	-0.065249159
		219			-1.240872

Table No: 3.34. Herbs

H (Shannon Diversity Index) =3.0

Common Name	Scientific Name	No of Species	Pi	ln Pi	Pi x ln (Pi)
Malai Kizhanelli	<i>Phyllanthus urinaria L.</i>	7	0.02180685	-1.66140699	-0.036230059
Partiniyam	<i>Parthenium hysterophorus</i>	29	0.09034268	-1.04410703	-0.094327427
Mookarattai	<i>Boerhavia diffusa L.</i>	13	0.04049844	-1.39256168	-0.056396579
Mullu keerai	<i>Amaranthus spinosus</i>	18	0.05607477	-1.25123253	-0.070162572
Pumpillu	<i>Ageratum conyzoides</i>	5	0.01557632	-1.80753503	-0.028154751
Katrazhai	<i>Aloe vera</i>	3	0.00934579	-2.02938378	-0.018966204
Nithyakalyani	<i>Catharanthus roseus</i>	12	0.03738318	-1.42732379	-0.053357899
Seemai Oomatthai	<i>Datura stramonium L</i>	25	0.07788162	-1.10856502	-0.08633684
Kuppamani	<i>Acalypha indica</i>	16	0.04984424	-1.30238505	-0.064916389
Mookutipoondu	<i>Vicoa indica</i>	14	0.04361371	-1.360377	-0.059331084
Nayuruvi	<i>Achyranthes aspera</i>	5	0.01557632	-1.80753503	-0.028154751
Ciru-pulai	<i>Aervalanata</i>	4	0.01246106	-1.90444504	-0.023731402
Melakai poondu	<i>Croton bonplandianus</i>	26	0.08099688	-1.09153168	-0.088410666
Manal keerai	<i>Gisekia pharnaceoides</i>	8	0.02492212	-1.60341505	-0.0399605
Kollukaivelai	<i>Tephrosia purpureae</i>	5	0.01557632	-1.80753503	-0.028154751
Yanai nerunji	<i>Pedaliium murex L.</i>	11	0.03426791	-1.46511235	-0.050206342
Nai kadugu	<i>Celome viscosa</i>	33	0.10280374	-0.98799109	-0.101569178
Thumbai	<i>Leucas aspera</i>	18	0.05607477	-1.25123253	-0.070162572
Kanavazha	<i>Commelina benghalensis</i>	6	0.01869159	-1.72835378	-0.032305678
Amman pacharisi	<i>Euphorbia hirta</i>	5	0.01557632	-1.80753503	-0.028154751
Thulasi	<i>Ocimum tenuiflorum</i>	16	0.04984424	-1.30238505	-0.064916389
Mukurattai	<i>Boerhavia diffusa</i>	6	0.01869159	-1.72835378	-0.032305678
Keelaneeli	<i>Phyllanthus niruri</i>	24	0.07476636	-1.12629379	-0.084208882
kathirikai	<i>Solanum melongena</i>	5	0.01557632	-1.80753503	-0.028154751
Manathakkali	<i>Solanumnigrum</i>	7	0.02180685	-1.66140699	-0.036230059
		321			-1.304806152

3.6.3. Interpretation

The community of trees appears to have greater diversity from the result below. while there is less diversity in the shrub ecosystem. Additionally, it has been noted that most quadrates feature plant species with older strands that are regulated generations. A more stable ecosystem containing more ecological niches is one where there is a higher diversity of plant species and a system where environmental change is less likely to be damaging to the ecosystem as a whole. When compared with communities of herbs and shrubs, tree communities have a higher species richness. In Table No. 3.35, the overall Shannon diversity index result is given.

There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding study area. Apart from the proposed project area, there is agricultural land. Horticulture and agricultural land are untouched. There are no Rare, Endangered, and Threatened Flora species in the mining area and their surrounding

study area. A list of floral species has been prepared based on a primary survey (site observations) and discussion with local people (Secondary data).

Table No:3.35. Overall, Shannon's diversity index

Details	Shannon diversity index	Evenness	Richness (number of species)	Average population size
Trees	3.27	0.953	31	9.87
Shrubs	2.86	0.94	21	10.4
Herbs	3.0	0.933	25	12.8

3.6.4. Economically important Flora of the study area

Agricultural crops: Paddy, Maize is the main crop grown. Different fruits like Banana, papaya, mangoes, guava, and vegetables like brinjal are also grown by the local people.

Medicinal species: The nearby area is also endowed with several medicinal species which are commonly available in the shrub and wastelands. The common medicinal species of the region is *Azadirachta indica* (Neem) etc.

3.6.5. The vegetation in the RF / PF areas, ecologically sensitive areas

There are no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar sites, Tiger/Elephant Reserves/(existing as well as proposed) within 10 km of the mine lease area. Usilamalai RF has located about 2.5 km on the North side and Velangudi RF has located about 2.5 km on the South side both forests are away from the proposed project site. There are neither reserved (RF) nor protected (PF) forests either in the mine lease area or in the buffer zone. Thus, no forest land is involved in any manner. Hence, no certificate from the Forest department is required. There are no impacts due to this mining activity.

There are no protected or ecologically sensitive areas such as National parks or Important Bird Areas (IBAs), or Wetlands or migratory routes of fauna or water bodies or human settlements within the proposed mine lease area. There are no Biosphere reserves or wildlife sanctuaries or National parks or Important Bird Areas (IBAs), or migratory routes of fauna. Thus, the area under study (Mine lease area and the 10 Km buffer zone) is not ecologically sensitive. It is away from the proposed project site. There are neither forests nor forest dwellers nor 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.

3.7. Fauna

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

3.7.1. Fauna Composition in the Core Zone

Core Zone: During the study, it was found that the faunal diversity in the core site was limited to Butterflies, insects, and some species of mammals & and reptiles among them numbers Insects 8, Reptiles 6, Mammals 3, and Avian 9. The core site has avifauna species like crow, Black drongo, Koel, etc. None of these species are threatened or endemic in the study area and surroundings. There is no Schedule I species and 13 species are under Schedule IV according to the Indian Wildlife Act 1972. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

Table No: 3.36. Fauna in the Core zone of Rough Stone quarry

SI. No	Common Name	Scientific Name	Schedule list WLPC 1972
Insects			
1.	Common Tiger	<i>Danaus genutia</i>	NL
2.	Red-veined darter	<i>Sympetrum fonscolombii</i>	NL
3.	Tawny coster	<i>Danaus chrysippus</i>	Schedule IV
4.	House fly	<i>Musca domestica</i>	-
5.	Dragonfly	<i>Agriansp</i>	-

6.	Striped tiger	<i>Danaus plexippus</i>	Schedule IV
7.	Grey pansy	<i>Junonia atlites</i>	LC
8.	Common Tiger	<i>Danaus genutia</i>	LC
Reptiles			
1.	Oriental garden lizard	<i>Calotes versicolor</i>	NL
2.	Green vine snake	<i>Ahaetulla nasuta</i>	Schedule IV
3.	Oriental garden lizard	<i>Calotes versicolor</i>	NL
4.	Rat snake	<i>Ptyas mucosa</i>	Sch IV (Part II)
5.	Indian forest skink	<i>Sphenomorphus indicus</i>	NL
6.	House lizards	<i>Hemidactylus flaviviridis</i>	Schedule IV
Mammals			
1.	Indian Field Mouse	<i>Mus booduga</i>	Schedule IV
2.	Asian Small Mongoose	<i>Herpestes javanicus</i>	Schedule (Part II)
3.	Squirrel	<i>Funambulus palmarum</i>	Schedule IV
Aves			
1.	Rose-ringed parakeet	<i>Psittacula krameri</i>	Schedule IV
2.	Common myna	<i>Acridotheres tristis</i>	NL
3.	Blue-rock pigeon	<i>Colombalivia</i>	Schedule IV
4.	Yellow wagtail	<i>Motacilla flava</i>	Schedule IV
5.	Pond heron	<i>Ardeolagrayii</i>	Schedule IV
6.	Asian koel	<i>Eudynamysscolopacea</i>	Schedule IV
7.	Koel	<i>Eudynamys</i>	Schedule IV
8.	Black drongo	<i>Dicrurus macrocercus</i>	Schedule IV
9.	House crow	<i>Corvus splendens</i>	NL

*NL- Not listed, LC- Least Concern

3.7.2. Fauna Composition in the Buffer Zone

As animals, especially vertebrates move from place to place in search of food, shelter, mate or other biological needs, separate lists for core and buffer areas are not feasible however, a separate list of fauna pertaining to core and buffer zone are listed separately. Though there is no reserved forests in the buffer zone. As such there are no chances of occurrence of any rare or endangered or endemic or threatened (REET) species within the core or buffer area.

There are no Sanctuaries, National Parks, Tiger Reserve or Biosphere reserves or Elephant Corridor or other protected areas within 10 km radius of from the core area. It is evident from the available records, reports, and circumstantial evidence that the entire study area including the core and buffer areas were free from any endangered animals. There were no resident birds other than common bird species such as Pond Heron, Indian Roller, House crow, Black drangos, Crows, Small Sunbird etc.

List of Mammals (*directly sighted animals & Secondary data) is given in table 3.37. The list of bird species recorded during the field survey and literature from the study area are given in Table 3.38. The list of reptilian species recorded during the field survey and literature from the study area is given in Table 3.39. The list of Butterflies recorded during the field survey and literature from the study area are given in Table 3.40. The list of insect species recorded during the field survey and literature from the study area are given in Table 3.38. It is apparent from the list that none of the species either spotted or reported is included in Schedule I of the Wildlife Protection Act. Similarly, none of them comes under the REET category.

Taxonomically a total of 61 species recorded were from the buffer zone area. Based on habitat classification the majority of species were Insects 5, followed by birds 22, Reptiles 10, Mammals 8, Amphibians 7, and Butterflies 19. There are four Schedule II species, and 31 species are under Schedule IV according to the Indian Wildlife Act 1972. A total of 22 species of bird were sighted in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed. There are no impacts on nearby fauna species.

Dominant species are mostly birds, butterflies, and insects, and seven amphibian was observed during the extensive field visit *Sphaerotheca breviceps*, *Euphylyctis hexadactylus*, *Bufomelanostictus*, etc. There is no Schedule

I Species in the study area. There are no critically endangered, endangered, vulnerable, and endemic species were observed.

Table No.3.37. Mammals: (*directly sighted animals & Secondary data)

Sl. No	Scientific Name	Common Name	Schedule list WLPA 1972	IUCN conservation status
1.	<i>Rattus norvegicus</i>	Brown rat	Schedule IV	Least Concern
2.	<i>Funambulus palmarum</i>	Indian palm squirrel	Schedule IV	Least Concern
3.	<i>Herpestes javanicus</i>	Asian Small Mongoose	Schedule (Part II)	Not listed
4.	<i>Canis lupus familiaris</i>	Indian dog	Not listed	Not listed
5.	<i>Lepus nigricollis</i>	Indian hare	Schedule (Part II)	Least Concern
6.	<i>Bos Indicus</i>	Indian Cow	Not listed	Not listed
7.	<i>Mus booduga</i>	Indian Field Mouse	Schedule IV	Least Concern
8.	<i>Bandicota bengalens</i>	Indian mole rat	Schedule IV	Least Concern

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

Table 3.38. Listed birds

SI. No	Common Name	Scientific Name	Schedule list WLPA 1972	IUCN Red List data
1.	Koel	<i>Eudynamys</i>	Schedule IV	LC
2.	Cattle egret	<i>Bubulcus ibis</i>	NL	LC
3.	Common myna	<i>Acridotheres tristis</i>	NL	LC
4.	Paddy Bird	<i>Ardea grayii grayii</i>	Schedule IV	LC
5.	House crow	<i>Corvus splendens</i>	NL	LC
6.	Small blue Kingfisher	<i>Alcedo atthis</i>	Schedule IV	LC
7.	Rose-ringed parakeet	<i>Psittacula krameri</i>	NL	LC
8.	Common quail	<i>Coturnix coturnix</i>	Schedule IV	LC
9.	Small Sunbird	<i>Nectarinia asiatica</i>	Schedule IV	LC
10.	Black drongo	<i>Dicrurus macrocercus</i>	Schedule IV	LC
11.	Indian Robin	<i>Saxicoloides fulicata</i>	Schedule IV	LC
12.	Woodpecker bird	<i>Picidae</i>	Schedule IV	LC
13.	Two-tailed Sparrow	<i>Dicrurus macrocercus</i>	Schedule IV	LC
14.	Pond Heron	<i>Ardeola grayii</i>	Schedule IV	LC
15.	Common Coot	<i>Fulica atra</i>	Schedule IV	LC
16.	House sparrow	<i>Passer domesticus</i>	Schedule IV	LC
17.	Indian Robin	<i>Saxicoloides fulicatus</i>	Schedule IV	LC
18.	Indian Roller	<i>Coracias benghalensis</i>	Schedule IV	LC
19.	Cuckoo	<i>Cuculuscanorus</i>	Schedule IV	LC
20.	House Sparrow	<i>Passer domesticus</i>	Schedule IV	LC

Table 3.39. List of butterflies spotted or reported from the study area

S.No	Scientific Name	Common Name	Schedule of Wild Protection Act	IUCN conservation status
1.	<i>Danaus genutia</i>	Common Tiger	-	Not listed
2.	<i>Danaus chrysippus</i>	Plain Tiger	-	Not listed
3.	<i>Danainae</i>	Milkweed butterfly	-	Least concern
4.	<i>Danaus plexippus</i>	Striped tiger	-	Not listed
5.	<i>Catopsiliapomona</i>	Common emigrant	-	Not listed

6.	<i>Euploea core</i>	Common Indian crow	-	Least concern
7.	<i>Eurema brigitta</i>	Small grass yellow	-	Least concern
8.	<i>Hebomoia glaucippe</i>	Great orange tip	-	Not listed
9.	<i>Graphium doson</i>	Common jay	-	

Table 3.40. List of Reptiles species observed from the study area

Sl. No	Scientific Name	Common Name	Schedule list WLPA 1972
1.	<i>Ptyas mucosa</i>	Rat snake	Sch IV (Part II)
2.	<i>Mabuya carinatus</i>	Common skink	NL
3.	<i>Calotes versicolor</i>	Oriental garden lizard	NL
4.	<i>Bungarus caeruleus</i>	Common krait	Schedule IV
5.	<i>Hemidactylus flaviviridis</i>	House lizards	Schedule IV
6.	<i>Ophisops leschenaultii</i>	Snake eyed lizard	NL
7.	<i>Naja naja</i>	Indian cobra	Sch II (Part II)
8.	<i>Bungarus caeruleus</i>	Common krait	Schedule IV
9.	<i>Ahaetulla nasuta</i>	Green vine snake	Schedule IV

Table 3.41. List of insects either spotted or reported from the study area

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

3.8. Aquatic Ecology

The study area has few seasonal odai and canal away from the proposed project site. But no major drainage system can be found within the study area. No Aquatic diversity is noticed in the core zone area. Aquatic weeds are found to be growing everywhere in 10 km radius area, in every water bog, pond, etc. Typha angustata can be found growing all along the drains of villages, small water-logged depressions, and agricultural fields lacking water but containing enough moisture to support its growth. And where water is present, Eichhornia crassipes has taken its roots and covers the entire water surface by its sprawl and invasion.

3.8.1. Objectives of Aquatic Studies

- ✓ Generating data through actual field collection in these locations over the study period
- ✓ Consulted with locals to obtain knowledge about aquatic flora and animals.

3.8.2. Macrophytes

The macrophytes observed within the study area are tabulated in Table 3.44.

Table No.3.42. Description of Macrophytes

S.No	Scientific name	Common Name	Vernacular Name (Tamil)	IUCN Red List of Threatened Species
1.	<i>Aponogeton natans</i>	Floating laceplant	Kottikizhnagu	NA
2.	<i>Cyperus exaltatus</i>	Tall Flat Sedge	Koraikizhangu	LC
3.	<i>Carex cruciata</i>	Cross Grass	Koraipullu	NA
4.	<i>Chrysopogon aciculatus</i>	Golden false beardgrass	Kampuputpi	NA
5.	<i>Nymphaea nauchali</i>	Blue lotus	Alli	LC
6.	<i>Hydrilla verticillata</i>	Waterthymes	Amiranappaci	LC

7.	<i>Eichornia crassipe</i>	Water hyacinth	Agayatamarai	NA
8.	<i>Marsilea quadrifolia</i>	Water clover	Aaraikeerai	LC

3.8.3. Aquatic Faunal Diversity

Amphibian species like the common Pond frog, Skipper frog, Indian Pond Frog etc., were sighted near the water bodies located in the study area

Table no. 3.43. Amphibians Observed/Recorded from the Study Area

SI. No	Scientific Name	Common Name	Schedule list WLPC 1972
1.	<i>Sphaerotheca breviceps</i>	Indian Burrowing frog	Schedule IV
2.	<i>Euphlyctis hexadactylus</i>	Green pond frog	Schedule IV
3.	<i>Bufo melanostictus</i>	Common Indian Toad	Schedule IV
4.	<i>Hoplobatrachus tigerinu</i>	Indian bull Frog	Schedule IV
5.	<i>Limnonectes limnocharis</i>	Paddyfield / Cricket Frog	Schedule IV
6.	<i>Microhyla ornata</i>	Ornate Narrow-mouthed Frog	Schedule IV
7.	<i>Sphaerotheca rolandea</i>	Southern Burrowing Frog	Schedule IV

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

a. Findings/Results

The assessment was carried out during the Summer season. The inspection day was quite alright with respectable weather. The details of the flora and fauna observed are given below.

Records of threatened species in the area

No threatened species were observed

Endangered Species as per Wildlife (Protection) Act

No Endangered fauna was recorded in the project area.

Endemic Species of the Project areas

No endemic species were observed in the project area.

Migratory species of the Project areas

No migratory fauna observed in project area.

Migratory corridors and Flight paths

No migratory corridors and Flight paths were observed in project area.

Breeding and spawning grounds

No breeding and spawning grounds were earmarked for the wildlife fauna in project area.

There are no critically endangered, endangered, vulnerable and endemic species were observed. As the rainfall in the area is scanty and as no toxic wastes are produced or discharged on account of mining, the proposed mining activity is not going to have any additional and adverse impacts on these RET species. There are no ecologically sensitive areas or protected areas within the 10 Km radius. Hence no specific conservation for conservation of any RET species or Wildlife is envisaged.

There is no endangered, endemic and RET Species. There is no Schedule I species in study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] The proposed project is not going to have any direct or indirect adverse impact on the species mentioned above.

3.10. Conclusion

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

and discussed with local people, from the villages, herders and farmers who inhabit close to the proposed project area.

3.6 Socio Economic Environment

The major developmental activities in mining /Industrial sector are required for economic development as well as creation of employment opportunities (direct and indirect) and to meet the basic/modern needs of the society, which ultimately results in overall improvement of the quality of life through upliftment of social, economic, health, education and nutritional status in the project region, state as well as the country. In this manner all developmental projects have direct as well as indirect relationships with socioeconomic aspects, which also include public acceptability for new developmental projects. Thus, the study of socioeconomic component incorporating various facets related to prevailing social and cultural conditions and economic status of the rough stone quarry project region is an important part of EIA study. The study of these parameters helps in identification, prediction and evaluation of the likely impacts on the socio economics and parameters of human interest due to the project.

3.6.1 Objectives of the Study

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

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

3.6.2 Scope of Work

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

3.6.3 Methodology

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

- a) The details of the activities and population structure have been obtained from Census 2001 and 2011 and analysed.
- b) Based on the above data, impacts due to plant operation on the community have been assessed and recommendations for further improvement have been made.

3.6.4 Sources of Information and Data Base

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

3.6.5 Primary Survey

The primary data collection includes the collection of data through a structured interview schedule by direct observation method. The questionnaire survey includes both open and closed methods. The sample size is limited respondents, who were selected on the basis of simple random sampling from Sevvur Village, Thiruppattur Taluk, Sivagangai District.

3.6.6 Collection of Data from Secondary Sources

Data from secondary sources were collected on following aspects:

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

Table 3.44 Type of Information and Sources

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

b) Data Presentation and Analysis

The data collected were presented in a suitable, concise form i.e., tabular or diagrammatic or graphic form for further analysis. These tabulated data were interpreted and analyzed with the help of various qualitative techniques and ideographic approaches.

3.7 Background Information of the Area

Tamil Nadu is the 11th largest states in India in terms of area. The state is the seventh most populous state in the country and its main language Tamil has origins that date back to 500 BC. Chennai is the capital of Tamil Nadu and lies on the eastern coast line of India. Tamil Nadu is famous for its wonderful temples and monuments that have been built 1000s of years ago and has places that have been marked as heritage sites by the United Nations. In a 180-degree paradigm shift, this state with a rich historical importance is also one of the fastest developing centres for technology and trade.

The State can be divided broadly into two natural divisions (a) the Coastal plains of South India and (b) the hilly western area. Parallel to the coast and gradually rising from it is the broad strip of plain country. It can further be subdivided into Coromandal plains comprising the districts of Kancheepuram, Sivagangai, Cuddalore and Vellore. The alluvial plains of the Cauvery Delta extending over Thanjavur and part of Tiruchirappalli districts and dry southern plains in Sivagangai, Dindigul, Ramanathapuram, Sivaganga, Virudhunagar, Tirunelveli and Tuticorin districts. It extends a little beyond Western Ghats in Kanyakumari District. The Cauvery Delta presents some extremely distinctive physical and human features, its power being a main factor in the remarkable growth, the towns of Tamil Nādu have witnessed.

3.8 Geography of the Area

Tamil Nadu is one of the 28 states of India, located in the southernmost part of the country. It extends from 8°4'N to 13°35'N latitudes and from 76°18'E to 80°20'E longitudes. Its extremities are

- in eastern - Point Calimere
- in western - hills of Anaimalai
- in northern - Pulicat lake
- in southern - Cape Comorin

It covers an area of 1,30,058 sq.km and 11th largest state in India. It covers 4% of the area of our country. Tamil Nadu is bounded by the Bay of Bengal in the east, Kerala in the west, Andhra Pradesh in the north, Tamil Nadu in the northwest and Indian Ocean in the south. Gulf of Mannar and Palk Strait separate Tamil Nadu from the Island of Sri Lanka, which lies to the southeast of India.

Already we have learnt that the state of Tamil Nadu had only 13 districts at the time of its formation. After that, the state was reorganised several times for the administrative convenience. At present there are 37 districts in Tamil Nadu, including the newly created districts such as Kallakurichi, Tenkasi, Chengalpet, Ranipet and Tirupathur.

1.9 Location and Boundaries of Sivagangai District.

Sivaganga District is the 26th largest district by population size and the density of people per Sq.Km is 324 as per 2011 census with a sex-ratio of 1,003 females for every 1,000 males. Sivaganga district is located between 9°.43' and 10°.22' North Latitude and 77°.47' and 78°.49' East longitudes. It covers area of 4189 sq.km. It is bounded by Pudukkottai district on the Northeast, Tiruchirappalli district on the North, Ramanathapuram district on South East, Virudhunagar district on South West and Sivagangai District on the West.

Sivaganga District consists of two Revenue Divisions viz., Sivaganga and Devakottai, Nine Taluks viz., SIVAGANGAI, MANASIVAGANGAI, ILAYANGUDI, THIRUPPUVANAM, KALAIYARKOIL, KARAIKKUDI, DEVAKOTTAI, THIRUPPATTUR and SIGAMPUNARI, comprising of 521 Revenue Villages. The District has Twelve blocks viz. Sivagangai, Kalayarkoil, ManaSivagangai, Thiruppuvanam, Ilyankudi, Devakottai, Kannangudi, Sakottai, Kallal, Thiruppathur, Singampunari and S.Pudur comprising of 451 Village Panchayats. There are three Municipalities viz. Sivagangai, Devakottai and Karaikudi and Eleven Town Panchayats viz. ManaSivagangai, Thiruppathur, Thiruppuvanam, Singampunari, Ilayankudi, Nattarasankottai, Kottaiyur, Kandapur, Puduvalayal, Pallathur, Kanadukathan, Nerkuppai. The district receives normal annual rainfall of 904.7mm.

3.10 Sevvur Village -Demographic Characteristics

Sevvur is a medium size village located in Tirupathur Taluka of Sivaganga district, Tamil Nadu with total 357 families residing. The Sevvur village has population of 1474 of which 754 are males while 720 are females as per Population Census 2011. The total geographical area of village is **582.13 hectares**.

3.10.1 Sex Ratio

In Sevvur village population of children with age 0-6 is 145 which makes up 9.84 % of total population of village. Average Sex Ratio of Sevvur village is 955 which is lower than Tamil Nadu state average of 996. Child Sex Ratio for the Sevvur as per census is 667, lower than Tamil Nadu average of 943.

3.10.2 Literacy Rate

Sevvur village has lower literacy rate compared to Tamil Nadu. In 2011, literacy rate of Sevvur village was 70.35 % compared to 80.09 % of Tamil Nadu. In Sevvur Male literacy stands at 80.06 % while female literacy rate was 60.57 %.

3.10.3 Caste Wise

Schedule Caste (SC) constitutes 14.04 % while Schedule Tribe (ST) were 0.27 % of total population in Sevvur village.

3.10.4 Workers

In Sevvur village out of total population, 823 were engaged in work activities. 35.72 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 64.28 % were involved in Marginal activity providing livelihood for less than 6 months. of 823 workers engaged in Main Work, 115 were cultivators (owner or co-owner) while 34 were Agricultural labourer.

Table 3.45 Demographic and Occupational Characteristics

Particulars	Total	Male	Female
Total No. of Houses	357		
Population	1,474	754	720
Child (0-6)	145	87	58
Schedule Caste	207	104	103
Schedule Tribe	4	1	3
Literacy	70.35%	80.06%	60.57%
Total workers	823	497	326
Main Workers	294	-	-
Marginal workers	529	249	280

Source: <https://www.census2011.co.in/data/village/639986-sevvur-tamil-nadu.html>

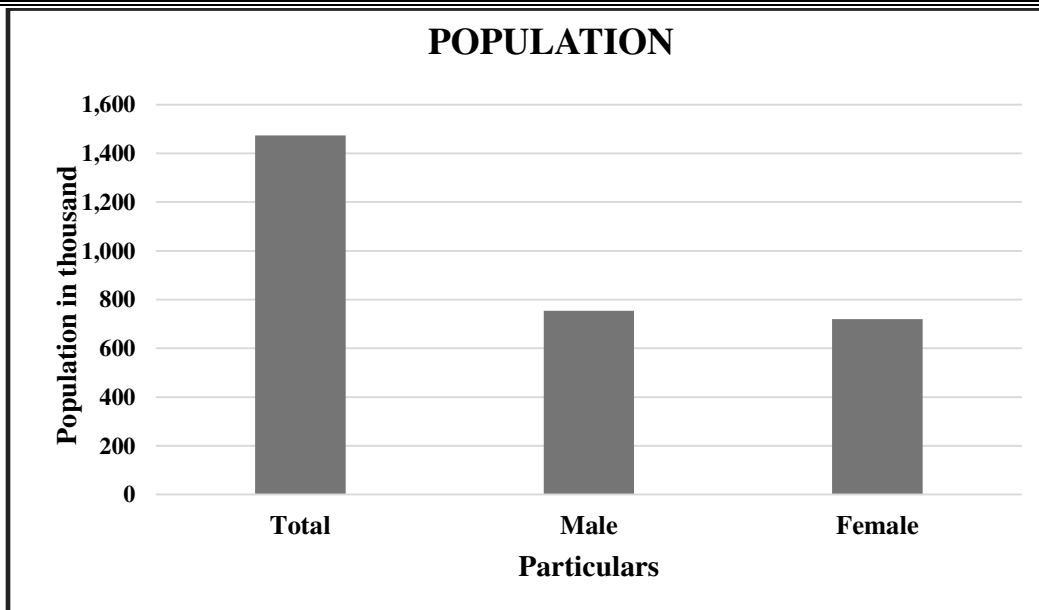


Figure. 3.22 Demographic structure

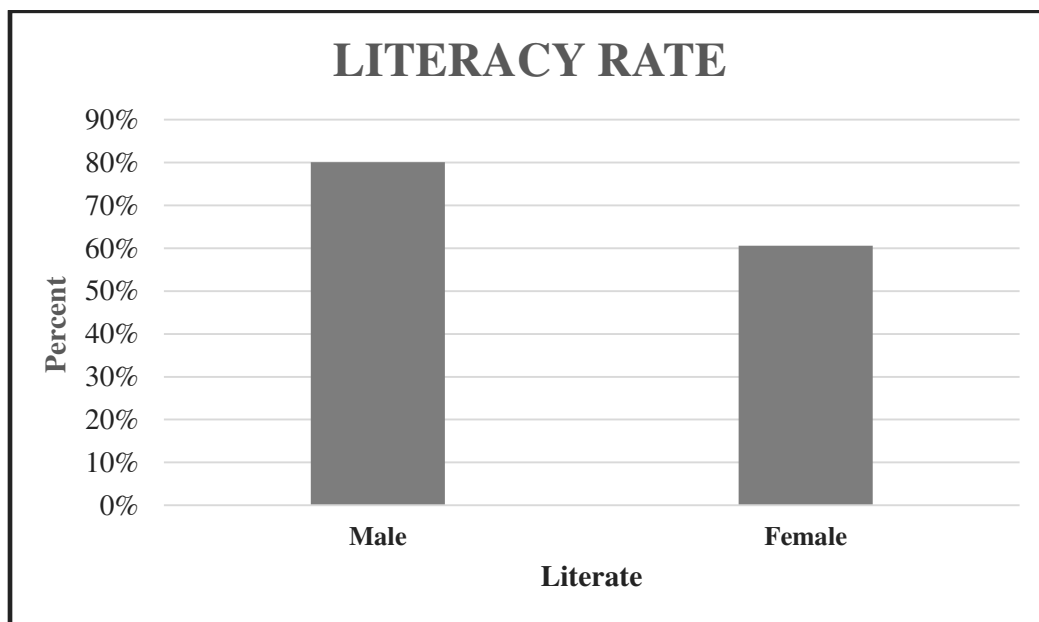


Figure.3.23 Literacy Rate

3.11 Recommendation and Suggestions

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

- **Women empowerment**– Home based income generation activities, vocational training programs and common education centre for increasing the literacy rate.

- **Education** – Free uniform, construction of common rooms and library, computer education and physical education, additional schools for girls, furniture and equipment in schools, up-gradation of existing school infrastructure.
- **Agriculture/livestock** – Infrastructure such as agricultural practices, electricity connections, assistance with buying improved tools and equipment, capacity building, supply and/or knowledge of better variety of seeds, pasture land development and trainings on animal husbandry & facility of veterinary doctor.
- **Health** – Improvements in sanitary conditions of villages, assistance with construction of latrines, improvement in drainage system, health camps and awareness campaigns for diseases like Covid-19, malaria, typhoid, tuberculosis, yellow fever and pneumonia. Repairing of PHCs and Anganwadi centers.
- **People with disability** – Establishment of centre for special education, sensitization of the community towards disabled and awareness on Government schemes.
- While **Developing an Action Plan**, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.
- **Connectivity** –Transport connectivity to easiness accessibility to the region.

3.12 Conclusion

To evaluate the impacts of proposed rough stone quarry project on the surrounding area, it is vital to assess the baseline status of the environmental quality in the locality of the site. Hence it can be concluded that the present environment status of the study area will not be affected by the project as **Sevvur rough stone cluster quarry** will adopt adequate control measures to protect the surrounding environment and will contribute in development of the study areas.

Socio Economic/ demographic status of the study area reveals that area further require improvement in the Economy and Infrastructure Development of the area. Hence it can be concluded that the present baseline environment status of the study area will not be affected by the proposed project.

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

CHAPTER – 4: ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 *General*

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

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans for sustainable resource extraction. Based on the baseline environmental status at the existing mine site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed. The various anticipated impacts will be on

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

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

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

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

4.1 *Land Environment*

4.1.2 Anticipated Impact from all Proposed Projects

- Permanent or temporary change on land use and land cover.
- Change in Topography: Topography of the ML area will change at the end of the life of the mine.
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.

- If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course
- Impact due to heritage site, Archaeological sites

4.1.2.1 Mitigation Measures for Proposed Projects

- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development of greenbelt etc.,
- Construction of garland drain 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., 7.5m, 10m and 50 m safety barrier and other safety provided) so as to help minimise dust emissions.
- Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle.
- There are no Archaeological sites, heritage site in the vicinity of the project area, the topography will be changed due to excavation of rough stone quarry.

4.1.3 Soil Environment

4.1.4 Impact on Soil Environment

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

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

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

4.1.5 Mitigation Measures

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

4.1.6 Waste Dump Management

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

4.2 Water Environment

4.2.1 Anticipated Impact on Surface and ground water

The impact due to quarrying on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during quarrying process. The quarrying activity will not intersect ground water table as the maximum depth of the quarry is 16m and water table is found at a depth of 64m BGL.

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

TABLE 4.1: WATER REQUIREMENTS

Purpose	Quantity	Source
Domestic & Drinking purpose	1.0KLD	From Existing bore wells from nearby area
Green Belt	0.7 KLD	From Existing bore wells from nearby area
Sanitation & Drinking	0.3 KLD	From existing, bore wells and drinking water will be sourced from Approved water vendors.
Total	2.0 KLD	

Source: Pre-Feasibility Report

Total water requirement in the proposed project is about 2.0 KLD, the water for dust suppression and greenbelt development will be sourced from the mine pit water collected during rainy seasons, the water for domestic purpose and drinking will be sourced from the approved water vendors.

4.2.2 Mitigation measures:

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

- Regular monitoring (every 6 months once) and analysing the quality of water in open well, bore wells and surface water.

Possibilities of water contamination and impact on an aquatic ecosystem health

- Anticipated impact from this proposed mining activity is surface runoff from cleared surfaces, or discharges from the quarry pit or floor, is likely to have elevated levels of sediment (both suspended and dissolved). The quality of the water discharged from the site can have impacts on downstream ecological communities and water users.
- Therefore, Run-off diversion is proposed – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry works areas. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion with only clear water after the garland drains are enrooted through settlement traps.
- And, the depth of the mining is maximum 16m bgl and the ground water level in the surrounding areas is about 64 m bgl and there are no possibilities of encountering any ground water aquifers system and hence no ground water table intersection is anticipated.
- After the completion of quarry operation, the quarried out open pit mine may utilized for pici-culture or temporary reservoir pit for use of water for domestic purpose during dry seasons.
- Therefore, its inferred that the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the possibilities of water contamination and impact on an aquatic ecosystem health.

4.3 Air Environment

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

4.3.1. Anticipated

Impact

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

4.3.1.1. Modelling of Incremental Concentration from all Proposed Projects

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

Similarly, loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles causes of pollution. This leads to an impact on the ambient air environment around the project area.

Anticipated incremental concentration due to this quarrying activity and net increase in emissions due to quarrying activities within 500 meters around the project area is predicted by Open Pit Source modelling using AERMOD Software.

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

4.3.1.2 Emission Estimation

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

The general equation for emissions estimation is:

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

Where:

E = emissions;

A = activity rate;

EF = emission factor, and

ER =overall emission reduction efficiency, %

The proposed mining activity includes various activities like ground preparation, excavation, handling and transport of ore. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 4.2.

TABLE 4.2: ESTIMATED EMISSION RATE FOR PROPOSED PROJECT

	Activity	Source type	Value	Unit
Estimated Emission Rate for PM ₁₀	Drilling	Point Source	0.043330721	g/s
	Blasting	Point Source	0.000036948	g/s
	Mineral Loading	Point Source	0.034373405	g/s
	Haul Road	Line Source	0.002483364	g/s/m
	Overall Mine	Area Source	0.037903724	g/s
Estimated Emission Rate for SO ₂	Overall Mine	Area Source	7.52769E-05	g/s
Estimated Emission Rate for NO _x	Overall Mine	Area Source	0.000001764	g/s

4.3.2 Frame work of Computation & Model details

The prediction included the impact of Excavation, Drilling, Blasting, loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and Cloud cover.

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

Air Pollution Dispersion Modelling.

Baseline Air Quality –

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

Meteorological Data –

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

A temporary meteorological station was installed at project site and monitored continually for study period without break. The station was installed at a height of 4 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis. A weather data was collected from IMD, Sivagangai agro for the month of March 2023 – May 2023 to correlate with site data and found not much of change in the parameters.

FIGURE 4.1: AERMOD TERRAIN MAP

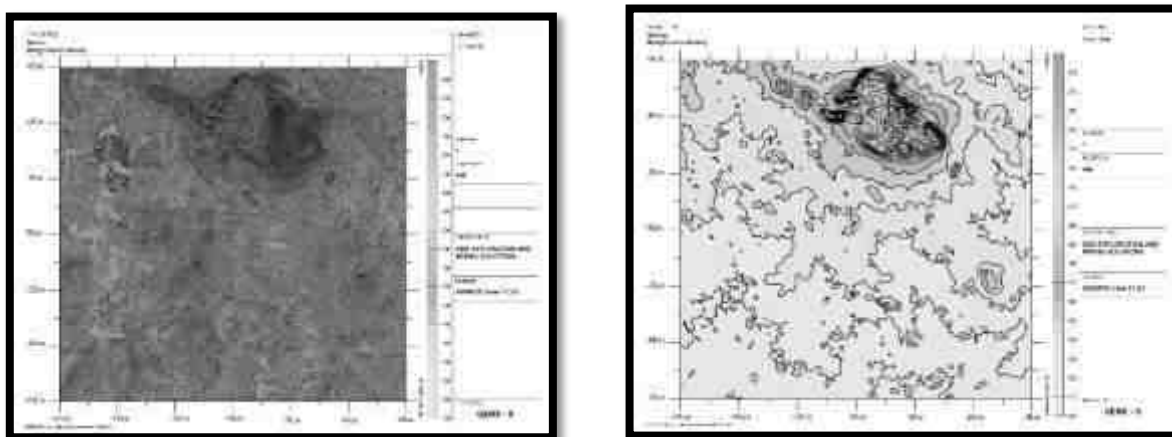


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM₁₀

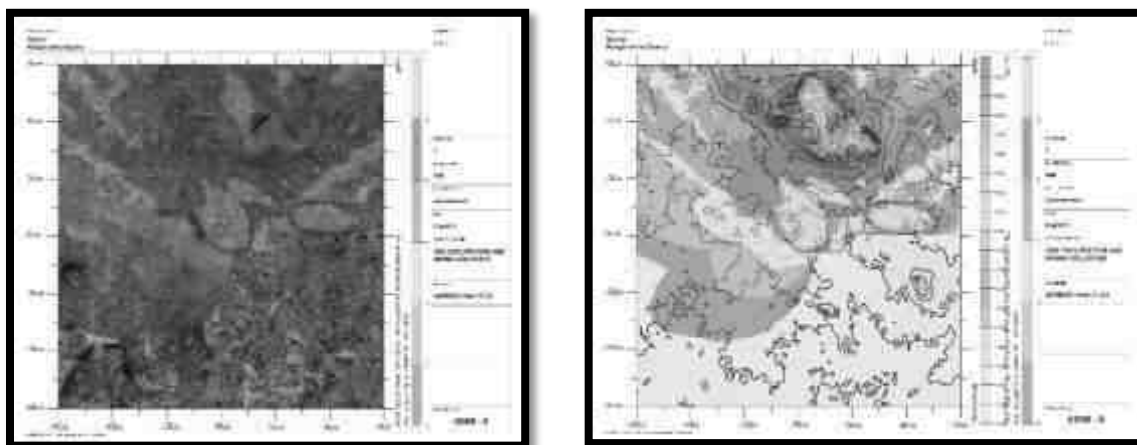


FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF PM_{2.5}

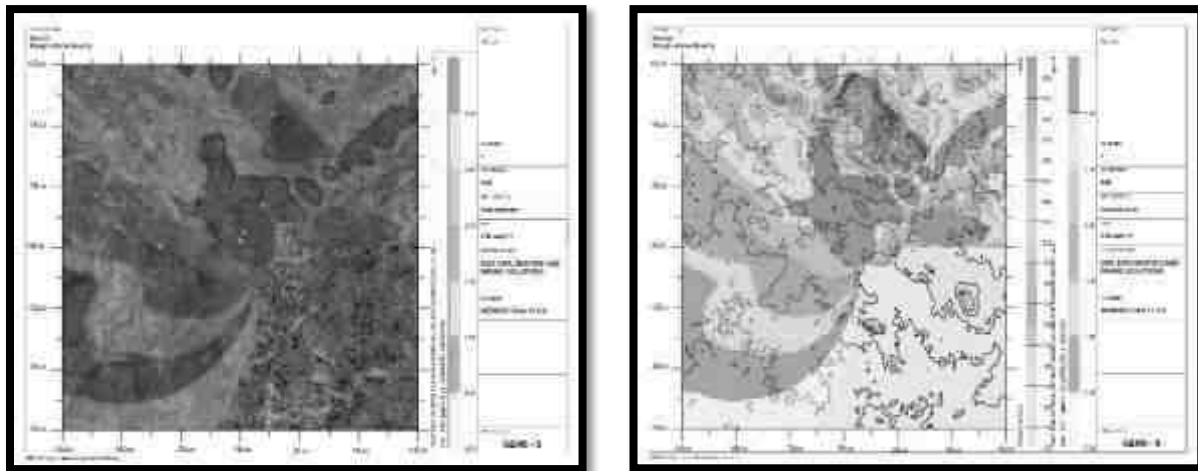


FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF SO₂

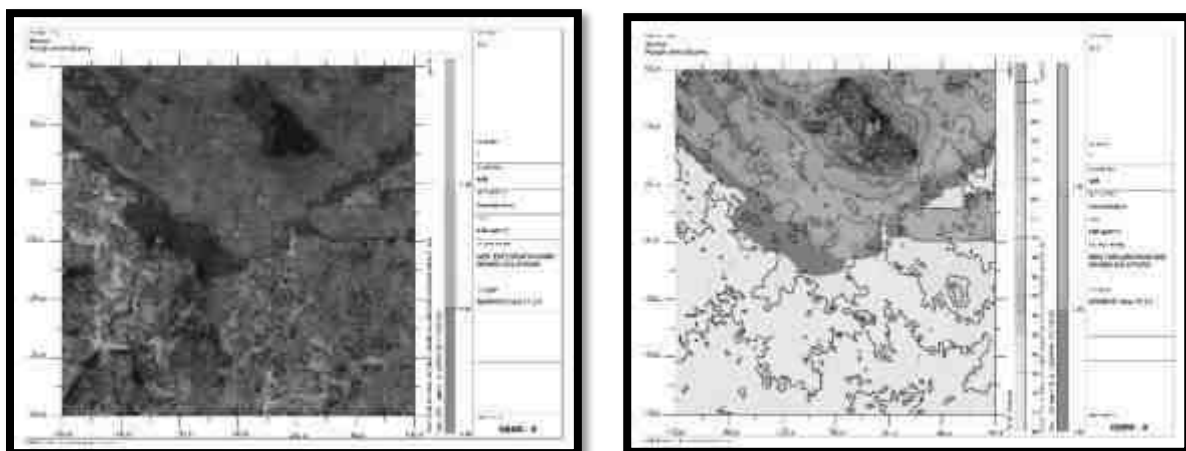


FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF NO_x

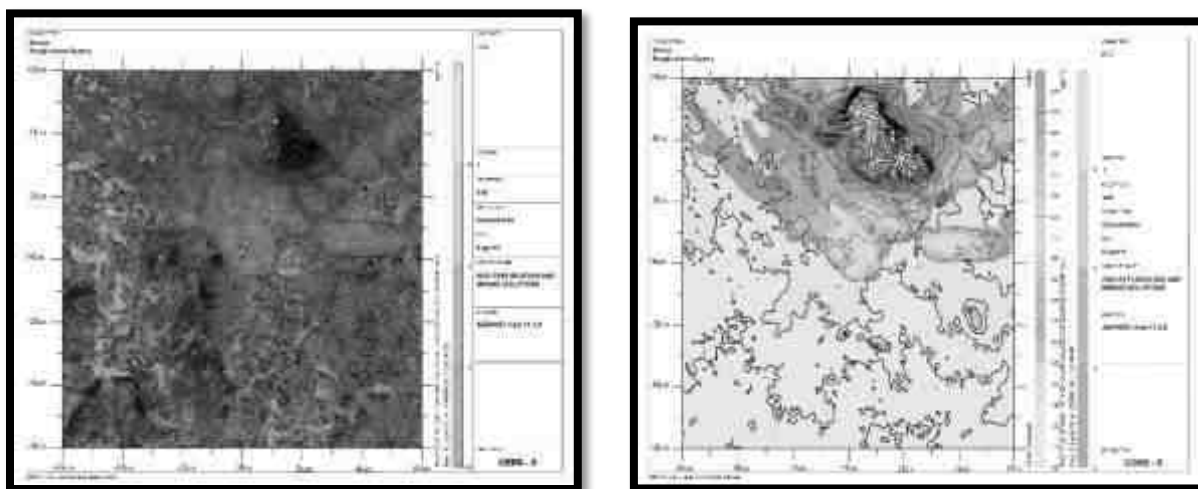
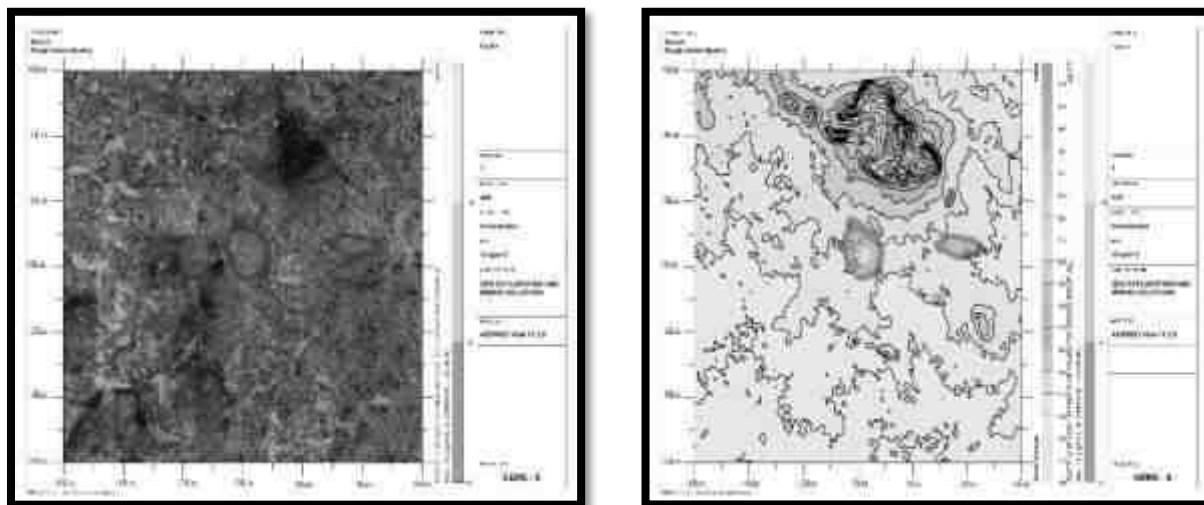


FIGURE 4.6: PREDICTED INCREMENTAL CONCENTRATION OF FUGITIVE DUST



4.3.2.1 Model Results

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

TABLE 4.3: INCREMENTAL & RESULTANT GLC OF PM₁₀

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM ₁₀ (µg/m ³)	Incremental value of PM ₁₀ due to mining (µg/m ³)	Total PM ₁₀ (µg/m ³) (5+6)
AAQ1	10°14'21.24"N 78°35'48.06"E	7	-17	46.0	9.79	55.8
AAQ2	10°14'29.79"N 78°35'52.12"E	132	245	41.8	9.23	51.1
AAQ3	10°14'58.07"N 78°36'13.42"E	786	1122	42.1	8.90	51.0
AAQ4	10°14'14.50"N 78°34'19.97"E	-2695	-226	42.4	2.86	45.2
AAQ5	10°12'38.61"N 78°34'6.39"E	-3109	-3196	44.4	0.39	44.8
AAQ6	10°15'28.87"N 78°37'42.70"E	3523	2080	44.4	6.60	51.0
AAQ7	10°12'11.23"N 78°37'31.07"E	3163	-4041	43.7	0	43.7
AAQ8	10°16'33.35"N 78°33'43.86"E	-3802	4071	40.2	4.70	44.9

TABLE 4.4: INCREMENTAL & RESULTANT GLC OF PM_{2.5}

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM _{2.5} (µg/m ³)	Incremental value of PM _{2.5} due to mining (µg/m ³)	Total PM _{2.5} (µg/m ³)
AAQ1	10°14'21.24"N 78°35'48.06"E	7	-17	23.7	3.97	27.7
AAQ2	10°14'29.79"N 78°35'52.12"E	132	245	21.8	3.79	25.6
AAQ3	10°14'58.07"N 78°36'13.42"E	786	1122	22.1	3.56	25.6
AAQ4	10°14'14.50"N 78°34'19.97"E	-2695	-226	22.0	1.81	23.8
AAQ5	10°12'38.61"N 78°34'6.39"E	-3109	-3196	44.4	1.23	45.6
AAQ6	10°15'28.87"N 78°37'42.70"E	3523	2080	46.3	3.03	49.3
AAQ7	10°12'11.23"N 78°37'31.07"E	3163	-4041	21.4	0	21.4
AAQ8	10°16'33.35"N 78°33'43.86"E	-3802	4071	20.8	2.35	23.2

TABLE 4.5: INCREMENTAL & RESULTANT GLC OF SO₂

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline SO ₂ (µg/m ³)	Incremental value of SO ₂ due to mining (µg/m ³)	Total SO ₂ (µg/m ³)
AAQ1	10°14'21.24"N 78°35'48.06"E	7	-17	8.1	1.59	9.7
AAQ2	10°14'29.79"N 78°35'52.12"E	132	245	6.7	1.55	8.3
AAQ3	10°14'58.07"N 78°36'13.42"E	786	1122	6.8	0	6.8
AAQ4	10°14'14.50"N 78°34'19.97"E	-2695	-226	6.8	1.5	8.3
AAQ5	10°12'38.61"N 78°34'6.39"E	-3109	-3196	7.0	1.19	8.1
AAQ6	10°15'28.87"N 78°37'42.70"E	3523	2080	6.8	0.41	7.2
AAQ7	10°12'11.23"N 78°37'31.07"E	3163	-4041	6.9	0	6.9
AAQ8	10°16'33.35"N 78°33'43.86"E	-3802	4071	6.2	0	6.2

TABLE 4.6: INCREMENTAL & RESULTANT GLC OF NO_x

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline Nox (µg/m ³)	Incremental value of Nox due to mining (µg/m ³)	Total Nox (µg/m ³)
AAQ1	10°14'21.24"N 78°35'48.06"E	7	-17	23.9	6.72	30.6
AAQ2	10°14'29.79"N 78°35'52.12"E	132	245	21.0	6.33	27.4
AAQ3	10°14'58.07"N 78°36'13.42"E	786	1122	20.9	5.83	26.8
AAQ4	10°14'14.50"N 78°34'19.97"E	-2695	-226	22.3	0	22.3
AAQ5	10°12'38.61"N 78°34'6.39"E	-3109	-3196	22.1	0	22.1
AAQ6	10°15'28.87"N 78°37'42.70"E	3523	2080	22.3	1.64	23.9
AAQ7	10°12'11.23"N 78°37'31.07"E	3163	-4041	22.7	0	22.7
AAQ8	10°16'33.35"N 78°33'43.86"E	-3802	4071	21.2	0	21.2

TABLE 4.7: INCREMENTAL & RESULTANT GLC OF FUGITIVE DUST

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline Fugitive (µg/m ³)	Incremental value of Fugitive due to mining (µg/m ³)	Total Fugitive (µg/m ³)
AAQ1	10°14'21.24"N 78°35'48.06"E	7	-17	64.15	19.70	83.9
AAQ2	10°14'29.79"N 78°35'52.12"E	132	245	66.94	19.0	85.9
AAQ3	10°14'58.07"N 78°36'13.42"E	786	1122	65.59	0	65.6
AAQ4	10°14'14.50"N 78°34'19.97"E	-2695	-226	64.32	0	85.3
AAQ5	10°12'38.61"N 78°34'6.39"E	-3109	-3196	64.45	0	64.4
AAQ6	10°15'28.87"N 78°37'42.70"E	3523	2080	67.57	0	67.6
AAQ7	10°12'11.23"N 78°37'31.07"E	3163	-4041	67.39	0	67.4
AAQ8	10°16'33.35"N 78°33'43.86"E	-3802	4071	66.07	0	66.1

From the resultant of cumulative concentration i.e., Background + Incremental Concentration of pollutant in all the receptor locations without effective mitigation measures are still within the prescribed NAAQ limits of 100,60, 80 & 80 µg/m³ for PM₁₀, Pm_{2.5}, SO₂ & NO_x respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

4.3.4. Mitigation Measure

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

Advantages of Wet Drilling:

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.

- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

Blasting

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

Haul Road & Transportation

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

Green Belt –

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

Occupational Health –

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

Climatic Changes:

- In general, the main findings regarding the potential impacts of climate change are Land Use Type, Energy Use, Water use & Dust emission and Biodiversity & rehabilitation.
- Whereas, this proposed mining activity is restricted to a small scale mining the proposals falls in a cluster situation where the surrounding environment is already subjected to mining activities and based on the past weather data its inferred that there is no much of change in the climate data of the region and the district profile has no records or past history of climate change leading to Droughts and floods.
- The project area with land use type of Government land for mining with 5 m height bench with 5 m width bench and Pollution Under Control Certified Machineries is proposed for wining of mineral by opencast mechanized mining method and water consumption are proposed with water tankers from nearby areas and the mine pit itself shall act as a rain water harvesting structure and formation of garland drains along the mine lease boundary to divert the surface runoff and collecting the runoff water for greenbelt development and dust suppression activities shall prove beneficial.

- The greenbelt development plan, all along the mine lease boundary @ 1000 Nos of trees, along with the budget allocation for the proposed mitigation measures shall prove beneficial to surrounding environment.
- Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding Climate Change leading Droughts and Floods etc.,

4.4 Noise Environment (Impact & Mitigation Measures)

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

Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources. Noise modelling has been carried out to assess the impact on surrounding ambient noise levels. Basic phenomenon of the model is the geometric attenuation of sound. Noise at a point generates spherical waves, which are propagated outwards from the source through the air at a speed of 1,100 ft/sec, with the first wave making an ever-increasing sphere with time. As the wave spreads the intensity of noise diminishes as the fixed amount of energy is spread over an increasing surface area of the sphere. The assumption of the model is based on point source relationship i.e., for every doubling of the distance the noise levels are decreased by 6 dB (A).

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

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

Where:

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

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

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

4.4.1 Anticipated Impact

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

- Source data
- Receptor data
- Attenuation factor

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

Same has been listed in Table 4-8.

TABLE 4.8: ACTIVITY AND NOISE LEVEL PRODUCED BY MACHINERY

Sl.No.	Machinery / Activity	Impact on Environment?	Noise Produced in dB(A) at 50 ft from source*
1	Blasting	Yes	94
2	Jack Hammer	Yes	88
3	Compressor	No	81
4	Excavator	No	85
5	Tipper	No	84
Total Noise Produced			95.8

*50 feet from source = 15.24 meters

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

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

TABLE 4.9: PREDICTED NOISE INCREMENTAL VALUES

Location ID	N1	N2	N3	N4	N5	N6	N7	N8
Maximum Monitored Value (Day) dB(A)	48.3	48.8	49.7	49.3	45.9	43.2	45.9	47.1
Incremental Value dB(A)	60.10	54.08	38.52	31.80	27.43	28.06	26.12	25.29
Total Predicted Noise level dB(A)	60.38	55.21	50.02	49.38	45.96	43.33	45.95	47.13
NAAQ Standards	Industrial		Day Time- 75 dB (A)		Night Time- 70 dB (A)			
	Residential		Day Time- 55 dB (A)		Night Time- 45 dB (A)			

4.4.2 Mitigation Measures

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

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

4.4.3 Ground Vibrations

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

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining lease area and may cause injury to persons or damage to the structures. Nearest habitation from the project area is located 1km Southeast in Sevvur village. The ground vibrations due to the blasting in proposed mine are calculated using the empirical equation.

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

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

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

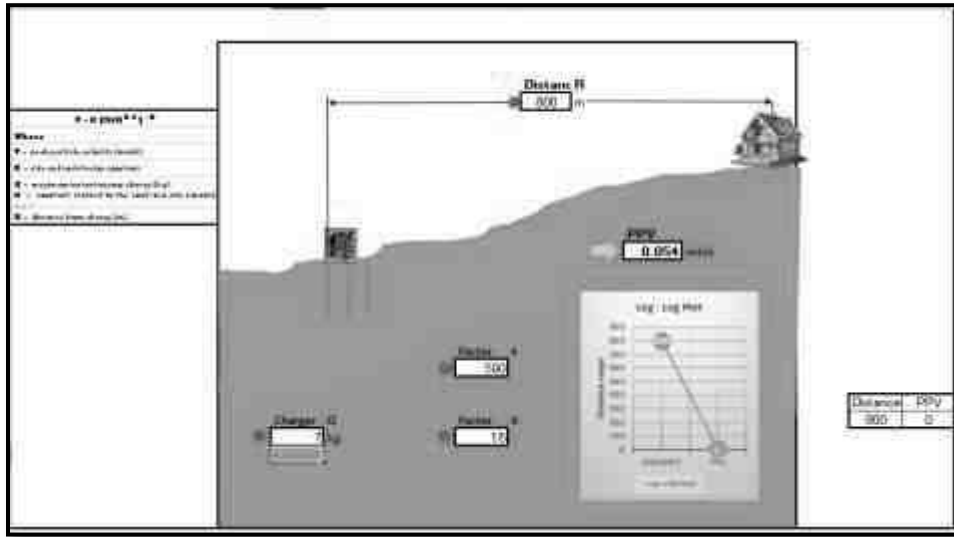
Q = maximum instantaneous charge (kg)

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

R = distance from charge (m)

TABLE 4.10: PREDICTED PPV VALUES DUE TO BLASTING

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	7	800	0.054



From the above graph, the Maximum charge per blast of 7 Kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. It is proposed to carry out blasting not exceeding 2 kg of Explosives per one blasting round. However, as per statutory requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

4.4.3.1 Mitigation Measures

- The blasting operations in this project will be carried out without deep hole drilling and blasting using delay detonators, which reduces the ground vibrations;
- Proper quantity of explosive, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting;
- Adequate safe distance from blasting will be maintained as per DGMS guidelines;
- Blasting shelter will be provided as per DGMS guidelines;
- Blasting operations will be carried out only during day time;
- The charge per delay will be minimized and preferably more number of delays will be used per blasts;
- During blasting, other activities in the immediate vicinity will be temporarily stopped;
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;
- A fully trained explosives blast man (Mining Mate, Mines Foreman, 2nd Class Mines Manager/ 1st Class Mines Manager) will be appointed.
- A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public.
- Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire.
- The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used.
- The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
- Appropriate blasting techniques shall be adopted such that the predicted peak particle velocity shall not exceed 8 Hz.
- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices

4.5 *Biological Environment*

4.5.1. Anticipated Impact on Flora

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

4.5.1.1. Mitigation Measures

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

- Plants that grow fast will be preferred.
- Preference for high canopy covers plants with local varieties.
- Perennial and evergreen plants will be preferred.
- The development of the Green Belt is an important aspect for any plant because:

It improves the ambient air quality by controlling Suspended Particulate Matter (SPM) in the air.

- a. It helps in noise abatement for the surrounding area.
- b. It helps in the settlement of new birds and insects within itself.
- c. It maintains the ecological balance.
- d. It increases the aesthetic value of the site.

Table No 4.11. List of plant species proposed for Greenbelt development

S. No	Scientific name	Tamil Name
1	<i>Aegle marmelos</i>	Vilva maram
2	<i>Albizia lebbeck</i>	Vaagai maram
3	<i>Cassia fistula</i>	Konrai tree
4	<i>Lannea coromandelica</i>	Othiyam
5	<i>Limonia acidissima</i>	Vila maram
6	<i>Syzygium cumini</i>	Naval maram
7	<i>Toona ciliata</i>	Santhana Vembu
8	<i>Ficus hispida</i>	Aththi maram
9	<i>Borassus flabellifer</i>	Panai-maram
Species suitable for abatement of noise and dust pollution		
1	<i>Azadirachta indica</i>	Vembhu maram
2	<i>Ficus religiosa</i>	Arasan maram
3	<i>Ficus hispida</i>	Aththi maram
4	<i>Bombax ceiba</i>	Mul Elavu
5	<i>Syzygium cumini</i>	Naval maram
6	<i>Tamarindus indica</i>	Puliyamaram
7	<i>Mangifera indica</i>	Manga maram
8	<i>Harwickia binata</i>	Anjan maram

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

4.5.2. Anticipated Impact on Fauna

- No rare, endemic & endangered species are reported in the buffer zone. However, during the course of mining, the management will practice the scientific method of mining with a proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife.
- Fencing around the mine lease area to restrict the entry of stray animals.
- Green belt development will be carried out which will help in minimizing adverse impact on the flora found in the area.

4.5.2.1. Measures for protection and conservation of wildlife species

- Topsoil has a large number of seeds of native plant species in the mining area.
- Topsoil will be used for restoration and suitable surfaces for planted seedlings.
- Checks and controls the movement of vehicles in and out of the mine.
- Undertaking mitigative measures for a conducive environment for the flora and fauna in consultation with the Forest Department.
- A dust suppression system will be installed within the mine and periphery of the mine.
- Plantation around the mine area will help in creating habitats for small faunal species and create a better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages.

4.5.5. Impact on Aquatic Biodiversity

Mining activities will not disturb the aquatic ecology as there is no effluent discharge proposed from the Rough Stone quarry because the applied lease area exhibits Plain topography. There is no natural perennial surface water body within the mine lease area, like wetlands, rivers streams, lakes, and farmer sites. There are a few water bodies in the study area (within a 10 km radius), including the Odai and Canals, Pond, Lake, and others. There is no impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. Aquatic biodiversity is observed in the study area.

4.5.6 Anticipated Impact on Fauna

- No rare, endemic & endangered species are reported in the buffer zone. However, during the course of mining, the management will practice the scientific method of mining with a proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife.
- Fencing around the mine lease area to restrict the entry of stray animals.
- Green belt development will be carried out which will help in minimizing adverse impact on the flora found in the area.

4.5.6.1. Measures for protection and conservation of wildlife species

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

4.5.6.2 Mitigation Measures

- A suitable plan for the conservation of Schedule-I Species have been prepared and the necessary fund for implementation for the same will be made.
- All the preventive measures will be taken for the growth & development of fauna.
- Creating and developing awareness for nature and wildlife in the adjoining villages.
- The workers shall be trained to not harm any wildlife, should it come near the project site. No work shall be carried out after 6.00 pm.
- Topsoil has a large number of seeds of native plant species in the mining area.
- Checks and controls the movement of vehicles in and out of the mine.
- Undertaking mitigative measures for a conducive environment for the flora and fauna in consultation with Forest Department.
- A dust suppression system will be installed within the mine and periphery of the mine.

4.5.6.3. Impacts on Bird Fauna:

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

4.5.6.4. Impacts on wildlife

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

4.5.7 Impact Assessment on Biological Environment

A detail of impact and assessments was mentioned in Table No 4.14.

TABLE 4.12: ECOLOGICAL IMPACT ASSESSMENTS

S.No	Attributes	Assessment
1	Impact of mining activity on agricultural land nearby the proposed project site.	Agricultural land is located away from the proposed project site. There are no impacts on the agricultural land & Horticulture. Kindly refer to the conclusion.
	Activities of the project affect the breeding/nesting sites of birds and animals	No breeding and nesting site was identified in the mining lease site. The fauna sighted mostly migrated from the buffer

		area.
2	Located near an area populated by rare or endangered species	No Endangered, Critically Endangered, or vulnerable species were sighted in the core mining lease area.
3	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/coastline/estuary/sea	There is no National Park/ Wildlife Sanctuary/ Reserve Forest/ Mangroves and Eco-Sensitive zone/ Critically polluted area/ HACA/CRZ located within 10 km radius of the area. Usilamalai RF has located about 2.5 km on the North side and Velangudi RF has located about 2.5 km on the South side both forests are away from the proposed project site.
4	The proposed project restricts access to waterholes for wildlife	'No '
5	Proposed mining project impact surface water quality that also provides water to wildlife	'No 'scheduled or threatened wildlife animals are sighted regularly core in the core area.
6	Proposed mining project increase siltation that would affect nearby biodiversity areas.	Surface runoff management such as drains is constructed properly so there will be no siltation effect in the nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities.	'No'
8	The project release effluents into a water body that also supplies water to a wildlife.	No water body near to core zone so the chances of water becoming polluted is low.
9	Mining projects affect the forest-based livelihood/ any specific forest product on which local livelihood depended.	'No'
10	The project likely to affect migration routes.	'No 'migration route was observed during the monitoring period.
11	The project is likely to affect the flora of an area, which have medicinal value	'No'
12	Forestland is to be diverted, has carbon high sequestration.	'No 'There was no forest land diverted.
13	The project is likely to affect wetlands, Fish breeding grounds, and marine ecology.	'No'. Wetland was not present in the near core Mining lease area. No breeding and nesting ground is present in the core mining area.

4.6 Socio Economic

4.6.1 Anticipated Impact

- Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area.
- Approach roads can be damaged by the movement of tippers
- Increase in Employment opportunities both direct and indirect thereby increasing economic status of people of the region
- Due to the increase in the number of vehicles, traffic jams may occur
- Due to the vehicles passing through the villages, there is a disturbance to the people

4.6.2 Mitigation Measures

- Good maintenance practices will be adopted for all machinery and equipment, which will help to avert potential noise problems.
- Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.
- Air pollution control measure will be taken to minimize the environmental impact within the core zone.
- For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules.
- Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc., from this project directly and indirectly.
- From above details, the quarry operations will have highly beneficial positive impact in the area
- No villages in the proposed mineral transportation route
- Mineral loaded Vehicles will not be allowed during school hours (Morning 8AM to 10AM & Evening 4.30PM to 5.30PM)

4.7 Occupational Health and Safety

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

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

4.7.1 Respiratory Hazards

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

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

4.7.2 Noise

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

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

4.7.3 Physical Hazards

The following measures are proposed for control of physical hazards

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

4.7.4 Occupational Health Survey

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

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

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

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

4.8 *Mine Waste Management*

No waste is anticipated from any of the proposed quarries.

4.9 *Mine Closure*

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

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

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

4.9.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

4.9.1.1 Physical Stability

All anthropogenic structures, which include mine workings, buildings, rest shelters etc., remaining after mine decommissioning should be physically stable. They should present no hazard to public health and safety as a result of failure or physical deterioration and they should continue to perform the functions for which they were designed. The

design periods and factors of safety proposed should take full account of extreme events such as floods, hurricane, winds or earthquakes, etc. and other natural perpetual forces like erosion, etc.,

4.9.1.2 Chemical Stability

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

4.9.1.3 Biological Stability

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

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

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

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

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

5.0 Introduction:

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

- This area denotes the indicative of flow pattern of the rock mass in N30⁰E to S30⁰W with dipping SE60⁰.
- Transportation facility for materials & manpower.
- Overall impact on environment and mitigation feasibility.
- Socio – economic background.

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

5.1 Factors Behind the Selection of Project Site

Rough Stone Quarry Projects at Sevvur Village is site specific. The proposed mining lease area has following advantages: -

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

5.2 Analysis of Alternative Site

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

5.3 Factors Behind Selection of Proposed Technology

Mechanized open cast mining operation with drilling and blasting method will be used to extract Rough Stone in the area. The quarry areas fall in the clusters has following advantages

- As the mineral deposition is homogeneous and batholith formation, therefore opencast method of working out deposit is preferred over underground method
- The material will be loaded after sprinkling with water with the help of excavators into dumpers / trippers and transported to the needy customers.
- Blasting and availability of drills along with controlled blasting technology gives desired fragmentation so that the mineral is handled safely and used without secondary blasting.

Semi-skilled labours fit for quarrying operations are easily available around the nearby villages.

5.4 Analysis of Alternative Technology

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

CHAPTER – 6: ENVIRONMENTAL MONITORING PROGRAMME

6.0 General

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

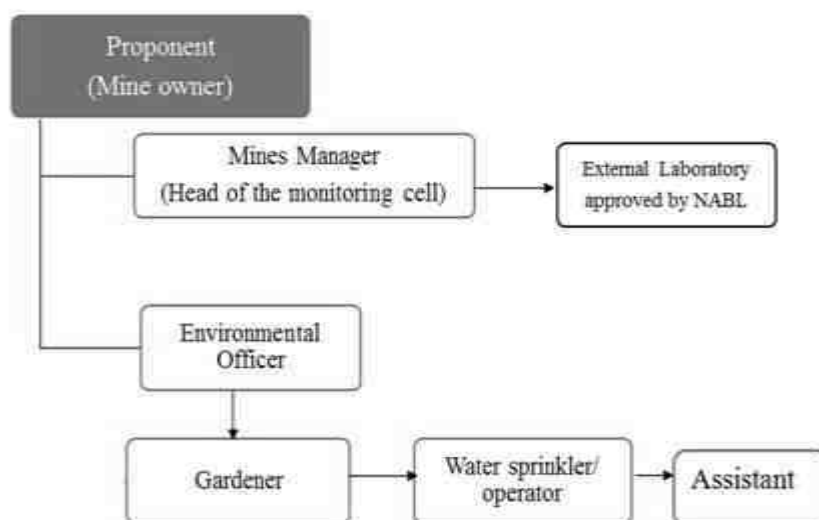
The monitoring and evaluation of environmental parameters indicates potential changes occurring in the environment, which paves way for implementation of rectifying measures wherever required to maintain the status of the natural environment. Evaluation is also a very effective tool to judge the effectiveness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

6.1 Methodology of Monitoring Mechanism

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

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

FIGURE 6.1 HIERARCHY OF ENVIRONMENTAL MONITORING CELL



The responsibilities of this cell will be:

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

The environmental monitoring cell will co-ordinate all monitoring programs at site and data thus generated will be regularly furnished to the State regulatory agencies. The sampling and analysis report of the monitored environmental attributes will be submitted to the Tamil Nadu Pollution Control Board (TNPCB) at a frequency of monthly, half-yearly and yearly. The half-yearly reports will be submitted to Ministry of Environment and Forest, Regional Office and SEIAA as well.

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

6.2 Implementation Schedule of Mitigation Measures

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

TABLE 6.1 IMPLEMENTATION SCHEDULE

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

6.3 Monitoring Schedule and Frequency

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

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

The details of monitoring is detailed in Table 6.2

TABLE 6.2: PROPOSED MONITORING SCHEDULE POST EC

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

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

6.4 Environmental Policy of the Proponent

The project proponent committed to ensure that:

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

6.5 Budgetary Provision for Environmental Monitoring Programme

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

The proposed total cost for Environmental Monitoring Programme is Rs 7,60,000/-

TABLE 6.3 ENVIRONMENT MONITORING BUDGET

Parameter	Capital Cost
Air Quality Meteorology Water Quality Hydrology Soil Quality	Rs.7,60,000/-

Noise Quality Vibration Study Greenbelt	
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Source: Approved Mining Plan

6.6 Reporting Schedules of Monitored Data

The monitored data on Air quality, Water quality, Noise levels and other environmental attributes will be periodically examined by the proponent with Environmental Monitoring cell and necessary corrective measures will be carried out. The monitoring data will be submitted to Tamil Nadu State Pollution Control Board in the Compliance to CTO Conditions & environmental audit statements every year to MoEF & CC and Half-Yearly Compliance Monitoring Reports to MoEF & CC Regional Office and SEIAA.

Periodical reports to be submitted to: -

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

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

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

CHAPTER – 7: ADDITIONAL STUDIES

7.0 General

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

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

7.1. **Public Consultation:**

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

7.2 **Risk Assessment**

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

The cluster quarry operation will be carried out under the direction of a Qualified Competent Mine manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening. Factors of risks involved due to human induced activities in connection with mining & allied activities with detailed analysis of causes and control measures for the mine is given in below Table 7.1.

TABLE 7.3 RISK ASSESSMENT & CONTROL MEASURES

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

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

			<ul style="list-style-type: none"> horn with one spotter at every tipping point ▪ Loading according to the vehicle capacity ▪ Periodical maintenance of vehicles as per operator manual
5	Natural calamities	Unexpected happenings	<ul style="list-style-type: none"> ▪ Escape Routes will be provided to prevent inundation of storm water ▪ Fire Extinguishers & Sand Buckets
6	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	<ul style="list-style-type: none"> ▪ Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

7.3 Disaster Management Plan

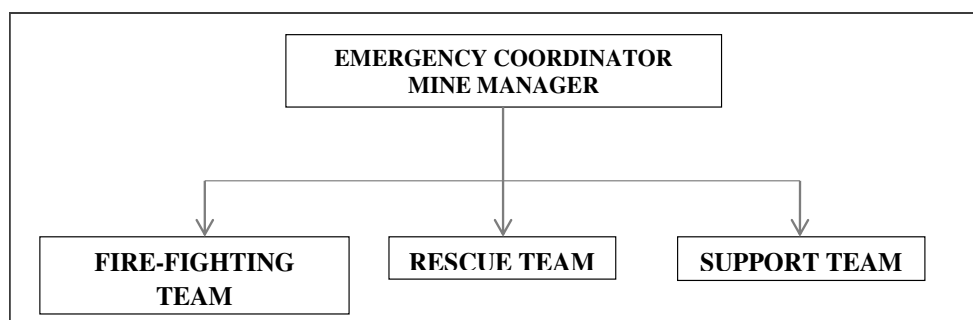
Natural disasters like Earthquake, Landslides has not been recorded in the past history as the terrain is categorized under seismic zone III. The area is far away from the sea hence the disaster due to heavy floods and tsunamis are not anticipated. The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

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

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

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

FIGURE 7.2: DISASTER MANAGEMENT TEAM LAYOUT



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

TABLE 7.4: PROPOSED TEAMS TO DEAL WITH EMERGENCY SITUATION

DESIGNATION	QUALIFICATION
FIRE-FIGHTING TEAM	
Team Leader/ Emergency Coordinator (EC)	Mines Manager

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

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

Roles and responsibilities of emergency team –

(a) Emergency coordinator (EC)

The emergency coordinator shall assume absolute control of site

(b) Incident controller (IC)

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

(c) Communication and advisory team

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

(d) Roll call coordinator

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

(e) Search and rescue team

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

(f) Emergency security controller

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

Emergency control procedure –

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

- On site fire crew led by a fireman will arrive at the site of incident with fire foam tenders and necessary equipment.

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

Proposed fire extinguishers at different locations –

The following type of fire extinguishers is proposed at strategic locations within the quarry.

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

Alarm system to be followed during disaster –

On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system.

On receiving the message of "Emergency Over" from Incident Controller the emergency control room attendant will give "All Clear Signal", by sounding alarm straight for 2 minutes.

The features of alarm system will be explained to one and all to avoid panic or misunderstanding during disaster.

In order to prevent or take care of hazard / disasters if any the following control measures have been adopted.

- All safety precautions and provisions of Metalliferous Mines Regulations (MMR), 1961 is strictly followed during all mining operations.
- Firefighting and first-aid provisions in the mines office complex and mining area will be provided.
- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring.
- Training and refresher courses for all the employees working in the quarry in phase manner.
- Cleaning of mine faces will be carried out regularly.
- Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- A blasting SIREN will be used at the time of blasting for audio signal.
- Checking of blasting area for any un-blasted hole or material.
- Warning notice boards indicating the time of blasting and NOT TO TREESPASS will be displayed at prominent places.

7.4 CUMULATIVE IMPACT STUDY

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

PROPOSED QUARRY				
CODE	Name of the Proponent and Address	S.F.Nos ,Village & Taluk	Extent in Ha	Status
P1	Thiru. C. Ammavasai,	118/4, 118/5, 118/6A & 119/3 Sevvur Village	0.98.0	Tor Obtained Lr No.SEIAA-TN/F.No.9938/ToR-1481/2023 Dated :22.06.2023.
Total			0.98.0 Ha	
EXISTING QUARRIES				
CODE	Name of the Proponent and Address	S.F.Nos	Extent in Ha	Lease Period
E-1	Thiru.A.Selvam	113/4A,4B,3A,3B etc	1.69.0	08.09.2020 to 07.09.2025
E-2	Thiru.S.Vairavan	81/1, 2,3,4,5, etc	3.43.0	10.11.2020 to 09.11.2026
E-3	Thiru.R.M.Alagappan	116/3B, 116/3C, 116/3E & 116/3G	1.42.5	23.11.2021 to 22.11.2026
Total			6.54.5 Ha	
ABANDONED QUARRY				
A-1	Thiru.Arumugam	118/3	0.68.0	30.11.2005 to 29.11.2010
Total			0.68.0	
TOTAL CLUSTER EXTENT			7.52.5 Ha	

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

TABLE 7.5: SALIENT FEATURES OF THE PROPOSED PROJECTS IN CLUSTER
SALIENT FEATURES OF THE PROPOSED PROJECTS -P1

Name of the Mine	Thiru. C. Ammavasai, Rough Stone Quarry	
Land Type	It is a Patta land – Non-Forest	
Land use classification	It is a Patta land, Registered in the name of the applicant (Thiru. C. Ammavasai), vide Patta Nos. 901 & 916	
S.F. Nos	118/4, 118/5, 118/6A & 119/3	
Extent	0.98.0 ha	
Proposed depth of mining As per Mining plan	16m (1m Topsoil + 15m Rough Stone) below ground level	
Geological Resources in m ³	Rough Stone	Topsoil
	1,47,000m ³	9,800 m ³
Mineable Reserves	Rough Stone	Topsoil
	48,910 m ³	5,837 m ³
Year wise production for Ten years	Rough Stone	Topsoil
	48,910 m ³	5,837 m ³
Mining Plan Period / Lease Period	10 Years	
Ultimate Pit Dimension	Pit I - 25m (L) x 94 m(W) x 16m (D) BGL Pit II - 133m (L) x 33 m(W) x 16m (D) BGL	
Toposheet No	58-J/12	
Latitude between	10° 14' 18.68" N to 10° 14' 24.49" N	
Longitude between	78° 35' 46.28" E to 78° 35' 50.35" E	
Topography	The lease applied area is exhibits plain terrain. The gradient is gentle towards South side and altitude of the area is 137m above from Mean Sea level. The area is covered by 1m thickness of Topsoil and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pits.	
Machinery proposed	Jack Hammer	2

	Compressor	1
	Excavator with Bucket and Rock Breaker	1
	Tipper	1
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	15Nos	
Water table	64m Bgl	
Water Bodies	S.No	NAME DISTANCE & DIRECTION
	1	Odai 100m West
	2	Tank 230m North
	3	Tank 420m NW
	4	Tank 570m SW
	5	Tank 680m SE
	6	Tank 7km West
	7	Tank 8.2km North
	8	Tank 9.2km East
Water requirements	2.0 KLD	
Total Project Cost	Project cost	Rs 19,82,000/-
	EMP Cost	Rs 7,60,000/-
	Total	Rs 27,42,000/-
Proposed CER Cost	Rs. 5,00,000/-	
Nearest Habitation	800m-NE	

SALIENT FEATURES OF THE EXISTING PROJECTS -E1

Name of the Mine	Thiru. A. Selvam Rough Stone & Gravel Quarry	
Land Type	It is a Patta land – Barren Land	
Land use classification	Own Patta Land Patta no 963	
S.F. Nos	113/3A,3B,3C,3D,3E1,E2,E3,E4, 3F,4A,4B	
Extent	1.69.0 ha	
Proposed depth of mining As per Mining plan	28m Bgl	
Existing Depth	35m (L) 24m (W) 8m (D)	
Geological Resources in m ³	Rough Stone	Topsoil with Gravel
	4,21,855	33,345
Mineable Reserves	Rough Stone	Topsoil with Gravel
	1,70,805	22,407
Year wise production for Ten years	Rough Stone	Topsoil with Gravel
	1,70,805	22,407
Mining Plan Period / Lease Period	5Years	
Ultimate Pit Dimension	Pit I - 133m (L) x 101 m(W) x 28m (D) BGL	
Toposheet No	58-J/12	
Latitude between	10° 14' 22.92" N to 10° 14' 28.68" N	
Longitude between	78° 35' 51.72" E to 78° 35' 56.52" E	
Topography	The lease area plain terrain which is covered by weathered rock formation, the massive formation is clearly inferred followed by the 3m (Avg) weathered rock formation. The slope is gentle southern side, the applied area is 75m Amsl.	
Machinery proposed	Jack Hammer	2
	Compressor	1
	Excavator with Bucket and Rock Breaker	1
	Tipper	1
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	14Nos	
Water table	50m-45m	
Water Bodies	Odai – 6.0km-SW	

Water requirements	2.10 KLD	
Total Project Cost	Project cost	Rs 78,37,680/-
	EMP Cost	Rs 2,90,000/-
	Total	Rs 81,27,680
Proposed CER Cost	Rs. 5,00,000/-	
Nearest Habitation	680m-NE	

Source: Approved Mining Plan

SALIENT FEATURES OF THE EXISTING PROJECTS -E2

Name of the Mine	Thiru. S.Vairavan, Rough Stone Quarry	
Land Type	Own Patta Land Patta no 3048 &3049	
Land use classification	It is a Patta land – Non-Agric Land	
S.F. Nos	81/1,2,3,4,5, 82/1,3,4,6 &7	
Extent	3.22.5 ha	
Proposed depth of mining As per Mining plan	37m Bgl	
Existing Depth	10m (Max) Bgl	
Geological Resources in m ³	Rough Stone	Topsoil
	18,87,392	53,924
Mineable Reserves	Rough Stone	Topsoil
	1,64,275	23,220
Year wise production for Ten years	Rough Stone	Topsoil
	1,64,275	23,220
Mining Plan Period / Lease Period	5Years	
Ultimate Pit Dimension	Pit I - 202m (L) x 58m Avg (W) x 37m (D) BGL	
Toposheet No	58-J/12	
Latitude between	10° 14' 31.92" N to 10° 14' 41.25" N	
Longitude between	78° 35' 45.17" E to 78° 35' 52.71" E	
Topography	The lease area plain terrain which is covered by weathered rock formation, the massive formation is clearly inferred followed by the 3m (Avg) weathered rock formation. The slope is gentle south eastern side, the applied area is 143m MSL.	
Machinery proposed	Jack Hammer	2
	Compressor	2
	Excavator	2
	Tippers	6
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	36Nos	
Water table	65m-70m	
Water Bodies	Odai – 6.0km-SW	
Water requirements	2.10 KLD	
Total Project Cost	Project cost	Rs 64,28,000/-
	EMP Cost	Rs 8,90,000/-
	Total	Rs 73,18,000/-
Proposed CER Cost	Rs. 5,00,000/-	
Nearest Habitation	420m-NE	

Source: Approved Mining Plan

SALIENT FEATURES OF THE EXISTING PROJECTS -E3

Name of the Mine	Thiru.R.M.Alagappan Rough Stone & Gravel Quarry
Land Type	It is a Consent Patta Land registered in the name of the applicant Thiru.RM.Alagappan at S.F.Nos. 116/3C, 116/3E & 116/3G Vide Patta No.993 and Consent Pattadhar is name of Thiru.A.Lakshmanan at S.F.No. 116/3B vide Patta

	No. 949.	
Land use classification	It is a Patta land (Barren land)	
S.F. Nos	116/3B, 116/3C, 116/3E & 116/3G	
Extent	1.42.5 ha	
Proposed depth of mining As per Mining plan	46m Bgl	
Existing Depth	35m (L) 24m (W) 8m (D)	
Geological Resources in m ³	Rough Stone	Topsoil
	8,76,380	7359
Mineable Reserves	Rough Stone	Topsoil
	1,59,285	4745
Year wise production for Ten years	Rough Stone	Topsoil
	1,53,705	4745
Mining Plan Period / Lease Period	5Years	
Ultimate Pit Dimension	46m	
Toposheet No	58-J/12	
Latitude between	10°14'27.86"N to 10°14'32.61"N	
Longitude between	78°35'40.73"E to 78°35'46.87"E	
Topography	The lease applied area is exhibits plain terrain. The area has gentle sloping towards North-eastern side. The altitude of the area is 142m (Max) above Mean sea level.	
Machinery proposed	Jack Hammer	2
	Compressor	2
	Excavator with Bucket and Rock Breaker	2
	Tipper	6
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	32Nos	
Water table	65m-70m	
Water Bodies	Odai – 6.0km-SW	
Water requirements	6.0 KLD	
Total Project Cost	Project cost	Rs 36,70,000/-
	EMP Cost	Rs 9,10,000/-
	Total	Rs. 45,80,000/-
Proposed CER Cost	Rs. 5,00,000/-	
Nearest Habitation	760m-NE	

Source: Approved Mining Plan

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

Impact on Air Environment –

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

TABLE 7.6 CUMULATIVE PRODUCTION LOAD OF ROUGH STONE IN CLUSTER

PROPOSED QUARRY				
Quarry	Production for 10year plan period considering safety parameters m ³	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 6m ³ per load
P1	48,910	4891	16	3Trips /Day
TOTAL	48,910	4,891	16	3Trips /Day
EXISTING QUARRIES				

Quarry	Production for five-year plan period	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 6m ³ per load
E1	1,70,805	34,161	114	19 Trips /Day
E2	1,64,275	32,855	110	18 Trips /Day
E3	1,53,705	30,741	102	17 Trips /Day
TOTAL	4,88,785	97,757	326	54 Trips/ Day
Grant Total	5,37,695	1,02,648	342	57 Trips/ Day

TABLE 7.7: CUMULATIVE PRODUCTION OF TOPSOIL IN CLUSTER

PROPOSED QUARRY				
Quarry	Production for five-year plan period considering safety parameters m ³	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 6m ³ per load
P1	5,837	1167	4	1- Trips /week
EXISTING QUARRIES				
Quarry	Production for five-year and three-year plan period	Per Year Production in m ³	Per Day Production in m ³	Number of Lorry Load Per Day @ 6m ³ per load
E1	22,407	4481	15	2- Trips /week
E2	23,220	7,740	26	4- Trips /week
E3	4,745	1582	5	1- Trips /week
TOTAL	50,372	13,803	20	7- Trips/ Day
G. Total	56,209	14,970	24	8- Trips/ Day

Based on the above production quantities the emissions due to various activities in all the 4mines includes various activities like ground preparation, excavation, handling and transport of mineral. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 7.7.

TABLE 7.8: INCREMENTAL & RESULTANT GLC WITHIN CLUSTER

PM ₁₀ in µg/m ³	
Location	AAQ1 – CORE
Background (average)	46.0
Anticipated Incremental due to the proposals	9.79
Resultant	55.8
NAAQ Norms	100 µg/m ³
PM _{2.5} in µg/m ³	
Background (average)	23.7
Highest Incremental	3.97
Resultant	27.7
NAAQ Norms	60 µg/m ³
SO ₂ in µg/m ³	
Location	AAQ1 – CORE
Background (average)	8.1
Anticipated Incremental due to the proposals	1.59
Resultant	9.7
NAAQ Norms	80 µg/m ³
NO _x in µg/m ³	
Location	AAQ1 – CORE
Background (average)	23.9
Anticipated Incremental due to the proposals	6.72
Resultant	30.6
NAAQ Norms	80 µg/m ³

Noise Environment

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

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

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

Where:

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

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

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

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

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

TABLE 7.9: PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER

Location ID	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near East from the cluster 800m NE	48.3	42.0	49.2	55
Habitation Near East from the cluster 680m	46.7	43.4	48.4	
Habitation Near North East from the cluster 420m	42.5	47.6	48.8	
Habitation Near North East from the cluster 760m	46	42.5	47.6	

Source: Lab Monitoring Data

The incremental noise level is found within the range of 42.0 – 47.6 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.).

Ground Vibrations

Ground vibrations due to mining activities in the all the 4 Mines within cluster are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc., However, the major source of ground vibration from the all the 4 mines is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease areas. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining areas and may cause injury to persons or damage to the structures. Nearest Habitations from Cluster is tabulated in Table 7.9

The ground vibrations due to the blasting in all the mines are calculated using the empirical equation for assessment of peak particle velocity (PPV) is:

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

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

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

R = distance from charge (m)

TABLE 7.10: GROUND VIBRATIONS AT CLUSTER MINES

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
Proposed Quarry			
P1	7	800	0.054
Existing Quarries			
E1	49	680	0.330
E2	47	420	0.691
E3	44	760	0.254

Source: PPV Calculation

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

Socio Economic Environment

The 4 mines shall provide employment and revenue will be created to government

TABLE 7.11: SOCIO ECONOMIC BENEFITS FROM CLUSTER MINES

Proposed Quarry			
Code	Employment	Project Cost	CER
P1	15	Rs 27,42,000/-	Rs 5,00,000/-
TOTAL	15	Rs 27,42,000/-	Rs 5,00,000/-
Existing Quarries			
Code	Employment	Project Cost	CER
E1	14	Rs 81,27,680/-	Rs. 5,00,000/-
E2	36	Rs 73,18,000/-	Rs. 5,00,000/-
E3	32	Rs. 45,80,000/-	Rs. 5,00,000/-
TOTAL	82	Rs. 2,00,25,680/-	Rs.15,00,000/-
Grand Total	97	Rs. 2,27,67,680/-	Rs. 20,00,000/-

A total of 15 people will get employment due to this Proposed Quarry, in this already 82peoples employed in the existing quarries. For the Existing quarries Corporate Environment Responsibility (CER) allocated as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.

For the proposed projects it is recommended to spent Rs 5,00,000/- towards CER Activities in the nearby Government School for Renovation or reconstruction of Existing Toilet, Providing Note books to the School library and Plantation in the school ground any other recommendations by the School Head masters.

Considering 500 Nos of trees per hectare it is proposed to plant About 490 nos. of saplings in the proposed projects for the Mining plan period in safety barrier, Un utilized area and village roads with survival rate 80% (Anticipated). The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

TABLE 7.12: GREENBELT DEVELOPMENT BENEFITS FROM CLUSTER

CODE	No of Trees proposed to be planted	Survival %	Area to be covered	Name of the Species
PROPOSED QUARRY				
P1	490	80	Safety barrier, Un utilized area and approach road and Panchayat Road	Neem, Pongamia, Pinnata, Causarina, etc.,
Total	490			
EXISTING QUARRIES				
E-1	845	80	Safety barrier, Un utilized area and approach road and Panchayat Road	Neem, Pongamia, Pinnata, Causarina, etc
E-2	1,715	80	Safety barrier, Un utilized area and approach road and Panchayat Road	Neem, Pongamia, Pinnata, Causarina, etc
E-3	700	80	Safety barrier, Un utilized area and approach road and Panchayat Road	Neem, Pongamia, Teak Causarina, etc
Total	3,260			

It is anticipated that there shall growth of native species of Neem, Pongamia, Pinnata, Causarina, etc in the Cluster at a rate due to these proposals 3,260Trees Planted over a period of 5 Years with Survival Rate of 80%. Besides every individual lease holder will plant Saplings in the School ground as part of CER activities.

7.5 PLASTIC WASTE MANAGEMENT PLAN

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

Objective –

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

TABLE 7.13: ACTION PLAN TO MANAGE PLASTIC WASTE

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

Source: Proposed by FAE's and EC

Carbon Emission.

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

Methane (CH₄): Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices, land use and by the decay of organic waste in municipal solid waste landfills.

Nitrous oxide (N₂O): Nitrous oxide is emitted during agricultural, land use, and industrial activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.

In this quarrying activities, anticipated GHG is mainly CO₂ as its proposed for usage of HSD (High Speed Diesel) for proposed machinery totally deployed are 1 Nos. Compressor, 1 Nos Excavator and 1 Nos. of Tippers for which an approximate usage of HSD is 21,146 Liters of HSD will be utilized for first five years. Which contributes to 90.45 kg of CO₂ for the stretch of daily activity of 20 kms @ 1 Liter Diesel produces 2.68 kg of CO₂ on the contrast 1 tree absorbs approximately 20-40 kgs of CO₂ per year.

- It is proposed to plant 490 Nos of trees in the 1proposals shall absorb 1,313kgs of CO₂ per year on average basis.
- Apart from which, its proposed for deployment of New Modern Machineries (BSVI) and PUC certified Vehicles.

Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding environment leading to release of Greenhouse gases (GHC), rise in temperature & livelihood of local people.

Hydrothermal/Geothermal effect due to destruction in the Environment.

- Hydrothermal – relating to hot water —used especially of the formation of minerals by hot solutions rising from a cooling magma.
- Geothermal – relating to or produced by the internal heat of the earth.
- The proposed activity is for quarrying of rough stone by opencast mechanized mining method for an ultimate depth of 16m bgl.
- The proposed mining area and the surrounding falls under hard rock formation i.e., Charnockite Formation and the district has not recorded any Hydrothermal / Geothermal effect and as per the Seismic Zonation Map of India, the district falls under the Zone II of seismic zones classification.
- The resultant of this open cast mining shall not have any Hydrothermal/Geothermal effect on the surrounding environment.

Bio-geochemical processes and its foot prints including environmental stress.

- Bio-geochemical cycle – any of the natural pathways by which essential elements of living matter are circulated. The term biogeochemical is a contraction that refers to the consideration of the biological, geological, and chemical aspects of each cycle.
- This proposed activity is for quarrying of rough stone quarry and maximum depth of mining is 16m bgl and the applied area for quarrying is a patta land with no major vegetation and it is proposed for greenbelt development all along the safety barrier and construction of garland drainage and implement the proposed EMP strictly to mitigate the impacts on surrounding environment.
- No Bio-geochemical processes and its foot prints including environmental stress are anticipated and at the end of life of mine the proposed quarry shall be left as an artificial reservoir structure and allowed to collect rain water and shall enrich the ecosystem.

Sediment's geochemistry in the surface streams.

- Sedimentary Geochemistry has been in use to understand the conditions of deposition, climatic variations, tectonic setting, provenance, reservoir characteristics, etc.,
- The elemental composition of sediments in surface streams is the product of physical and chemical erosion of rocks, which is then transported across drainage networks.
- The project area when broken up lead to create void and land use pattern of the proposed area is alerted by ways of formation of open pit and as mitigation measure its proposed for garland drain all along the boundary barrier to ensure that no natural drainage pattern is disturbed and the garland drains are in turn connected to settlement traps were its ensured that no debris are carried away and hence the proposed activity shall not lead to any deposition of sediments in the nearby surface streams.

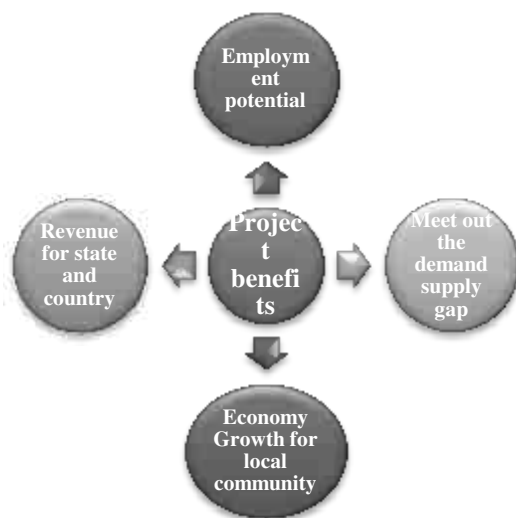
CHAPTER – 8: PROJECT BENEFITS

8.0 General

The proposed Rough Stone projects belongs to **Thiru. C. Ammavasai** aims to produce 48,910m³ Rough Stone over a period of 10 years and 5,837m³ Topsoil over a period of 5 Years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits.

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

This proposed project falls in the cluster will provide employment opportunities to about 15 persons directly. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.2 Socio-Economic Welfare Measures Proposed

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

8.3 Improvement in Physical Infrastructure

The proposed project site is located in Sevvur village, Thiruppattur taluk, Sivagangai District of Tamil Nadu and the area have communications, roads and other facilities already well established. The following physical infrastructure facilities will further improve due to the cluster quarry projects.

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

8.4 Improvement in Social Infrastructure

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

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

8.5 Other Tangible Benefits

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

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

CORPORATE SOCIAL RESPONSIBILITY

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

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

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

CORPORATE ENVIRONMENT RESPONSIBILITY

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

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

TABLE 8.1: CER ACTION PLAN

Activity	Beneficiaries	Total In Rs
Improving Sanitation facilities to the Government school	Government School Students	Rs 5,00,000/-
Plantation along the village roads		
Providing Environmental Related books to the School Library		

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

CHAPTER – 9: ENVIRONMENTAL COST BENEFIT ANALYSIS

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

CHAPTER - 10: ENVIRONMENTAL MANAGEMENT PLAN

10.0 General

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

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

10.1 Environmental Policy

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

The Proponent **Thiru. C. Amavasai**

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

Description of the Administration and Technical Setup –

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

The said team will be responsible for:

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

10.2 Land Environment Management –

Land degradation is one of the major adverse impacts of opencast mining in the form of excavated voids and contamination of soil affects the viability of the soil resource. Total area of extent 0.98.0 ha, Area at the end of life of quarry is 0.55.0 Ha.

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

TABLE 10.1: PROPOSED CONTROLS FOR LAND ENVIRONMENT

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

Source: Proposed by FAE's & EIA Coordinator

10.3 Soil Management

Top Soil Management –

- There is top soil within the project area thin layer of soil will be utilized for Greenbelt purpose.

Overburden / Waste and Side Burden Management –

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

TABLE 10.2: PROPOSED CONTROLS FOR SOIL MANAGEMENT

CONTROL	RESPONSIBILITY
Garland drains are to be paved around the quarry pit area to arrest possible wash off in the rainy seasons	Mines Manager
Surface run-off from the surface water via garland drains will be diverted to the mine pits	Mine Foreman & Mining Mate
Design haul roads and other access roads with drainage systems to minimize concentration of flow and erosion risk	Environment Officer
keeping records of mitigation of erosion events, to improve on management techniques	Environment Officer
A monitoring map with information including their GPS coordinates, erosion type, intensity, and the extent of the affected area, as well as existing control measures and assessment of their performance	Environment Officer

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

Source: Proposed by FAE's & EIA Coordinator

10.4 Water Management

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

The quarrying operation is proposed up to a depth of 16m BGL, the water table in the area is below 64m below ground level, hence the proposed projects will not intersect the Ground water table during entire quarry period.

TABLE 10.3: PROPOSED CONTROLS FOR WATER ENVIRONMENT

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

Source: Proposed by FAE's & EIA Coordinator

10.5 Air Quality Management

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

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

In this quarrying activity, anticipated GHG is mainly CO₂ as its proposed for usage of HSD (High Speed Diesel) for machinery to be deployed are 1 Nos. Compressor, 1 Nos. Excavator attached with rock breaker/ bucket 2 No. of Tippers for which an approximate usage of HSD is around 350 Liters per day. Which contributes to 62.53 kg of CO₂ for the stretch of daily activity of 15 kms @ 1 Litter Diesel produces 2.68 kg of CO₂ on the contrast 1 tree absorbs approximately 20-40 kgs of CO₂ per year.

Therefore, the proposal for 490 Nos. of trees shall absorb 1,313 kgs of CO₂ per year on average basis.

TABLE 10.4: PROPOSED CONTROLS FOR AIR ENVIRONMENT

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

Source: Proposed by FAE's & EIA Coordinator

10.6 Noise Management

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

TABLE 10.5: PROPOSED CONTROLS FOR NOISE ENVIRONMENT

CONTROL	RESPONSIBILITY
Development of thick greenbelt all along the Buffer Zone (7.5 Meters and 50m safety barrier) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Foreman
Deployment of mining equipment with an 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 shall be carried out in the project area and in	Mines Manager

surrounding villages to access the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	
Reduce maximum instantaneous charge using delays while blasting	Mining Mate
Change the burden and spacing by altering the drilling pattern and/or delay layout, or altering the hole inclination	Mines Manager
Undertake noise or vibration monitoring	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.7 *Ground Vibration and Fly Rock Control*

TABLE 10.6: PROPOSED CONTROLS FOR GROUND VIBRATIONS & FLY ROCK

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

Source: Proposed by FAE's & EIA Coordinator

10.8 *Biological Environment Management*

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

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

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

10.8.1 Green Belt Development Plan

About 490 nos. of saplings is proposed to be planted for the Mining plan period in safety barrier and nearby village roads with survival rate 80%. The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

TABLE 10.7 PROPOSED GREENBELT ACTIVITIES FOR 5 YEAR PLAN PERIOD

Year	No. of trees proposed to be planted	Area to be covered	Name of the species	Survival rate expected in %
I	490	Safety zone, Un utilized area & Village roads	Neem, Pungam, Pinnata, Causarina etc.,	80

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

The objectives of the greenbelt development plan are –

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

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

10.8.2 Species Recommended for Plantation

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

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

TABLE 10.8: RECOMMENDED SPECIES TO PLANT IN THE GREENBELT

S.No	Botanical Name	Local Name	Importance
1.	Azadirachta indica	Neem, Vembu	Neem oil & neem products
2.	Borassus Flabellifer	Palmyra Palm	Tall Wind breaker tree and its fruits are edible

Source: Proposed by FAE's & EIA Coordinator

10.9 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

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

10.9.1 Medical Surveillance and Examinations –

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

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

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

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

TABLE 10.9: MEDICAL EXAMINATION SCHEDULE

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

10.9.2 Proposed Occupational Health and Safety Measures –

- The mine site will have adequate drinking water supply so that workers do not get dehydrated.
- Lightweight and loose-fitting clothes having light colours will be preferred to wear.
- Noise exposure measurements will be taken to determine the need for noise control strategies.
- The personal protective equipment will be provided for mine workers.
- Supervisor will be instructed for reporting any problems with hearing protectors or noise control equipment.
- At noisy working activity, exposure time will be minimized.
- Dust generating sources will be identified and proper control measure will be adopted.
- Periodic medical examinations will be provided for all workers.
- Strict observance of the provisions of DGMS Acts, Rules and Regulations in respect of safety both by management and the workers.
- The width of road will be maintained more than thrice the width of the vehicle. A code of traffic rules will be implemented.
- In respect of contract work, safety code for contractors and workers will be implemented. They will be allowed to work under strict supervision of statutory person/officials only after they will impart training at vocational training centres. All personal protective equipment's will be provided to them.
- A safety committee meeting every month will be organized to discuss the safety of the mines and the persons employed.
- Celebration of annual mines safety week and environmental week in order to develop safety awareness and harmony amongst employees and co quarry owners.

FIGURE 10.1: PERSONAL PROTECTIVE EQUIPMENT TO THE MINE WORKERS



10.9.3 Health and Safety Training Programme

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

TABLE 10.10: LIST OF PERIODICAL TRAININGS PROPOSED FOR EMPLOYEES

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

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

10.9.4 Budgetary Provision for Environmental Management –

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

TABLE 10.11: EMP BUDGET FOR PROPOSED PROJECT

	Mitigation Measure	Provision for Implementation	Capital	Recurring
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	9800	9800
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	800000	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance - 3 Units	50000	5000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed - 2 Units	5000	250
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	19600
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000
Noise Environment	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0

	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Compentent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	65585
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	5000	20000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0
Mine Closure	1. Progressive Closure Activity - Surface Runoff managment	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	9800	5000
	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	196000	10000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 490Trees - (510 Inside Lease Area & 410 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)	102000	15300
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	123000	12300
	4. Implementation of Final Mine Closure activity as per approved mining plan on last year	Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year	48900	0
5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budge and not necessarily implemented in the Project Site	148828	0	

Implementation of EC, Mining Plan & DGMS Condition	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	10000	1000
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0	50000
	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) - 15 Employees	60000	15000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	15000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	1960
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	49000	10000
	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 st Class / 2 nd Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
CER	As per MoEF &CC OM 22-65/2017-IA.III Dated 25.02.2021	Detailed Description in following slides and Budget allocation is included as per MoeEF & CC OM	500000	0
TOTAL			2064600	1141795

In order to implement the environmental protection measures, an amount of Rs.20.64 lakhs as capital cost and recurring cost as Rs. 11.41 lakhs as recurring cost is proposed considering present market price considering present market scenario for the proposed project.

Year	Total Cost (Rs)
1st	3206395
2nd	1198884.8
3rd	1258829
4th	1321770.4
5th	1436759
Total	84 Lakhs

10.10 CONCLUSION

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

CHAPTER – 11: SUMMARY AND CONCLUSIONS

The Rough Stone quarry project belongs to Thiru. C. Amavasai, over an extent of 0.98.0 Ha falls under “B” category as per MoEF & CC Notification S.O. 3977 (E).

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

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

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the months March to May 2023 (Baseline Data Used is as per MoEF & CC Office Memorandum No. J-11013/41/2006-IA-II (I) (Part) Dated 29th August 2017 & MoEF & CC Office Memorandum F.No.IA3-22/10/2022-IA.III [E 177258] Dated: 08.06.2022) for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suitable mitigation measures for likely adverse impacts due to the proposed project is suggested individually for the respective proposed project under Chapter 10.

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

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

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

Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 15 people directly and indirectly around 40 – 50 people.

As discussed, it is safe to say that the proposed quarry is not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigate technique, as well as to serve as biological indicators for the pollutants released from the **Thiru. C. Amavasai, Rough Stone Quarry.**

CHAPTER 12.0: DISCLOSURE OF CONSULTANTS

The Project Proponent's –

Thiru. C. Amavasai, Rough Stone Quarry-Cluster (0.98.0Ha) have engaged M/s Geo Exploration and Mining Solutions, an Accredited Organization under Quality Council of India – National Accreditation Board for Education & Training, New Delhi, for carrying out the EIA Study as per the ToR Issued.

Name and address of the consultancy:

GEO EXPLORATION AND MINING SOLUTIONS

No 17, Advaita Ashram Road,

Alagapuram, Salem – 636 004

Tamil Nadu, India

Email: infogeoexploration@gmail.com

Web: www.gemssalem.com

Phone: 0427 2431989.

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

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

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

DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

Declaration by experts contributing to the EIA/EMP for **Thiru. C. Amavasai**, Rough Stone Quarry-Cluster (0.98.0Ha) in **Sevvur Village, Thiruppattur Taluk, Sivagangai District** of Tamil Nadu. It is also certified that information furnished in the above EIA study are true and correct to the best of our knowledge.

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

Name: **Dr. M. Ifthikhar Ahmed**

Designation: **EIA Coordinator**

Date & Signature:



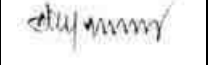

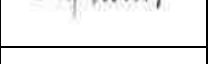







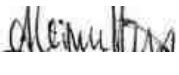





Period of Involvement: **January 2019 to till date**

Associated Team Member with EIA Coordinator:

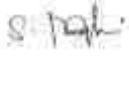



1. **Mr. S. Nagamani**
2. **Mr. Viswanathan**
3. **Mr. Santhoshkumar**
4. **Mr. S. Ilavarasan**



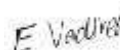


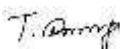
FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

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

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

LIST OF TEAM MEMBERS ENGAGED IN THIS PROJECT

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

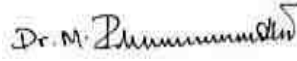
5	Mr. A. Allimuthu	SE	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of data's ▪ Provide inputs by analysing primary and secondary data 	
6	Mr. S. Ilavarasan	LU; SC	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assisting FAE in preparation of land use maps ▪ Provide inputs & Assisting FAE with soil conservation methods and identifying impacts 	
7	Mr. E. Vadivel	HG	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE & provide inputs on aquifer characteristics, ground water level/table ▪ Assist with methods of ground water recharge and conduct pump test, flow rate 	
8	Mr. D. Dinesh	NV	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE and provide inputs on impacts due to proposed mine activity and suggest mitigation measures ▪ Assist FAE with prediction modelling 	
9	Mr. Panneer Selvam	EB	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of baseline data ▪ Provide inputs and assist with labelling of Flora and Fauna 	
10	Mrs. Nathiya	EB	<ul style="list-style-type: none"> ▪ Site Visit with FAE ▪ Assist FAE with collection of baseline data ▪ Provide inputs and assist with labelling of Flora and Fauna 	

DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION

I, Dr. M. Ifthikhar Ahmed, Managing Partner, Geo Exploration and Mining Solutions, hereby, confirm that the above-mentioned Functional Area Experts and Team Members prepared the EIA/EMP for Thiru. C. Amavasai, Rough Stone Quarry-Cluster (0.98.0Ha) in Sevvur Village, Thiruppattur Taluk, Sivagangai District of Tamil Nadu. It is also certified that information furnished in the EIA study are true and correct to the best of our knowledge.

Signature& Date

:



Name:

Dr. M. Ifthikhar Ahmed

Designation:

Managing Partner

Name of the EIA Consultant Organization:

M/s. Geo Exploration and Mining Solutions

NABET Certificate No & Issue Date:

NABET/EIA/2225/RA0276 Dated: 20.2.2023

Validity:

August 06, 2025

ANNEXURE

THIRU. C. AMMAVASAI ROUGH STONE QUARRY

Sevvur Village,
Thiruppattur Taluk,
Sivagangai District

EXTENT =0.98.0 ha

ToR obtained

Lr No.SEIAA-TN/F.No.9938/ToR-1481/2023 Dated :22.06.2023.

Project Proponent

THIRU. C. AMMAVASAI,

S/o. Chinnaiah,

No.564, Minnalkudi,

Thirukolakudi,

Kuruvikondanpatti

Thiruppattur Taluk,

Sivagangai District – 622 409

LIST OF ANNEXURES

Annexure No	DESCRIPTION	PAGE NO
P1 Thiru.C.Ammavasai,	COPY OF TERMS OF REFERENCE	1A-23A
	COPY OF 500M RADIUS QUARRIES DETAILS LETTER	24A-25A
	COPY OF MINING PLAN APPROVED LETTER	26A-27A
	COPY OF APPROVED MINING PLAN WITH PLATES	28A-97A
	COPY OF ADDITIONAL DOCUMENT	98A-143A
E1- Thiru.A.Selvam,	COPY OF ENVIRONMENTAL CLEARANCE	144A-160A
E2 - Thiru.S.Vairavan	COPY OF ENVIRONMENTAL CLEARANCE	161A – 176A
E3 - Thiru.R.M.Alagappan	COPY OF ENVIRONMENTAL CLEARANCE	177A – 189A
	COPY OF BASE LINE MONITORING DATA	190A-219A
	COPY OF NABET CERTIFICATE	220A



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

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU

3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai-15.

Phone No. 044-24359973

Fax No. 044-24359975

TERMS OF REFERENCE (ToR)

Lr No.SEIAA-TN/F.No.9938/ToR-1481/2023 Dated:22.06.2023.

To

Thiru. C Ammavasai
S/o Chinnaiah
No.564, Minnalkudi,
Thirukolakudi,
Kuruvikondanpatti,
Thiruppattur Taluk,
Sivagangai District-622409.

Sir / Madam,

Sub: SEIAA, Tamil Nadu – Terms of Reference with public Hearing (ToR) for the Proposed Rough Stone Quarry lease over an extent of 0.98.0Ha S.F.No.118/4, 118/5, 118/6A & 119/3. Sevvur Village. Thiruppattur Taluk, Sivagangai District by Thiru.C.Ammavasai - 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/422613/2023, dt:18/03/2023.
2. Your application submitted for Terms of Reference dated: 29.03.2023.
3. Minutes of the 382nd SEAC Meeting held on 09.06.2023.
4. Minutes of the 632nd SEIAA meeting held on 21.06.2023&22.06.2023.

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


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The proponent, Thiru. C Amavasai has submitted application for Terms of Reference (ToR) with public Hearing on 29.03.2023, in Form-I, Pre- Feasibility report for the Proposed Rough Stone Quarry lease over an extent of 0.98.0Ha S.F.No.118/4, 118/5, 118/6A & 119/3, Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough Stone Quarry lease over an extent of 0.98.0Ha S.F.No.118/4, 118/5, 118/6A & 119/3, Sevvur Village, Thiruppattur Taluk, Sivagangai District by Thiru.C.Ammavasai - For Terms of Reference.

(SIA/TN/MIN/422613/2023, dt:18/03/2023)



The proposal was placed in the 382nd SEAC Meeting held on 09.06.2023. The details of the project furnished by the proponent are available in the website (parivesh.nic.in).

The SEAC noted the following:



1. The project proponent, Thiru.C.Ammavasai has applied for Terms of Reference for the proposed Rough Stone Quarry lease over an extent of 0.98.0Ha S.F.No.118/4, 118/5, 118/6A & 119/3, Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006.
3. As per the precise area communication the lease period is 10 Years. The mining plan is for 10 Years. The production for the 1st five Years shall not to exceed 25225m³ of Rough Stone & 5837m³ of Gravel and the ultimate depth of 16m BGL.

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

1. The PP shall submit photographs of fencing, greenbelt and garland drain.
2. AD mines letter for the existing pit with details of earlier lease period and pit dimension.
3. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc.
4. The study on impact of the dust & other environmental impacts due to proposed quarrying operations on the Rose flowers being cultivated through greenhouse nearby.


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5. The Proponent shall furnish photographs of greenbelt, fencing and garland drain around the boundary of the proposed quarry.
6. The proponent shall furnish a revised EMP budget for entire life of proposed mining.
7. The revised and corrected version of the Production & Development Plan shall be produced with showing the safety berm width of 2m is maintained for the bench height of 2m distinctly in the gravel formation and it shall be duly signed by the concerned QP & approved by the concerned AD (Geology & Mining).
8. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall prepare and submit an 'Action Plan' for carrying out the realignment of the benches in the proposed quarry lease during the time of appraisal for obtaining the EC.
9. The Proponent shall submit a conceptual 'Slope Stability Plan' indicating the mitigating measures for the proposed quarry during the appraisal while obtaining the EC, as the depth of the proposed quarry working is extended beyond 30 m below ground level.
10. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.
11. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site.
12. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.
13. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
 - a. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
 - b. Quantity of minerals mined out.
 - c. Highest production achieved in any one year
 - d. Detail of approved depth of mining.
 - e. Actual depth of the mining achieved earlier.
 - f. Name of the person already mined in that leases area.


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- g. If EC and CTO already obtained, the copy of the same shall be submitted.
- h. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.
14. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
15. The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc..
16. The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for the proposed quarry based on the volume of rock handled & area of excavation.
17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.
19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.


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22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
23. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided.
26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.
27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
28. Impact on local transport infrastructure due to the Project should be indicated.
29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
31. Public Hearing points raised and commitments of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project and to be submitted to SEIAA/SEAC with regard to the Office Memorandum of MoEF& CC accordingly.




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32. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
33. The PP shall produce/display the EIA report, Executive summary and other related information with respect to public hearing in Tamil Language also.
34. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.
35. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix-I** in consultation with the DFO, State Agriculture University and local school/college authorities. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
36. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site-specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
37. A Disaster Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
38. A Risk Assessment and Management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.
39. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific


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occupational health mitigation measures with required facilities proposed in the mining area may be detailed.

40. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
41. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
42. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
43. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
44. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.
45. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.
46. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.


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Appendix -I
List of Native Trees Suggested for Planting

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


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

Appendix-II

Display Board

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

-----சுரங்கம்

காங்குகளில் குவாரி செயல்பாடுகளுக்கான சுற்றுச்சூழல் அனுமதி கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு வழங்கப்பட்ட (என்பது SEIAA)----- தேதியிட்டபட்ட (உ) சுற்றுச்சூழல் அனுமதி ----- தேதி வரை செல்லத்தக்கதாக உள்ளது.

புகளம் பகுதி வளர்ச்சி மேம்பாட்டுக்கான கார்ப்பு திட்டம்	குவாரியின் எல்லைவளைய சுற்றி வேலி அமைக்க வேண்டும் காங்குப்பாளையின் கீழும் தளமட்டத்தில் இருந்து மீட்டாக மிகாமல் இருக்க வேண்டும் காற்றில் மாக ஏற்படாதவாறு கார்ப்பு பணிகளை மேற்கொள்ள வேண்டும்.
நட்ப்பட்டு பராமரிக்கப்பட்ட வேண்டிய மாங்குகள் எண்ணிக்கை	வாகளங்கள் செல்லும் பாதையில் மாக ஏற்படாத அளவிற்கு தண்ணீரை முறையாக தண்ணீர் வளிகளின் மூலமாக அவ்வப்போது தெளிக்க வேண்டும். இளரச்சலை அளவையும் தூசி மாகபாடையம் குறைப்பதற்காக குவாரியின் எல்லைவளைய சுற்றி அடர்த்தியான பசைய பகுதியை ஏற்படுத்த வேண்டும்.
காங்குத்தில் வெடி வைக்கும்பொழுது நிலத்திரவிகள் ஏற்படாதவாறும் மற்றும் கற்கள் பறக்காதவாறும் பாதுகாப்பு நடவடிக்கைகளை உள்ளிப்பாக செயல்படுத்தப்பட வேண்டும்.	காங்குத்தில் இருந்து ஏற்படும் இளரச்சலை அளவு 85 டிசிபெல்ஸ் (dB) அளவிற்கு மேல் ஏற்படாதவாறு தகுந்த கட்டுப்பாடுகளை மேற்கொள்ள வேண்டும்.
காங்கு எட்ட விதிகள் 1955ன் கீழ் காங்குத்தில் உள்ள பணியாளர்களுக்கு தகுந்த பாதுகாப்பு கருவிகள் வழங்குவதோடு கார்தரமுள்ள கழிப்பறை வசதிகளை செய்து தர வேண்டும்.	கிராமம் தலைவது பரிசீலித்து வழிபாக வாகளங்கள் செல்லும் சாலைவட தொடர்ந்து நடை பராமரிக்க வேண்டும். காங்குப்பணிகளால் அருகில் உள்ள விவசாய பணிகள் மற்றும் நீர்நிலைகள் பாதிக்கப்படக் கூடாது. நீர்நிலைகள் பாதிக்கப்படாமல் இருப்பதை உறுதி செய்யும் வகையில் நிலத்தடி நீர்வ தாத்தினை தொடர்ந்து கண்காணிக்க வேண்டும்.
காங்குத்திலிருந்து கனிம பொருட்களை எடுத்துச் செல்வது கிராம மக்களுக்கு எந்த சிரமத்தினையும் ஏற்படுத்தாதவாறு பாதுகாப்போடும் மற்றும் சுற்றுச்சூழல் பாதிக்கவாத வண்ணம் வாகளங்களை இயக்க வேண்டும்.	காங்குப்பணிகள் முடிக்கப்பட்டவுடன் காங்கு மூடல் திட்டத்தில் உள்ளவாறு காங்குத்தினை மூட வேண்டும்.
காங்கு நடவடிக்கைகளை முடித்தபின்னர் காங்குப் பகுதி மற்றும் காங்கு நடவடிக்கைகளால் இடைபூறு ஏற்படக்கூடிய வேறு எந்தப் பகுதியையும் மறுகட்டுமாணம் செய்து தாவரங்கள் விலங்குகள் ஆகியவற்றின் வளர்ச்சிக்கு ஏற்ற வகையில் புகளம்பகுதியை உருவாக்க வேண்டும்.	முழுமையான நிபந்தனைகளை கருவ பாரிவேஷ (http://parivesh.gov.in) என்கிற இணையதளத்தை பார்வையிடவும் மேலும் எந்தவித சுற்றுச்சூழல் சாந்த பகாங்குக்கு செல்லையில் உள்ள சுற்றுச்சூழல் மற்றும் வள அமைச்சகத்தின் ஒருங்கிணைந்த வட்டமா அலுவலகம்: PH - 2622335 (அல்லது) தமிழ்நாடு மாக.கட்டுப்பாட்டு வாரியத்தின் மாவட்ட சுற்றுச்சூழல் பொறியாளர் அலுவலகம்


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Discussion by SEIAA and the Remarks:-

The proposal was placed in the 632nd Authority meeting held on 21.06.2023 & 22.06.2023. The Authority noted that this proposal was placed for appraisal in this 382nd SEAC meeting held on 09.06.2023. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant **Terms of Reference (ToR) along with Public Hearing** under cluster for undertaking the combined Environment Impact Assessment Study and preparation of separate Environment Management Plan subject to the conditions as recommended by SEAC & normal conditions in addition to the conditions in '**Annexure B**' of this minute.

1. The project proponent shall prepare mine closure plan considering quantity of Topsoil & Weathered rock. If any.
2. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site.

Annexure 'B'**Cluster Management Committee**

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


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9. The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public.
10. The committee shall furnish an action plan to achieve sustainable development goals with reference to water, sanitation & safety.
11. The committee shall furnish the fire safety and evacuation plan in the case of fire accidents.

Impact study of mining

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

Agriculture & Agro-Biodiversity

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


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Forests

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

Water Environment

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


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Energy

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

Climate Change

32. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.

33. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.

Mine Closure Plan

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

EMP

35. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.

36. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.

Risk Assessment

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

Disaster Management Plan

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

Others

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


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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 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


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hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.

- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study


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area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.

- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for Coastal Projects, a CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease with respect to CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted


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accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers


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present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.
- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed


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along with budgetary allocations.

- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report
 - b) All documents to be properly referenced with index and continuous page numbering.
 - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - e) Where the documents provided are in a language other than English, an English translation should be provided.
 - f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.



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- h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the ToR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
- i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
- j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

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



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

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


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SEIAA-TN

Mining of Minerals published February 2010.

11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.


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31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.
 - After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
 - The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
 - The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.


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Copy to:

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

From

Thiru. K. Vijayaragavan, M.Sc.,
Assistant Director/
Deputy Director(i/c),
Geology and Mining,
Sivagangai.

To

Thiru. Ammavasai,
S/o. Chinnaiah,
No. 564, Minnalkudi,
Thiruppathur Taluk,
Sivagangai District.

Rc.No. 714/Mines/2022**dated.02.02.2023.**

Sir,

Sub: Mines and Minerals - Minor Mineral - Rough Stone
- Sivagangai District - Thiruppathur Taluk - Sevoor
Village - Patta land in S.F.Nos. 118/4 (0.14.0),
118/5 (0.14.0), 118/6A (0.12.0) and 119/3(0.58.0)
- Over an extent of 0.98.0 hectares - Quarry Lease
application preferred by Thiru. Ammavasai
S/o. Chinnaiah - Precise area communicated Draft
Mining Plan submitted - Approved - Other quarries
situated in 500 m radius details - Requested -
Regarding.

- Ref:**
1. Application preferred by Thiru. Ammavasai
S/o. Chinnaiah, D.No. 564-Minnalkudi,
Tiruppattur Taluk, Sivagangai District, dated:
07.09.2022
 2. The Assistant Director/ Deputy Director(i/c),
Geology and Mining, Sivagangai letter Roc No.
714/Mines/2022, dated 29.12.2022
 3. Mining Plan submitted by
Thiru. Ammavasai S/o. Chinnaiah, in
letter dated 01.02.2023.
 4. Thiru. Ammavasai, S/o. Chinnaiah, letter
dated. 01.02.2023
 5. The Assistant Director/Deputy Director(i/c),
Geology and Mining, Sivagangai letter R.C. No.
714/Mines/2022, dated 02.02.2023.

As requested by the applicant, the details of quarry leases located within 500 meter radius from the proposed Rough Stone quarry lease in S.F.Nos. 118/4 (0.14.0), 118/5 (0.14.0), 118/6A (0.12.0) and 119/3(0.58.0) over an extent of 0.98.0 hectares of Sevoor Village of Thiruppathur Taluk of Sivagangai District, is given as follows.

a. Existing quarries

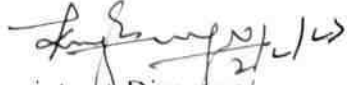
S. No	Name of the lessee	Name of the Mineral	Village	S.F. Nos	Extent Hect.	Collector's proceedings No. & Date	Lease period
1	A. Selvam,	Rough Stone	Sevoor	113/4A, 4B, 3A,3B, 3E1, 3E2, 3E3, 3E4, 3C, 3D and 3F	1.69.0	M2/131/2019 dt. 25.08.2020	08.09.2020 to 07.09.2025
2.	S. Vairavan,			81/1, 81/2, 81/3, 81/4, 81/5, 82/1, 82/3, 82/4, 82/5, 82/6, 82/7, 82/8A and 82/8B	3.43.0	M2/97/2019 dt. 08.11.2021	10.11.2021 to 09.11.2026
3.	R.M. Alagappan,			116/3B, 116/3C, 116/3E and 116/3G	1.42.5	M2/760/2013 dt. 18.11.2021	23.11.2021 to 22.11.2026

b. Abandoned / expired quarries

S. No	Name of the lessee	Name of the Mineral	Village	S.F. No	Extent Hect.	Collector's proceedings No. & Date	Lease period
1	Thiru. Arumugam,	Rough Stone	Sevoor	118/3	0.68.0	Rc. No Mines.1/17 79/2005-5, dated. 31.10.2005	30.11.2005 to 29.11.2010

c. Present proposed quarries

S. No	Name of the lessee	Name of the Mineral	Village	S.F. Nos.	Extent Hect	Collector's proceedings No. & Date	Lease period
1	Thiru. Amavasai, S/o. Chinnaiyah, No. 564, Minnalkudi, Thiruppathur Taluk, Sivagangai District.	Rough Stone	Sevoor	118/4, 118/5, 118/6 A & 119/3	0.98.0	--	Proposed quarries


 Assistant Director/
 Deputy Director(i/c),
 Geology and Mining,
 Sivagangai.

Copy to

The Chairman, State Level Environment Impact,
 Assessment Authority, Tamil Nadu,
 3rd Floor, PanagalMaaligai, No.1 Jeenis Road,
 Saidapet, Chennai-15.

From

Thiru.K.Vijayaragavan,M.Sc.,
Assistant Director/
Deputy Director (i/c),
Geology and Mining,
Sivagangai.

To

Thiru. Amavasai,
S/o. Chinnaiah,
No. 564, Minnalkudi,
Thiruppathur Taluk,
Sivagangai District.

Rc.No. 714/Mines/2022**dated. 02.02.2023**

Sir,

Sub: Mines and Minerals - Minor Mineral - Rough Stone - Sivagangai District - Thiruppathur Taluk - Sevoor Village - Patta land in S.F.Nos. 118/4 (0.14.0), 118/5 (0.14.0), 118/6A (0.12.0) and 119/3(0.58.0) - Over an extent of 0.98.0 hectares for quarrying and transportation of 48,910 cu.m of Rough Stone and 5837 cu.m of Gravel - draft mining plan submitted by Thiru. Amavasai S/o. Chinnaiah- Mining plan approved - Regarding.

- Ref:**
1. Application preferred by Thiru. Amavasai S/o. Chinnaiah, D.No. 564-Minnalkudi, Tiruppattur Taluk, Sivagangai District, dated: 07.09.2022
 2. Precise area communication in Rc. No. 714/Mines/2022, dated: 29.12.2022.
 3. Letter from Thiru. Amavasai, dated: 01.02.2023.


In the reference 1st cited, Thiru. Amavasai S/o. Chinnaiah, has preferred an application requesting for the grant of permission for quarrying and transportation of Rough Stone and Gravel over an extent of 1.35.33 hectares in S.F.Nos. 117/5B2 (0.37.33) 118/4 (0.14.0), 118/5 (0.14.0), 118/6A (0.12.0) and 119/3(0.58.0) of Sevoor Village, Tiruppattur Taluk under Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

Based on the recommendations of the Revenue Divisional Officer, Devakkottai and Assistant Geologist (Mines), the precise area has been communicated to the applicant vide reference 2nd cited.

In exercise of the power delegated under Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan submitted by Thiru. Amavasai S/o. Chinnaiah, for grant of lease to quarry Rough Stone and Gravel over an extent of 0.98.0 hectares in S.F.Nos. 118/4 (0.14.0), 118/5 (0.14.0), 118/6A (0.12.0) and 119/3(0.58.0) of Sevoor Village, Tiruppattur Taluk, Sivagangai District for a period of **10 years** and the proposed mineable reserves of Rough Stone and Topsoil after leaving necessary safety distance to

the depth of 16 m is arrived as **48910 m³** and **5837 m³** respectively. This approval is subject to the following conditions:

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


Assistant Director/
Deputy Director (i/c),
Geology and Mining,
Sivagangai.


02/02/23



MINING PLAN AND PROGRESSIVE QUARRY CLOSURE PLAN FOR SEVVUR ROUGH STONE QUARRY

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

Patta Land/ Lease period = Ten years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 0.98.0Ha ✓
S.F.Nos. : 118/4, 118/5, 118/6A & 119/3 ✓
VILLAGE : SEVVUR ✓
TALUK : THIRUPPATTUR ✓
DISTRICT : SIVAGANGAI ✓
STATE : TAMIL NADU ✓

FOR

APPLICANT

THIRU. C. AMMAVASAI,
S/o. Chinnaiah,
No.564, Minnalkudi,
Thirukolakudi, Kuruvikondanpatti
Thiruppattur Taluk,
Sivagangai District – 622 409,
Tamil Nadu State.

PREPARED BY

P. VISWANATHAN, M.Sc.,
Qualified Person

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

No.17, Advaita Ashram Road,
Alagapuram, Salem – 636 004.

Cell: +91 94422 78601 & 94433 56539

E-Mail: infogeoexploration@gmail.com



C. Ammavasai,
S/o. Chinnaiah,
No.564, Minnalkudi,
Thirukolakudi, Kuruvikondanpatti
Thiruppattur Taluk, Sivagangai District – 622 409,
Tamil Nadu State

CONSENT LETTER FROM THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in respect of Sevvur Rough stone Quarry lease over an extent of 0.98.0 Ha of Patta Lands in S.F.Nos.118/4, 118/5, 118/6A & 119/3 of Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu State has been prepared by

P. Viswanathan, M.Sc.,

Qualified Person

I request the Assistant Director / Deputy Director (i/c), Department of Geology and Mining, Sivagangai District to make further correspondence regarding the modification of the Mining Plan with the said Qualified Person at his following address.

P. Viswanathan, M.Sc.,

No.17, Advaita Ashram Road,

Alagapuram, Salem-636 004.

Cell: +91 94422 78601 & 94433 56539

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

Signature of the Applicant

(C. Ammavasai)

Place: Sivagangai

Date: 31.12.2022



C. Ammavasai,

S/o. Chinnaiyah,

No.564, Minnalkudi,

Thirukolakudi, Kuruvikondanpatti

Thiruppattur Taluk, Sivagangai District – 622 409,

Tamil Nadu State

DECLARATION OF THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in respect of Sevvur Rough stone Quarry lease over an extent of 0.98.0 Ha of Patta Lands in S.F.Nos.118/4, 118/5, 118/6A & 119/3 of Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu State has been prepared in full consultation with me.

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

Signature of the Applicant

(C. Ammavasai)

Place: Sivagangai

Date: 31.12.2022



CERTIFICATE

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

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

Accordingly, I am prepare this Mining Plan and Progressive Quarry Closure Plan in Respect of Sevvur Rough stone Quarry lease over an extent of 0.98.0 Ha of Patta Lands in S.F.Nos.118/4, 118/5, 118/6A & 119/3 of Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu State for **Thiru. C. Ammavasai**, S/o. Chinnaiah, No.564, Minnalkudi, Thirukolakudi, Kuruvikondanpatti, Thiruppattur Taluk, Sivagangai District – 622 409, Tamil Nadu State. Since the Mining Plan is prepared as per the provisions contained in Rule 15(I)(a) and (I)(b) of Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016.

Signature of the Qualified Person

P. Viswanathan, M.Sc.,

Place: Salem

Date: 12.01.2023



P. Viswanathan, M.Sc.,

No.17, Advaita Ashram Road,

Alagapuram, Salem – 636 004.

Cell: +91 94422 78601 & 94433 56539

CERTIFICATE FROM THE QUALIFIED PERSON

This is to certify that the Provisions of under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959 have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Sevvur Rough stone Quarry lease over an extent of 0.98.0 Ha of Patta Lands in S.F.Nos.118/4, 118/5, 118/6A & 119/3 of Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu State has been prepared for

Thiru. C. Amavasai,

S/o. Chinnaiah,

No.564, Minnalkudi,

Thirukolakudi, Kuruvikondanpatti

Thiruppattur Taluk, Sivagangai District – 622 409,

Tamil Nadu State.

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

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

Signature of the Qualified Person

P. Viswanathan, M.Sc.,

Place: Salem

Date: 12.01.2023



P. Viswanathan, M.Sc.,

No.17, Advaita Ashram Road,
Alagapuram, Salem-636 004.

Cell: +91 94422 78601 & 94433 56539

CERTIFICATE FROM THE QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations and Orders made there under have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Sevvur Rough stone Quarry lease over an extent of 0.98.0 Ha of Patta Lands in S.F.Nos.118/4, 118/5, 118/6A & 119/3 of Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu State has been prepared for

Thiru. C. Annavasai,

S/o. Chinnaiah,

No.564, Minnalkudi,

Thirukolakudi, Kuruvikondanpatti

Thiruppattur Taluk, Sivagangai District – 622 409,

Tamil Nadu State.

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

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

Signature of the Qualified Person

P. Viswanathan, M.Sc.,

Place: Salem

Date: 12.01.2023



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MINING PLAN ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR SEVVUR ROUGH STONE QUARRY

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

1.0 INTRODUCTION AND EXECUTIVE SUMMARY

The Mining Plan and Environmental Management plan is prepared for **Thiru. C. Ammavasai**, S/o. Chinnaiyah, No.564, Minnalkudi, Thirukolakudi, Kuruvikondanpatti, Thiruppattur Taluk, Sivagangai District – 622 409, Tamil Nadu State.

The applicant applied to quarry Rough Stone for over an extent of 0.98.0 Ha of Patta Lands in S.F.Nos.118/4, 118/5, 118/6A & 119/3 of Sevvur Village, Thiruppattur Taluk, Sivagangai District for a period of Ten years under Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

The application was processed by the Assistant Director / Deputy Director (i/c), Department of Geology and Mining, Sivagangai District and passed a Precise Area Communication letter vide **Rc.No.714/Mines/2022, Dated: 29.12.2022** to submit Mining Plan for obtain approval from Department of Geology and Mining, Sivagangai District and obtain Environmental Clearance from the Competent Authority, Tamil Nadu State for **over an extent of 0.98.0 Hectares of Patta Lands in S.F.Nos.118/4, 118/5, 118/6A & 119/3 of Sevvur Village, Thiruppattur Taluk, Sivagangai District for the period of Ten years** under Amended Rules 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959 with the following conditions to provide (Refer Annexure No. I):

1. The Applicant must submit approved mining plan and obtain environmental clearance to quarrying of Rough Stone over an extent of 0.98.0 ha of patta lands in S.F.Nos.118/4 (0.14.0), 118/5 (0.14.0), 118/6A (0.12.0) & 119/3 (0.58.0) of Sevvur Village, Thiruppattur Taluk, Sivagangai District.
2. A safety distance of 10 meters should be provided to the pathai in S.F.No 120/1.
3. A safety distance of 10 meters should be provided to the Stone Pit in S.F.No. 118/3 on the North side of the applied area.
4. A safety distance of 7.5 meters should be provided to the adjacent patta lands.

All the conditions stipulated in the precise area communication have been followed while preparing this Mining Plan.

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

considered by the state Competent Authority notified by MoEF & CC as prescribed procedure under EIA notification 2006.

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

Short Notes of Mining plan:

- a. Village Panchayat - Sevvur
- b. Panchayat Union - Thiruppattur
- c. The Total Geological Resources are $1,47,000\text{m}^3$ of Rough Stone and $9,800\text{m}^3$ of Topsoil in the entire area.
- d. The Total Mineable Reserves are $48,910\text{m}^3$ of Rough Stone and $5,837\text{m}^3$ of Topsoil in the entire area.
- e. The proposed quantity of reserves/ (level of production) to be mined are $48,910\text{m}^3$ of Rough Stone and $5,837\text{m}^3$ of Topsoil in the entire area for the period of **Ten years** ($25,225\text{m}^3$ of Rough Stone and $5,837\text{m}^3$ of Topsoil for first five years in the entire area and $23,685\text{m}^3$ of Rough Stone for the remaining five years period).
- f. Total extent of the lease applied area is about 0.98.0Ha.
- g. Topography of the area = The area is exhibits plain terrain
- h. Proposed Depth of mining = 16m (1m Topsoil + 15m Rough Stone) below ground level (upto 16m in a portion for first five years and 16m for Ten years in the remaining area).
- i. Lease Period = Ten years
- j. Mining Plan Period = Ten years
- k. It is a fresh lease applied area. At present the area is virgin hence, no existing pit.
- l. Method of mining / level of mechanization.
Opencast mechanized method, the quarry operation involves shallow jack hammer drilling, slurry blasting.
- m. Type of machineries proposed in the quarrying operation is given below.
Excavators attached with rock breaker (Rental Basis).
Jack hammer, Compressor (Diesel drive) (4 Jack Hammer capacity) (Rental Basis).
- n. No trees will be uprooted due to this quarry operation.

- o. The approach road from the main road to quarry will be constructed and the same will be maintained in a good condition for the haulage of quarry materials and machineries.
- p. There is No Export of this Rough Stone.
- q. Topo sketch covering 10Km and 1Km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archeological importance, and place of worship is marked and enclosed as Plate Nos.IA and IB.
- r. The lease applied area is about 0.98.0 Ha bounded by ten corners; the corners are designated as 1-10 clock-wise from the Southwest corner and the Co-ordinates for all the corners are clearly marked in the Quarry Lease and Surface Plan enclosed as Plate No. II.
- s. The plans of proposed quarrying area showing the dimensions of the pit, their proposed depth and maximum area of proposed quarrying are marked in the Topography, Geological Plan and Year wise Development and production Plan and sections enclosed as Plate Nos.III-A, III-B, IV and V.
- t. The General conditions will not applicable for the proposed area. Based on the EIA Notification 2006 the general condition shall apply except mining of minor minerals category B2 (>5Ha of mining lease applied area) The area applied for quarry lease is 10Km away from the,
- i) Interstate Boundary,
 - ii) Protected area under wild life protection ACT, 1972,
 - iii) Critically polluted areas as identified by CPCB,
 - iv) Notified Eco sensitive areas.
- u. There is no waste anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- v. Around 15 employees are deploying in the quarrying operation.
- w. Total Cost of the project is about **Rs.27,97,000/-**.





x. Infrastructures around the quarry lease applied area are given table below

Table - 1

Particulars	Location	Approximate aerial distance from lease applied area.
Nearest Post Office	Sevvur	1km - NE
Nearest School	Sevvur	1km - NE
Nearest Dispensary	Ponnamaravathi	8km - NW
Nearest Town	Ponnamaravathi	8km - NW
Nearest Police Station	Pulankurichi	3km - NW
Nearest Govt. Hospital	Pulankurichi	3km - NW
Nearest D.S.P. Office	Pillayarpati	15km - SE
Nearest Railway Station	Tirumayam	18km - East
Nearest Airport	Trichy	58km - NE
Nearest Seaport	Thoothukudi	171km - SW
District Head quarters	Sivagangai	45km - SW

**2.0 GENERAL INFORMATION**

2.1 a) Name of the Applicant : Thiru. C. Amavasai, ,
: S/o. Chinnaiah,

b) Address of the Applicant (With Phone No and Aadhaar No.)

Address : No.564, Minnalkudi, Thirukolakudi,
Kuruvikondanpatti, Thiruppattur Taluk,
Sivagangai District.

Pin Code : 622 409

Mobile No : +91 95857 88845 & 63792 43729

Aadhaar No : 7077 6343 2046 (Refer Annexure No. VII)

Email ID : suriyakanna4@gmail.com

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

The applicant is an individual.

2.2 a) Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough Stone.

b) Precise area communication letter details received from the Competent Authority of the Government:

The precise area communication letter was received from the Assistant Director / Deputy Director (i/c), Department of Geology and Mining, Sivagangai District vide **Rc.No.714/Mines/2022, Dated: 29.12.2022** (Refer Annexure No. I).

c) Period of permission / lease to be granted:

Ten years.

d) Name and address of the Qualified Person preparing the mining plan:

Name : **P. Viswanathan, M.Sc.,**
Qualified Person
(As per Rule 15(I)(a) and (b) of MCR, 2016)

Address : No.17, Advaita Ashram Road,
Alagapuram, Salem - 636 004.

Mobile : +91 94422 78601 & 94433 56539

Telephone No. : 0427- 2431989

Email : infogeoexploration@gmail.com

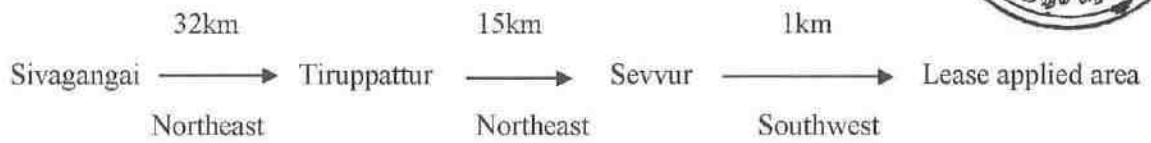
(Refer Annexure Nos. VIII and IX).



3.0 LOCATION

a) Details of the area with location map:

The lease applied area is located about 45km Northeastern side of Sivagangai town, 14km North side of Tiruppattur town and 1km Southwest side of Sevvur Village.



Location Map of the Lease Applied area

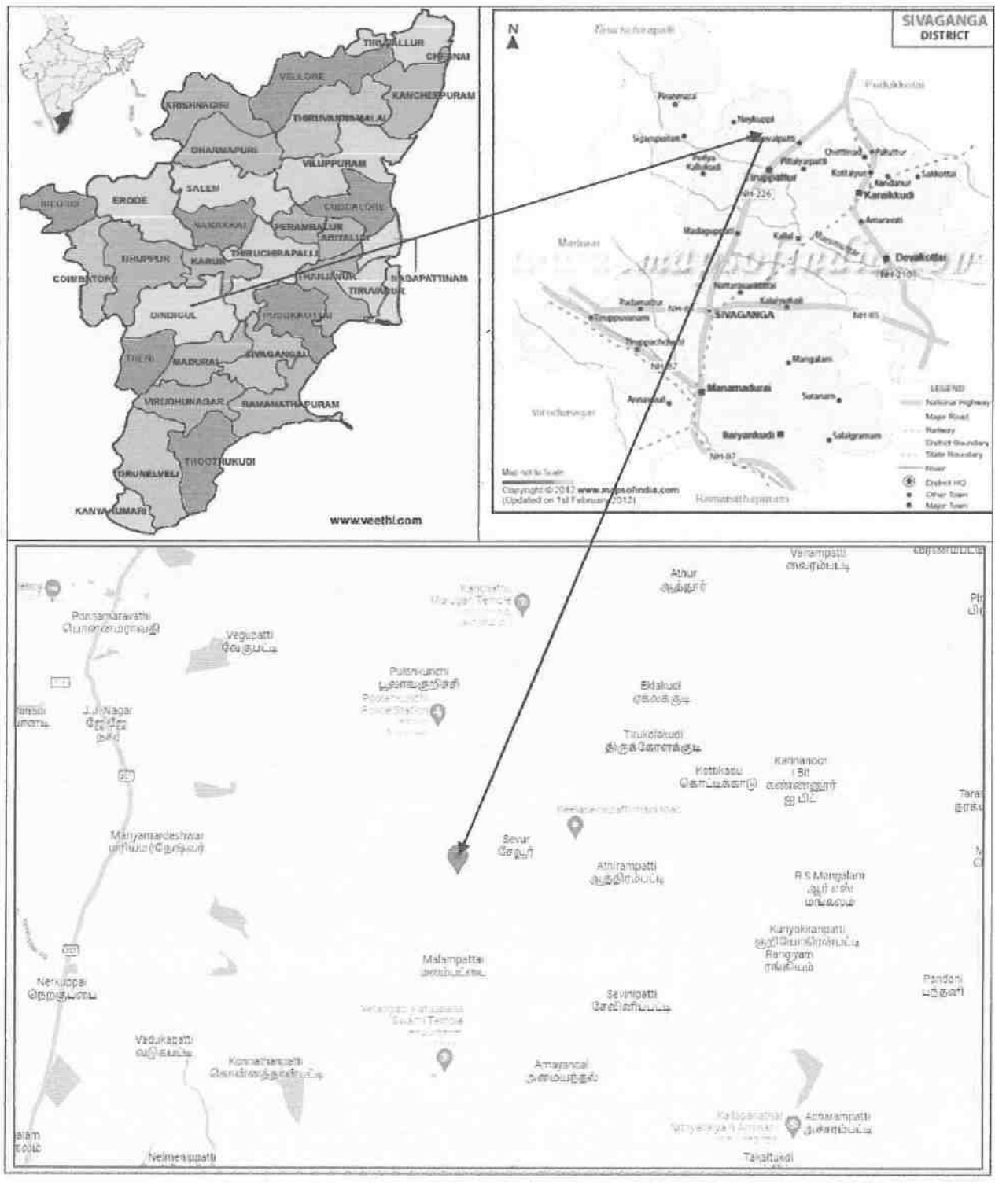


Table - 2

District	Taluk	Village	S.F. No.	Area in Ha.	Patta No.	Classification
Sivagangai	Tiruppattur	Sevvur	118/4	0.14.0	916	Patta lands (Refer Annexure No. IV to VI)
			118/5	0.14.0		
			119/3	0.58.0		
			118/6A	0.12.0	901	
Total Extent				0.98.0		

b) Classification of the area (Ryotwari/ Poramboke / others):

It is a Patta land, classified as punjai (Ryotwari).

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

It is a Patta land, Registered in the name of the applicant (Thiru. C. Ammavasai), vide Patta Nos. 901 & 916 (Refer Annexure No. IV to VI).

d) Toposheet No. with latitude and longitude:

The lease applied area falls in the Toposheet No. **58 J/12** Latitude between: **10° 14' 18.68" N** to **10° 14' 24.49" N** and Longitude between: **78° 35' 46.28" E** to **78° 35' 50.35" E** on WGS datum-1984 (Please refer the Plate Nos. I to II).

e) Existence of public road / Railway line, if any nearby and approximate distance:

The approach road is situated on the Northern side of the applied area which connects to the cart track situated at a distance of 250m on the Northeastern side of the lease applied area.

Multiple road access is available from the quarry to state highways and National Highway, no towns are enrooted hence the traffic density is not much more due to the transportation of Rough Stone. The approach road from the quarry to main road is already existence and the same will be maintained and utilized for haulage, besides trees will be planted on the either side of the road to prevent dust and noise propagation to the nearby areas.

The Nearest Railway line is Pudukkottai - Karaikudi which is located at 18km on the Eastern side of the area.



PART - A

4.0 GEOLOGY AND MINERAL RESERVES

4.1 Brief description of the Topography and general Geology of the area (with photos):

The lease applied area is exhibits plain terrain. The gradient is gentle towards South side and altitude of the area is 137m above from Mean Sea level. The area is covered by 1m thickness of Topsoil and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pits. The Water level in the surrounding area is 64m below general ground profile which is observed from the nearby bore wells and Average annual rainfall is about 985mm.

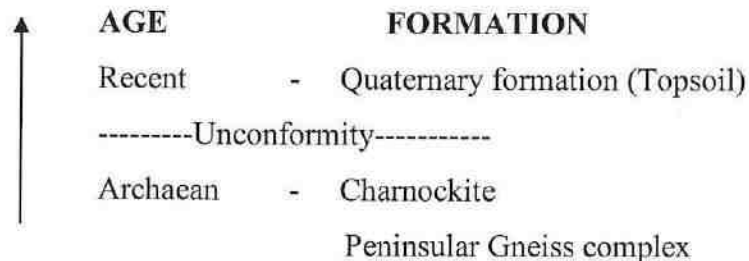
Topographical view of Sevvur
Rough Stone Quarry lease applied area





Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body N45°E – S45°W with SE 65° dipping.

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



4.2 Details of exploration already carried out if any:

State Geology and Mining Department, Govt. of Tamil Nadu, has carried out the regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Sivagangai District. Besides, the Qualified Person and his team members made a detailed geological study of the proposed area. The Rough Stone formation is clearly inferred from the nearby existing quarry pits.

4.3 Estimation of Reserves:

a) Geological reserves with geological sections on a scale of 1:1000 / 1:2000

As far as Rough Stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough Stone within the field and careful evaluation of body luster, physical properties, engineering properties, commercial aspects etc.,

Totally three sections have been drawn, one section is drawn vertically as (X-Y) length wise and another two cross sections are horizontally as (A-B) & (C-D) width wise to cover the maximum area considered for lease up to 16m depth.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough Stone (Charnockite) deposit has been prepared in the scale of Plan and Sections 1:1000 (please refer the Geological plan and sections Plate Nos. III-A & III-B). As the sale of Rough Stone are in terms of cubic meters (Volume) only and not in terms of tonnage.

Geological Resources (Plate No. III-A):

The Geological Resources of Rough Stone Quarry are calculated to a maximum depth of 16m (1m Topsoil + 15m Rough Stone) below from the existing ground profile. The total **Geological resources are calculated by area method.** The total geological resources are given below.

Total Extent of the area	:	0.98.0 Hectares
Area in square meter (0.98.0 x 10,000)	:	9,800m ²

Table – 3

GEOLOGICAL RESOURCES			
Area (m ²)	Depth (m)	Geological Resources of Rough Stone in (m ³) 100%	Topsoil (m ³)
9800	1	-	9800
9800	15	1,47,000	-

Total Geological Resources of Topsoil : 9,800m³ ✓

Total Geological Resources of Rough Stone : 1,47,000m³ ✓

Mineable Reserves:

The mineable reserves are calculated after leaving the safety distance and Bench loss.

Table – 4

MINEABLE RESERVES						
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Mineable Reserves of Roughstone in (m ³)100%	Topsoil (m ³)
XY-AB	I	17	93	1	-	1581
	II	15	90	5	6750	-
	III	10	80	5	4000	-
	IV	5	70	5	1750	-
	Total					12500	1581
XY-CD	I	133	32	1	-	4256
	II	131	29	5	18995	-
	III	126	19	5	11970	-
	IV	121	9	5	5445	-
	Total					36410	4256
Grand Total					48910	5837

Total Mineable Recoverable Reserves of Topsoil : 5,837m³ ✓

Total Mineable Recoverable Reserves of Rough Stone : 48,910m³ ✓

The mineable reserves have been computed as 48,910m³ of Rough Stone and 5,837m³ of Topsoil at the rate of 100% recovery upto a depth of 16m (1m Topsoil + 15m Rough Stone) below from the general ground level for a period of Ten years.



5.0 MINING

5.1. Method of mining (opencast / underground):

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height.

However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) is available with Director General of Mines Safety. If the applicant/lessee intends to modify the dimensions of benches, relaxation and permission are available with Director General of Mines Safety under 106 (2) (b) of Metalliferous Mines Regulations, 1961. In such a scenario if there is any drastic change in the Resources and Reserves a modified plan will be submitted to the concerned authority for necessary relaxation, clearance and permission. The relaxation will be applied and obtained after the execution of lease deed / commencement of quarry operation.

5.2. Mode of working (mechanized, manual):

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

The quarry operation involves shallow jack hammer drilling, slurry explosives in blasting, excavation, Loading and transportation of Rough Stone to the needy crusher.

The production of Rough Stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining.

Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining.

5.3. Proposed Bench Height and Width:

The bench height is proposed maximum 5.0 meter vertical bench in Rough Stone and width of the bench is not less than the Height.

5.4. Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.)

The overburden in the form of Topsoil, the quarried out topsoil will be preserved all along the safety barrier and utilized for construction of bund, afforestation and reclamation purpose. The excavated Rough stone will be directly loaded into Tipper to the needy customers. The excavated Rough Stone will be directly loaded into Tipper to the needy customers. The Composite year wise Development and production plan and sections indicating the Pit lay out, Green belt development are shown in Plate Nos. III-A and III-B.

Year wise Development and Production Table

Table - 5

FIRST FIVE YEARWISE PRODUCTION DETAILS							
Section	Years	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserves in Rough stone (m ³)	Topsoil (m ³)
XY-CD	I	I	28 ✓	32 ✓	1	-	896
		II	25 ✓	29 ✓	5	3625	-
		III	15 ✓	19 ✓	5	1425	-
		Total					5050	896
	II	I	22 ✓	32 ✓	1 ✓	-	704
		II	22 ✓	29 ✓	5 ✓	3190	-
		III	22 ✓	19 ✓	5 ✓	2090	-
		Total					5280	704
	III	I	13 ✓	32 ✓	1	-	416
		II	13 ✓	29 ✓	5	1885	-
		III	13 ✓	19 ✓	5	1235	-
		IV	40 ✓	9 ✓	5	1800	-
		Total					4920	416
	IV	I	70 ✓	32	1	-	2240
		II	35 ✓	29	5	5075	-
		Total					5075	2240
	V	III	35 -	19 ✓	5	3325	-
		IV	35 -	9	5	1575	-
		I	17 ✓	93 ✓	1 ✓	-	1581
	XY-AB	Total					4900	1581
Grand Total						25225	5837

The Recoverable reserves have been computed as **25,225m³** of Rough stone and **5,837m³** of Topsoil at 100% recovery upto depth of 16m below ground level (R.L.137.0m to R.L.121.0m) for first five years.



TABLE-5A

NEXT FIVE YEARWISE PRODUCTION DETAILS							
Section	Years	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserves in Rough stone (m ³)	Topsoil (m ³)
XY-CD	I	II	36	29	5	5220	-
		Total				5220	-
XY-AB	II	II	10	90	5	4500	-
		Total				4500	-
XY-CD	III	II	5	90	5	2250	-
		III	25	19	5	2375	-
		Total				4625	-
XY-AB	IV	III	16	19	5	1520	-
		III	10	80	5	4000	-
		Total				5520	-
XY-CD	V	IV	5	70	5	1750	-
		IV	46	9	5	2070	-
		Total				3820	-
Grand Total						23685	-

The Recoverable reserves have been computed as **23,685m³** of Rough stone at 100% recovery upto depth of 15m below ground level (R.L.136.0m to R.L.121.0m) for remaining five years.

The Recoverable reserves have been computed as **48,910m³** of Rough Stone and **5,837m³** of Topsoil at 100% recovery upto depth of 16m below ground level (R.L.137.0m to R.L.121.0m) for ten years.

The applicant ensures the total quantity proposed in the benches will not exceed during the quarrying operation. Besides the Rough Stone locked up in benches will be exploited after obtaining necessary permission from the office of **Director General of Mine Safety, Chennai** region by submitting relevant documents, appropriate safety plans and its Mitigation measures.

One lorry load	=	6m ³ (approx.)
Total No of Working days	=	300 Days per year
Total quantity to be removed in this Ten years plan period	=	48,910m ³
Hence total Lorry loads per day	=	48,910m ³ /6m ³
	=	8152 Lorry loads
	=	8152/10 years
	=	815/300
Rough Stone	=	2-3 Lorry loads per day

Lorry loads per day (Topsoil)	=	5,837m ³ /6m ³
	=	973 Lorry loads
	=	973/5 years
	=	195/300
Topsoil	=	1 Lorry loads per day
Working hours = 8.30 am to 5.30 pm (with 12.30-1.30 pm lunch break)		



5.5. Machineries to be used:

For Mining:

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

TABLE-6

I. DRILLING MACHINE:

S. No.	Type	Nos	Dia Hole mm	Size Capacity	Motive power
1	Jack-Hammer	2	30-35	1.2m to 2.0m	Compressed air
2	Compressor	1	-	400 psi	Diesel Drive

II. EXCAVATION & LOADING EQUIPMENT:

S. No.	Type	Nos	Capacity	Motive Power
1	Excavator with Bucket and Rock Breaker	1	300	Diesel Drive

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

S. No.	Type	Nos	Capacity	Motive Power
1	Tipper	1	20 tonnes	Diesel Drive

5.6. Disposal of Overburden/Waste:

The overburden in the form of Topsoil, the quarried out topsoil will be preserved all along the safety barrier and utilized for construction of bund, afforestation and reclamation purpose. The excavated Rough Stone will be directly loaded into Tipper to the needy customers. Hence, there is no Waste anticipated and disposal of waste does not arise.

5.7. Brief note on conceptual mining plan for the entire lease period base on the geological, mining and environmental considerations:

Conceptual mining plan is prepared with an object of long term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

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

As the applicant has applied quarry lease for Ten years, the ultimate pit limit (dimension) at the end of this mining plan period is given below:

Table – 7

Pit ID	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)
I	25	94	16 (Below Ground Level)
II	133	33	16 (Below Ground Level)

All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF & CC Norms. Please refer Plate Nos. III-A and III-B.

It is proposed to engage any local institution to monitor the EIA and EMP during the course of quarrying operation after the grant of quarry lease. There is no waste anticipated during the entire life of quarry. Hence, backfilling is not possible in this quarry. The quarry pit will be allowed to collect the seepage and rain water and the water storage will be kept as reservoir to charging the nearby wells and will be utilized for greenbelt development.

When the quarry reaches its ultimate pit limit or at the end of life of quarry, suitable soil type will be brought from outside and preserved over the quarried out top benches to facilitate the greenbelt development. The quarry area will be fenced with barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle (Refer Plate Nos. IV and V).

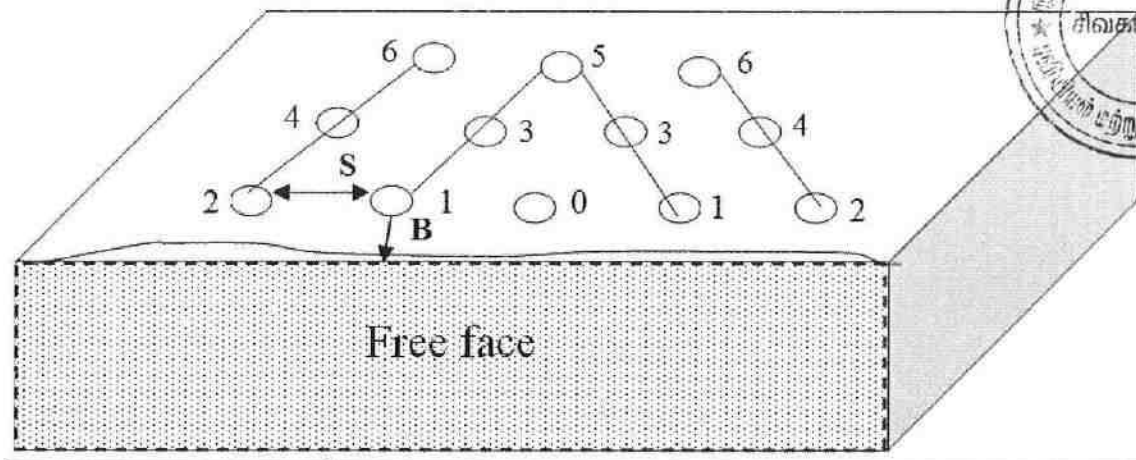
6.9 BLASTING

6.1 Blasting pattern:

The quarrying operation is proposed to carried out by Mechanized Opencast Method in conjunction with conventional method of mining using Jack hammer drilling and blasting of shattering effect for loosen the Rough Stone.

Drilling and blasting parameters are as follows:

Depth of Each hole	:	1.5m
Diameter of hole	:	30-32mm
Spacing between holes	:	1.2m
Burden for hole	:	1.0m
Pattern of hole	:	Zigzag – Multi-rows
Inclination of holes	:	80 ⁰ from horizontal
Use of delay detonators	:	25millisecond relays
Detonating fuse	:	“Detonating” Cord

BLASTING PATTERN DRAWING**Staggered "V" Pattern of Blasting Design**

Spacing	=	1.2m
Burden	=	1.0m
Depth of the hole	=	1.5m
No of holes proposed per day	=	14 Holes

6.2 Type of explosives to be used:

Small Dia. 25mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling or secondary blasting is proposed.

6.3 Measures proposed to minimize ground vibration due to blasting:

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

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

Delay detonators:

Delay blasting (millisecond delays) permits to divide the shot in to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals.

The major advantages of delay blasting are:

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



Blasting program for the production per day:

No of Holes	= 14 Holes
Yield	= 42 Tons
Powder factor	= 6 Tons/Kg of explosives
Total explosive required	= 7 Kg-Slurry explosives
Charge/ hole	= 0.5 Kg
Blasting at day time only	= 12.00 P.M. – 1.00 P.M. (whenever required)

6.4 Storage and safety measures to be taken while blasting:

The applicant will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/Permit Mines Manager. The explosives agencies should be have the valid Blaster certificate. He will blast holes in the quarry site. After the completion of Blasting the explosives Agencies will take it out back the remaining quantity of Explosives.

7.0 MINE DRAINAGE

7.1 Depth of water table (based on nearby wells and water bodies):

The water table in the area is about 64m which is observed from the nearby wells and the data obtained from existing private boreholes. The lease area is fully covered by Massive Charnockite formation and it is revealed from the outcrops. The quarry operation confined to well above the water table hence, the Ground Water problem will not arise. If water is encountered at due to rain water and seepage, the same will be drained out by 5HP motor pumps and the drained-out water will be utilized for afforestation.

Table – 8

Type	Distance & Direction	Location
Bore Well	335m Northeast side	10°14'23.45"N, 78°36'01.63"E

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

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


8.0 OTHER PERMANENT STRUCTURES (also shown in the map)

S. No.	Salient Features Present around site	Prescribed safety distance	If any present within Prescribed distance, it's actual distance and direction from the area															
8.1	Railways, Highways	50m	None of the above situated within 50m radius. Nearest National Highway – Tiruppattur to Dindigul (NH-383) – 11km – SW Nearest State Highway – Namasamudram to M. Kovilpatti Road (SH-201) – 6km – West Nearest Major District Road – Ponnamaravathi to Melaisivapur Road (MD-914) – 8km – NW															
8.2	Water Bodies (River, Pond, Lake, Odai, Canal)	50m	There is no River, Pond, Lake, Odai, Canal located within 50m radius of the lease applied area.															
8.3	Village Road	10m	No village road is passing within 10m radius on the lease applied area. There is a pathai in S.F.No. 120/1, Hence necessary safety distance has been provided.															
8.4	Habitation / Village	300m	There is no approved habitation within 300m radius from the lease applied area (Refer Plate No I-B).															
8.5	Archaeological / historical monuments	500m	There is no Archaeological / historical monuments within 500m radius from the lease applied area.															
8.6	Places of worships	300m	There is no place of worships within the radius of 300m from the lease applied area.															
8.7	Housing area, EB line (HT & LT Line)	50m	There is no Housing area, EB line (HT & LT Line) within the radius of 50m from the lease applied area.															
8.8	Adjacent Patta lands / Govt. Land	7.5m/10m	<table border="1"> <thead> <tr> <th>Direction</th> <th>Classification</th> <th>Safety Distance</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>Govt. land</td> <td>10m</td> </tr> <tr> <td>East</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>South</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>West</td> <td>Patta land</td> <td>7.5m</td> </tr> </tbody> </table> (Refer Plate No. II).	Direction	Classification	Safety Distance	North	Govt. land	10m	East	Patta land	7.5m	South	Patta land	7.5m	West	Patta land	7.5m
Direction	Classification	Safety Distance																
North	Govt. land	10m																
East	Patta land	7.5m																
South	Patta land	7.5m																
West	Patta land	7.5m																

8.9	Boundaries of the permitted area	7.5m/10m	The boundaries of the permitted areas as follows: North - S.F.No.118/3 East - 118/6B, 119/4 South - S.F.No.122 West - S.F.Nos.119/2, 119/1 (Refer Plate No. II).
8.10	Reserve forest	60m	There is no reserved forest within radius of 60m of the lease applied area. (Refer Plate No. IA and IB).
8.11	Protected area / ECO sensitive area/ Wild Life Sanctuary	10km	There is no ECO sensitive Zone/ Wild Life Sanctuary/ Critically Polluted Area/ HACA/ CRZ located within 10km radius of the area. (Refer Plate No. IA).



9.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES

9.1 Employment potential (skilled, semi-skilled, un skilled):

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

a. Skilled labour:

Mine Foreman	:	1
Blaster/mate	:	1
Excavator – Operator	:	1
Drivers	:	1
Jack hammer operator	:	4

b. Semi-skilled:

Security	:	1
----------	---	---

c. Unskilled:

Labour & Helper	:	3
Co-operator and Cleaner	:	3
Total	:	15

The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations. It is been ensured that the labour will not be employed less than 18 years, **No child labour** will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.



9.2 Welfare Measures:

a) Drinking Water:

Packaged drinking water is available from the nearby water vendors in Sevvur which is situated at 1km on the Northern side of the lease applied area.

b) Sanitary Facilities:

Hygienic modern Sanitary Facilities will be constructed with in the lease applied area as semi permanent structure and it will be maintained periodically.

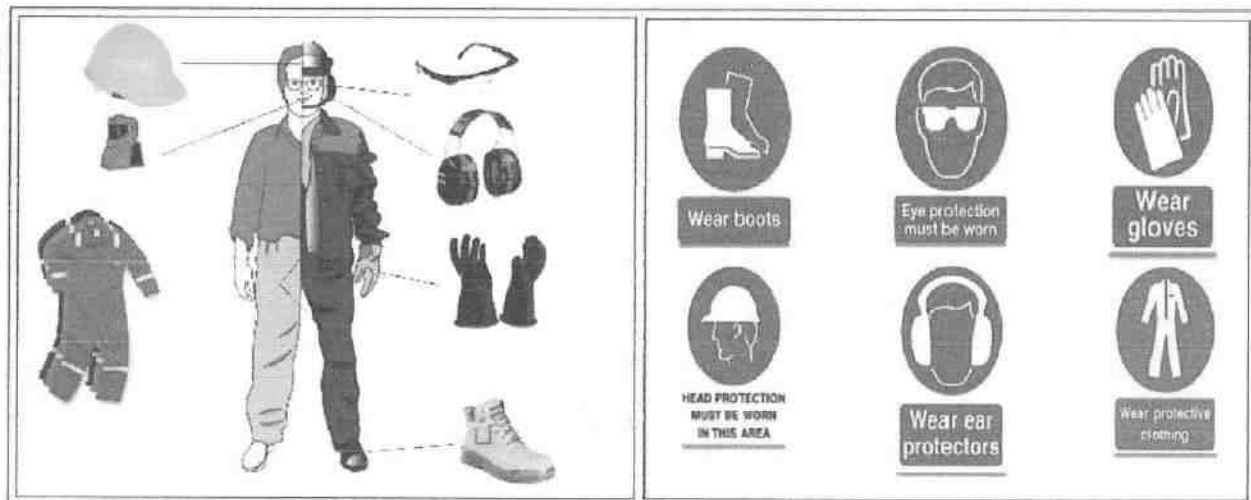
c) First aid facility:

First aid kits are kept in Mines office room, in case of such eventuality is the victim will be given first aid immediately at the site by the competent and statutory foreman/permit manager/mate will be in charge of first aid and injured person will be taken to the hospital by the applicant's vehicle. Hospital is available in Pulankurichi located at a distance of 3km on the Northwestern side.

d) Labour Health:

Periodically medical check-up related to occupational health safety will be conducted to all the workers in applicant own cost.

e) Precautionary safety measures to the labourers:



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

All personnel protective devices will be provided as per the specification approved by Director of mines safety. Periodically medical check-up will be conducted for all workers for any mine health related problems. Proper training and vocational education will be given by qualified and experienced safety officer to all the employees about the safety and systematic Rough Stone quarrying operations. The drillers and workers will be sent for vocational training periodically, to carry out the quarrying operations scientifically and to safe guard the men and machinery and to create awareness about conventional opencast quarrying operations.

PART – B

10.0 ENVIRONMENT MANAGEMENT PLAN

10.1 Existing Land use pattern:

The quarry lease applied area is exhibits flat terrain. The area is a dry barren land devoid of Agriculture and Habitations. The land is previously did not used any specific purpose.

Land Use Pattern

Table – 9

Description	Present area in (ha)
Quarrying Pit	Nil
Infrastructure	Nil
Roads	Nil
Green Belt	Nil
Unutilized	0.98.0
Grand Total	0.98.0

10.2 Water Regime:






It is a simple opencast quarry operation. The quality of water will not be affected due to this quarrying operation. However, mitigation measures will be carried out like Garland drains constructed on all sides of quarry pit to avoid surface run-off rain water entering into the pit.

The waste water discharged to water bodies will be met the standard prescribed under the Environment (Protection) Act – 1986 by The Ministry of Environment, Forest and Climate change.






10.3 Flora and Fauna:

TABLE-10

List of Flora

S.No.	Name of the plant (Scientific)	Family Name	Common Name	Habit	Picture
1.	<i>Zizphus jujube</i>	<i>Rhamnaceae</i>	Jackal, jujube, suraimullu	Tree	
2.	<i>Tectona grandis</i>	<i>Lamiaceae</i>	Teak, Tekku	Tree	
3.	<i>Jasminum angustifolium</i>	<i>Oleaceae</i>	Kundumlligai	Shurb	
4.	<i>Cucurbita pepo</i>	<i>Cucurbitaceae</i>	Parangi	Climber	
5.	<i>Heliconia rostrata</i> Ruiz & Pav.	<i>Heliconiaceae</i>	Parrot's flower	Herb	

List of Fauna

S.No.	Scientific Name	Common Name	Picture
1.	<i>Calotes versicolor</i>	Garden Lizard	
2.	<i>Dicrurus longicaudatus</i>	Grey Drongo	
3.	<i>Bosindicus</i>	Cow	
4.	<i>Chameleon zeylanicus</i>	Indian chamaeleon	
5.	<i>Ardeolagravii</i>	Pond heron	

10.4 Climatic Conditions:

The area receives rainfall of about 985mm/annum and the rainy season is mainly from Oct - Dec during monsoon. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 22°C.

**10.5 Human settlement:**

There are few villages located within 5km radius of the area; the approximate distance, direction and populations are given below:

Table – 11

S. No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population
1.	Pulankurichi	3km – NW	4,200
2.	Thuvar	3km – NW	2,300
3.	Thirukolakudi	4Km – NE	4,100
4.	Sevvur	1km – NE	1,600

Basic human welfare Amenities such as Health Centre, Schools, Communication Facilities, and Commercial Centres etc are available at Ponnamaravathi located at a distance of 8km on the Northwestern side of the area.

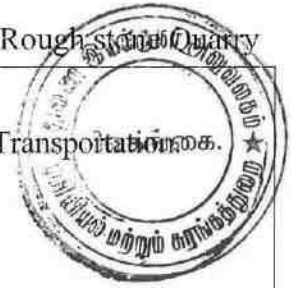
10.6 Plan for air, dust suppression:

The air quality will be affected by the Suspended Particulate Matter (SPM) generated by the blasting, jack hammer drilling, Loading and unloading during the Rough Stone quarry operation.

The following Mitigations measures will be carried out:

- Mist Water spraying will be carried out by means of water sprinklers to suppress the dust emission in the Haul roads.
- Vegetations will be formed on the non quarrying area.
- Avoiding spillages during the transportation.

Air quality will be monitored periodically as per Norms and Mitigate measures carried out to prevent dust and Air propagation in to air. The estimated budget for dust suppression would be around **Rs.52,000/year.**



10.7 Plan for Noise level control:

The noise level increased due to the Excavation, Drilling, Blasting and Transportation.

Engineering Noise control:

Noise will be created due to the usage of Machineries and Vehicles. The Noise will be controlled in the following manner.

- Selection of new low – noise equipments for the Rough Stone quarry operation.
- Modifications of older equipments.
- Implementation of effective preventive maintenance which reduces noise more than 50%.
- Developing Green belts which act as Acoustic barrier, pollution absorbent and noise controller.
- The drivers will be strictly instructed to move the vehicle during the transportation not exceed 40km per hour.
- Sentries with flags & whistle will posted in village road junction and populated area to control and regulate traffic.

Shallow holes of 32mm diameter and maximum depth of 1.5m will be drilled and conventional low power explosives such as Slurry Explosives, ordinary safety fuse will be used for Rough Stone. Hence, ground vibration and noise pollution i.e., minimal and restricted within the quarry working area.

Noise level monitoring and other Mitigation measures will be carried out to reduce Noise and Vibration. The estimated budget for Noise level monitoring would be around **Rs.2,000/Year**.

10.8 Environmental impact assessment statement describing impact of mining on the next Ten years:

In the mining plan proposed for a production of Rough Stone does not involve deep hole drilling and blasting. Such limited mining activity is not likely to cause any impact adversely on the environment. As far as pollution of air, water and noise concerned, the environmental impact studies will be conducted as per EIA notification issued by MoEF& CC. It is B2 Category mine. The estimated budget would be around **Rs.7,60,000/-**.

10.9 Proposal for waste management:

There is no waste anticipated in this Rough Stone quarrying operation. The entire quarried out materials will be utilized (100%). Hence, Waste management does not arise.

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

In the mining plan only to a maximum depth of 16m [1m Topsoil + 15m Rough Stone] has been envisaged as workable depth for safe & economic quarry operation during entire lease period. When the quarry reaches its ultimate pit limit or at the end of life of quarry, suitable soil type will be brought from outside the same will be spread out over the quarried out top bench to facilitate the greenbelt development. There is no proposal for backfilling. However, the quarry area will be fenced with Barbed wire fencing also safety bund constructed around the quarry to prevent inadvertent entry of public and cattle. The fencing cost would be **Rs.1,53,000/-**.

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

The safety zone all along the boundary barrier has been utilized for Greenbelt development. Appropriate species of Neem, Pongamia pinnata, Casuarina, Thespesia populnea, etc., trees will be planted in a phased manner as described below.

Table – 12

Year	No. of trees proposed to be planted	Survival %	Area to be covered sq.m.	Name of the species	No. of trees expected to be grown
I	30	80%	240	Neem, Pongamia pinnata, Casuarina, Thespesia populnea, etc.,	24
II	30	80%	240		24
III	30	80%	240		24
IV	30	80%	240		24
V	30	80%	240		24

Year	No. of trees proposed to be planted	Survival %	Area to be covered sq.m.	Name of the species	No. of trees expected to be grown
VI	20	80%	200	Neem, Pongamia pinnata, Casuarina, Thespesia populnea, etc.,	16
VII	20	80%	200		16
VIII	20	80%	200		16
IX	20	80%	200		16
X	20	80%	200		16

Nearly 2,200m² area is proposed to use under Greenbelt by planting 250 Numbers of trees during the lease period with an anticipated survival rate of 80% (Please refer Plate Nos. III-A & III-B). The estimated budget for plantation and maintenance of green belt development would be around **Rs.25,000/-** for the period of Ten years.

The Greenbelt will be carried out over all along the quarried out top benches and approach road. The cost would be around **Rs.25,000/-** (Please refer Plate No. IV).

10.12 Proposed financial estimate / budget for (EMP) environment management:

Budget Provision for the entire quarrying period:

Table – 13

S. No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charge/ year
1	Ambient air quality monitoring	6500	4	26000	52000
2	Noise level monitoring	250	4	1000	2000
3	Ground vibration monitoring	1000	2	2000	4000
4	Water sampling and analysis	9000	1	9000	18000
Total EMP Cost/ year					76,000

The EMP cost would be around **Rs. 7,60,000/-** for the period of Ten years.**A. Project cost / investment**

i)	Land cost	The Land value as per the Government Guideline land cost is calculated as follows, Total Extent = 0.98.0Ha Cost per Hectare = Rs. 1,38,500/- 0.98.0Ha x 1,38,500 = Rs. 1,35,730/- (Source: https://tnreginet.gov.in/portal/)	Rs.1,36,000/-
ii)	Machiner y to be used	1. The following machineries are proposed to meet out the productions. Excavator attached with rock breaker, Tipper, Tractor mounted compressor with Jack-Hammer and loose tools (Rental Basis)	Rs.10,00,000/-
iii)	Refilling/ Fencing	Fencing will be constructed around the quarry pit to prevent the inadvertent entry of public and cattle cost would be around	Rs.1,53,000/-
iv)	Labourer s shed	Labour sheds will be constructed as semi-permanent structure. The cost would be around	Rs.70,000/-
v)	Sanitary facility	Adequate latrine and urinal accommodation shall be provided at conveniently accessible places the cost would be around	Rs.60,000/-
vi)	Others items	First aid room & accessories	Rs.60,000/-

vii) Drinking water facility for the labourers	Packaged drinking water will be provided for all the Labors. Drinking water will be readily available at conveniently accessible points during the whole of the working shift the cost would be around	Rs.1,00,000/- எவகாங்கைக.
viii) Sanitary arrangement	The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around	Rs.70,000/-
ix) Safety kit	All the Safety kit such as Helmet, Earmuffs, Goggles, Reflector Jackets, Safety shoes etc., will be provided to the workers by the applicant own cost which would be around	Rs.60,000/-
x) Water sprinkling	Water will be sprinkled in the haul roads by water sprinklers the cost would be around	Rs.1,00,000/-
xi) Garland drain	Construction of Garland drain with check dam to prevent surface run-off rain water in to the quarry pit, the construction cost is around	Rs.1,23,000/-
xii) Greenbelt etc.	Greenbelt development and maintenance will be carried out in the safety zone, the cost would be around	Rs.25,000/-
	Greenbelt program will be carried out in the quarried out top benches and approach road	Rs.25,000/-
	Total Project Cost	Rs.19,82,000/-
A. EMP Cost: (Per year)		
Air Quality monitoring		Rs.52,000/-
Water Quality Sampling		Rs.18,000/-
Noise Monitoring		Rs. 2,000/-
Ground Vibration test		Rs. 4,000/-
Total Cost		Rs.76,000/-
Total EMP Cost for the ten years period is Rs.7,60,000/-		
Description		Amount (Rs.)
A. Operational Cost		19,82,000
B. EMP Cost		7,60,000
Total Project Cost (A+ B)		27,42,000
The applicant indents to involve corporate environment responsibilities (CER) activity like Water purifier and Sanitary Facilities to the nearby Dispensary at 2.0% from the total project cost. The Cost would be around Rs.55,000/- .		55,000
Total Cost		27,97,000
The total cost would be around twenty-seven lakhs and ninety seven thousand only.		

11.0 PROGRESSIVE QUARRY CLOSURE PLAN**11.1 Introduction:**

The Progressive Quarry Closure Plan for Rough Stone quarry lease applied area over an extent of 0.98.0 Ha of Patta Lands in S.F.Nos. 118/4, 118/5, 118/6A & 119/3 of Sevvur Village, Thiruppattur Taluk, Sivagangai District, Tamil Nadu State has been prepared for Thiru. C. Amavasai, S/o. Chinnaiah, No.564, Minnalkudi, Thirukolakudi, Kuruvikondanpatti, Thiruppattur Taluk, Sivagangai District – 622 409, Tamil Nadu State.

11.2 Present Land use pattern:

Land Use Table – 14

Description	Present area (Ha)
Quarry Pit	Nil
Infrastructure	Nil
Roads	Nil
Green Belt	Nil
Unutilized Area	0.98.0
Grand Total	0.98.0 ✓

11.3 Method of Mining:

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height for Rough Stone.

However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) is available with Director General of Mines Safety. If the applicant/lessee intends to modify the dimensions of benches, relaxation and permission are available with Director General of Mines Safety under 106 (2) (b) of Metalliferous Mines Regulations, 1961. In such a scenario if there is any drastic change in the Resources and Reserves a modified plan will be submitted to the concerned authority for necessary relaxation, clearance and permission. The relaxation will be applied and obtained after the execution of lease deed / commencement of quarry operation.

11.4 Mineral Processing Operations:

The quarried out Rough stone will be transported by the 20tons capacity Tipper to the needy crushers. Splitting of rock mass of considerable volume from the parent rock mass by Jack-Hammer drilling and blasting, hydraulic excavators are used for loading the Rough stone from pithead to the needy crushers.

11.5 Reasons for closure:

As the mineral is not going to be exhausted during the proposed plan period no immediate closure is planned due to sufficient reserves are available to carry on the activities. Hence, the reason for closure will be discussed in the ensuing mining plan or in final mine closure plan.

**11.6 Statutory obligations:**

The applicant ensures to comply all the conditions were imposed while granting the precise area communication letter before the execution of lease deed and during the course of quarry operations.

11.7 Progressive quarry closure plan preparation:

Name and address of the Qualified Person who prepared the progressive closure plan and name and address of the executing agency who is involved in the Preparation of progressive quarry closure plan.

Name : **P. Viswanathan, M.Sc.,**
 Qualified Person
 (As per Rule 15(I)(a) and (b) of MCR, 2016)

Address : Regd. off. No.17, Advaita Ashram Road,
 Alagapuram, Salem - 636 004.

Tele Fax : 0427- 2431989 (Office)

Cell No : +91 94422 78601 & 94433 56539

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

11.8 Review of Implementation of Mining Plan including Progressive Closure Plan upto the Final Closure Plan:

Mining Plan and Progressive quarry closure plan are being submitted for the first time. It will be reviewed after Ten years and review of implementation will be given in the next mining plan or in Final Mine Closure Plan.

**11.9 Closure Plan:****(i) Mined Out Land:**

At the end of mining plan period, about 0.55.0Ha of area will be mined out. Various stages is given in the table below.

Land Use Table – 15

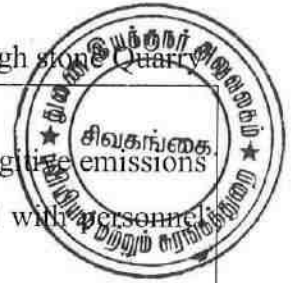
Description	Present area in (Ha)	Area required during the First Five years of the Plan period (Ha)	Area at the end of Lease period (Ha)
Quarrying Pit	Nil	0.55.0	0.55.0
Infrastructure	Nil	0.01.0	0.01.0
Roads	Nil	0.02.0	0.02.0
Green Belt	Nil	0.12.0	0.22.0
Unutilized Area	0.98.0	0.28.0	0.18.0
Grand Total	0.98.0	0.98.0 ✓	0.98.0 ✓

The quarried out benches, Greenbelt Development will be formed in all around the quarried out top benches and approach road of the lease applied area.

(ii) Water quality management:

Following control measures will be adopted for controlling water pollution:

- Garland drain will be constructed around the quarry area to prevent surface runoff rainwater entering in to the pit.
- Construction of check dams / gully plugs at strategic places to arrest silt wash off from broken up area.
- Collection of surface run-off from broken up area in mine pits for settling and only properly settled excess water from mine pit will be discharged to nearby users. The storm water/ mine water will be used for dust suppression, greenbelt development, etc.
- Periodic analysis of mine pit water and ground water quality in nearby villages.
- The quarried out pit will be allowed to collect rain and seepage water which will act as a reservoir for storage. This water storage will enhance the static level and ground water recharge of nearby wells and it will be used for agriculture purpose to the nearby agriculture lands.
- Domestic sewage from site office & urinals/latrines provided in QL is discharged in septic tank followed by soak pits.

**(iii) Air Quality Management:**

The proposed mining method is not likely to produce much of dust and fugitive emissions to cause damage to ambient air quality of the area. Workers will be provided with personnel protective equipment like face-mask, earplug/ muffs.

For air pollution management at the progressive quarry closure plan, greenbelt will be developed to prevent and control air pollution.

(iv) Top Soil and Waste Management:

There is no topsoil or Waste will be generated during the entire lease period, hence waste management does not arise.

(v) Disposal of mining machinery:

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

(vi) Safety & Security:

Safety measures will be implemented to prevent access in the excavation area an unauthorized persons as per Mine Act 1952, MMR 1961.

- Safety measures will be implemented as per Mine Act 1952, MMR 1961, and Mines Rules 1955.
- Provisions of MMR 1961 shall be strictly followed and all roads shall be wider than the height of the bench or equal to the height of the bench and have a gradient of not more than 1 in 16.
- The bench height will be 5.0m.
- Width of working bench will be kept about 5.0 m for ease of operations and provide sufficient room for the movement of equipment.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipment shall be provided for use by the work persons.
- Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.
- Danger signs shall be displayed near the excavations also proper signal by siren alarm will be provide to the public before blasting to prevent accident.
- Security guards will be posted.
- In the event of temporary closer, approaches will be fenced off and notice displayed.

**(vii) Disaster Management and Risk Assessment:**

This should deal with action plan for high risk accidents like landslides, subsidence, flood, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of applicant to meet such eventualities and the assistance to be required from the local authorities should be described.

- The mechanized mining activities in the area may involve any high risk accident due to side falls/collapse, flying stones due to blasting etc.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, TNMMCR 1959 and other laws applicable to mine will be strictly complied with.
- During heavy rainfall the mining activities will be suspended.
- All persons in supervisory capacity will be provided with proper communication facilities.
- Competent persons will be provided FIRST AID kits which they will always carry.
- The quarried out benches, Greenbelt Development will be formed in all around the quarried out top benches and approach road of the lease applied area.

(viii) Care and Maintenance during Temporary Discontinuance:

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:
 - Quarry roads and approach roads,
 - Fencing on approach roads,
 - Checking and maintenance of machines and equipment,
 - Drinking water arrangements,
 - Quarry office, first aid stations etc.

- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per PGB and IBM Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

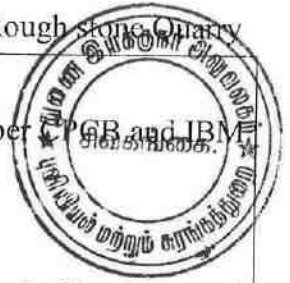
In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

(ix) Economic Repercussion of Closure of Quarry and manpower Retrenchments:

The quarry lease is granted for a period of Ten years only. As per the production Programme envisaged, there will be no effect on the man power as the majority of persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

(x) Time Scheduling for Abandonment:

The lease applied area has enormous potential for continuance of operations even after the expiry of the lease period. The details of time schedule of all abandonment will be given at the time of final closure plan.



**(xi) Abandonment Cost:**

As at present mining is not going to be closed so abandonment cost could not be assessed.

However, based on the progressive quarry closure activities during the plan period the cost is assessed as given below:

Table – 16

ACTIVITY		YEARS										RATE	COST (Rs./-)
		I	II	III	IV	V	VI	VII	VIII	IX	X		
Plantation under safety zone	Nos	30	30	30	30	30	20	20	20	20	20	@100 Rs Per sapling	25000
	Cost	3000	3000	3000	3000	3000	2000	2000	2000	2000	2000		
Plantation in quarried out benches and approach road	Nos	25	25	25	25	25	25	25	25	25	25	@300 Rs Per sapling	25000
	Cost	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500		
Barbed Wire Fencing (In Mtrs) 510 Mtrs		153000	-	-	-	-	-	-	-	-	-	@300 Rs Per Meter	153000
Garland drain (In Mtrs) 410 Mtrs		123000	-	-	-	-	-	-	-	-	-	@300 Rs Per Meter	123000
TOTAL													326000

12 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

This Mining plan for Rough Stone (Charnockite) is under Rules 41 & 42 as per the Amendment under Tamil Nadu Minor Mineral Concession Rules, 1959. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied within the quarrying operations that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Concerned Department.



Prepared by

P. Viswanathan

P. Viswanathan, M.Sc.,
Qualified person

Place: Salem

Date: 12.01.2023

DONATE RED
SPREAD GREEN
SAVE BLUE

This Mining Plan is approved Subject to the Conditions / Stipulations indicated in the mining Plan Approval
Roc. No: 74/Minu/2022 Date: 21/2/23

This Mining Plan is approved based on incorporation of the particulars specified under sub rule (7) (i to (7) (vii) & 8 of Concession Rules, 1959 and subject to the future fulfillment of the conditions laid down under sub rule 18) of Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959
[Signature]
Assistant Director
Geology and Mining
Sivagangal.

21/2/23

PRIC

துணை இயக்குநர் அலுவலகம்,
புவியியல் மற்றும் சூழலியல் துறை
சிவகங்கை.



குறிப்பாணை

ந.க.எண். 714/கனிமம்/2022

நாள்: 29.12.2022

பொருள்: கனிமம் மற்றும் சுரங்கம் - சிவகங்கை மாவட்டம் - திருப்பத்தூர் வட்டம் - செவ்வூர் வருவாய் கிராமம் - புல எண். 117/5B2(0.37.33) 118/4(0.14.0), 118/5(0.14.0), 118/6A(0.12.0), மற்றும் 119/3(0.58.0), மொத்த பரப்பு 1.35.33 ஹெக்டேரில் சாதாரண கற்கள் வெட்டி எடுக்க அனுமதி கோரி திரு.அமாவாசை, என்பவர் தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி 19(1)-ன் படி விண்ணப்பம் செய்தது - சார்நிலை அலுவலர்களின் அறிக்கைகள் வரப்பெற்றது - குவாரி செய்ய உகந்த புலம் என அறிவிப்பு (Precise Area Communication) செய்தல் - தொடர்பாக.

- பார்வை:**
1. திரு. அமாவாசை த/பெ. சின்னையா, 564, மின்னல்குடி, திருக்கோளக்குடி, குருவிக்கொண்டான்பட்டி, திருப்பத்தூர் சிவகங்கை மாவட்டம், என்பவரது விண்ணப்பம் நாள்: 07.09.2022.
 2. இவ்வலுவலகக் கடிதம் ந.க.எண். 714/கனிமம்/2022, நாள்: 07.09.2022.
 3. தேவகோட்டை வருவாய் கோட்டாட்சியரின் கடித எண். ந.க.எண். மூ.மு.ஆ3/7356/2022, நாள். 25.11.2022.
 4. புவியியல் மற்றும் சுரங்கத்துறை, உதவி புவியியலாளர் புலத்தணிக்கை அறிக்கை நாள்: 19.12.2022.
 5. தொடர்புடைய ஆவணங்கள்.

சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், செவ்வூர் வருவாய் கிராமம், புல எண். 117/5B2 (0.37.33), 118/4 (0.14.0), 118/5 (0.14.0), 118/6A(0.12.0), மற்றும் 119/3(0.58.0), மொத்த பரப்பு 1.35.33 ஹெக்டேரில் சாதாரண கற்கள் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி அமைப்பதற்கு அனுமதி கோரி திரு.அமாவாசை த/பெ. சின்னையா, 564, மின்னல்குடி, திருக்கோளக்குடி, குருவிக்கொண்டான்பட்டி, திருப்பத்தூர் சிவகங்கை மாவட்டம், என்பவர் தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி 19-ன் படி பார்வை 1-ல் காணும் விண்ணப்பத்தினை சமர்ப்பித்துள்ளார்.

2. பார்வை 3 மற்றும் 4-ல் கண்டுள்ளவாறு வருவாய் கோட்டாட்சியர், தேவகோட்டை மற்றும் உதவி புவியியலாளர் (கனிமம்) ஆகியோர் புலத்தணிக்கை மேற்கொண்டு சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், செவ்வூர் வருவாய் கிராமம், புல எண். 118/4(0.14.0), 118/5(0.14.0), 118/6A(0.12.0), மற்றும் 119/3(0.58.0), மொத்த பரப்பு 0.98.0 ஹெக்டேரில் சாதாரணகற்கள் வெட்டியெடுத்து குவாரி அமைப்பதற்கு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.


3. எனவே, வருவாய் கோட்டாட்சியர், தேவகோட்டை மற்றும் உதவி புவியியலாளர் புவியியல் மற்றும் சுரங்கத்துறை ஆகியோரின் பரிந்துரைகளை ஏற்று திருப்பத்தூர் வட்டம், செவ்வூர் வருவாய் கிராமம், புல எண்கள். 118/4(0.14.0), 118/5(0.14.0), 118/6A(0.12.0), மற்றும் 119/3(0.58.0), மொத்த பரப்பு 0.98.0 ஹெக்டேர் பரப்புள்ள நிலத்திலிருந்து சாதாரணகற்கள் வெட்டியெடுத்து குவாரி பணி மேற்கொள்ள 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19(1)-ன்படி கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 வருட காலத்திற்கு குவாரி குத்தகை உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

நிபந்தனைகள்

1. திருப்பத்தூர் வட்டம், செவ்வூர் கிராமம் புல எண்கள் 118/4 (0.14.0), 118/5 (0.14.0), 118/6A(0.12.0), மற்றும் 119/3 (0.58.0) பரப்பு 0.98.0 ஹெக்டேர் பரப்பளவுள்ள நிலத்திலிருந்து சாதாரணகற்கள் குவாரி குத்தகை உரிமம் வழங்குவது தொடர்பாக ஏற்பளிக்கப்பட்ட சுரங்கத் திட்டம் மற்றும் சுற்றுச் சூழல் ஒப்புதல் ஆகியன பெற்றளிக்கப்பட வேண்டும்...
2. விண்ணப்ப புல எண். 120/1-இல் அமைந்துள்ள பாதைக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரி பணி புரிய வேண்டும்.
3. விண்ணப்ப புலங்களுக்கு வடக்கு பகுதியில் புல எண் 118/3-ல் காணப்படும் கற்குழிக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரி பணி புரிய வேண்டும்.
4. விண்ணப்ப புலங்களை சுற்றியுள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு குவாரி பணி புரிய வேண்டும்.

மேலும் 1959-ம் வருட தமிழ்நாடு சிறு கனிம சலுகை விதிகள் விதி எண்-41-ன்படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை 90 திண்டுகளுக்குள் சமர்ப்பிக்குமாறும் மற்றும் விதி எண்-42-ன்படி தமிழ்நாடு மாநில சுற்றுச்சூழல் தரக்க மதிப்பீட்டு ஆணையத்தின் இசைவினை பெற்று சமர்ப்பிக்குமாறு கேட்டுக்கொள்ளப்படுகிறது.




உதவி இயக்குநர்/
துணை இயக்குநர் (பொ),
புவியியல் மற்றும் சுரங்கத்துறை,
சிவகங்கை.

பெறுநர்:

திரு. அமாவாசை,
த/பெ. சின்னையா,
கதவு எண். 564, மின்னல்குடி,
திருக்கோளக்குடி,
குருவிக் கொண்டான்பட்டி,
திருப்பத்தூர் வட்டம்,
சிவகங்கை மாவட்டம்.


29/11/22

பெரிய கிணம் மீட்டர் அளவீடு செய்து தரப்படும் நிலம்

எண். 39

பிரதமம்



பெரிய கிணம் மீட்டர்

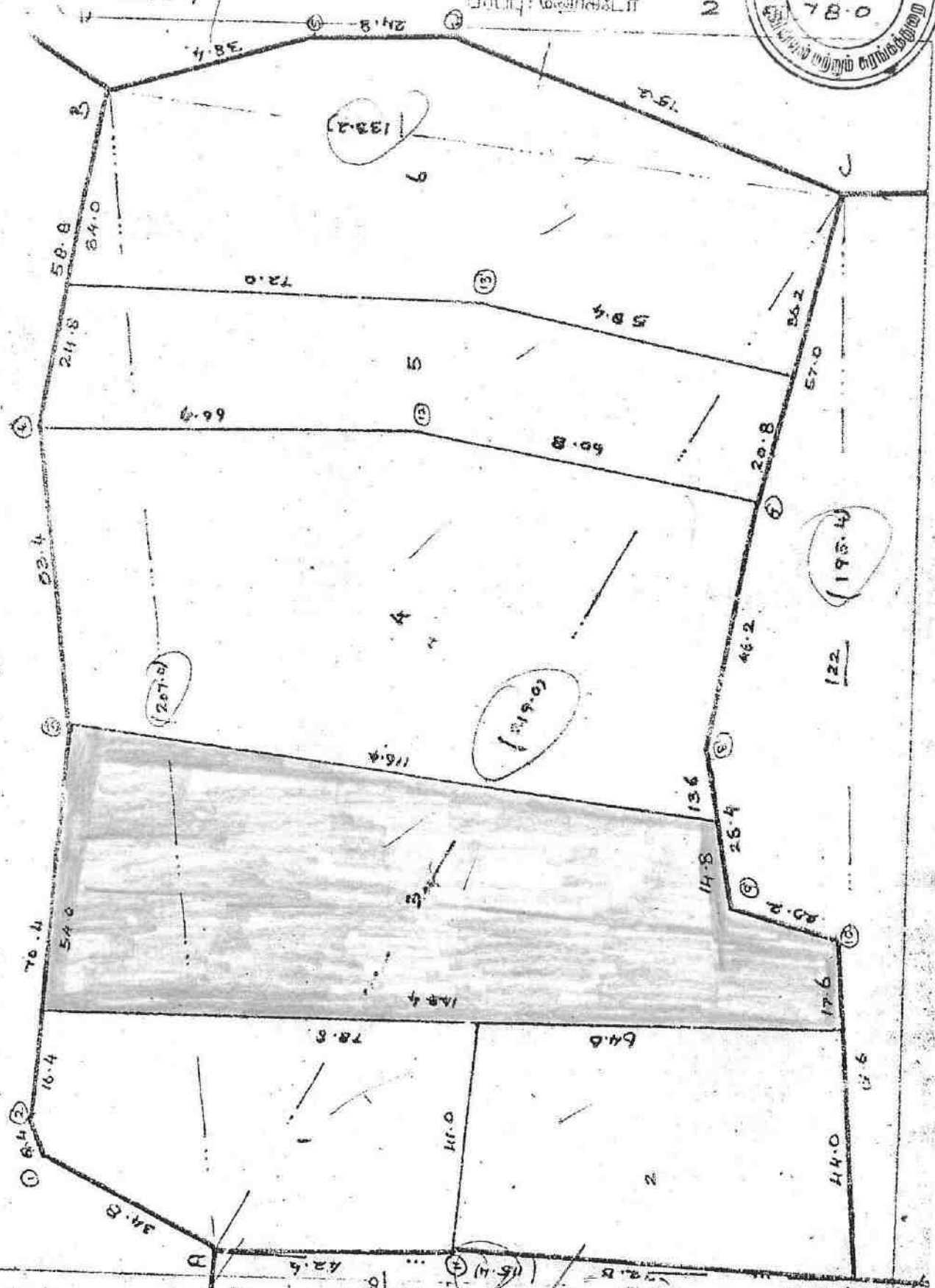
எண். 119 / 6

129

119

பரப்பு: மொத்தம் 2

2



உயர்நீதி

R.K. Velupillai

30.12.88

1000 ச. மீ.

பெரிய கிணம் மீட்டர் அளவீடு செய்து தரப்படும் நிலம்

சென்னை

சென்னை

சென்னை

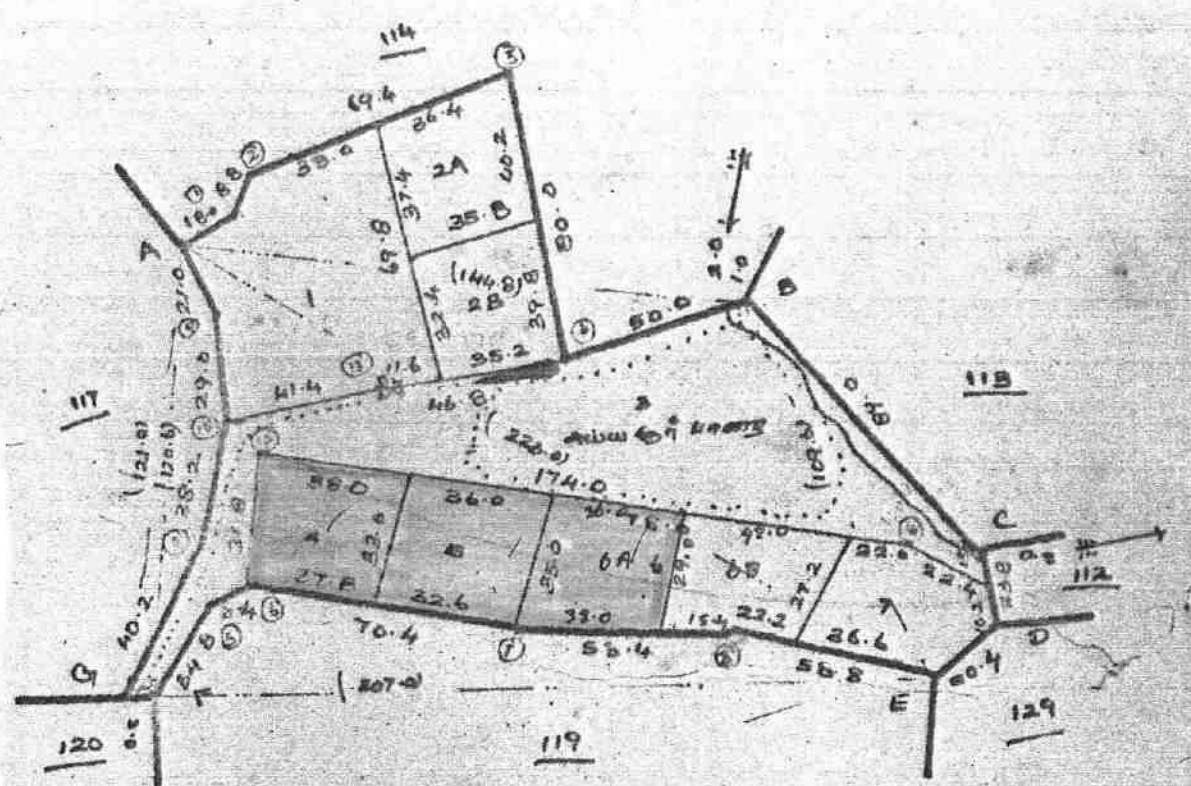
LEASE APPLIED AREA

சென்னை

4.3.87

பெயர்: சிவசுந்தரம்
 டி. எண். 118

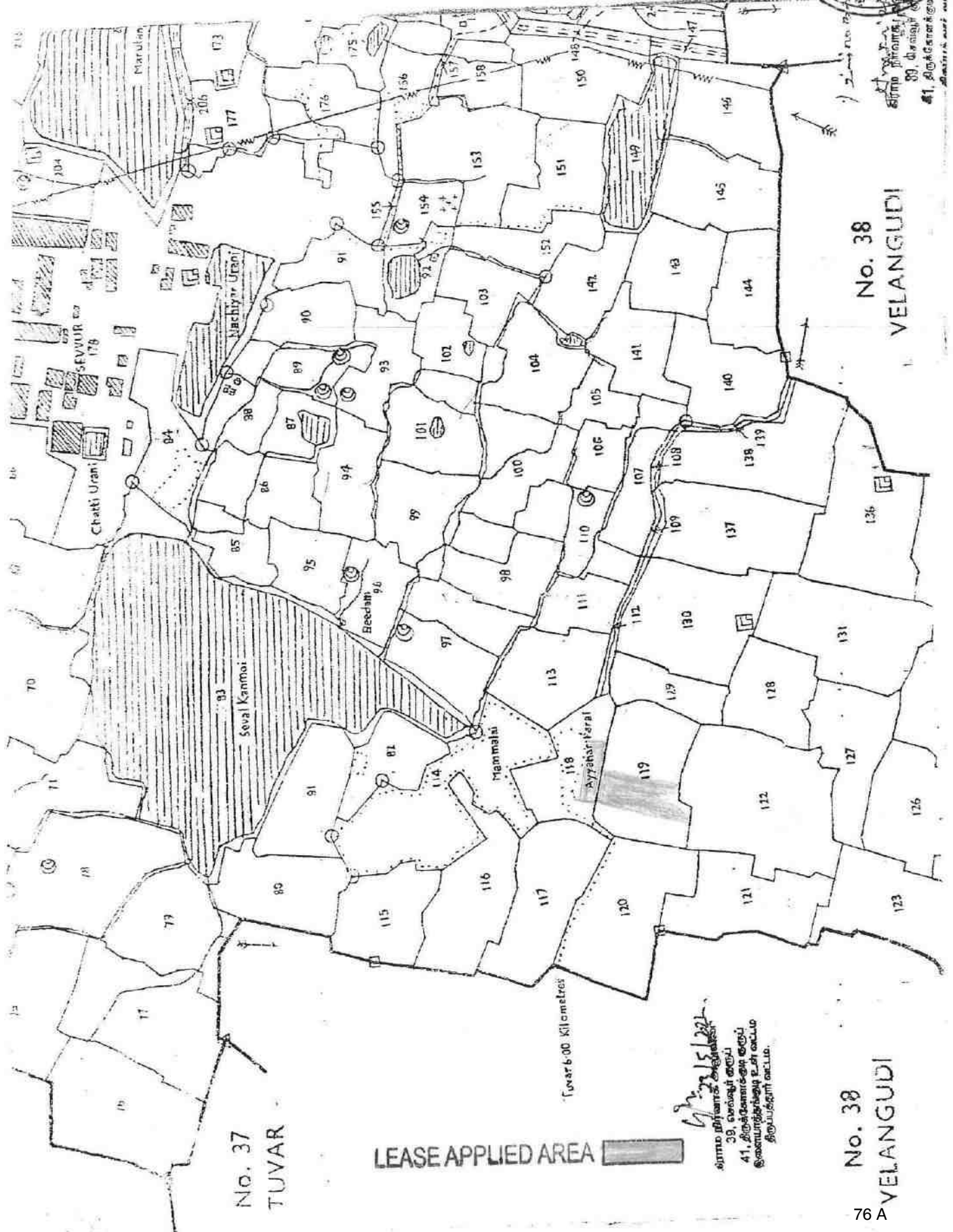
கிராமம்: கிராமம்
 எண். 39
 பெயர்: சிவசுந்தரம்
 பரப்பு: ஒன்றரை ஏக்கர்



LEASE APPLIED AREA

New subdivision 6A, 6B
 Plotted paper 1615/118
 dt: 16.5.2022
 by

செய்த: R.K. Vignesh
 29.12.86
 அளவு: 110.00: 2000 சது.



No. 38
VELANGUDI

No. 37
TUVAR

LEASE APPLIED AREA

[Handwritten Signature]
 சிவசுப்பிரமணியன்
 39, சுவாமிநாதர் தெருவு
 41, திருச்செங்கோட்டு அருகில்
 இலையாண்டுக்கான உயர் அதிகாரம்
 திருச்செங்கோட்டு வட்டம்.

No. 38
VELANGUDI



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : சிவகங்கை

வட்டம் : திருப்பத்தூர்

வருவாய் கிராமம் : செவ்வூர்

பட்டா எண் : 901

உரிமையாளர்கள் பெயர்

1. சின்னையா மகன் அம்மாவாசை -

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
117	75B2	0 - 37.33	1.00	--	--	--	--	2022/0105 /23/172626--2022 /23/23/000016SD -- 10-05-2022
118	6A	0 - 12.00	0.30	--	--	--	--	2022/0105 /23/172626--2022 /23/23/000016SD -- 10-05-2022
		0 - 49.33	1.30					

குறிப்பு2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 23/23/039/00901/90940 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 23-05-2022 அன்று 04:33:51 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : சிவகங்கை

வட்டம் : திருப்பத்தூர்

வருவாய் கிராமம் : செவ்வூர்

பட்டா எண் : 916

உரிமையாளர்கள் பெயர்

1. சின்னையா மகன் அம்மாவாசை

புல எண்	உட்பிரிவு	புன்செய்		நன்செய்		மற்றவை		குறிப்புரைகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	ஹெக் - ஏர்	ரூ - பை	
118	1	0 - 32.00	0.88	--	--	--	--	1678/08--- -- 26-04-2004
118	2A	0 - 13.00	0.36	--	--	--	--	1678/08--- -- 26-04-2004
118	2B	0 - 11.00	0.30	--	--	--	--	1678/08--- -- 26-04-2004
118	4 7	0 - 14.00	0.38	--	--	--	--	1678/08--- -- 26-04-2004
118	5 7	0 - 14.00	0.38	--	--	--	--	1678/08--- -- 26-04-2004
119	3 7	0 - 58.00	1.61	--	--	--	--	2019/0103 /23/057126--- -- 13-06-2019
		1 - 42.00	3.91					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 23/05/2022/00916/90996 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 23-05-2022 அன்று 04:34:36 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்



மக் கட்டு
செவ் குரு

1432 ஆம் பசலியில் சிவகங்கை மாவட்டம் திருப்பத்து

நிலவரித் திட்டத்தின்படி புலன்களின் விபரம்					சாகுபடியாளரின் பெயர்	முதல் போக						
நில அளவை எண்	உட்பிரிவு எண்	பரப்பு	தீர்வை	ஒரு போகம் அல்லது இரு போகம்		கைப்பற்றுதாரருடைய பெயரும் எண்ணும் அல்லது அனுபோகதாரருடைய பெயர்	நலத்தலை எந்த பகுதியாவது சாகுபடியாளரால் பயிரிடப்பட்டுள்ளதா	எந்த மாதத்தில் பயிர் செய்யப்பட்டது /எந்த மாதத்தில் அறுவடை செய்யப்பட்டது	பயிரின் பெயர்	பயிரான /அறுவடைபயான பரப்பு	உள்ளமையான பாய்ச்சல் ஆதாரம்	விளைச்சல் அளவு விழுக்காடு
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
118	5	0.14.00	0.38		916-ஆம்மாவாசை							
118	6A	0.12.00	0.30		901-ஆம்மாவாசை							
118	6B	0.12.00	0.30		3118-தையல்நாயகி							
118	7	0.12.00	0.33		3117-தையல்நாயகி							
119	1	0.29.50	0.81		651-பழனியப்பன் மற்றும் 2 நபர்(கள்)							
119	2	0.30.00	0.82		3125-புனிதவதி							
119	3	0.58.00	1.61		916-ஆம்மாவாசை							
119	4	0.73.00	2.02		3125-புனிதவதி							
119	5	0.31.50	0.87		78-கருத்தையா							
119	6	0.56.00	1.55		2977-செந்தில்வேல்							

செவ்வூர் குரு
41, திருவோளக்குடி
கிழவாத்தம்பட்டினம்
திருப்பத்து வட்டம்



கிராமக் கணக்கு

1432 ஆம் பசலியில் சிவகங்கை மாவட்டம் திருப்பத்தூர் வட்டம் 39 செவ்வாய்க்குழு

நிலவரித் திட்டத்தின்படி புலன்களின் விபரம்					கைப்பற்றுதாரருடைய பெயரும் எண்ணும் அல்லது அனுபோகதாரருடைய பெயர்	சாகுபடியாளரின் பெயர்	முதல் போட்டி				
நில அளவை எண்	உட்பிரிவு எண்	பரப்பு	தீர்வை	ஒரு போகம் அல்லது இரு போகம்			நலத்தலை எந்த பகுதியாவது சாகுபடியாளரால் பயிரிடப்பட்டுள்ளதா	எந்த மாதத்தில் பயிர் செய்யப்பட்டது / எந்த மாதத்தில் அறுவடை செய்யப்பட்டது	பயிரின் பெயர்	பயிரான (அறுவடையான பரப்பு	உண்மையான பாப்ச்சல் ஆதாரம்	விளைச்சல் அளவு
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
117	4A	0.30.50	0.83		2965-லெட்கமணன்						
117	4B	0.31.50	0.87		904-லெட்கமணன்						
117	5A	0.72.50	2.01		922-லெட்கமணன்						
117	5B1	0.38.17	1.00		3118-தையல்நாயகி						
117	5B2	0.37.33	1.00		901-அம்மாவாசை						
118	1	0.32.00	0.88		916-அம்மாவாசை						
118	2A	0.13.00	0.36		916-அம்மாவாசை						
118	2B	0.11.00	0.30		916-அம்மாவாசை						
118	4	0.14.00	0.38		916-அம்மாவாசை						

ச. சிவசுப்பிரமணியன்
39, செவ்வாய்க்குழு
41, திருக்கோளக்குடி குழு
தனையாத்தம்பட்டி வட்டம்
திருப்பத்தூர் வட்டம்

கி. எண். 39, செவ்வூர்.



	2	3	4	5	6	7	8	9	10	
1B	116-2பா	ர	4	...	7-2	3	2 77	0 14.0	0 39	133 பி. வெ. ராக.
3	-3	ர	4	...	7-2	3	2 77	2 10.0	5 82	607 அ. முத்துக் கருப்பன் (எ) சின்னச்சாமி(1), அ. நாச்சியப்பன் (2).
								2 74.0	7 60	
1A	117-1பா	ர	4	...	7-2	3	2 77	0 24.5	0 68	445 வ. முத்துக் கண்ணு (1), க. அடைக்கலம் (எ) அம்பாபி (2).
1B	-1பா	ர	4	...	7-2	3	2 77	0 27.5	0 76	244 து. தவமணி(1), க. அடைக்கலம் (எ) அம்பாபி (2).
2	-2	ர	4	...	7-2	3	2 77	0 14.0	0 39	333 சி. பிரமன்.
2	-3	ர	4	...	7-2	3	2 77	0 12.0	0 33	162 சி. திக்கன் (எ) சின்னக் கருப்பன்.
4A	-4பா	ர	4	...	7-2	3	2 77	0 30.5	0 84	133 பி. வெ. ராக.
1B	-4பா	ர	4	...	7-2	3	2 77	0 31.5	0 87	169 பி. சின்னத்தம்பி.
5A	-5பா	ர	4	...	7-2	3	2 77	0 72.5	2 01	370 அ. பொன்னையா.
6	-5பா	ர	4	...	7-2	3	2 77	0 75.5	2 09	98 வெ. மு. கருப்பையா.
								2 88.0	7 97	
	118-1	ர	4	...	7-2	3	2 77	0 32.0	0 89	335 வெ. பிரமன்.
2A	-2பா	ர	4	...	7-2	3	2 77	0 13.0	0 36	62 ப. ஆறுமுக
2B	-2பா	ர	4	...	7-2	3	2 77	0 11.0	0 30	62 ப. ஆறு
	-3	அ	தி.வ.த.	...	...	...	...	0 68.0	...	...
	-4	ர	4	...	7-2	3	2 77	0 14.0	0 39	232 பி. வெ.
	-5	ர	4	...	7-2	3	2 77	0 14.0	0 39	45 பி. பழையப்பன்.

மாண்புமிகு பேரவைத் தலைவர்
39, செவ்வூர் குருப்
41, திருக்கோளக்குடி குருப்
செவ்வூர் வட்டம்.



7-2-3-277. 018.70. 850. 887
 7-2-3-277. 0-55. 80. 1-50. 260. 887
 7-2-3-277. 0-37. 80. 1-10. 887
1-12. 00. 370

80 780/146
 00. 30 00
 16.8-01
 012

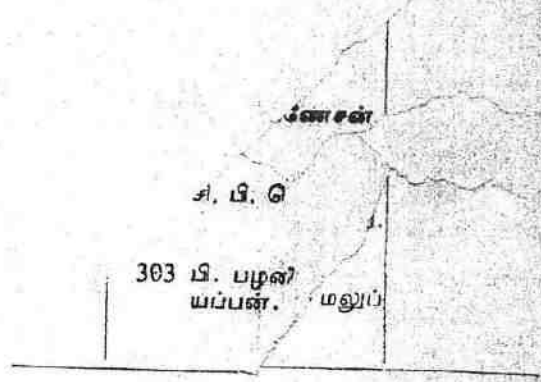
38.17 0.20 3118 கையாள்பாடல்
 0. 37.33 0.17 901 சிங்கப்பாடி
 0. 75. 9
 0.12. 00 0.10 901 சிங்கப்பாடி
 0.12. 00 0.10 3118 கையாள்பாடல்
0.24. 00

1615/451
 16.5.12
 012

(உரை நகல்)

23/5/2022

மாம நிர்வாக அலுவலர்
 39, செவ்வூர் குருப்
 41, திருக்கோளக்குடி குருப்
 ஸையாத்தங்குடி உள் வட்டம்
 கருநாடகம் வட்டம்





1	2	3	4	5	6	7	8	9	10	11	
118	6	118-6	ர	ப	✓...	7-2	3	2 77	0 24-0	0 66	335 வெ. பிரமன்.
	7	-7	ர	ப	✓...	7-2	3	2 77	0 12-0	0 33	170 பி. பழனி (எ) சின்னப்பயல்.
								1 88-0	3 32		
119	1	119-1	ர	ப	✓...	7-2	3	2 77	0 29-5	0 82	651 பெ. ப. பெரிய கருப்பன் (1), பழனியப்பன்(2), சாமநாதன்(3).
	2	-2	ர	ப	✓...	7-2	3	2 77	0 30-0	0 83	381 ஆ. பொன்னையர்.
	3	-3	ர	ப	✓...	7-2	3	2 77	0 58-0	1 61	249 த. சின்னு (எ) தாண்டவ மூர்த்தி.
	4	-4	ர	ப	✓...	7-2	3	2 77	0 73-0	2 02	648 ஆ. முத்துக் கருப்பன் (1), துரைக்கப்பன் (2), கருப்பையா(3).
	5	-5	ர	ப	✓...	7-2	3	2 77	0 31-5	0 87	78 ப. கருந்தையர்.
	6	-6	ர	ப	✓...	7-2	3	2 77	0 56-0	1 55	77 வெ. கருத்தச் சாரி.
								2 78-0	7 70		
	1	120-1	அ	புற	✓...	...	...	...	0 14-0	...	.....
113	3A	-2	ர	ப	✓...	7-2	3	2 77	1 12-0	3 10	260 க. கருப்பன்.
	3B	-3	ர	ப	✓...	7-2	3	2 77	0 24-0	0 66	671 பெ. எ. சாமி நாதன் (1), கப்பையர் (2), மரணிக்கம் (3).
		113-8	ர	ப	✓...	7-2	3	2 77	0 30-0	0 83	337 பெ. பிரமன்.
			ர	ப	✓...	7-2	3	2 77	0 18-5	0 51	63 பெ. ஆறு முகம்.
11.	1	111	ர	ப	✓...	7-2	3	2 77	0 23-0	0 64	561 ஆ. வேலு.
	2	-16-1	ர	ப	✓...	7-2	3	2 77	0 52-5	1 45	355 சி. பெரிய கருப்பன் கெட்டியார்.
	3	-3	ர	ப	✓...	7-2	3	2 77	0 52-5	1 45	355 சி. பெரிய கருப்பன் கெட்டியார்.

சுற்றுலா அமைச்சர்
39, செவ்வாய்
41, திருவள்ளூர்
83 A



இந்திய அரசாங்கம்
Government of India

அம்மாவாசை சின்னையா
Ammavasai Chinnayah
தந்தை : சின்னையா
Father: Chinnalah
பிறந்த நாள் / DOB : 02/04/1969
ஆண்பால் / Male

7077 6343 2046

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

ஆதார்
Unique Identification Authority of India

முகவரி:
தந்தை / தாய் பெயர்
சின்னையா, 564, மின்னல்குடி,
திருக்கோளக்குடி,
கூருவிக்கொண்டான்பட்டி,
சிவகங்கை, தமிழ் நாடு, 622409

Address:
S/O: Chinnalah, 564,
MINNALKUDI, Thirukolakudi,
Kuruvikondanpatti, Sivaganga,
Tamil Nadu, 622409

7077 6343 2046

1800 300 1947 help@uidai.gov.in www.uidai.gov.in



आयकर विभाग
INCOME TAX DEPARTMENT

भारत सरकार
GOVT. OF INDIA

C AMMAVASAI
CHINNAIAH

D2/04/1969
Permanent Account Number
ALGPA2792Q

[Signature]
Signature

In case this card is lost / found, kindly inform / return to :
Income Tax PAN Services Unit, UTITSL
Plot No. 3, Sector 11, CBD Belapur,
Navi Mumbai - 400 614.

इस कार्ड को खोने/पानेपर कृपया सूचित करें/सौंपाएं :
आयकर पैन सेवा यूनिट, पुणे-बेलपुर
प्लॉट नं. ३, सेक्टर ११, सी.बी.डी. बेलपुर,
नवी मुंबई-४०० ६१४.



அறிவியல் புலம்
FACULTY OF SCIENCE

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

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

The Syndicate of the Periyar University hereby makes known
that **VISWANATHAN P** *has been*
admitted to the **DEGREE OF MASTER OF SCIENCE in**
APPLIED GEOLOGY
he/she having been certified by duly appointed Examiners to be qualified
to receive the same and was placed in the **FIRST CLASS**
WITH A++ GRADE *at the Examination held in* **APR-2010** *through*
GOVERNMENT ARTS COLLEGE, SALEM - 636 007 (AUTONOMOUS).



Given under the seal of this university



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

பதிவாளர்
Registrar

துணைவேந்தர்
Vice-Chancellor

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



ANNEXURE 1X
Ph : Mines : 0427 - 2403645
Fact : 0427 - 2400046

SUDHARSHAAN MINING CORPORATION

Mfrs : Dead Burnt Magnesite, Lightly Calcined Magnesite, Dunite Chips & Powder.
S.F. No. 77, Kuduvampatty Road, Vinayagampatti, SALEM - 636 008.

Date : 28.12.2015.....

EXPERIENCE CERTIFICATE

This is to certify that **Shri.P.Viswanathan, S/o. P.Paramasivam, Geologist,** has worked in our Magnesite Mines from **13.09.2010 to 25.11.2015** as our company Geologist. During his service he used to maintain all records and returns submitted to Government Departments.


His nature of work in the mines was to show the plan of working and demarcate Magnesite reserve areas. He was looking after production of Magnesite and was maintaining quality of the Mineral as per the specifications given by the buyers.

During his tenor of his service he was very sincere and prompt in his duties.

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

For M/s.SUDHARSHAAN MINING CORPORATION,

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


G.PASUPATHY,
Proprietor

28 Dec 2015

Resi : "Garuda" 14/315, Kaliyapillai Garden IInd Cross, Fairlands, Salem - 636 004. Tamilnadu.



INDEX

QLA AFFUED AREA :

TOPO SHEET NO. : SE 272

LATITUDE : 10°14'18"N to 10°15'04"N
LONGITUDE : 78°14'32"E to 78°15'02"E

APPLICANT

THIRU C. ANNAIAH
E/A CHIRANNA
Door No. 84A, HIRAIKUDU,
THIRUVALARU, KURUNCHOLAPATTI
THIRUPATTUR TALUK,
SIVAGANGAI DISTRICT

LOCATION OF QLA AREA

EPBM : 118X S 84 S 11913
CPBM : 250/100
VILLAGE : SOYVA
TALUK : THIRUPATTUR
DISTRICT : SIVAGANGAI
STATE : TAMIL NADU

PLATE NO. : I

DATE OF SURVEY : 04.11.2022

LOCATION PLAN

SCALE : 1:50,000

PREPARED BY :

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS
MAP IS TRUE AND CORRECT TO THE BEST OF MY
KNOWLEDGE AND BELIEF AND THAT I AM NOT
AFFECTED BY THIS CERTIFICATE

SURVEYOR
SIVAGANGAI



10° 17' 45" N

76° 28' 15" E



10° 16' 30" N

76° 27' 15" E

TOPO SHEET NO. 18 (27)

LEGEND

- BOUNDARY OF QUARRY LEASE
- BOUNDARY OF RESERVATION
- HIGH RANGES
- QL APPLIED AREA

<p>Express Highway: 100 km and longer with 4 lanes each.</p> <p>State Highway: 50 km and longer with 2 lanes each.</p> <p>Main Road: 20 km and longer with 2 lanes each.</p> <p>Dist. Road: 10 km and longer with 2 lanes each.</p> <p>Other Road: 5 km and longer with 2 lanes each.</p> <p>Water: 100 km and longer with 2 lanes each.</p> <p>Power: 100 km and longer with 2 lanes each.</p> <p>Telecom: 100 km and longer with 2 lanes each.</p> <p>Other: 100 km and longer with 2 lanes each.</p>	
---	--

APPLICANT

MR. C. RAMAYAN

S/O. CHIRAVU

600 No. 5th, Hennur

HENNUR, CHIRAVU TALUK, SHIMOGA DISTRICT.

LOCATION OF Q.L. AREA

27th 11th S. No. 11/3

CHIRAVU

VILLAGE: CHIRAVU

TALUK: CHIRAVU

DISTRICT: SHIMOGA

STATE: KARNATAKA

PLAT NO. 2A

DATE OF SURVEY: 20.11.2015

TWO SHEETS OF QUARRY LEASE APPLIED AREA FOR HIGH RANGES

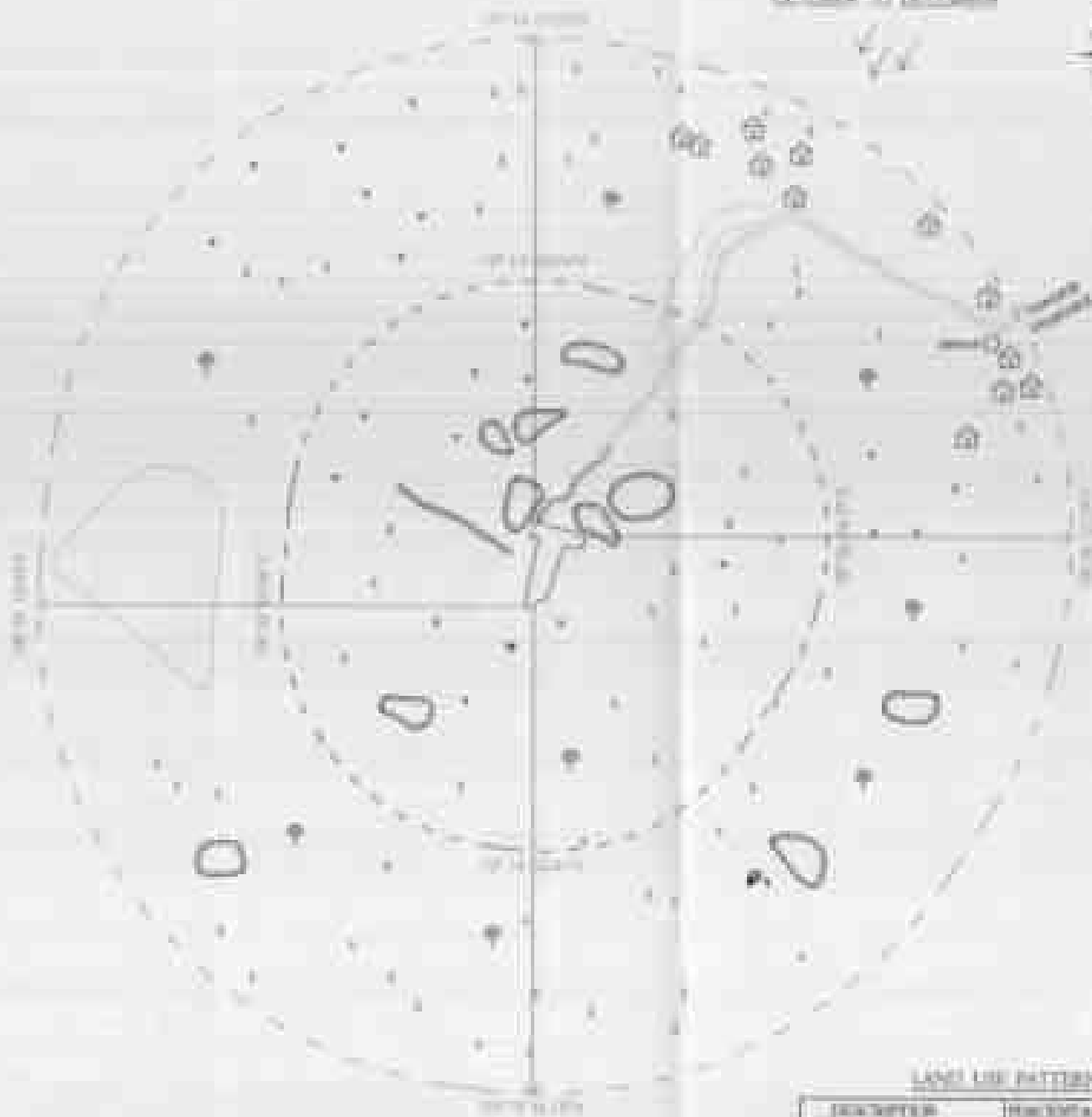
SCALE: 1:10,000

TREASURY

...

...

OCTOBER TO DECEMBER



- INDEX**
- D.L. APPROACH ROAD
 - FARM ROAD
 - DRAINAGE CANAL
 - DRAINAGE CANAL WITH BRIDGE
 - RIVER
 - HABITATION
 - WIND DIRECTION
 - PANCHAYAT ROAD
 - APPROACH ROAD
 - QUARRY PIT & CRIBBER PLANT
 - BARREN LAND
 - CULTIVATED LAND

APPLICANT :
 Mr. C. ANANDASAL
 Sr. Officer,
 Dist. P.W. & S.D. ANANDASAL,
 HIRAKUDAM, BIRBHAR, BIHAR,
 INDIA

LOCATION OF D.L. AREA :
 S.P. NO. - 1184, S. & S. 1181,
 EXTENT - 5.00 HA.
 VILLAGE - BIVHAR,
 TAUK - BIHAR,
 DISTRICT - BIHAR,
 STATE - INDIA

PLAT NO - 11
 DATE OF SURVEY - 25.10.2002

ENVIRONMENTAL & LAND USE PLAN
 DATE - 11.08.02

PREPARED BY :
 Mr. C. Anandasal
 Sr. Officer,
 Dist. P.W. & S.D. ANANDASAL,
 HIRAKUDAM, BIRBHAR, BIHAR,
 INDIA

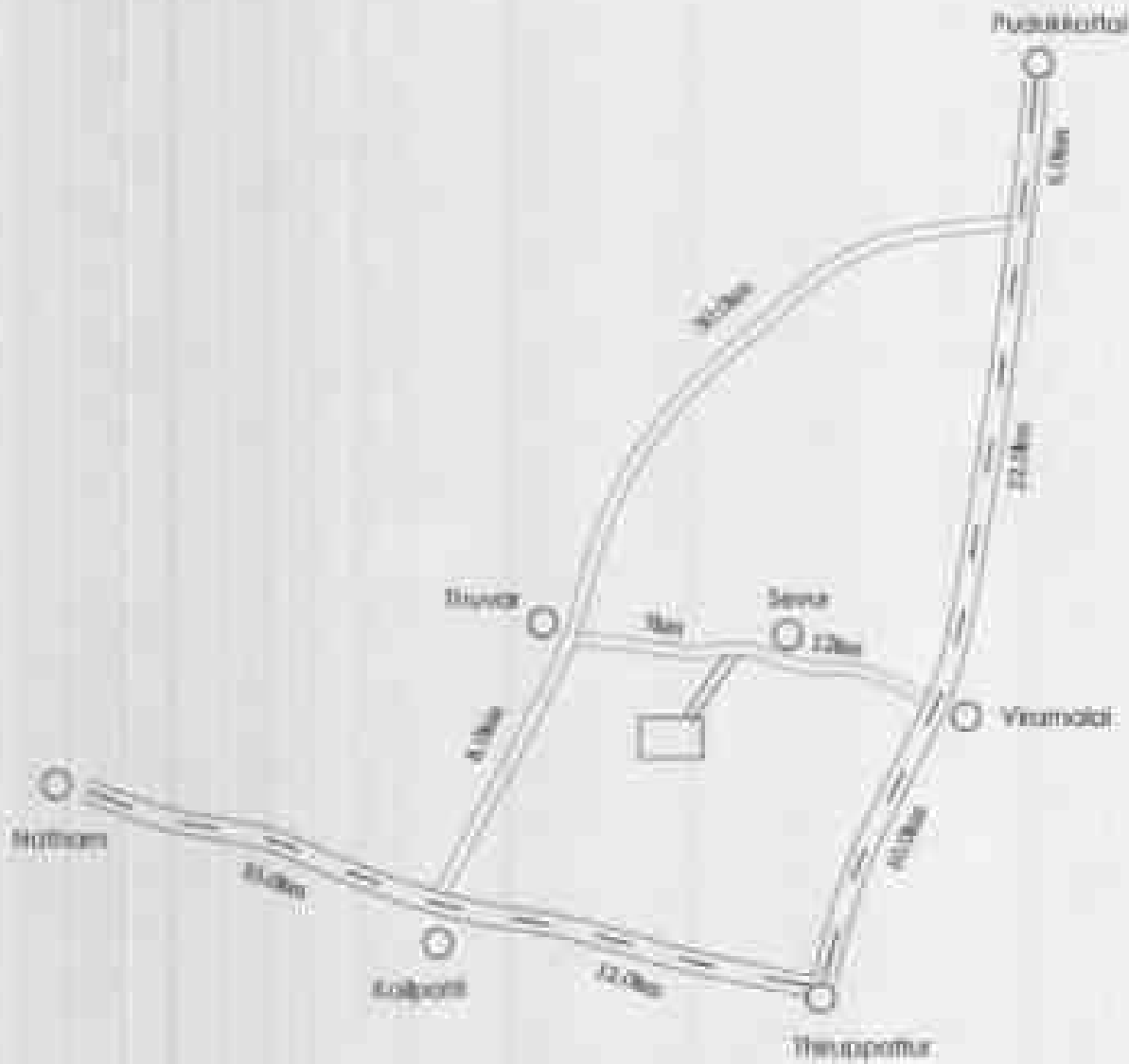
APRIL TO SEPTEMBER

TOPO SHEET NO. : 54-112
 LATITUDE : 25°14' 30" N
 LONGITUDE : 85°54' 30" E

LAND USE PATTERN

LAND USE	AREA (HA)	PERCENTAGE (%)
WATER	0.00	0.00
BARREN LAND	0.00	0.00
CULTIVATED LAND	5.00	100.00
ROADS	0.00	0.00
SETTLEMENTS	0.00	0.00
INDUSTRIAL	0.00	0.00
UNCLASSIFIED	0.00	0.00
TOTAL	5.00	100.00

PLATE NO : I-C
ROUTE MAP



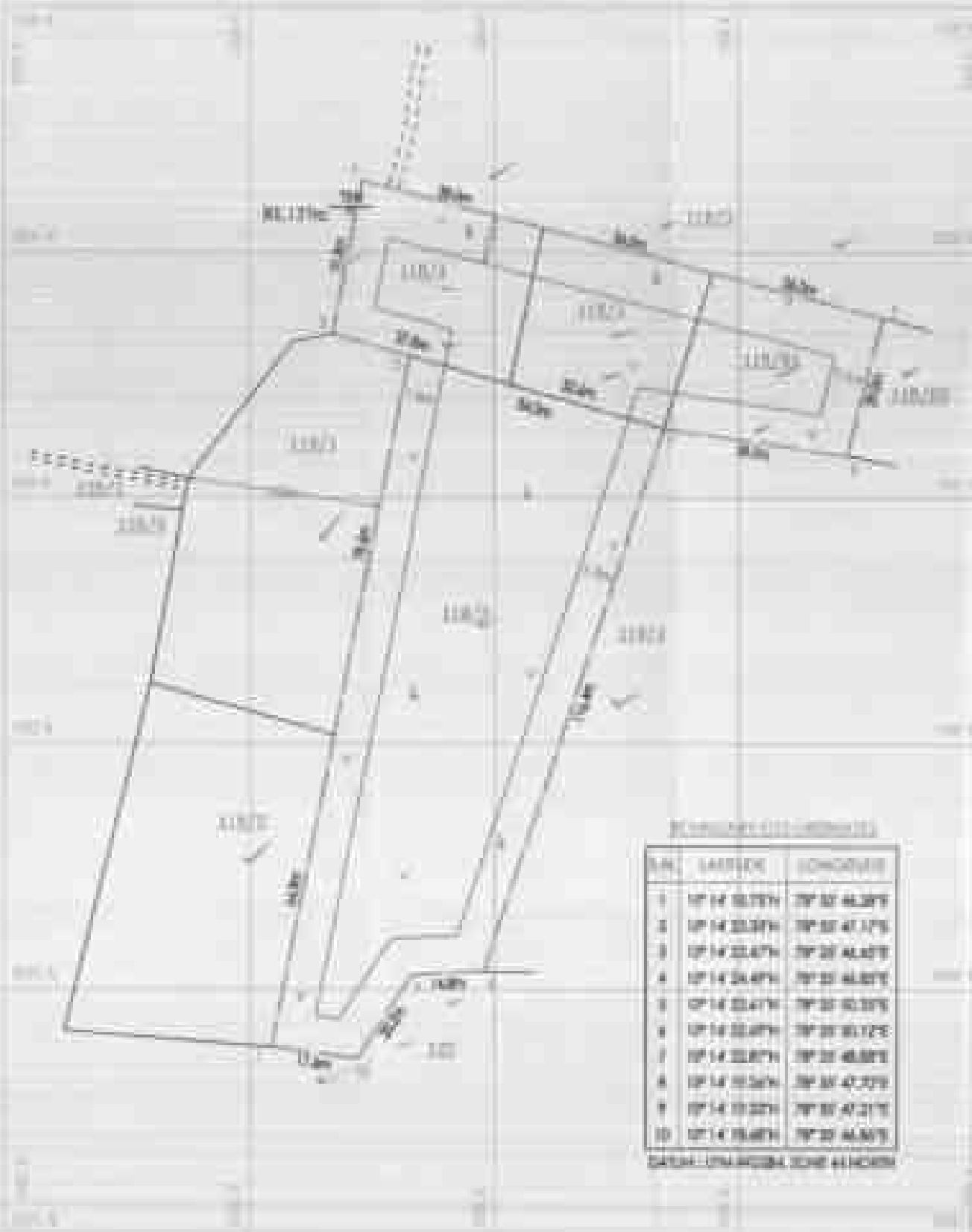
<u>INDEX</u>	<p>LEASE AREA </p> <p>NATIONAL HIGHWAY </p> <p>STATE HIGHWAY </p> <p>APPROACH ROAD </p> <p>PANCHAYAT ROAD </p>	<p><u>APPLICANT:</u> TIRU. C. AMMAVATSI S/O. CHINNAIYAN Door No. 344, MINALUZZI, THIRUOLAKKI, KURUVIKONDAIPATTI, THIRUPATTUR TALUK, SIVAGANGAI DISTRICT.</p>
	<p><u>LOCATION OF Q.L.A. AREA:</u> S.F.No. : 118/A 5, 6A & 119/3 EXTENT : 0.982 Ha. VILLAGE : SEYVUR, TALUK : THIRUPATTUR, DISTRICT : SIVAGANGAI, STATE : TAMIL NADU.</p>	

SCALE NOT TO SCALE

PREPARED BY:

THIS IS TO CERTIFY THAT THE INFORMATION IN THIS MAP IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THE LEASE MAP IS AUTHENTICATED BY SIGNATURE.

(Signature)
 P. Srinivasan
 District Engineer,
 Sivagangai District.



பொருள் குறிப்புகள்

NO.	பகுதி	அளவு
1	10'x14'00"	140'x10'00"
2	10'x14'00"	140'x10'00"
3	10'x14'00"	140'x10'00"
4	10'x14'00"	140'x10'00"
5	10'x14'00"	140'x10'00"
6	10'x14'00"	140'x10'00"
7	10'x14'00"	140'x10'00"
8	10'x14'00"	140'x10'00"
9	10'x14'00"	140'x10'00"
10	10'x14'00"	140'x10'00"

பகுதி அளவுகள் மீட்டர்கள்

- QLA APPLIED AREA BOUNDARY
- 10m & 7.5m SAFETY DISTANCE
- ⊕ TEMPORARY BECH MARK
- ▭ GRAVEL
- ▭ DRUM
- ▭ APPROACH ROAD
- ▭ ROAD

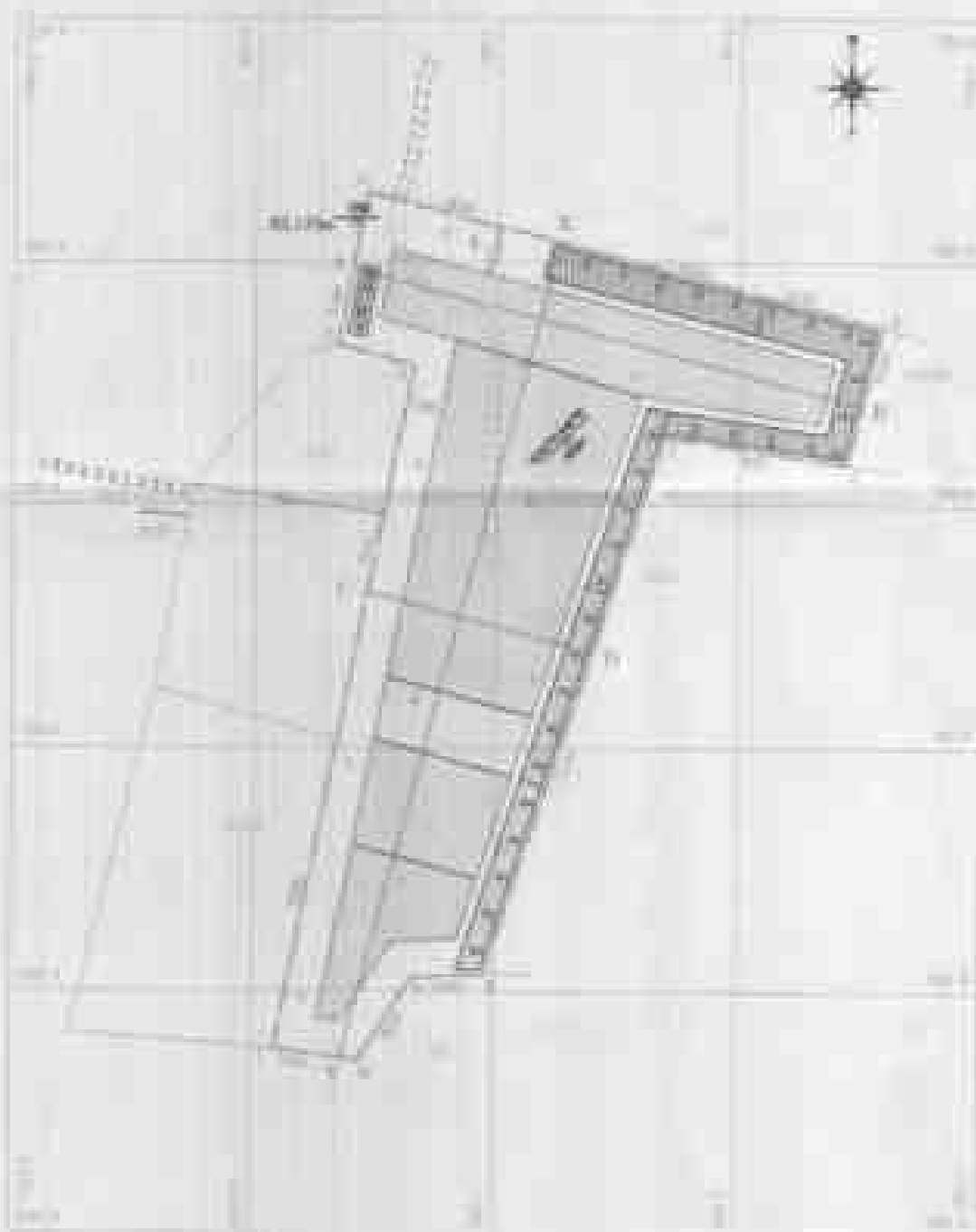
APPLICANT:
 TIRU. C. AMMAVAJAL
 S/O. CHIRUJAL
 DOOR NO. 544, AMMAVAJAL,
 THIRUVALUR, PUDUCHERRY DISTRICT,
 TAMIL NADU.

LOCATION OF QLA AREA:
 T.T. NO. : 118A & 6A & 119/3
 EXTENT : 0.880 Ha.
 VILLAGE : SIVVUR,
 TALUK : THIRUPATTUR,
 DISTRICT : SVAMANGAL,
 STATE : TAMIL NADU.

PLAT NO - B
 DATE OF SURVEY : 08.01.2022

**QUARRY LEASE PLAN &
 SURFACE PLAN**
 SCALE : 1:1000

PREPARED BY:
 (Signature)
 ENGINEER IN CHARGE



NO.	DESCRIPTION	QTY	UNIT	AMOUNT
1
2
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12

CODE

---	GLASS CURTAIN WALL
---	WALL & PARTITION
---	SUPPORT STRUCTURE
---	FLOOR
---	ROOFING
---	DOOR & WINDOW
---	DOOR
---	SHUTTER
---	SCREEN
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---	SCREEN
---	SCREEN

APPLICABLE
 TYPE 1: ...
 TYPE 2: ...
 TYPE 3: ...
 TYPE 4: ...
 TYPE 5: ...
 TYPE 6: ...

LOCATION OF OLA AREA
 LAKE ...
 ROAD ...
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 ROAD ...

PLANNING AREA
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PROGRAMS AND SERVICES
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PREPARED BY:
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SECTION ALONG X-Y



SECTION ALONG A-B



SECTION ALONG C-D



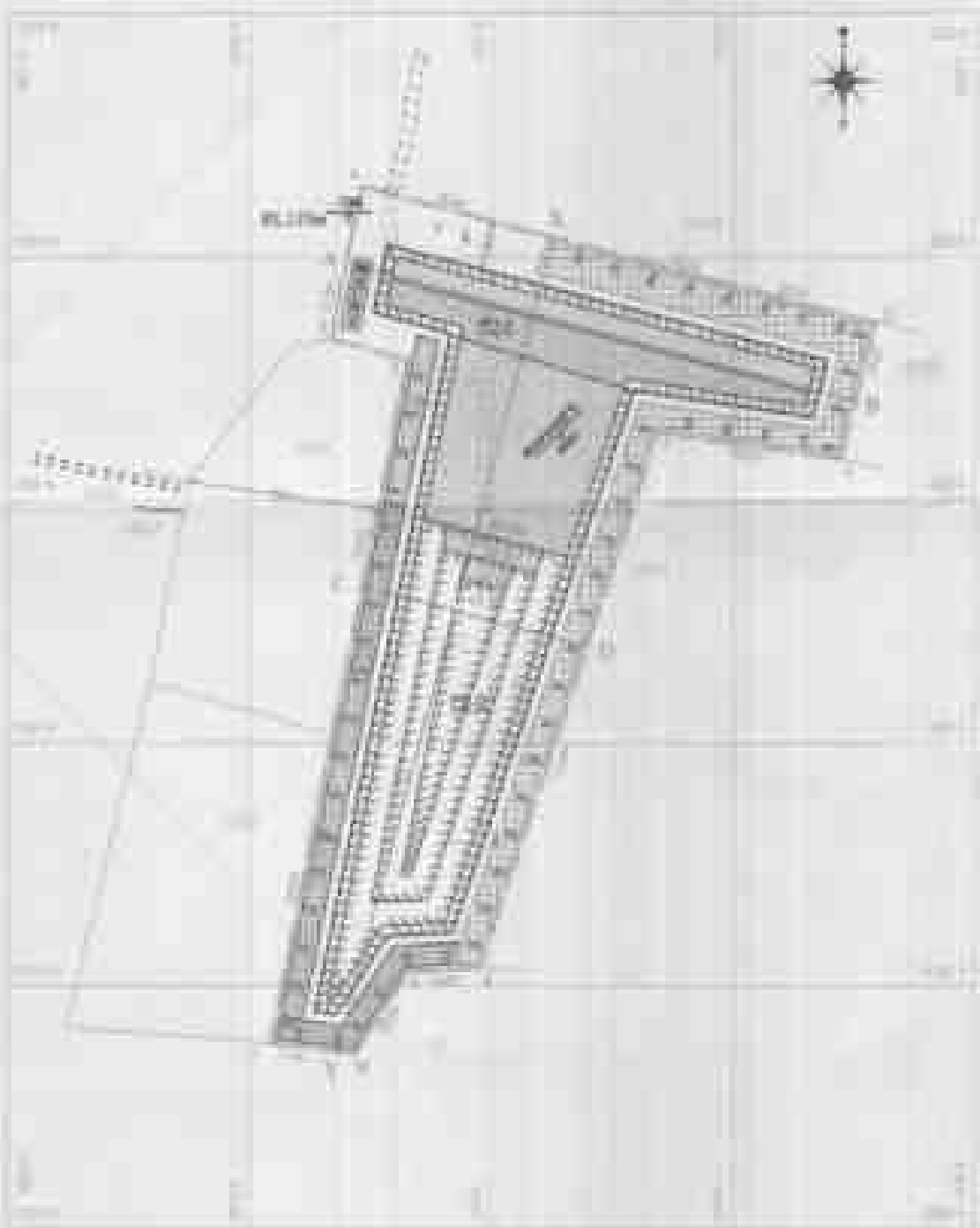
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INDEX

- CL. AFFRUIT AREA BOUNDARY
- 100' 2.7' BOUNDARY DEMARC
- IMPROVED ROAD
- TOP SOIL
- BOUNDARY
- DIRT & OP
- QUARRY PIT
- DRAIN
- QUARRY HALL ROAD
- APPROACH ROAD
- EARTH ROAD
- RIVER PLANTATION

APPLICANT

Ulla C. Association
 Ulla Charitable
 200 No. 24, Thiravally,
 Thiruvananthapuram, Kerala,
 INDIA

LOCATION OF ULLA AREA

SP No. 1100, S. 10 & 1101
 EXTENT: 10000 SQ.
 VILLAGE: ULLA
 TALUK: THIRUVANANTHAPURAM
 DISTRICT: THIRUVANANTHAPURAM
 STATE: KERALA

PLATE NO. 12-B

DATE OF SURVEY: 05-01-2011

**TOPOGRAPHY, GEOLOGICAL PLAN,
 SECOND FIVE YEARLY
 DEVELOPMENT & PROTECTION
 PLAN SHEET**

SCALE: 1:500

PREPARED BY:

Ulla C. Association
 Ulla Charitable
 200 No. 24, Thiravally,
 Thiruvananthapuram, Kerala,
 INDIA

(Signature)
 Ulla C. Association
 Ulla Charitable

SECTION ALONG X-Y



SECTION ALONG A-B

SECTION ALONG C-D



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Prepared by: Ulla C. Association
 Ulla Charitable
 200 No. 24, Thiravally,
 Thiruvananthapuram, Kerala,
 INDIA

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Hydrogeological Report for
Sevvur Rough Stone Quarry

HYDROGEOLOGICAL REPORT FOR SEVVUR ROUGH STONE QUARRY

The Client requires detailed information on Ground Water Occurrences at Proposed Site of Rough Stone and Gravel Quarry. The objective of the present study is to assess the availability of groundwater and comment on aspects of depth to potential aquifers, aquifer availability and type, possible yields and water quality. For this purpose, all available hydrogeological information of the areas has been analyzed, and a geophysical survey was done.

1. INTRODUCTION-

NAME OF THE APPLICANT WITH ADDRESS-

Name of the applicant : **Thiru. C. Amavasai**
S/o. Chinnaiah

Address : No.564, Minnalkudi, Thirukolakudi,
Kuruvikondanpatti, Thiruppattur Taluk,
Sivagangai District.

Pin Code : 622 409

Mobile No : +91 95857 88845 & 63792 43729

Aadhaar No : 7077 6343 2046 (Refer Annexure No. VII)

Email ID : suriyakanna4@gmail.com

DETAILS OF THE AREA-

Land Classification : Patta Land

Survey No : 118/4, 118/5, 118/6A & 119/3

Extent in Hectares : 0.98.0Ha

Village : Sevvur.

Taluk : Thiruppattur

District : Sivagangai

The investigations involved hydrogeological, geophysical field investigations and a detailed study in which the available relevant geological and hydrogeological data were collected, analyzed, collated and evaluated within the context of the Client's requirements.

The data sources consulted were mainly

- a) Central Ground Water Board (CGWB) Data
- b) State & District Geological and Hydrogeological Reports and Maps.
- c) Technical reports of the area by various organizations.

2. SCOPE OF THE WORKS –

The scope of works includes:

- Site visits to familiarize with the project areas. Identify any issues that might impact the Ground Water Scenario due to proposed mining activities.
- To obtain, study and synthesize background information including the geology, hydrogeology and existing borehole data, for the purpose of improving the quality of assessment and preparing comprehensive hydrogeological reports,
- To carry out hydrogeological evaluation and geophysical investigations in the selected sites in order to determine potential for groundwater at project site.
- To prepare hydrogeological survey reports in conformity with the provisions of the rules and procedure outlined by the Central Ground Water Board (CGWB), by Assessment of water quality and potential infringement of National standards, Assessment of availability of groundwater and Impact of proposed activity on aquifer, water quality and other abstractors.

3. BACKGROUND INFORMATION

Location

The investigated site falls in the Toposheet No: 58 J/12 Latitude between 10° 14' 18.68" N to 10° 14' 24.49" N and Longitude between 78° 35' 46.28" E to 78° 35' 50.35"E on WGS datum-1984.

4. Regional geology of Sivagangai District-

The northern part of Sivaganga and Tirupattur taluk are made up of rocks of chornockite – Kondalite groups and migmatite of archaean age comprises chornockite, garnet Sillimanite gneiss, Hornblende biotite gneiss. In gneiss rock quartzo – feldspathic band and mafic enclaves are observed due to segregation by differential composition. Numerous band and lenses of metabasic rocks i.e amphibole, pyroxinite and biotite, schist, quartzite, calc granulite and grey and pink granite occur within the group.

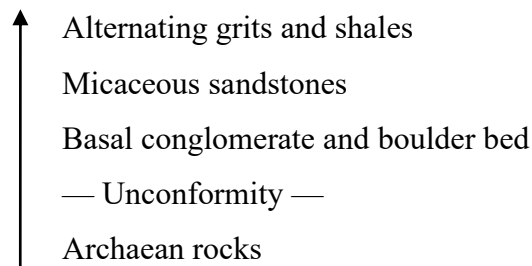
Hornblende biotite gneiss, garnetiferous quartzo feldspathic gneiss is the major lithological unit in north and west. They are very coarse grained and highly feldspathic.

Sillimanite bearing gneiss is seen in association with quartzite. The gneiss occurs at places as residual hillocks and knolls with gneiss trending NE to N-S having steep dip. The quartzite forms long ridges and folds. Calc gneiss and calc granulite occurs as thin bands within the garnet sillimanite gneiss and hornblende biotite gneiss and intensely folded.

The geological sequence of rocks around Sivaganga district is as follows.

Recent alluvium of the Vaigai river and Upper Laterite and lateritic soils. It is followed by basal Gondwana Formation,

Showing the following sequence:



The Archaean Rocks-

They are found on the western side of the Sivaganga town. The rocks consist of quartzites, mica-gneisses, pink and gray granitics. These rock types occur as parallel bands between ENEWSW and E-W with steep southward dips of 60° to 90°. A small inlier of one square mile of the gneissic rocks is seen in the Gondwana Formation.

Gondwana Formation-

The western boundary between the Archaean rocks and Gondwana Formation runs in roughly NE to SW line from near Kallal in the north to Sivaganga Railway station. The Gondwana formation extend over a large area of 160 Square Km. They comprise a basal conglomerates and boulder-beds followed by sandstones, shales and grits. The plant fossils were collected from these shales. The Gondwana rocks have very low and irregular dips.

Dimension Stones (Granite)

The district is occupied by hard crystalline rocks like leptynite, gneissic rock. These rocks are normally used as building materials purposes. The area is famous for multi colored granite (leptynite), commercially Known as “Kshmir White”.

Geomorphology

Differing resistances of the geological formation has given rise to various land forms, viz., structural hills, residual hills and pediment terrains in the district. The eastern and southern part of the district is characterized by flood plain.

The structural hills are occurring North West of Sivaganga in Sivaganga taluk, while pediment terrain in Tiruppuvanam and Tiruppathur. Deep buried pediments occur NW of Tiruppuvanam and Tiruppathur in Sivaganga and Manamadurai taluks. Flood plains are found along Vaigai river and alluvial plain in Devakottai, Sivaganga and Manamadurai Taluks.

Soils

The major soil types in the district are 1. Red soil, 2. Lateritic Soil, 3. Alluvial Soil and 4. Black Cotton soil. Red soils are prevalent in Devakottai, Tiruppathur and Sivagangai taluks, while Lateritic soil is found in Karaikudi and Devakottai taluks. Alluvial soil along the river courses and Black Soil in Illayangudi, Manamadurai and Tiruppathur Taluks.

5. GEOPHYSICAL INVESTIGATION METHODS-

A variety of methods are available to assist in the assessment of geological sub-surface conditions. The main emphasis of the fieldwork undertaken was to determine the thickness and composition of the sub-surface formations and to identify water-bearing zones. This information was principally obtained in the field using, and vertical electrical soundings (VES). The VES probes the resistivity layering below the site of measurement. This method is described below.

Resistivity Method

Vertical electrical soundings (VES) were carried out to probe the condition of the sub-surface and to confirm the existence of deep groundwater. The VES investigates the resistivity layering below the site of measurement.

Basic Principles

The electrical properties of rocks in the upper part of the earth's crust are dependent upon the lithology, porosity, and the degree of pore space saturation and the salinity of the pore water. Saturated rocks have lower resistivity than unsaturated and dry rocks. The higher the porosity of the saturated rock, or the higher the salinity of the saturating fluids, the lower is the resistivity. The presence of clays and conductive minerals also reduces the resistivity of the rock.

The resistivity of earth materials can be studied by measuring the electrical potential distribution produced at the earth's surface by an electric current that is passed through the earth. Current is moved through the subsurface from one current electrode to the other and the potential difference is recorded as the current passes. From this information, resistivity values of various layers are acquired and layer thickness can be identified.

The apparent resistivity values determined are plotted as a log function versus the log of the spacing between the electrodes. These plotted curves identify thickness of layers. If there are multiple layers (more than 2), the acquired data is compared to a master curve to determine layer thickness.

This method is least influenced by lateral in-homogeneities and capable of providing higher depth of investigation.

The resistance R of a certain material is directly proportional to its length L and cross-sectional area A , expressed as:

$$R = R_s * L/A \text{ (in Ohm)}$$

Where R_s is known as the specific resistivity (characteristic of the material and independent of its shape or size)

With Ohm's Law,

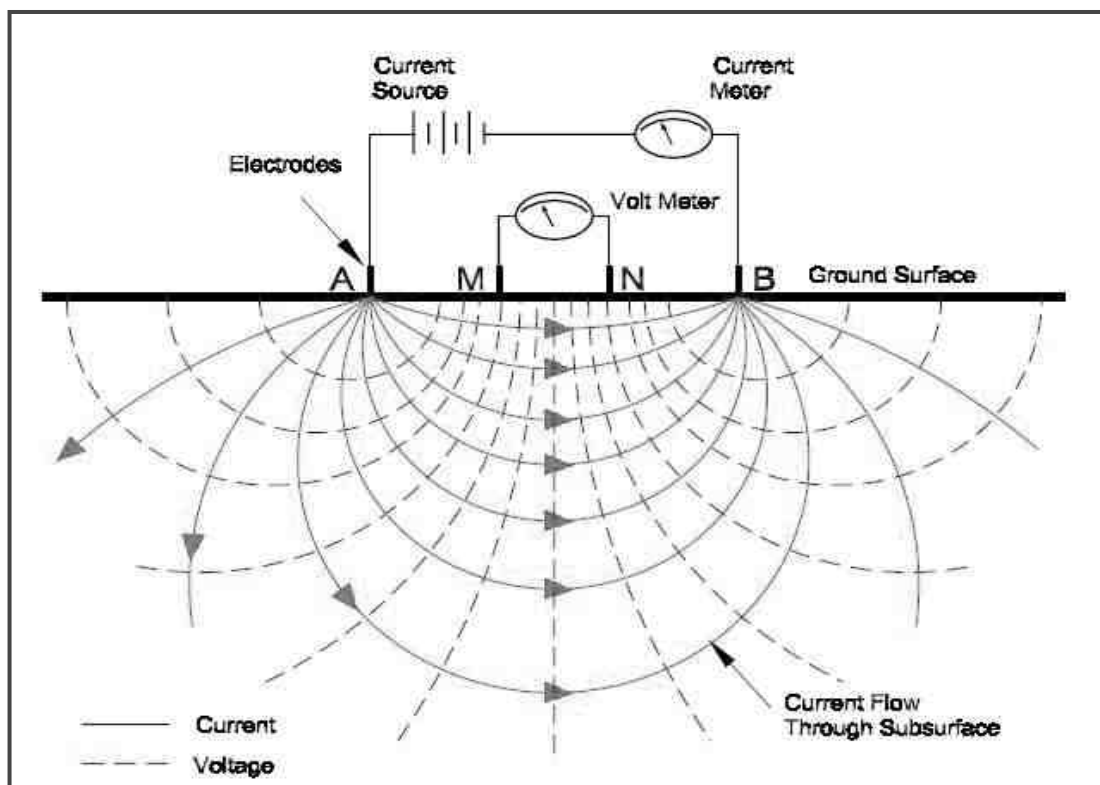
$$R = dV/I \text{ (Ohm)}$$

Where dV is the potential difference across the resistor and I is the electric current through the resistor. The specific resistivity may be determined by:

$$R_s = (A/L) * (dV/I) \text{ (in Ohm m)}$$

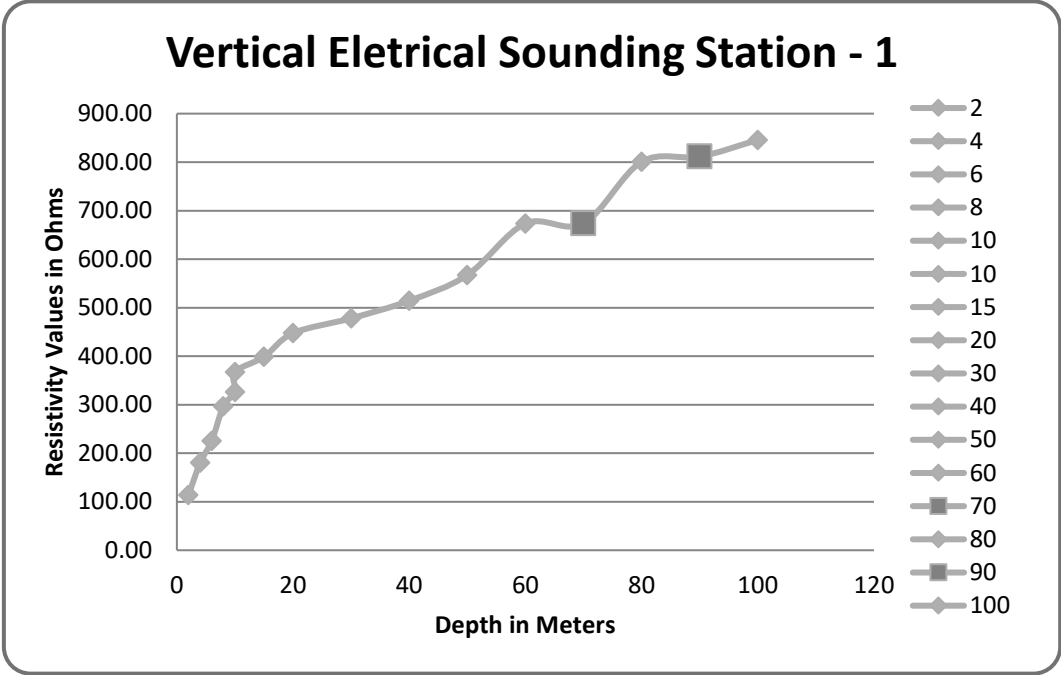
Vertical Electrical Sounding (VES)

When carrying out a resistivity sounding, current is led into the ground by means of two electrodes. With two other electrodes, situated near the center of the array, the potential field generated by the current is measured. From the observations of the current strength and the potential difference, and taking into account the electrode separations, the ground resistivity can be determined. During a resistivity sounding, the separation between the electrodes is step-wise increased (known as a Schlumberger Array), thus causing the flow of current to penetrate greater depths. When plotting the observed resistivity values against depth on double logarithmic paper, a resistivity graph is formed, which depicts the variation of resistivity with depth. This graph can be interpreted with the aid of a computer, and the actual resistivity layering of the subsoil is obtained. The depths and resistivity values provide the hydro geologist with information on the geological layering and thus the occurrence of groundwater.

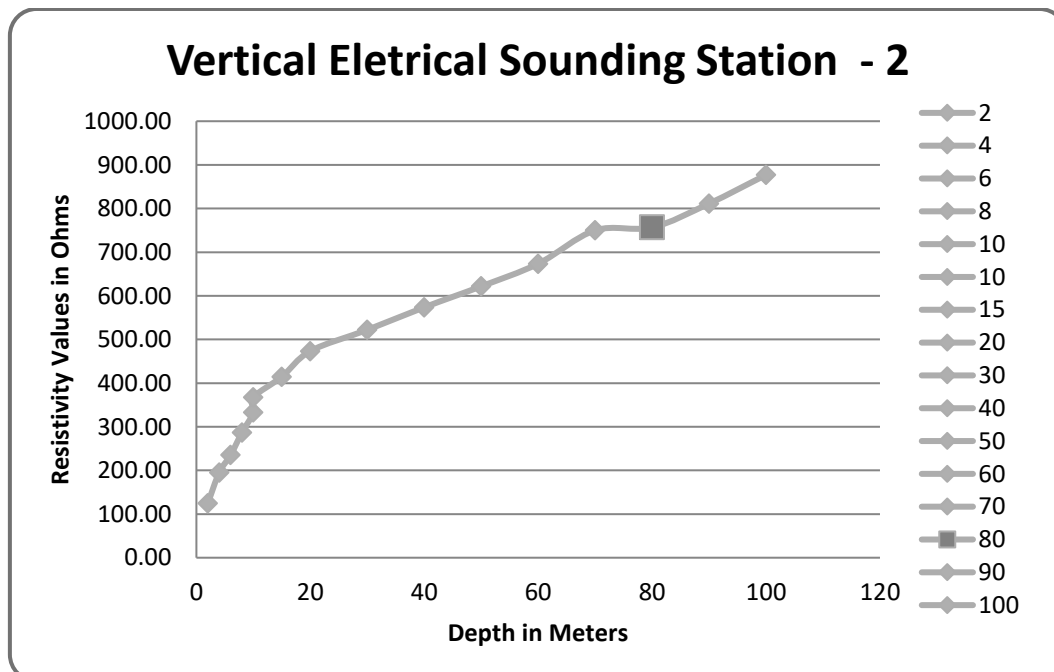


Geophysical Data and graph Diagram

Vertical Electrical Sounding Station - 1					
GPS Coordinates - 10° 14' 18.68" N 78° 35' 46.28" E					
S.No	Ab/2(m)	Mn/2(m)	Geometrical Factor (G)	Resistance Value in Ohms [R]	Apparent Resistance in Ohms
1	2	1	4.71	24.10	113.51
2	4	1	23.55	7.66	180.39
3	6	1	54.95	4.10	225.30
4	8	1	98.91	3.00	296.73
5	10	1	155.45	2.10	326.45
6	10	5	23.55	15.60	367.38
7	15	5	62.80	6.35	398.78
8	20	5	117.75	3.80	447.45
9	30	5	274.75	1.74	478.07
10	40	5	494.55	1.04	514.33
11	50	5	777.15	0.73	567.32
12	60	5	1122.55	0.60	673.53
13	70	5	1530.75	0.44	673.53
14	80	5	2001.75	0.40	800.70
15	90	5	2535.55	0.32	811.38
16	100	5	3132.15	0.27	845.68



Vertical Electrical Sounding Station - 2					
GPS Coordinates - 10° 14' 24.49" N 78° 35' 50.35"E					
S.No	Ab/2(m)	Mn/2(m)	Geometrical Factor (G)	Resistance Value in Ohms [R]	Apparent Resistance in Ohms
1	2	1	4.71	26.44	124.53
2	4	1	23.55	8.28	194.99
3	6	1	54.95	4.28	235.19
4	8	1	98.91	2.90	286.84
5	10	1	155.45	2.14	332.66
6	10	5	23.55	15.60	367.38
7	15	5	62.80	6.60	414.48
8	20	5	117.75	4.02	473.36
9	30	5	274.75	1.90	522.03
10	40	5	494.55	1.16	573.68
11	50	5	777.15	0.80	621.72
12	60	5	1122.55	0.60	673.53
13	70	5	1530.75	0.49	750.07
14	80	5	2001.75	0.38	756.66
15	90	5	2535.55	0.32	811.38
16	100	5	3132.15	0.28	877.00

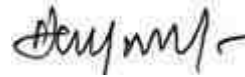


6. Conclusions –

Topography and Geology of the Study area-

The lease applied area exhibits plain terrain. The gradient is gentle towards South side and altitude of the area is 137m above from Mean Sea level. The area is covered by 1m thickness of Topsoil and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pits.

Based on the available information and the geophysical investigations it is concluded that the project area is considered to have medium groundwater potential. Productive aquifers are expected at depth of 85m to 90m where minor fractures are observed and shallow aquifers are expected above 70-75m BGL. The ultimate pit limit as per the approved mining plan depth is 16m Below Ground Level which will have no impact on the Ground Water.



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அனுப்புநர்:

திரு.சோ.பால்துரை,
வருவாய் கோட்டாட்சியர்,
தேவகோட்டை.

பெறுநர்:

மாவட்ட ஆட்சியர்,
சிவகங்கை.

மூ.மு.ஆ3/7356/2022, நாள்: 25.11.2022.

மதிப்பிற்குரிய அய்யா,

பொருள்:

கனிமம் மற்றும் சுரங்கம் - சிவகங்கை மாவட்டம் - திருப்பத்தூர் வட்டம் - செவ்வூர் வருவாய் கிராமம் - புல எண்கள். 117/5B2, 118/4, 118/5, 118/6A மற்றும் 119/3 ஆகிய புலங்களின் மொத்த பரப்பு 1.35.33 ஹெக்டேர் பட்டா நிலப்பரப்பில் சாதாரண கற்கள் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் கோரியது - அறிக்கை அனுப்புதல் - தொடர்பாக.

பார்வை :

1. சிவகங்கை மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை துணை இயக்குநரின் கடிதம் ந.க.எண்.714/கனிமம்/2022, நாள்:07.09.2022.
2. திருப்பத்தூர் வட்டாட்சியரின் கடிதம் ந.க.அ5/4542/2022, நாள்:01.11.2022.

சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், செவ்வூர் வருவாய் கிராமம், புல எண்கள். 117/5B2, 118/4, 118/5, 118/6A மற்றும் 119/3 ஆகிய புலங்களின் மொத்த பரப்பு 1.35.33 ஹெக்டேர் பட்டா நிலப்பரப்பில் சாதாரண கற்கள் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் வழங்கக்கோரி மனு செய்துள்ளதன் அடிப்படையில் பார்வை 1-ல் கண்டுள்ளவாறு புலத்தணிக்கை செய்து அறிக்கை கோரப்பட்டதன் பேரில் பார்வை 2-ல் கண்டுள்ளவாறு திருப்பத்தூர் வட்டாட்சியர் கீழ்க்கண்டவாறு தெரிவித்துள்ளார்.

சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் உள்ள மொத்த பரப்பு 1.35.33 ஹெக்டேர் நில பரப்பில் சாதாரண கற்கல் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் கோரும் புலம் கீழ்க்கண்டவாறு பட்டா தாக்கலாகியுள்ளது.

வ. எண்.	புல எண்	விஸ்தீர்ணம்	தீர்வை	வகைப்பாடு	குறிப்புரை
1	117/5B2	0.37.33	1.00	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
2	118/4	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
3	118/5	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
4	118/6A	0.12.00	0.30	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
5	119/3	0.58.00	1.61	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை

மேற்கண்ட புலங்களுக்கான நான்குமால் விபரம் கீழ்க்கண்டவாறு உள்ளது.

புல எண்.117/5B2-க்கான நான்குமால்

வடக்கு : புலஎண்: 117/5B1 - தையல்நாயகி

தெற்கு : புலஎண்: 120/1 - பாதை

மேற்கு : புலஎண்: 117/5A - லெட்சுமணன்

கிழக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

புல எண்.118/4-க்கான நான்குமால்

வடக்கு : புலஎண்: 118/3- அய்யனார் பாறை

தெற்கு : புலஎண்: 119/1, - பழனியப்பன் வகை

119/3, - அம்மாவாசை

மேற்கு : புலஎண்: 118/3 - அய்யனார் பாறை

கிழக்கு : புலஎண்: 118/5 - அம்மாவாசை

புல எண்.118/5-க்கான நான்குமால்

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

தெற்கு : புலஎண்: 119/3 - அம்மாவாசை

மேற்கு : புலஎண்: 118/4 - அம்மாவாசை

கிழக்கு : புலஎண்: 118/6A - அம்மாவாசை

புல எண்.118/6A-க்கான நான்குமால்

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

தெற்கு : புலஎண்: 119/3 - அம்மாவாசை

மேற்கு : புலஎண்: 118/5 - அம்மாவாசை

கிழக்கு : புலஎண்: 118/6B - தையல்நாயகி

புல எண்.119/3-க்கான நான்குமால்

வடக்கு : புலஎண்: 118/5 - அம்மாவாசை

118/6A - அம்மாவாசை

தெற்கு : புலஎண்: 122/1 - கணேசன்

122/3A - பழனியப்பன்

மேற்கு : புலஎண்: 119/1 - பழனியப்பன் வகை

119/2 - சிவக்குமார்

கிழக்கு : புலஎண்: 119/4 - புனிதவதி

மேற்படி குத்தகை உரிமம் கோரும் திருப்பத்தூர் வட்டம், செவ்வூர் வருவாய் கிராமம், புல எண்கள். 117/5B2, 118/4, 118/5, 118/6A மற்றும் 119/3 ஆகிய புலத்திற்கு மேற்படி கிராமத்தில் அ1 நோட்டீஸ் விளம்புகை செய்யப்பட்டதில் ஆட்சேபணை ஏதும் வரப்பெறவில்லை. விண்ணப்ப புலத்திலிருந்து 1கி.மீ. சுற்றளவிற்குள் பறவைகள் சரணாலயம், புலிகள் காப்பகம், யாணை வழித்தடம் ஏதுமில்லை. 500 மீட்டர் சுற்றளவிற்குள் தொல்லியல் துறையின் பாதுகாக்கப்பட்ட பகுதிகள் ஏதுமில்லை, 300 மீட்டர் சுற்றளவிற்குள் குடியிருப்புகள், அங்கீகரிக்கப்பட்ட வீட்டு மனைகள், நத்தம் புறம்போக்கு நிலங்கள் ஏதுமில்லை. மேற்படி புலத்திலிருந்து 50 மீட்டர் சுற்றளவிற்குள் மின்கம்பிகள் / கம்பங்கள், நீர்நிலைகள்,

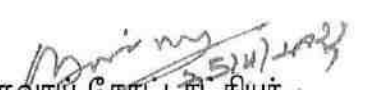
நெடுஞ்சாலைகள், இரயில் பாதைகள், மயானம், வழிபாட்டு தளங்கள், பொதுக்கட்டடம் / கிணறு போன்றவை ஏதுமில்லை. மேற்படி புலத்திலிருந்து 10 மீட்டர் சுற்றளவிற்குள் கிராமச் சாலைகள், வண்டிப்பாதை, அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை.

மேற்படி குவாரி அமைக்க கோரும் விண்ணப்பதாரர் மீது தமிழ்நாடு சிறு கனிம சலுகை விதிகள் 36(A)ன் கீழ் தண்டம் ஏதும் நாளது தேதி வரை விதிக்கப்படவில்லை. விண்ணப்பப் புலங்கள் ஒப்படை, பஞ்சமி, அரசால் ஆர்ஜிதம் செய்ய உள்ள நிலங்கள் இல்லை. PACL நிறுவனத்திற்கு சொந்தமான நிலங்கள் இல்லை. மேற்படி புலத்தில் உள்ளே மின்கோபுரம் இல்லை. புரதானச்சின்னங்கள் மற்றும் தொல்லியல் துறைக்கு சொந்தமான நிலங்கள் ஏதுமில்லை. எனவே மேற்படி புலத்தல் குவாரி அமைக்க நடவடிக்கை மேற்கொள்ளலாம் என திருப்பத்தூர் வட்டாட்சியர் தெரிவித்துள்ளார்.

எனவே, சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், செவ்வூர் குருப் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புல எண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் திரு.அம்மாவாசை த/பெ.சின்னையா என்பவர் பெயரில் பட்டா தாக்கலாகியுள்ளது. மேற்படி புலத்தில் திரு.அம்மாவாசை த/பெ.சின்னையா என்பவருக்கு பட்டா நிலப்பரப்பில் சாதாரண கற்கள் வெட்டி எடுக்க அரசு விதிகளுக்குட்பட்டு அப்புறப்படுத்தி கொள்ளவும், நிபந்தனை மீறல் ஏதும் காணப்பட்டால் அதற்கு மனுதாரர் முழு பொறுப்பினை ஏற்கவேண்டும் என்ற நிபந்தனையுடன் கனிமவளத்துறையின் இசைவினை பெற்று அனுமதி வழங்கலாம். இத்துடன் புலத்தணிக்கை குறிப்பு உள்ளிட்ட இதர ஆவணங்களை இணைத்தனுப்பியுள்ளேன் என்பதைப் பணிவுடன் தெரிவித்துக்கொள்கிறேன்.

இணைப்பு:மேற்கண்டவாறு.

தங்கள் நம்பிக்கையுள்ள,


வருவாய் கோட்டாட்சியர்,
தேவகோட்டை.



புலத்தணிக்கை குறிப்பு

1. புலத்தணிக்கை அலுவலர் பெயர் மற்றும் பதவி : திரு.சோ.பால்துரை, வருவாய் கோட்டாட்சியர், தேவகோட்டை.
2. புலத்தணிக்கை நாள் : 24.11.2022.
3. வருவாய் வட்டம் மற்றும் வருவாய் கிராமம் : திருப்பத்தூர், செவ்வூர் குரூப்
4. புலஎண் : 117/5B2,118/4, 118/5, 118/6A மற்றும் 119/3
5. விஸ்தீர்ணம் : 0.37.33, 0.14.00, 0.14.00, 0.12.00, 0.58.00
6. வகைப்பாடு : ரயத்து புன்செய்
7. நோக்கம் : ரயத்து நன்செய் நிலத்தினை மனை இடமாக மாற்றுவதற்கு தடையின்மைச் சான்று வழங்குவது தொடர்பாக.

சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், செவ்வூர் வருவாய் கிராமம், புல எண்கள். 117/5B2,118/4, 118/5, 118/6A மற்றும் 119/3 ஆகிய புலங்களின் மொத்த பரப்பு 1.35.33 ஹெக்டேர் பட்டா நிலப்பரப்பில் சாதாரண கற்கள் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் வழங்கக்கோரி மனு செய்துள்ளதன் அடிப்படையில் சம்மந்தப்பட்ட புலத்தை 24.11.2022-ம் நான்று நேரடியாக தணிக்கை செய்யப்பட்டது.

சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீர்ணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீர்ணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீர்ணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீர்ணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீர்ணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் உள்ள மொத்த பரப்பு 1.35.33 ஹெக்டேர் நில பரப்பில் சாதாரண கற்கல் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் கோரும் புலம் கீழ்க்கண்டவாறு பட்டா தாக்கலாகியுள்ளது.

வ. எண்.	புல எண்	விஸ்தீர்ணம்	தீர்வை	வகைப்பாடு	குறிப்புரை
1	117/5B2	0.37.33	1.00	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை

2	118/4	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையாமகன் அம்மாவசை
3	118/5	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையாமகன் அம்மாவசை
4	118/6A	0.12.00	0.30	ர.புன்செய்	பட்டா எண்.901. சின்னையாமகன் அம்மாவசை
5	119/3	0.58.00	1.61	ர.புன்செய்	பட்டா எண்.916. சின்னையாமகன் அம்மாவசை

மேற்கண்ட புலங்களுக்கான நான்குமால் விபரம் கீழ்க்கண்டவாறு உள்ளது.

புல எண்.117/5B2-க்கான நான்குமால்

வடக்கு : புலஎண்: 117/5B1 - தையல்நாயகி

தெற்கு : புலஎண்: 120/1 - பாதை

மேற்கு : புலஎண்: 117/5A - லெட்சுமணன்

கிழக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

புல எண்.118/4-க்கான நான்குமால்

வடக்கு : புலஎண்: 118/3- அய்யனார் பாறை

தெற்கு : புலஎண்: 119/1, - பழனியப்பன் வகை

119/3, - அம்மாவாசை

மேற்கு : புலஎண்: 118/3 - அய்யனார் பாறை

கிழக்கு : புலஎண்: 118/5 - அம்மாவாசை

புல எண்.118/5-க்கான நான்குமால்

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

தெற்கு : புலஎண்: 119/3 - அம்மாவாசை

மேற்கு : புலஎண்: 118/4 - அம்மாவாசை

கிழக்கு : புலஎண்: 118/6A - அம்மாவாசை

புல எண்.118/6A-க்கான நான்குமால்

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

தெற்கு : புலஎண்: 119/3 - அம்மாவாசை

மேற்கு : புலஎண்: 118/5 - அம்மாவாசை

கிழக்கு : புலஎண்: 118/6B - தையல்நாயகி

புல எண்.119/3-க்கான நான்குமால்

வடக்கு : புலஎண்: 118/5 - அம்மாவாசை

118/6A - அம்மாவாசை

தெற்கு : புலஎண்: 122/1 - கணேசன்


122/3A - பழனியப்பன்

மேற்கு : புலஎண்: 119/1 - பழனியப்பன் வகை

119/2 - சிவக்குமார்

கிழக்கு : புலஎண்: 119/4 - புனிதவதி

எனவே, சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், செவ்வூர் குருப் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புல எண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் திரு.அம்மாவாசை த/பெ.சின்னையா என்பவர் பெயரில் பட்டா தாக்கலாகியுள்ளது. மேற்படி புலத்தில் திரு.அம்மாவாசை த/பெ.சின்னையா என்பவருக்கு பட்டா நிலப்பரப்பில் சாதாரண கற்கள் வெட்டி எடுக்க அரசு விதிகளுக்குட்பட்டு அப்புறப்படுத்தி கொள்ளவும், நிபந்தனை மீறல் ஏதும் காணப்பட்டால் அதற்கு மனுதாரர் முழு பொறுப்பினை ஏற்கவேண்டும் என்ற நிபந்தனையுடன் கனிமவளத்துறையின் இசைவினை பெற்று அனுமதி வழங்கலாம்.


வருவாய் தோட்டாட்சியர்,
தேவகோட்டை.

அனுப்புனர்

திரு. த. வெங்கடேஷ், எம்.ஏ.,
வருவாய் வட்டாட்சியர்,
திருப்பத்தூர்.

பெறுநர்

வருவாய் கோட்டாட்சியர்,
தேவகோட்டை.

ந.க.எண்.அ5/4542/2022

நாள்: 01.11.2022

மதிப்பிற்குரிய அய்யா,



பொருள்

: கனிமம் மற்றும் சுரங்கம் - சிவகங்கை மாவட்டம் - திருப்பத்தூர் வட்டம் - செவ்வூர் வருவாய் கிராமம் - புல எண்கள். 117/5B2, 118/4, 118/5, 118/6 மற்றும் 119/3 ஆகிய புலங்களின் மொத்த பரப்பில் 1.35.33 ஹெக்டேர் பட்டா நிலப்பரப்பில் சாதாரண கற்கள் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் கோரியது - அறிக்கை அனுப்புவது தொடர்பாக.

பார்வை

: தேவகோட்டை வருவாய் கோட்டாட்சியர் அவர்களின் கடிதம் ந.க.எண்.ஆ3/7356/2022, நாள்:20.09.2022.

சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் உள்ள மொத்த பரப்பு 1.35.33 ஹெக்டேர் நில பரப்பில் சாதாரண கற்கல் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் கோரி திரு. அம்மாவாசை என்பவர் அளித்துள்ள மனு தொடர்பாக மேற்படி புலங்களை ஸ்தலப்பார்வை செய்தும், விசாரணை மேற்கொண்டும் எனதறிக்கையினை கீழ்க்கண்டவாறு தெரிவித்துக் கொள்கிறேன்.

மனுதாரர் கோரும் புலமானது சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமக் கணக்குகளில் கீழ்க்கண்டுள்ளவாறு தாக்கலாகியுள்ளது.

வ. எண்.	புல எண்	விஸ்தீரணம்	தீர்வை	வகைப்பாடு	குறிப்புரை
1	117/5B2	0.37.33	1.00	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
2	118/4	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
3	118/5	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
4	118/6A	0.12.00	0.30	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
5	119/3	0.58.00	1.61	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை

புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய் நிலத்திற்கு நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 117/5B1 - தையல்நாயகி
 தெற்கு : புலஎண்: 120/1 - பாதை
 மேற்கு : புலஎண்: 117/5A - லெட்சுமணன்
 கிழக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3- அய்யனார் பாறை
 தெற்கு : புலஎண்: 119/1, - பழனியப்பன் வகை
 119/3, - அம்மாவாசை
 மேற்கு : புலஎண்: 118/3 - அய்யனார் பாறை
 கிழக்கு : புலஎண்: 118/5 - அம்மாவாசை

புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை
 தெற்கு : புலஎண்: 119/3 - அம்மாவாசை
 மேற்கு : புலஎண்: 118/4 - அம்மாவாசை
 கிழக்கு : புலஎண்: 118/6A - அம்மாவாசை

புல எண்.118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை
தெற்கு : புலஎண்: 119/3 - அம்மாவாசை
மேற்கு : புலஎண்: 118/5 - அம்மாவாசை
கிழக்கு : புலஎண்: 118/6B - தையல்நாயகி

புல எண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/5 - அம்மாவாசை
118/6A - அம்மாவாசை
தெற்கு : புலஎண்: 122/1 - கணேசன்
122/3A - பழனியப்பன்
மேற்கு : புலஎண்: 119/1 - பழனியப்பன் வகை
119/2 - சிவக்குமார்
கிழக்கு : புலஎண்: 119/4 - புனிதவதி

1) விண்ணப்ப புலங்களுக்கு மனுதாரருக்கு குத்தகை உரிமம் வழங்குவது தொடர்பாக செவ்வூர் வருவாய் கிராமத்தில் அ1 நோட்டீஸ் விளம்புகை செய்யப்பட்டதில் ஆட்சேபனை வரப்பெறவில்லை.

2) விண்ணப்ப புலத்திலிருந்து 1கி.மீ. சுற்றளவிற்குள் பறவைகள் சரணாலயம், புலிகள் காப்பகம், யானை வழித்தடம் ஏதுமில்லை.

3) விண்ணப்ப புலத்திலிருந்து 500 மீட்டர் சுற்றளவிற்குள் தொல்லியல் துறையின் பாதுகாக்கப்பட்ட பகுதிகள் ஏதுமில்லை.

4) விண்ணப்ப புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் குடியிருப்புகள், அங்கீகரிக்கப்பட்ட வீட்டு மனைகள், நத்தம் புறம்போக்கு நிலங்கள் ஏதுமில்லை.

5) விண்ணப்ப புலத்திலிருந்து 50 மீட்டர் சுற்றளவிற்குள் மின்கம்பிகள் / கம்பங்கள், நீர்நிலைகள், நெடுஞ்சாலைகள், இரயில் பாதைகள், மயானம், வழிபாட்டு தளங்கள், பொதுக்கட்டடம் / கிணறு போன்றவை ஏதுமில்லை.

6) விண்ணப்ப புலத்திலிருந்து 10 மீட்டர் சுற்றளவிற்குள் கிராமச் சாலைகள், வண்டிப்பாதை, அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை.

விண்ணப்பதாரர் மீது தமிழ்நாடு சிறு கனிம சலுகை விதிகள் 36(யு)ன் கீழ் தண்டம் ஏதும் நாளது தேதிவரை விதிக்கப்படவில்லை. விண்ணப்பப் புலங்கள் ஒப்படை நிலங்கள் இல்லை. பஞ்சமி நிலங்கள் இல்லை. அரசால் ஆர்ஜிதம் செய்ய உள்ள நிலங்கள் இல்லை.

PACL நிறுவனத்திற்கு சொந்தமான நிலங்கள் இல்லை. மேற்படி புலத்தில் உள்ளே மின்கோபுரம் இல்லை. புரதானச்சின்னங்கள் மற்றும் தொல்லியல் துறைக்கு சொந்தமான நிலங்கள் ஏதுமில்லை.

எனவே, மனுதாரர் சாதாரண கற்கள் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குவாரி குத்தகை உரிமம் கோரும் புல எண்ணில் சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் திரு. அம்மாவாசை த/பெ. சின்னையா என்பவருக்கு சிறுகனிம விதிகளின்படி நடவடிக்கை மேற்கொள்ளலாம் என்பதனைப் பணிவுடன் தெரிவித்துக்கொள்கிறேன். இத்துடன் திருப்பத்தூர் மண்டல துணை வட்டாட்சியர் அறிக்கை, வருவாய் ஆய்வாளர் அறிக்கை, செவ்வூர் குருப் கிராம நிர்வாக அலுவலர் வாக்குமூலம் மற்றும் கிராமக் கணக்குகளின் நகல்களை இணைத்துள்ளேன்.


வட்டாட்சியர், I.I.I.வ
திருப்பத்தூர்


11/11/22

புலத்தணிக்கை குறிப்பு

மாவட்டம்	: சிவகங்கை
வட்டம்	: திருப்பத்தூர்
உள்வட்டம்	: இளையாத்தங்குடி உள்வட்டம்
வருவாய் கிராமம்	: 39. செவ்வூர்
புல எண்	: 117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய்

சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் உள்ள மொத்த பரப்பு 1.35.33 ஹெக்டேர் நில பரப்பில் சாதாரண கற்கல் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் கோரி திரு. அம்மாவாசை என்பவர் அளித்துள்ள மனு தொடர்பாக மேற்படி புலங்களை தணிக்கை செய்யப்பட்டது.

மனுதாரர் கோரும் புலமானது சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமக் கணக்குகளில் கீழ்க்கண்டுள்ளவாறு தாக்கலாகியுள்ளது.

வ. எண்.	புல எண்	விஸ்தீரணம்	தீர்வை	வகைப்பாடு	குறிப்புரை
1	117/5B2	0.37.33	1.00	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
2	118/4	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
3	118/5	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
4	118/6A	0.12.00	0.30	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
5	119/3	0.58.00	1.61	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை

புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய் நிலத்திற்கு நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 117/5B1 - தையல்நாயகி
தெற்கு : புலஎண்: 120/1 - பாதை
மேற்கு : புலஎண்: 117/5A - லெட்சுமணன்
கிழக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3- அய்யனார் பாறை
தெற்கு : புலஎண்: 119/1, - பழனியப்பன் வகை
119/3, - அம்மாவாசை
மேற்கு : புலஎண்: 118/3 - அய்யனார் பாறை
கிழக்கு : புலஎண்: 118/5 - அம்மாவாசை

புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை
தெற்கு : புலஎண்: 119/3 - அம்மாவாசை
மேற்கு : புலஎண்: 118/4 - அம்மாவாசை
கிழக்கு : புலஎண்: 118/6A - அம்மாவாசை

புல எண்.118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை
தெற்கு : புலஎண்: 119/3 - அம்மாவாசை
மேற்கு : புலஎண்: 118/5 - அம்மாவாசை
கிழக்கு : புலஎண்: 118/6B - தையல்நாயகி

புல எண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/5 - அம்மாவாசை
118/6A - அம்மாவாசை

தெற்கு : புலஎண்: 122/1 - கணேசன்
122/3A - பழனியப்பன்

மேற்கு : புலஎண்: 119/1 - பழனியப்பன் வகை
119/2 - சிவக்குமார்

கிழக்கு : புலஎண்: 119/4 - புனிதவதி

1) விண்ணப்ப புலங்களுக்கு மனுதாரருக்கு குத்தகை உரிமம் வழங்குவது தொடர்பாக செவ்வூர் வருவாய் கிராமத்தில் அ1 நோட்டீஸ் விளம்புகை செய்யப்பட்டதில் ஆட்சேபனை வரப்பெறவில்லை.

2) விண்ணப்ப புலத்திலிருந்து 1கி.மீ. சுற்றளவிற்குள் பறவைகள் சரணாலயம், புலிகள் காப்பகம், யாணை வழித்தடம் ஏதுமில்லை.

3) விண்ணப்ப புலத்திலிருந்து 500 மீட்டர் சுற்றளவிற்குள் தொல்லியல் துறையின் பாதுகாக்கப்பட்ட பகுதிகள் ஏதுமில்லை.


4) விண்ணப்ப புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் குடியிருப்புகள், அங்கீகரிக்கப்பட்ட வீட்டு மனைகள், நத்தம் புறம்போக்கு நிலங்கள் ஏதுமில்லை.

5) விண்ணப்ப புலத்திலிருந்து 50 மீட்டர் சுற்றளவிற்குள் மின்கம்பிகள் / கம்பங்கள், நீர்நிலைகள், நெடுஞ்சாலைகள், இரயில் பாதைகள், மயானம், வழிபாட்டு தளங்கள், பொதுக்கட்டடம் / கிணறு போன்றவை ஏதுமில்லை.

6) விண்ணப்ப புலத்திலிருந்து 10 மீட்டர் சுற்றளவிற்குள் கிராமச் சாலைகள், வண்டிப்பாதை, அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை.

விண்ணப்பதாரர் மீது தமிழ்நாடு சிறு கனிம சலுகை விதிகள் 36(யு)ன் கீழ் தண்டம் ஏதும் நாளது தேதிவரை விதிக்கப்படவில்லை. விண்ணப்பப் புலங்கள் ஒப்படை நிலங்கள் இல்லை. பஞ்சமி நிலங்கள் இல்லை. அரசால் ஆர்ஜிதம் செய்ய உள்ள நிலங்கள் இல்லை. PACL நிறுவனத்திற்கு சொந்தமான நிலங்கள் இல்லை. மேற்படி புலத்தில் உள்ளே மின்கோபுரம் இல்லை. புராதானச்சின்னங்கள் மற்றும் தொல்லியல் துறைக்கு சொந்தமான நிலங்கள் ஏதுமில்லை.

எனவே, மனுதாரர் சாதாரண கற்கள் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குவாரி குத்தகை உரிமம் கோரும் புல எண்ணில் சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் திரு. அம்மாவாசை த/பெ. சின்னையா என்பவருக்கு சிறுகனிம விதிகளின்படி நடவடிக்கை மேற்கொள்ளலாம்.


வட்டாட்சியர்,
திருப்பத்தூர்.

39.செவ்வூர் குரூப் கிராம நிருவாக அலுவலர் வாக்குமூலம்.

சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் உள்ள மொத்த பரப்பு 1.35.33 ஹெக்டேர் நில பரப்பில் சாதாரண கற்கல் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் கோரி திரு. அம்மாவாசை என்பவர் அளித்துள்ள மனு தொடர்பாக மேற்படி புலங்களை ஸ்தலப்பார்வை செய்தும், விசாரணை மேற்கொண்டும் எனதறிக்கையினை கீழ்க்கண்டவாறு தெரிவித்துக் கொள்கிறேன்.

மனுதாரர் கோரும் புலமானது சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமக் கணக்குகளில் கீழ்க்கண்டுள்ளவாறு தாக்கலாகியுள்ளது.

வ. எண்.	புல எண்	விஸ்தீரணம்	தீர்வை	வகைப்பாடு	குறிப்புரை
1	117/5B2	0.37.33	1.00	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
2	118/4	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
3	118/5	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
4	118/6A	0.12.00	0.30	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
5	119/3	0.58.00	1.61	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை

புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய் நிலத்திற்கு நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 117/5B1 - தையல்நாயகி
தெற்கு : புலஎண்: 120/1 - பாதை
மேற்கு : புலஎண்: 117/5A - லெட்சுமணன்
கிழக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3- அய்யனார் பாறை
தெற்கு : புலஎண்: 119/1, - பழனியப்பன் வகை
119/3, - அம்மாவாசை
மேற்கு : புலஎண்: 118/3 - அய்யனார் பாறை
கிழக்கு : புலஎண்: 118/5 - அம்மாவாசை

புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை
தெற்கு : புலஎண்: 119/3 - அம்மாவாசை
மேற்கு : புலஎண்: 118/4 - அம்மாவாசை
கிழக்கு : புலஎண்: 118/6A - அம்மாவாசை

புல எண்.118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை
தெற்கு : புலஎண்: 119/3 - அம்மாவாசை
மேற்கு : புலஎண்: 118/5 - அம்மாவாசை
கிழக்கு : புலஎண்: 118/6B - தையல்நாயகி

புல எண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/5 - அம்மாவாசை
118/6A - அம்மாவாசை
தெற்கு : புலஎண்: 122/1 - கணேசன்
122/3A - பழனியப்பன்
மேற்கு : புலஎண்: 119/1 - பழனியப்பன் வகை
119/2 - சிவக்குமார்
கிழக்கு : புலஎண்: 119/4 - புனிதவதி

1) விண்ணப்ப புலங்களுக்கு மனுதாரருக்கு குத்தகை உரிமம் வழங்குவது

தொடர்பாக செவ்வூர் வருவாய் கிராமத்தில் அ1 நோட்டீஸ் விளம்புகை செய்யப்பட்டதில்

ஆட்சேபனை வரப்பெறவில்லை.

2) விண்ணப்ப புலத்திலிருந்து 1கி.மீ. சுற்றளவிற்குள் பறவைகள் சரணாலயம், புலிகள் காப்பகம், யாணை வழித்தடம் ஏதுமில்லை.

3) விண்ணப்ப புலத்திலிருந்து 500 மீட்டர் சுற்றளவிற்குள் தொல்லியல் துறையின் பாதுகாக்கப்பட்ட பகுதிகள் ஏதுமில்லை.

4) விண்ணப்ப புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் குடியிருப்புகள், அங்கீகரிக்கப்பட்ட வீட்டு மனைகள், நத்தம் புறம்போக்கு நிலங்கள் ஏதுமில்லை.

5) விண்ணப்ப புலத்திலிருந்து 50 மீட்டர் சுற்றளவிற்குள் மின்கம்பிகள் / கம்பங்கள், நீர்நிலைகள், நெடுஞ்சாலைகள், இரயில் பாதைகள், மயானம், வழிபாட்டு தளங்கள், பொதுக்கட்டடம் / கிணறு போன்றவை ஏதுமில்லை.

6) விண்ணப்ப புலத்திலிருந்து 10 மீட்டர் சுற்றளவிற்குள் கிராமச் சாலைகள், வண்டிப்பாதை, அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை.

விண்ணப்பதாரர் மீது தமிழ்நாடு சிறு கனிம சலுகை விதிகள் 36(யு)ன் கீழ் தண்டம் ஏதும் நாளது தேதிவரை விதிக்கப்படவில்லை. விண்ணப்பப் புலங்கள் ஒப்படை நிலங்கள் இல்லை. பஞ்சமி நிலங்கள் இல்லை. அரசால் ஆர்ஜிதம் செய்ய உள்ள நிலங்கள் இல்லை. PACL நிறுவனத்திற்கு சொந்தமான நிலங்கள் இல்லை. மேற்படி புலத்தில் உள்ளே மின்கோபுரம் இல்லை. புரதானச்சின்னங்கள் மற்றும் தொல்லியல் துறைக்கு சொந்தமான நிலங்கள் ஏதுமில்லை.

எனவே, மனுதாரர் சாதாரண கற்கள் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குவாரி குத்தகை உரிமம் கோரும் புல எண்ணில் சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் திரு. அம்மாவாசை த/பெ. சின்னையா என்பவருக்கு சிறுகனிம விதிகளின்படி நடவடிக்கை மேற்கொள்ளலாம் என்பதனைப் பணிவுடன் தெரிவித்துக்கொள்கிறேன். இத்துடன் கிராமக் கணக்குகளின் நகல்களை இணைத்துள்ளேன் என்பதனைப் பணிவுடன் தெரிவித்துக்கொள்கிறேன்.

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கிராம நிர்வாக அலுவலர்
39, செவ்வூர் குடி
41, திருக்கோள்குடி குடி
01/11/2022

திருப்பத்தூர் வட்டாட்சியர் அவர்களுக்கு பணிந்நனுப்பப்படுகிறது:

சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் உள்ள மொத்த பரப்பு 1.35.33 ஹெக்டேர் நில பரப்பில் சாதாரண கற்கல் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் கோரி திரு. அம்மாவாசை என்பவர் அளித்துள்ள மனு தொடர்பாக மேற்படி புலங்களை ஸ்தலப்பார்வை செய்தும், விசாரணை மேற்கொண்டும் எனதறிக்கையினை கீழ்க்கண்டவாறு தெரிவித்துக் கொள்கிறேன்.

மனுதாரர் கோரும் புலமானது சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமக் கணக்குகளில் கீழ்க்கண்டுள்ளவாறு தாக்கலாகியுள்ளது.

வ. எண்.	புல எண்	விஸ்தீரணம்	தீர்வை	வகைப்பாடு	குறிப்புரை
1	117/5B2	0.37.33	1.00	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
2	118/4	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
3	118/5	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
4	118/6A	0.12.00	0.30	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
5	119/3	0.58.00	1.61	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை

புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய் நிலத்திற்கு நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 117/5B1 - தையல்நாயகி
தெற்கு : புலஎண்: 120/1 - பாதை
மேற்கு : புலஎண்: 117/5A - லெட்சுமணன்
கிழக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3- அய்யனார் பாறை
தெற்கு : புலஎண்: 119/1, - பழனியப்பன் வகை
119/3, - அம்மாவாசை
மேற்கு : புலஎண்: 118/3 - அய்யனார் பாறை
கிழக்கு : புலஎண்: 118/5 - அம்மாவாசை

புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை
தெற்கு : புலஎண்: 119/3 - அம்மாவாசை
மேற்கு : புலஎண்: 118/4 - அம்மாவாசை
கிழக்கு : புலஎண்: 118/6A - அம்மாவாசை

புல எண்.118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை
தெற்கு : புலஎண்: 119/3 - அம்மாவாசை
மேற்கு : புலஎண்: 118/5 - அம்மாவாசை
கிழக்கு : புலஎண்: 118/6B - தையல்நாயகி

புல எண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/5 - அம்மாவாசை
118/6A - அம்மாவாசை
தெற்கு : புலஎண்: 122/1 - கணேசன்
122/3A - பழனியப்பன்
மேற்கு : புலஎண்: 119/1 - பழனியப்பன் வகை
119/2 - சிவக்குமார்
கிழக்கு : புலஎண்: 119/4 - புனிதவதி

1) விண்ணப்ப புலங்களுக்கு மனுதாரருக்கு குத்தகை உரிமம் வழங்குவது

தொடர்பாக செவ்வூர் வருவாய் கிராமத்தில் அ1 நோட்டீஸ் விளம்புகை செய்யப்பட்டதில்

ஆட்சேபனை வரப்பெறவில்லை.

2) விண்ணப்ப புலத்திலிருந்து 1கி.மீ. சுற்றளவிற்குள் பறவைகள் சரணாலயம், புலிகள் காப்பகம், யாணை வழித்தடம் ஏதுமில்லை.

3) விண்ணப்ப புலத்திலிருந்து 500 மீட்டர் சுற்றளவிற்குள் தொல்லியல் துறையின் பாதுகாக்கப்பட்ட பகுதிகள் ஏதுமில்லை.


4) விண்ணப்ப புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் குடியிருப்புகள், அங்கீகரிக்கப்பட்ட வீட்டு மனைகள், நத்தம் புறம்போக்கு நிலங்கள் ஏதுமில்லை.

5) விண்ணப்ப புலத்திலிருந்து 50 மீட்டர் சுற்றளவிற்குள் மின்கம்பிகள் / கம்பங்கள், நீர்நிலைகள், நெடுஞ்சாலைகள், இரயில் பாதைகள், மயானம், வழிபாட்டு தளங்கள், பொதுக்கட்டடம் / கிணறு போன்றவை ஏதுமில்லை.

6) விண்ணப்ப புலத்திலிருந்து 10 மீட்டர் சுற்றளவிற்குள் கிராமச் சாலைகள், வண்டிப்பாதை, அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை.

விண்ணப்பதாரர் மீது தமிழ்நாடு சிறு கனிம சலுகை விதிகள் 36(யு)ன் கீழ் தண்டம் ஏதும் நாளது தேதிவரை விதிக்கப்படவில்லை. விண்ணப்பப் புலங்கள் ஒப்படை நிலங்கள் இல்லை. பஞ்சமி நிலங்கள் இல்லை. அரசால் ஆர்ஜிதம் செய்ய உள்ள நிலங்கள் இல்லை. PACL நிறுவனத்திற்கு சொந்தமான நிலங்கள் இல்லை. மேற்படி புலத்தில் உள்ளே மின்கோபுரம் இல்லை. புரதானச்சின்னங்கள் மற்றும் தொல்லியல் துறைக்கு சொந்தமான நிலங்கள் ஏதுமில்லை.

எனவே, மனுதாரர் சாதாரண கற்கள் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குவாரி குத்தகை உரிமம் கோரும் புல எண்ணில் சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் திரு. அம்மாவாசை த/பெ. சின்னையா என்பவருக்கு சிறுகனிம விதிகளின்படி நடவடிக்கை மேற்கொள்ளலாம் என்பதனைப் பணிவுடன் தெரிவித்துக்கொள்கிறேன். இத்துடன் செவ்வூர் குருப் கிராம நிர்வாக அலுவலர் வாக்குமூலம் மற்றும் கிராமக் கணக்குகளின் நகல்களை இணைத்துள்ளேன்.


வருவாய் ஆய்வாளர்
இளையாத்தங்குடி உள்வட்டம்
கருப்பத்தூர் வட்டம்

திருப்பத்தூர் வட்டாட்சியர் அவர்களுக்கு பணிந்தனுப்பப்படுகிறது:

சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீர்ணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீர்ணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீர்ணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீர்ணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீர்ணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் உள்ள மொத்த பரப்பு 1.35.33 ஹெக்டேர் நில பரப்பில் சாதாரண கற்கல் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குத்தகை உரிமம் கோரி திரு. அம்மாவாசை என்பவர் அளித்துள்ள மனு தொடர்பாக மேற்படி புலங்களை ஸ்தலப்பார்வை செய்தும், விசாரணை மேற்கொண்டும் எனதறிக்கையினை கீழ்க்கண்டவாறு தெரிவித்துக் கொள்கிறேன்.

மனுதாரர் கோரும் புலமானது சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமக் கணக்குகளில் கீழ்க்கண்டுள்ளவாறு தாக்கலாகியுள்ளது.

வ. எண்.	புல எண்	விஸ்தீர்ணம்	தீர்வை	வகைப்பாடு	குறிப்புரை
1	117/5B2	0.37.33	1.00	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
2	118/4	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
3	118/5	0.14.00	0.38	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை
4	118/6A	0.12.00	0.30	ர.புன்செய்	பட்டா எண்.901. சின்னையா மகன் அம்மாவசை
5	119/3	0.58.00	1.61	ர.புன்செய்	பட்டா எண்.916. சின்னையா மகன் அம்மாவசை

புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய் நிலத்திற்கு நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 117/5B1 - தையல்நாயகி
தெற்கு : புலஎண்: 120/1 - பாதை
மேற்கு : புலஎண்: 117/5A - லெட்சுமணன்
கிழக்கு : புலஎண்: 118/3 - அய்யனார் பாறை

புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3- அய்யனார் பாறை
தெற்கு : புலஎண்: 119/1, - பழனியப்பன் வகை
119/3, - அம்மாவாசை
மேற்கு : புலஎண்: 118/3 - அய்யனார் பாறை
கிழக்கு : புலஎண்: 118/5 - அம்மாவாசை

புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை
தெற்கு : புலஎண்: 119/3 - அம்மாவாசை
மேற்கு : புலஎண்: 118/4 - அம்மாவாசை
கிழக்கு : புலஎண்: 118/6A - அம்மாவாசை

புல எண்.118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/3 - அய்யனார் பாறை
தெற்கு : புலஎண்: 119/3 - அம்மாவாசை
மேற்கு : புலஎண்: 118/5 - அம்மாவாசை
கிழக்கு : புலஎண்: 118/6B - தையல்நாயகி

புல எண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலத்தின் நான்குமால் கீழ்க்கண்டவாறு உள்ளது.

வடக்கு : புலஎண்: 118/5 - அம்மாவாசை
118/6A - அம்மாவாசை
தெற்கு : புலஎண்: 122/1 - கணேசன்
122/3A - பழனியப்பன்
மேற்கு : புலஎண்: 119/1 - பழனியப்பன் வகை
119/2 - சிவக்குமார்
கிழக்கு : புலஎண்: 119/4 - புனிதவதி

1) விண்ணப்ப புலங்களுக்கு மனுதாரருக்கு குத்தகை உரிமம் வழங்குவது தொடர்பாக செவ்வூர் வருவாய் கிராமத்தில் அ1 நோட்டீஸ் விளம்புகை செய்யப்பட்டதில் ஆட்சேபனை வரப்பெறவில்லை.

2) விண்ணப்ப புலத்திலிருந்து 1கி.மீ. சுற்றளவிற்குள் பறவைகள் சரணாலயம், புலிகள் காப்பகம், யானை வழித்தடம் ஏதுமில்லை.

3) விண்ணப்ப புலத்திலிருந்து 500 மீட்டர் சுற்றளவிற்குள் தொல்லியல் துறையின் பாதுகாக்கப்பட்ட பகுதிகள் ஏதுமில்லை.

4) விண்ணப்ப புலத்திலிருந்து 300 மீட்டர் சுற்றளவிற்குள் குடியிருப்புகள், அங்கீகரிக்கப்பட்ட வீட்டு மனைகள், நத்தம் புறம்போக்கு நிலங்கள் ஏதுமில்லை.

5) விண்ணப்ப புலத்திலிருந்து 50 மீட்டர் சுற்றளவிற்குள் மின்கம்பிகள் / கம்பங்கள், நீர்நிலைகள், நெடுஞ்சாலைகள், இரயில் பாதைகள், மயானம், வழிபாட்டு தளங்கள், பொதுக்கட்டடம் / கிணறு போன்றவை ஏதுமில்லை.

6) விண்ணப்ப புலத்திலிருந்து 10 மீட்டர் சுற்றளவிற்குள் கிராமச் சாலைகள், வண்டிப்பாதை, அரசு புறம்போக்கு நிலங்கள் ஏதுமில்லை.

விண்ணப்பதாரர் மீது தமிழ்நாடு சிறு கனிம சலுகை விதிகள் 36(யு)ன் கீழ் தண்டம் ஏதும் நாளது தேதிவரை விதிக்கப்படவில்லை. விண்ணப்பப் புலங்கள் ஒப்படை நிலங்கள் இல்லை. பஞ்சமி நிலங்கள் இல்லை. அரசால் ஆர்ஜிதம் செய்ய உள்ள நிலங்கள் இல்லை. PACL நிறுவனத்திற்கு சொந்தமான நிலங்கள் இல்லை. மேற்படி புலத்தில் உள்ளே மின்கோபுரம் இல்லை. புரதானச்சின்னங்கள் மற்றும் தொல்லியல் துறைக்கு சொந்தமான நிலங்கள் ஏதுமில்லை.

எனவே, மனுதாரர் சாதாரண கற்கள் வெட்டி எடுக்க 10 வருடங்களுக்கு குவாரி குவாரி குத்தகை உரிமம் கோரும் புல எண்ணில் சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி உள்வட்டம், 39.செவ்வூர் வருவாய் கிராமம் புல எண்.117/5B2, விஸ்தீரணம்: 0.37.33 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/4, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், புல எண்.118/5, விஸ்தீரணம்: 0.14.00 ஹெக்டேர் ரயத்து புன்செய், 118/6A, விஸ்தீரணம்: 0.12.00 ஹெக்டேர் ரயத்து புன்செய் மற்றும் புலஎண்.119/3, விஸ்தீரணம்: 0.58.00 ஹெக்டேர் ரயத்து புன்செய் நிலங்களில் திரு. அம்மாவாசை த/பெ. சின்னையா என்பவருக்கு சிறுகனிம விதிகளின்படி நடவடிக்கை மேற்கொள்ளலாம் என்பதனைப் பணிவுடன் தெரிவித்துக்கொள்கிறேன். இத்துடன் வருவாய் ஆய்வாளர் அறிக்கை, செவ்வூர் குருப் கிராம நிர்வாக அலுவலர் வாக்குமூலம் மற்றும் கிராமக் கணக்குகளின் நகல்களை இணைத்துள்ளேன்.


மாவட்ட லாசு உணவை மட்டாட்சியர்
திருப்பத்தூர்

MATHA EXPLOSIVES
S.MARIANATHAN,
57/1,MAHARAJAPURAM 3RD STREET,THIRUKKOGARNAM,
PUDUKKOTTAI-622001.TAMIL NADU. CELL No: 94422 07256

DATE: **10.02.2023**

C.Ammavasai
S/o. Chinnaiah
No.564,Minnalkudi, Thirukolakudi,
Kuruvikondanpatti,Thiruppathur Taluk
Sivagangai District.

Dear Sir,

Sub: Regarding Blasting work using explosives in your proposed quarry
Ref: Your letter dt.09.02.2023

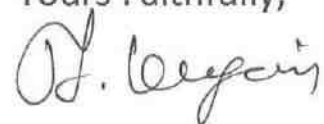
We are having explosive licence no.E/SC/TN/22/444(E25277) situated in Survey No.519/1A, Vellanoor village, Kolathur Taluk, Pudukkottai, Tamilnadu. Our office functioning at 57/1, Maharajapuram, 3rd street, Thirukokarnam, Pudukkottai – 622 001.

We are enacting 2 explosive vans for transporting detonators and class 2 explosives separately from our magazine to work site and well experienced and licensed blaster and shortfirer for safe blasting work since 16 years.

We are willing to undertake blasting work on contract basis at your SF nos. 118/4, 118/5, 118/6A & 119/3 over an total extent 0.98.0 ha – Sevvur Village, Thirupathur Taluk, Sivagangai District, Tamilnadu.

Thanking you.

Yours Faithfully,



अनुज्ञापन प्ररूप एल. ई.-3 | LICENCE FORM LE-3

(विस्फोटक नियम, 2008 की अनुसूची 4 के भाग 1 के अनुच्छेद 3(क) से (घ) देखिए।)
(See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)(ग) उपयोग के लिए एक समय पर वर्ग 1, 2, 3, 4, 5 या वर्ग 7 के विस्फोटक या किसी मैगजीन में वर्ग 6 के विस्फोटक रखने
Licence to possess - (c) for use explosives of class 1, 2, 3, 4, 5, 6 or 7 in a magazineअनुज्ञापन सं. (Licence No.): E/SC/TN/22/444(E25277)
वार्षिक फीस रुपए (Annual Fee Rs): 3600/-

Licence is hereby granted to

M/s MATHA EXPLOSIVES (अधिभोगी / Occupier : S. Mariannan), 57/1, Maharajapuram, 3rd Street,
Thirukokarnam, Pudukkottai, Town/Village - Thitukokarnam, District-PUDUKKOTTAL, State-Tamil Nadu, Pincode - 622002

को अनुज्ञापन अनुदत्त की जाती है।

2. अनुज्ञापनधारी की प्रास्थिति | Status of licensee : Partnership Firm

3. अनुज्ञापन निम्नलिखित प्रयोजनों के लिए विधिमान्य है।

Licence is valid only for the following purpose.

possess for use of Detonating Fuse, Safety Fuse, SI
के उपयोग के लिए4. अनुज्ञापन विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमान्य है।
Licence is valid for the following kinds and quantity of explosives. -- (क) (a)

क्र. सं. Sr. No.	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा किसी एक समय में Quantity at any one time
1	Slurry Explosives	2, 0	0	450 Kg
2	Detonators	6, 3	0	20000 Nos
3	Detonating Fuse	6, 2	0	5000 Mtrs
4	Safety Fuse	6, 1	0	10000 Mtrs

(श) किसी एक कैलेंडर मास में खरीदे जाने वाले विस्फोटक की मात्रा [अनुच्छेद 3(ख) और (ग) के अधीन अनुज्ञापन के लिए]

(b) Quantity of explosives to be purchased in a calendar month [applicable for licence under article 3(b) and (c)]

25 times
as above.

5. निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञापन परिसर की पुष्टि होती है।

The licensed premises shall conform to the following drawing(s).

रेखाचित्र क्र. (Drawing No.) E/SC/TN/22/444(E25277)
दिनांक (Dated) 19/04/20066. अनुज्ञापन परिसर निम्नलिखित पते पर स्थित हैं। The licensed premises are situated at following address:
Survey No(s): 5197/A, ग्राम (Town/Village): Vellanoor village, kolathur taluk

जिल्ला (District) PUDUKKOTTAI

राज्य (State)
ई-मेल (E-Mail)

Tamil Nadu

पुलिस थाना (Police Station): Thirukokarnam
पिनकोड (Pincode)
फैक्स (Fax)

7. अनुज्ञापन परिसर में निम्नलिखित सुविधाएं अंतर्भूत हैं।

The licensed premises consist of following facilities

Main room, lobby and detonator room

8. अनुज्ञापन समय-समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उनके अधीन विरचित विस्फोटक नियम, 2004 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित
उपबंधों के अधीन रहते हुए अनुदत्त की जाती है।
The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2004 framed there under and the conditions, additional conditions and the following Annexures

- उपरोक्त क्रम सं. 5 में यथा कथित रेखाचित्र (स्थान, सज्जिमाण संबंधी और अन्य विवरण दर्शित करते हुए)
Drawings (showing site, constructional and other details) as stated in serial No. 5 above.
- अनुज्ञापन प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञापन की शर्तों और अतिरिक्त शर्तों।
Conditions and Additional Conditions of this licence signed by the licensing authority.
- दूरी प्ररूप DE-2 | Distance Form DE-2.

9. यह अनुज्ञापन तारीख 31 मार्च 2008 तक (वैधमान्य रहेगी) | This licence shall remain valid till 31st day of March 2008.

यह अनुज्ञापन अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपबर्णित इस अनुज्ञापन की शर्तों का अधिकमण करने
या यदि अनुज्ञापन परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिगृह्य की जा सकती है, जहां वह लागू हो।
This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII,
wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure
attached hereto

तारीख The Date - 19/04/2006

संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives
South Circle, Chennai

Amendments :

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 12/10/2012
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 27/03/2014
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 09/05/2014

नवीनीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewalनवीकरण की तारीख
Date of Renewal

16/03/2021

समाप्त की तारीख
Date of Expiry

31/03/2026

अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प
Signature of licensing authority and stamp

J. Chief Controller of Explosives, South Circle, Chennai

कानूनी चेतावनी : विस्फोटकों का गलत ढंग से चलाना या उनका दुरुपयोग विधि के अधीन गंभीर दंड्य अपराध होगा।
Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.Note :- This is system generated document does not require signature.
Applicant may take printout for their records.

Form DE-2
(See rule 113 of the Explosives Rules, 2008)
(Distance Form to be attached to the licence)

Safety distances required to be kept clear around magazine for high explosives or fire works or factory licence number E/SC/TN/22/444(E25277) in form LE-3 granted to M/s MATHA EXPLOSIVES, 57/1, Maharajapuram, 3rd Street, Thirukokarnam, Pudukkottai, Tamil Nadu- .

Type of Structure(s)	Safety distances meters	
	M	UM
Inside Safety Distances(ISD)		
1 Room or Workshop used in Connection with the Magazine	21	31
2 Any other Explosives Magazine or store House or Factory of the Applicant		
3 Magazine Office		
Middle Safety Distances(MSD)		
4 Magazine Keeper's or Chowkidar's Dwelling house		
5 Railway including Minerals and Private Railways		
6 Canal (in active use) or other navigable water		
7 Dock or Pier or Jetty		
8 Public Highway or Public Road		54
9 Private Road which is PRINCIPAL means of access to a Temple, Mosque, Church, Gurudwara or other places of worships, Hospital, College, School or Factory		
10 River Embankment or Sea Embankment or Public Well		
11 Reservoir or Bounded tank/rope way		
12 Windmillor or Solar panel for Power Generation		
Outside Safety Distances(OSD)		
13 Dwelling House		
14 Govt. and Public Building		
15 Temple, Mosque, Church or Gurudwara or other Places of Worships		
16 Shops, Market place, Public recreation and Sports Ground, College, School, Hospital, Theater, Cinema or other Building where the public are accustomed to assemble		
17 Factory		
18 Buildings or Works used for the Storage in Bulk of Petroleum, Sprit, gas, or other inflammable or hazardous substances		107
19 Building or Works used for Storage and Manufacture of Explosives or of articles which contain Explosives		
20 Aerodrome		
21 Furnace, Kiln or Chimney		
22 Quarry or mine pit head		
23 Power House or Electric Substation		
24 Wireless Station		
25 Warehouse or other Storage Building		
26 Any other Protected works		
Overhead Electric lines		
27 Electric Power over head Transmission Lines above 440V	90	
28 Electric Power over head Transmission Lines upto 440V	15	

The Date : 19/04/2006

For Joint Chief Controller of Explosives
South Circle, Chennai

Amendments :

- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 12/10/2012
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 27/03/2014
- Amendment of Quantity of Explosives/Monthly Purchase Limit dated : 09/05/2014

Note :- This is system generated document does not require

(सेट VIII, Set VIII)

मैगजीन में वर्ग 1, 2, 3, 4, 5, 6, और 7 के विस्फोटकों को विक्री या प्रयोग हेतु रखने के लिए प्ररूप एल.ई. 3 (अनुच्छेद 3 (ख) से (ग)) में मुख्य विस्फोटक नियंत्रक या विस्फोटक नियंत्रक द्वारा प्रदान किए जाने वाले अनुज्ञापि सं. E/SC/TN/22/444(E25277) की शर्तें निम्नलिखित हैं।
The following are the conditions of licence number E/SC/TN/22/444(E25277) to possess for sale or use, explosives of Class 1, 2, 3, 4, 5, 6 and 7 in a magazine in Form I.E-3 (articles 3(b) to (c)) granted by Chief controller of Explosives or Controller of Explosives.

- परिसर में किसी भी समय विस्फोटकों की मात्रा अनुज्ञापन श्रेण्य सामर्थ्य से अधिक नहीं होगी।
The quantity of explosives on the premises at any one time shall not exceed the licensable capacity.
- विस्फोटकों के भंडारण के लिए प्रयुक्त होने वाली मैगजीन अनुसूची III और अनुज्ञापि के उपाबंध में विनिर्दिष्ट सुरक्षा दूरी बनाए रखना होगा।
The magazine used for storage of explosives shall maintain safety distance specified in Schedule III and annexure to the licence.
- मैगजीन का प्रयोग उन सभी विस्फोटकों के जो इस अनुज्ञापि में विनिर्दिष्ट हैं, रखे जाने के लिए और ऐसे रखे जाने से संबद्ध आधान या औजार या उपकरणों के रखे जाने के लिए ही किया जाएगा, अन्यथा नहीं।
The magazine shall be used only for keeping all explosives specified in this licence and of receptacles for, or tools or implements for work connected with the keeping of such explosives.
- पैकजों को खोलने का कार्य और विस्फोटकों को तोलने तथा पैक करने का कार्य मैगजीन में नहीं किया जाएगा।
The opening of packages and the weighing and packing of explosives shall not be carried on in the magazine.
- दो या दो से अधिक वर्णन के विस्फोटकों को, जिन्हें मैगजीन में रखे जाने की अनुज्ञा दी जा सकती है, मैगजीन में तभी रखे जाएंगे जब उनमें से प्रत्येक को, ऐसे पदार्थ या स्वरूप का कोई मध्यवर्ती विभाजक लगाकर या उनके बीच ऐसा मध्यवर्ती स्थान छोड़कर परस्पर भूयक कर दिया जाए कि किसी वजह से विस्फोटक में लगने वाली आग या होने वाला विस्फोट किसी अन्य वर्णन के विस्फोटक तक न पहुंच सके परंतु—
(ध) 2 (नाइट्रेट मिश्रण), वर्ग 3 (नाइट्रो योगिक) के विभिन्न विस्फोटक, वर्ग 6 प्रथम प्रभाग के अंतर्गत आने वाले सुरक्षा पत्तियों और वर्ग 6 प्रभाग 2 के अंतर्गत आनेवाले विस्फोटक प्रेरक पत्तियों, जिनमें कोई खुला लोहा या इस्पात नहीं है, एक दूसरे के साथ बिना किसी मध्यवर्ती विभाजक या स्थापन के रखे जा सकते हैं।
(द) वर्ग 6 प्रभाग 3 के अंतर्गत आनेवाले विस्फोटक प्रेरक अलग रखे जाएंगे।
(च) वर्ग 1 के अंतर्गत आने वाले बारूद को अलग रखा जाएगा।
Two or more description of explosives which may be permitted to be kept in the magazine shall be kept only if they are separated from each other by an intervening partition of such substance or character, or by such intervening space, as will effectually prevent explosion or fire in the one communicating with the other, Provided that—
(d) the various explosives of Class 2 (nitrate-mixture), Class 3 (nitro-compound), safety fuses belonging to Class 6 Division 1 and detonating fuses belonging to Class 6 Division 2 as do not contain any exposed iron or steel, may be kept with each other without any intervening partition or space;
(e) Detonators belonging to Class 6 Division 3 shall be kept separately.
(f) Gun powder belonging to Class 1 shall be kept separately.
- वर्ग 3 (नाइट्रो योगिक) के विस्फोटकों को, उनके विनिर्माण की तारीख से एक वर्ष बीत जाने के पश्चात् सिवाय अनुज्ञापन प्राधिकारी की विशेष मंजूरी के मैगजीन में नहीं रखा जाएगा।
Explosives of Class 3 (nitro compound) shall not be kept in the magazine after the expiration of one year from the date of their manufacture except with the special sanction of licensing authority.
- वर्ग 3 (नाइट्रो योगिक) के विस्फोटकों को, उनके विनिर्माण की तारीख से एक वर्ष बीत जाने के पश्चात् मैगजीन में तभी रखा जाएगा जब कि किसी विस्फोटक नियंत्रक में इसके लिए विशेष मंजूरी दे दी हो।
(1) जब ऐसी मंजूरी दे दी गई हो तो प्रत्येक निरीक्षण पर किसी विस्फोटक नियंत्रक से ऐसा लिखित प्रमाणपत्र अभिप्राप्त कर लिया जाए जिसमें दी गई मंजूरी के अंतर्गत आनेवाली अवधि दर्शित की गई हो और ऐसे प्रमाणपत्र के अनुज्ञापिधारी अपने पास रखेगा और मांग की जाने पर प्रस्तुत करेगा।
(2) जब कोई विस्फोटक मानक शुद्धता का न रह जाने के कारण या द्रवणीकरण या नाइट्रो ग्लाइसरीन या द्रव नाइट्रो योगिक के निकल जाने के चिन्ह प्रकट होने के कारण मैगजीन में भण्डारित किए जाने के उपयुक्त नहीं रह जाता है तो अनुज्ञापिधारी अपने ही व्यय पर ऐसे विस्फोटक के निपटारे के लिए ऐसे निदेशों का अनुपालन करेगा जो मुख्य नियंत्रक या विस्फोटक नियंत्रक जारी करें।
Explosives of Class 3 (nitro compound) shall not be kept in the magazine after the expiration of one year from the date of their manufacture except with the special sanction of the Controller of Explosives.
(1) When such sanction has been given, a written certificate showing the period covered by the sanction shall be obtained from the Controller of Explosives at each inspection, and shall be kept by the licensee and produced on demand.
(2) When an explosive owing to its being no longer of standard purity or owing to signs of liquefaction or of exuded nitro-glycerin or liquid nitro-glycerin or liquid nitrocompound is no longer fit for storage in the magazine or store house the licensee shall comply, at his own expense, with such directions as to its disposal as the Chief Controller or Controller of Explosives may issue.
- मैगजीन के भीतरी भाग या उसमें लगी बेंचों, शेल्फों और उसकी फिटिंग का इस प्रकार सन्निर्माण किया जाएगा या उन्हें इस प्रकार अंतरित या अवतरित किया जाएगा कि विस्फोटक का किसी लोहे या इस्पात के साथ संपर्क सेका जा सके। भीतरी भाग में लगी बेंचे, शेल्फें और फिटिंग यथासाध्य फ्रिट से मुक्त एवं साफ रखे जाएंगे तथा ऐसे विस्फोटक, जो जल से खतरनाक रूप में प्रभावित हो सकते हैं, इस बावत सम्यक सावधानी बरती जाएगी कि वहां कोई जल मौजूद न रहे; परंतु किसी लोहे या इस्पात के खुले होने के विरुद्ध सावधानी से संबंधित इस शर्त का वह भाग ऐसे किसी भवन में बाधकर नहीं होगा जिसमें वर्ग 6 (गोला बारूद) के प्रथम के विस्फोटक से भिन्न कोई विस्फोटक रखा गया है।
The interior of the magazine and the benches, shelves and fittings therein shall be so constructed or so lined or covered as to prevent the exposure of any iron or steel contact with the explosives. Such interior, benches, shelves and fittings shall so far as is reasonably practicable, be kept free from grit and shall otherwise be clean, and in the case of any explosives liable to be dangerously affected by water, due precautions shall be taken to exclude water there from.
Provided that so much of this condition as relates to precautions against the exposure of any iron or steel shall not be obligatory in a building in which no explosive other than explosive of the 1st Division 6th (Ammunition) Class is kept.
- यदि तड़ित चालक का परीक्षण विस्फोटक नियंत्रक करता है तो अनुज्ञापिधारी ऐसे परीक्षण के लिए विहित फीस का संदाय करेगा यदि परीक्षण असामान्यकारी साबित होता है तो उसकी ही फीस अनुज्ञापिधारी द्वारा पश्चात्वाती प्रत्येक परीक्षण के लिए तब तक दी जाती रहेगी जब तक कि परीक्षण अधिकारी तड़ित चालक को सहाय्यकर भूमित नहीं कर देता।
परंतु किसी एक परीक्षण के लिए देय फीस किसी एक दिन के दौरान किसी चालक के किए गए सभी परीक्षणों के लिए प्रभार्य होगा।
परंतु यह और कि यदि दो या अधिक तड़ित चालक एक ही मैगजीन से संबद्ध हैं तो ऐसे सभी चालकों के परीक्षण के लिए फीस ऐसी किसी फीस से अधिक नहीं होगी जो किसी एक तड़ित चालक के परीक्षण के लिए हर स्थिति में विहित की गई है।
If the lightning conductor is tested by the Controller of Explosives, the licensee shall pay the fees prescribed for test. In the even of the test proving unsatisfactory, the same fees shall be payable by the licensee for each subsequent test until the lightning conductor is passed by the testing officer as satisfactory.
Provided that the fees payable for a single test shall be charged for all tests made on a conductor during any one day.
Provided further that where two or more lightning conductors are attached to one and the same magazine, the fee for the testing of all such conductors shall not exceed the fee prescribed in this condition for testing a single lightning conductor.
- उपयुक्त तथा जब रहित कार्यकरण वस्तु, उपयुक्त जूलों के प्रयोग द्वारा तथा तलाशी लेकर या अन्यथा अथवा ऐसे किन्हीं साधनों द्वारा इस बावत सम्यक उपबंध किया जाएगा कि फैक्ट्री परिसर में अग्नि, दिवासलाई अथवा इसी कोई वस्तुएं या पदार्थ, जिससे विस्फोट हो सकता है या आग लग सकती हो, किन्तु इस शर्त के कारण ऐसी संरचना स्थिति या स्वरूप में किसी कृत्रिम बत्ती का प्रवेश वर्जित नहीं है जिससे आग लगने या विस्फोट होने का खतरा न हो।
परंतु इस शर्त का वह भाग, जो लोहे या इस्पात के अपवर्जन को लागू होता है, ऐसे किसी भवन के संबंध में बाधक नहीं होगा जिससे भिन्न कोई विस्फोटक नहीं रखा गया है।
Due provisions shall be made, by the use of suitable working clothes without pockets, suitable shoes and by searching or otherwise or by such means, for preventing the introduction into danger area of the factory premises of fire Lucifer matches or any substance or article likely to cause explosion or fire, but this condition shall not prevent the introduction of an artificial light of such construction, position or character as not to cause any danger of fire or explosion.
Provided that so much of this condition as applies to the exclusion of iron or steel, shall not be obligatory in a building in which no explosive other than an explosive of the 1st Division of the 6th (Ammunition) Class is kept.

14. अनुज्ञापिका प्ररूप आर ई-3 और आर ई-4 या आर ई-5, जैसी स्थिति हो, में सभी विस्फोटकों का अभिलेख और लेखा रखेगा और विस्फोटक नियम, 2008 के अधीन प्राधिकृत किसी भी अधिकारी के सामने उसके द्वारा ऐसा करने की मांग की जाने पर स्टाक पुस्तक और अभिलेख प्रस्तुत करेगा। स्टाक पुस्तक विहित प्रारूप में पृष्ठ संख्यांकित होगी।
The licensee shall keep records and accounts of all explosives in Forms RE-3 and RE-4 or RE-5, as the case may be, and exhibit the stock books and records to any of the officers authorised under the Explosives Rules, 2008 whenever such officer may call upon him to do so. The stock books in the prescribed proforma shall be page numbered.
15. परिवर्तन में कोई परिवर्तन या तब्दीली अनुज्ञापन प्राधिकारी के पूर्वानुमोदन बिना नहीं की जाएगी और अनुज्ञापिका ऐसी किसी शर्त का अनुपालन करेगा जो इस विहित अनुज्ञापन प्राधिकारी विनिर्दिष्ट करे।
No changes or alterations shall be carried out to the premises without prior approval of the licensing authority and the licensee shall comply with any condition that may be specified by the licensing authority in this behalf.
16. मगजीन सभी समयों पर अच्छी मरम्मत की स्थिति में बनाई रखी जाएगी (या अच्छी हात में बनाई रखी जाएगी) यदि किसी कारणवश किसी विस्फोटक के भण्डारण के लिए मगजीन अनुपयुक्त हो जाती है तो अनुज्ञापिका इस बात की सूचना अनुज्ञापन प्राधिकारी को तुरंत देगा।
Magazine shall at all times be kept in state of good repair (or maintained in good condition). The licensee shall report to licensing authority forthwith, if the magazine becomes unfit for storage of any explosives for any reason whatsoever.
17. मगजीन का अनुज्ञापिका इन नियमों के नियम 24 के उप-नियम 3 के अनुसार त्रैमासिक विवरणी प्रस्तुत करेगा।
The licensee of the magazine shall submit quarterly return as per sub-rules (3) and (4) of rule 24 of these rules.
18. यदि सुरक्षा दूरी का कोई अधिक्रमण होता है तो उसकी सूचना अनुज्ञापन प्राधिकारी को आवश्यक सहाय और कार्यवाही के लिए तुरंत दी जाएगी।
Any encroachment of the safety distance shall be immediately communicated to the licensing authority for necessary advice and action.
19. यदि कोई विस्फोटक विनाश हुआ अथवा अनुपयोगी पाया जाता है तो उसकी सूचना अनुज्ञापन प्राधिकारी को, सलाह प्राप्त करने के लिए, तुरंत दी जाएगी।
The licensing authority shall be immediately informed for advice if any explosive is found deteriorated or unserviceable.
20. विस्फोटकों के पैकेटों के चट्टे इस प्रकार लगाए जाएंगे कि कम से कम एक व्यक्ति भण्डार किए गए सभी पैकेजों की हातों की जांच करने और प्रत्येक पैकेज की विनिर्माण विधिओं को पढ़ने के लिए उनके बीच से होकर आ जा सके।
The explosive packages shall be stocked in such a way as to allow movement of at least one person to check the condition of all packages stored and to read the manufacture particulars of each package.
21. लॉट चालकों की भूमि के लिए प्रतिरोध यथाभव न्यूनतम होगा और किसी भी दशा में 10 ओह्म से अधिक नहीं होगा।
The resistance of the lightning conductor to earth shall be as low as possible and in no case be more than 10 ohms.
22. मगजीन के चारों ओर 15 मीटर की दूरी के अंतर्गत कोई शुल्क धारा या झाड़ी या ज्वलनशील सामग्री नहीं रहने दी जाएगी।
A distance of 15 meters surrounding the magazine or store house shall be kept clear of dried grass or bush or flammable materials.
23. विस्फोटकों के प्रत्येक पैकेट की, जब उसे मगजीन के भीतर लिया जा रहा हो, ठीक दशा जानने के लिए परीक्षा की जाएगी।
Every package of explosive at the time of bringing inside the magazine shall be examined for its sound condition.
24. किसी मगजीन/ भण्डारगृह में किसी एक समय में चार व्यक्तियों से अधिक को नहीं रहने दिया जाएगा।
Not more than 4 persons shall be allowed inside the magazine or store house at any one time.
25. विस्फोटकों के खाली पैकेजों को शीघ्रतया वहां से हटा दिया जाएगा और नष्ट कर दिया जाएगा।
Empty packages of the explosives shall be removed at the earliest and destroyed.
26. अनुज्ञापिका और कर्मचारियों को परिसर के भीतर आपातकाल के दौरान की जाने वाली क्रियाओं से अवगत होना चाहिए।
The licensee and the employee shall be conversant with procedure to be taken during the emergency within the premises.
27. निरीक्षण या नमूना अधिकारी को सभी युक्तियुक्त समयों पर अनुज्ञापन परिसर में अबाध रूप से पहुंचने दिया जाएगा और यह सुनिश्चित करने के लिए कि अधिनियम और इन नियमों के उपबन्धों और सुरक्षा स्थितियों को सम्यक्त अनुपालन किया जा रहा है अधिकारी को प्रत्येक सुविधा प्रदान की जाएगी।
Free access to the licensed premises shall be given at all reasonable times to any inspecting or sampling officer and every facility shall be afforded to the officer for ascertaining that the provisions of the Act and these rules and the safety conditions are duly observed.
28. यदि अनुज्ञापन प्राधिकारी या विस्फोटक नियंत्रक अनुज्ञापिका को अनुज्ञापन परिसरों या मशीनरी, टूल या उपकरण में ऐसी कोई मरम्मत या परिवर्तन या परिवर्तन करने या शिफारिशों को लागू करने को लिखित रूप में सूचित करता है जो परिसर के अंदर या बाहर या व्यक्तियों की सुरक्षा के लिए आवश्यक है, अनुज्ञापिका शिफारिशों को निश्चित करेगा और विनिर्दिष्ट अवधि के भीतर अनुपालन रिपोर्ट ऐसे प्राधिकारी को देगा।
If the licensing authority or a Controller of Explosives informs in writing, the holder of the licence to execute any repairs or to make any additions or alterations to the licensed premises or machinery, tools or apparatus or carry out recommendations, which are in the opinion of such authority may pose unacceptable risk and so necessary for the safety of either on-site or off-site of the premises or persons, the holder of the licence shall execute the recommendations and report compliance within the period specified by such authority.
29. अनुज्ञापिका मगजीन में रखने और बिक्री के लिए प्राधिकृत विस्फोटक सूची में उल्लिखित अनुज्ञापन फैक्टरी या कंपनी से प्राधिकृत विस्फोटक, अतिशबाजी या सुरक्षा पसंदिग्ध खरीदेगा।
The licensee shall purchase authorised explosives/ fireworks or safety fuse as mentioned in the list authorised explosives from a licensed factory or company for possession and sale from the magazine.
30. निम्न से अधिक ध्वनि स्तर उत्पादित करने वाले अतिशबाजियों पटाखों की बिक्री और रखने के लिए
(क) जो फटने की जगह से चार मीटर की दूरी पर है, 125 डी.बी.(ए) या 145 डी.बी.(सी)पी के प्रतिबंधित होंगे;
(ख) शृंखला (खुड़े हुए पटाखे) को गठन करने वाले व्यक्तिगत पटाखों के लिए उपर्युक्त उल्लिखित सीमा 5 लॉग 10(एन) डी.बी. (सी) पी के प्रतिबंधित होंगे।
The possession and sale of fire-crackers constituting the series (joined fire-crackers), the above mentioned limit be reduced by 5 log₁₀ (N) dB; where N = number of crackers joined together.
31. अथवा विस्फोटक द्वारा दुर्घटना या नुकसान पटाखों की कमी या चोरी, तुरंत पास के पुलिस थाने और अनुज्ञापन प्राधिकारी और अनुज्ञापन प्राधिकारी के स्थानीय कर्मचारियों को रिपोर्ट की जाएगी।
Accidents by fire or explosion and losses, shortage or theft of explosives shall be immediately reported to the nearest police station and the licensing authority and local office of the licensing authority.

अतिरिक्त शर्तें / Additional Conditions :

1. अनुज्ञापिका विदेशी मूल के अतिशबाजी को ना प्रदर्शित करेगा, ना रखेगा और ना ही उसकी बिक्री करेगा। The licensee shall not exhibit, possess and sell fireworks of foreign origin.

कृते संयुक्त मुख्य विस्फोटक नियंत्रक
For Joint Chief Controller of Explosives
दक्षिणचल, चेंने; South Circle, Chennai

**Note :- This is system generated document does not require signature.
Applicant may take printout for their records.**



भारत सरकार | Government of India
 वाणिज्य और उद्योग मंत्रालय | Ministry of Commerce & Industry
 पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पेसो) | Petroleum & Explosives Safety Organisation (PESO)
 पूर्व नाम- विस्फोटक विभाग | Formerly- Department of Explosives
 A और D - विंग, ब्लॉक 1-8, दूसरा तल, शास्त्री भवन | A & D - Wing, Block 1-8, IInd Floor, Shastri Bhuvan
 26 हड्डोस रोड, नुंगम्बक्कम चेन्नै | 26 Haddous Road, Nungambakkam Chennai 600006
 फोन (Phone)- 28281023 | फैक्स (Fax) - 28284848
 ई-मेल Email: jtee@chennai@explosives.gov.in

संख्या (No.) E/SC/TN/22/444(E25277)

दिनांक (Date) 16/03/2021

संवा में | To,

M/S MATHA EXPLOSIVES,

57/1, Maharajapuram, 3rd Street, Thirukokarnam, Pudukkottai Town/Village - Thirukokarnam

District-PUDUKKOTTAI, State-Tamil Nadu, Pincode - 622002

18 MAR 2021

विषय:

Survey No(s) 519/1A, ग्राम Vellanoor village, Kolathur taluk, जिला PUDUKKOTTAI, राज्य Tamil Nadu में विस्फोटक के मैगजीन में उपयोग के लिए कब्जा हेतु विस्फोटक नियम, 2008 के अंतर्गत LE-3 में जारी अनुज्ञप्ति सं E/SC/TN/22/444(E25277) के नवीनीकरण संदर्भ में।

Subject:

Possession for Use of of Explosives from magazine situated at Survey No(s) 519/1A, Vellanoor village, Kolathur taluk, Dist. PUDUKKOTTAI Tamil Nadu -I licence No. E/SC/TN/22/444(E25277) granted in Form LE-3 of Explosives Rules, 2008 - Renewal regarding

भवदीय | Sir

आपका उपरोक्त विषय पर पत्र संख्या X दिनांक 03/03/2021 का संदर्भ ग्रहण करें। विस्फोटक नियम, 2008 के अंतर्गत प्ररूप LE-3 में जारी अनुज्ञप्ति दिनांक 31/3/2026 तक नवीनीकृत कर इस पत्र के साथ भेजी जा रही है।

Reference to your letter No. X dated: 03/03/2021, the subject licence duly renewed upto 31/3/2026 and issued in Form LE-3 of Explosives Rules, 2008 is forwarded herewith.

अनुज्ञप्ति के आगामी नवीकरण हेतु कृपया निम्नलिखित दस्तावेज दिनांक 31/03/2026 से पहले इस कार्यालय को भेजे जाएं।

For further renewal of licence, please submit the following documents so as to reach this office on or before 31/3/2026.

- प्ररूप आरई-1 में विधिवत पूर्ण एवं हस्ताक्षरित आवेदन।
Application in Form RE-1 duly filled in and signed.
- एक से पाँच वर्ष के अनुज्ञप्ति शुल्क का, विस्फोटक नियम, 2008 के तहत ऑनलाइन आवेदन पोर्टल पर उपलब्ध ई-भुगतान सुविधा के माध्यम से लाइसेंस शुल्क ऑनलाइन जमा किया जाना है।
Licence fees renewable for one to five years, to be submitted online through e-payment facility available on online application portal under the Explosives Rules, 2008.
- अनुमोदित प्लान के साथ मूल अनुज्ञप्ति।
Original licence with approved plan.
- कृपया इस संबंध में विस्फोटक नियम, 2008 के नियम 112 का भी संदर्भ ग्रहण करें।
In this connection, please also refer to Rule 112 of Explosives Rules, 2008.
- विस्फोटकों के क्रय हेतु आरई-11 में मांगपत्र (इंडेंट) आपूर्तिकर्ता को दिया जाए और उसी की एक प्रति इस कार्यालय को भेजी जाए (अतिशबाजी गोदाम के लिए लागू नहीं)।
Indent for purchase of explosives shall be placed in RE-11 with the supplier and copy of the same shall be sent to this office (Not applicable for fireworks store house)
- कृपया विस्फोटकों की त्रैमासिक विवरणी हर तिमाही के अंत में आरई-7 में प्रस्तुत की जाए। विवरणी इस कार्यालय के कार्यालय में आगामी तिमाही के 10 तारीख से पहले पहुंचानी चाहिए (अतिशबाजी गोदाम के लिए लागू नहीं)। Please submit quarterly returns of explosives in RE-7 at the end of every quarter so as to reach this office by 10th of the succeeding quarter (Not applicable for fireworks store house)
- सभी ब्लास्टिंग ऑपरेशन एक संक्षम द्वारा की जाएगी जो उपरोक्त नियमों के तहत एक वैध शॉट फायर प्रमाणपत्र धारक हो। हालांकि, खान अधिनियम 1952 के अधीन आने वाले खानों में ब्लास्टिंग ऑपरेशन करने वाले ब्लास्टर की योग्यता उसी अधिनियम से निर्धारित हो।
All blasting operations shall be carried out by a competent person holding a valid shot firer's permit granted under above rules. However, blasting operations in mines coming under the purview of the Mines Act 1952, the blaster shall have qualifications prescribed in the regulations framed under the said Act

भवदीय | Your's faithfully

(AHIN NANBI)

उप विस्फोटक नियंत्रक | Dy. Controller of Explosives

कृते संयुक्त मुख्य विस्फोटक नियंत्रक | For Joint Chief Controller of Explosives

दक्षिणार्क, चेन्नै | South Circle, Chennai

प्रतिलिपि प्रेषित | Copy Forwarded to:

1. जिला मजिस्ट्रेट (District Magistrate), PUDUKKOTTAI (Tamil Nadu)- सूचना के लिए (for information)

कृते संयुक्त मुख्य विस्फोटक नियंत्रक | For Joint Chief Controller of Explosives

दक्षिणार्क, चेन्नै | South Circle, Chennai

(अधिक जानकारी जैसे आवेदन की स्थिति, शुल्क आदि के लिए हमारी वेबसाइट <http://peso.gov.in> देखें)
 (For more information regarding status, fees and other details please visit our website <http://peso.gov.in>)

**Note :- This is system generated document does not require signature.
 Applicant may take printout for their records.**

சீர்தரம்:-

சீர்தரம் செய்ய வேண்டிய தகவல்கள்

மேல்க்க: ~~சீர்தரம் செய்ய வேண்டிய தகவல்கள்~~ 2ம் பக்கம்

39. சீர்தரம் செய்ய வேண்டிய தகவல்கள்: 916 டி.நா.நா.நா. 118/4

பகுதி: 0.14.00 டி.நா.நா.நா. 118/5 பகுதி: 0.14.00

டி.நா.நா.நா. 119/3 பகுதி: 0.58.00 டி.நா.நா.நா. 901

டி.நா.நா.நா. 118/6A பகுதி: 0.12.00 டி.நா.நா.நா. சீர்தரம் செய்ய வேண்டிய தகவல்கள்

சீர்தரம் செய்ய வேண்டிய தகவல்கள்: சீர்தரம் செய்ய வேண்டிய தகவல்கள்

சீர்தரம் செய்ய வேண்டிய தகவல்கள்: சீர்தரம் செய்ய வேண்டிய தகவல்கள் 500.000

சீர்தரம் செய்ய வேண்டிய தகவல்கள்: சீர்தரம் செய்ய வேண்டிய தகவல்கள், சீர்தரம் செய்ய வேண்டிய தகவல்கள், சீர்தரம் செய்ய வேண்டிய தகவல்கள்

சீர்தரம் செய்ய வேண்டிய தகவல்கள்: சீர்தரம் செய்ய வேண்டிய தகவல்கள், சீர்தரம் செய்ய வேண்டிய தகவல்கள்

5 916
சீர்தரம் செய்ய வேண்டிய தகவல்கள்
39, செவ்வாய் குறுப்பு 01/2023
41, சீர்தரம் செய்ய வேண்டிய தகவல்கள்
சீர்தரம் செய்ய வேண்டிய தகவல்கள்
சீர்தரம் செய்ய வேண்டிய தகவல்கள்

TOPOGRAPHICAL VIEW OF SEVVUR
ROUGH STONE QUARRY LEASE APPLIED AREA



Name of the Applicant : **Thiru. C. Ammavasai,**
S/o. Chinnaiah,
Address : No.564, Minnalkudi, Thirukolakudi, Kuruvikondanpatti,
Thiruppattur Taluk, Sivagangai District – 622 409,
Tamil Nadu State.

Location:

S.F.Nos. : 118/4, 118/5, 118/6A & 119/3
Extent : 0.98.0Ha
Village : Sevvur
Taluk : Thiruppattur
District : Sivagangai

Signature of the applicant

(C. Ammavasai)

5. 295
சாமிநாதன் அம்மாவசாய்
(Village Administrative Officer)
39, செவ்வூர் குருதி/01/2023
41, திருக்கோண்டித்தருப்
இளையாத்தங்குடி உள் வட்டம்
திருப்பத்தூர் வட்டம்.

ந.க.எண் .1090/2023/வ நாள்: 02.02.2023

மாவட்ட வன அலுவலகம்
சிவகங்கை.

- பொருள்: வனம் - குவாரி அமைய உள்ள பகுதியில் இருந்து சுமார் 25 கி.மீ சுற்றளவில் உள்ள காப்புக்காடு, காப்புநிலம், பாதுகாக்கப்பட்ட பகுதி மற்றும் சுற்றுச்சூழல் உணர்திறன் பகுதி தொலைவு விபரங்கள் கேட்டல் - தொடர்பாக.
- பார்வை: 1. திருஅமாவாசை த/பெ சின்னையா,மின்னல்குடிகடிதநாள் 14.02.2023.
2. உதவி இயக்குநர், சிவகங்கை க.எண். 714 / கனிமம் / 2022 நாள் :02.02.2023.
3. வனச்சரக அலுவலர், திருப்பத்தூர் க.எண்.29/ 2023, நாள் 02.03.2023.
4. அரசாணை எண்.295, தொழில்துறை (எம்.எம்.சி-1) நாள்:03.11.2021

மேற்காண் பொருள் தொடர்பாக, பார்வை 1-ல் காணும் திருஅமாவாசை த/பெ. கப்பன், மின்னல்குடி என்பவர் சிவகங்கை மாவட்டம், திருப்பத்தூர் வட்டம், இளையாத்தங்குடி குருப், செவ்வூர் வருவாய் கிராமம் புலஎண் 118/4, 118/5, 118/6A & 119/3 பரப்பளவு 0.098.0 ஹெக்டர் அளவில் கல் குவாரி அமைய உள்ள பகுதியில் இருந்து 1 கிலோமீட்டர் மற்றும் 25 கிலோமீட்டர் தொலைவில் உள்ள காப்புக் காடுகளின் விபரத்தினை தெரிவிக்கும்படி கேட்கப்பட்டது.

கல் குவாரி அமைக்க தேர்வு செய்த இடத்தினை தணிக்கை செய்த போது குவாரிக்கு அருகில் உள்ள காப்புக்காடுகளின் GPS அளவீடு எடுத்து வான் வெளிதூரம் கீழ்க்காணுமாறு கணக்கீடு செய்யப்பட்டுள்ளது.

குவாரிக்கு தேர்வு செய்யப்பட்ட இடத்தின் GPS அளவீடு	அருகில் உள்ள காப்புக்காடுகள் விபரம்	குவாரிக்கும் காப்புக்காட்டிற்கும் இடையேயுள்ள தூரம்
Latitude : N 10.239961 Longitude : E 078.596719	வேலங்குடி	6.50 கி.மீ.
	ஆத்திக்காடு	12 கி.மீ.
	உசிலைமலை	5.50 கி.மீ.
	பூலாங்குறிச்சி	4.00 கி.மீ.
	வண்ணாரிருப்பு	16.5 கி.மீ.
	வடகாட்டுச்செடி	15 கி.மீ.
	காளாப்பூர்	16 கி.மீ.

Latitude : N 10.239961 Longitude : E 078.596719	கோவினிப்பட்டிகாடு	21 கி.மீ.
	கோவினிப்பட்டிமலை	23 கி.மீ.
	வெள்ளச்சரளைவடக்கு	19 கி.மீ.
	வெள்ளச்சரளைதெற்கு	19.5 கி.மீ.
	மாமலை	18 கி.மீ.
	பாமரக்காடு	21 கி.மீ.
	கானமலை	22 கி.மீ.
	பூதக்கல்மலை	15 கி.மீ.
	பூவண்ணாமலை	19 கி.மீ.
	வீரமலை	22 கி.மீ.
	பச்சமலை	18 கி.மீ.
	மரகாட்டு கூட்டு	20 கி.மீ.
	புளியமலை	20 கி.மீ.
	பொட்டக்காடு	22 கி.மீ.

பார்வை 4ல் காணும் அரசாணையின்படி (நகல் அடக்கம்) குவாரி அமைக்க டத்தேசிக்கப்பட்டுள்ள இடத்திற்கு 1 கி.மீ தூரத்திற்குள் குழலியல் உணர்திறன் பகுதி, சுற்றுச்சூழல் ற்றும் குழலியல் பாதுகாக்கப்பட்ட பகுதி அதாவது சரணாலயம், தேசிய பூங்கா காப்புக்காடு, புலிகள் ாப்பகம் மற்றும் யானை வழித்தடம் ஏதுமில்லை என்பதனை இதன் மூலம்)தரிவித்துக்கொள்கிறேன்.

றுநர்,

ந.அமாவாசை
பெ. சின்னையா,
ன். 564, மின்னல்குடி,
நப்பத்தூரர் தாலுகா,
பகங்கை.

//உ.ந.உ.ப//

ஓம்/- செ.பிரபா
மாவட்ட வன அலுவலர்,
சிவகங்கை.


கண்காணிப்பாளர்



THIRU.R.VIJAYABASKARAN
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY - TAMIL NADU

3rd Floor, Panagal Maaligai,
No.1 Jeeris Road, Saidapet,
Chennai-15.

Phone No.044-24359973

Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/E.No.7359/1(a)/EC.No:4266/2020 dated: 17.08.2020

To

Thiru.A.Selvam
No.1/78, Sivankovil Street
Sevur Village
Tiruppathur Taluk
Sivagangai District-630405

Sir/Madam,


Sub: SEIAA-TN – Proposed for the Rough Stone & Gravel over an Extent of 1.69.0Ha at S.F.No. 113/4A, 113/4B, 113/3A, 113/3B, 113/3E1, 113/3E2, 113/3E3, 113/3E4, 113/3C, 113/3D & 113/3F in Sevur Village, Tiruppathur Taluk, Sivagangai District by Thiru. A.Selvam - issue of Environmental Clearance - Reg.

Ref: 1. Your Application for Environmental Clearance dated: 03.01.2020
2. Minutes of the 149th SEAC meeting held on 14.03.2020
3. Proponent reply dated 16.07.2020
4. Minutes of the 167th SEAC meeting held on 04.08.2020
5. Minutes of the 388th SEIAA meeting held on 12.08.2020


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.




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1	Name of Project Proponent and address	Thiru.A.Selvam No.1/78, Sivankovil Street Sevur Village Tiruppathur Taluk Sivagangai District-630405
2	Location of the Proposed Activity	
	Survey Number	113/4A, 113/4B, 113/3A, 113/3B, 113/3E1, 113/3E2, 113/3E3, 113/3E4, 113/3C, 113/3D & 113/3F
	Latitude and Longitude	10°14'22"N to 10°14'28.68"N 78°35'32" E to 78°35'56.52" E
	Village	Sevoor
	Taluk	Thiruppathur
	District	Sivagangai
3	Proposed Activity	
	i. Minor mineral	Rough Stone & Gravel
	ii. Mining Lease Area	1.690Ha
	iii. Approved quantity	170805cu.m of Rough Stone & 22407cu.m of Gravel
	iv. Depth of Mining	28m
	v. Type of mining	Opencast Semi Mechanized Mining
	vi. Category(B1/B2)	B2
	vii. Precise area communication approved by the District Collector with date	Na.Ka.M.2/131/2019, dated: 03.10.2019
	viii. Mining plan approval by Assistant Director of Geology and Mining, Sivagangai	Re. No.M2/131/2019, dated: 04.12.2019
	ix. Mining period	5 Years
4	Whether Project area attracts any General	Not attracted. Affidavit furnished.


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	conditions specified in the EIA notification, 2006 as amended:-	
5	Man Power requirement per day:	14 Employees
6	Utilities	
	i. Source of Water :	Water Vendors & Tankers supply
	ii. Quantity of Water Requirement in KLD:	2.10 KLD
	a. Domestic & Drinking purpose	0.1 KLD
	b. Green Belt & Dust Suppression	2.0 KLD
	iii. Power Requirement:	
	a. Domestic Purpose	TNEB
	b. Industrial purpose:	
7	Cost	
	i. Project Cost	Rs. 78.37 Lakhs
	ii. EMP Cost	Rs. 2.90 Lakhs
8	Validity: This Environmental Clearance is granted for the production of 170805cu.m of Rough Stone & 22407cu.m of Gravel for the period of 5 Years from the date of execution of the mining lease.	


The Proponent has furnished affidavit in Hundred Rupees stamp paper attested by the Notary stating that

I, Thiru.A.Selvam, No.1/78, Sivankovil Street, Sevvar Village, Tirupathur Taluk, Sivagangai District-630405, solemnly declare and sincerely affirm that:

I have applied for getting Environmental Clearance to SEIAA, Tamil Nadu for mining lease for mining of Rough Stone & Gravel Quarry over an Extent of 1.69.0Ha at S.F.No. 113/4A, 113/4B, 113/3A, 113/3B, 113/3E1, 113/3E2, 113/3E3, 113/3E4, 113/3C, 113/3D & 113/3F in Sevour Village, Thirupathur Taluk, Sivagangai District, Tamil Nadu.

I. I swear to state and confirm that within 10km area of the mine site, I have applied for Environmental Clearance, none of the following is situated.

a. Protected areas notified under the Wild Life (Protection) Act, 1972.


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- b. Critically polluted areas as notified by the central pollution control board constituted under Water (Prevention and Control of Pollution) Act, 1974.
- c. Eco - Sensitive areas as notified.
Vettangudi Birds Sanctuary is 17.0km-SW side
- d. Interstate boundaries within 10km radius from the boundary of the proposed site.
2. I will complete the following Corporate Environment responsibility (CER) activities before commencement of the quarrying activities.

CER Activity	Project Cost (Rs. In Lakhs)	CER Cost 2.0% of project cost (Rs. In Lakhs)
For carrying out various development works in the nearby region based on the need of the locals	81.27	1.62
Total cost Allocation	81.27	1.62

3. No quarries located within 500m radius from the periphery of our quarry

Existing quarries


S.No.	Name of the applicant/ Lessee	Name of the Village & S.F.No.	Extent in Hectre	Remarks
1.	Thiru.C.Ammavasai	Sevoor Village 118/1, 118/2A, 118/2B	0.56.0	

Abandoned quarries

S.No.	Name of the applicant/ Lessee	Name of the Village & S.F.No.	Extent in Hectre	Remarks
1.	Thiru.S.Vairavan	Sevoor Village 81/1, 2, 3, 4, 5, 82/1, 3, 4, 6 and 7	3.22.5	

Present proposed quarries

S.No.	Name of the applicant/ Lessee	Name of the Village & S.F.No.	Extent in Hectre	Remarks
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1.	Thiru.A.Selvam	Sevner Village 113/4A, 113/4B, 113/3A, 113/3B, 113/3E1, 113/3E2, 113/3E3, 113/3E4, 113/3C, 113/3D & 113/3F	1.69.0	Proposed
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The total lease within the 500m radius (existing+proposed) works out of to 2.25.0ha including this lease area.

4. There will not be hindrance or disturbance to the people living no enrouted / nearby our quarry site while transporting the mineral our material and due to quarrying activities.
5. There is no approved habitation within 300m radius from the periphery of our quarry.
6. I swear that afforestation will be carried out during the course of mining operation and maintained.
7. The required insurance will be taken in the name of the labourers working in my quarry site.
8. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for transportation of Rough stone & Gravel.
9. I will not engage any child labour in my quarry site and I aware that engaging child labour is punishable under the law.
10. All types of safety / protective equipments will be provided to all the labourers working in my quarry.
11. There is no permanent structures, temples, etc., are located within 500m radius from the periphery of my quarry.

I ensure to do all the social and Environment commitment as mentioned in the Mining Plan to the best of my knowledge.

Details of 500M radius Proposed quarry:

The Project Proponent has submitted a copy of the letter obtained from the Deputy Director, Department of Geology & Mining, Sivagangai District in his letter Re.No.M2/131/2019 dated: 15.07.2020 has stated that the details of other quarries (Proposed / Existing / Abandoned Quarries) within a radius 500m from the boundary of the proposed quarry site as follows:



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Existing quarries

S.No.	Name of the applicant/ Lessee	Name of the Village & S.F.No.	Extent in Hectre	Remarks
1.	Thiru.C.Ammavasai	Sevoor Village 118/1, 118/2A, 118/2B	0.56.0	

Abandoned quarries

S.No.	Name of the applicant/ Lessee	Name of the Village & S.F.No.	Extent in Hectre	Remarks
1.	Thiru.S.Vairavan	Sevoor Village 81/1, 2, 3, 4, 5, 82/1, 3, 4, 6 and 7	3.22.5	

Present proposed quarries

S.No.	Name of the applicant/ Lessee	Name of the Village & S.F.No.	Extent in Hectre	Remarks
1.	Thiru.A.Selvam	Sevoor Village 113/4A, 113/4B, 113/3A, 113/3B, 113/3E1, 113/3E2, 113/3E3, 113/3E4, 113/3C, 113/3D & 113/3F	1.69.0	Proposed

Appraisal by SEAC:-

The project proposal was placed in the 167th SEAC meeting held on 04.08.2020. Based on the presentation made by the proponent and the documents furnished, the SEAC has recommended the proposal to SEIAA for issue of Environmental Clearance subject to the following conditions in addition to the normal conditions:

1. Groundwater level and quality should be monitored once in six months in few wells around the quarry and the record should be maintained and annual report should be submitted to the TNPCB



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2. After mining is completed, proper levelling should be done by the Project proponent & Environmental Management Plan furnished by the Proponent should be strictly followed.
3. Prior clearance from Forestry & Wild Life including clearance from committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site attracts the NBWL clearance.
4. The Project Proponent shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which might have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
5. Proper barrier for reducing the Noise level and to combat the dust pollution shall be established like providing Green Belt along the boundary of the quarrying site, etc. and to prevent dust pollution, suitable working methodology needs to be adopted taking wind direction into consideration.
6. The operation of the quarry should not affect the agriculture activities & water bodies near the project site.
7. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
8. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
9. The proponent shall develop adequate green belt with native species on the periphery of the mine lease area before commencement of the mining activity, in consultation with DFO of the concern district/agriculture university.
10. The proponent should erect fencing all around the boundary of the proposed area with gates as per the conditions and shall furnish the photographs/map showing the same before obtaining the CTO from TNPCB.
11. 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.
12. The recommendation for the issue of environmental clearance is subject to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in O.A No.186 of 2016



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(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).

13. To ensure safety measures along the boundary of the quarry site, security guards are to be posted during the entire period of mining operation.
14. The mine closure plan submitted by the project proponent shall be strictly followed after the lapse of the mine.
15. The amount of Rs. 1,62,000/- (2% of project cost) shall be utilized as CER activities to carry out the development of the Sanitary Facilities for Sevvur Village Government School as reported before obtaining the CTO from TNPCB.

Discussion by SEIAA and the Remarks:-

The proposal was placed before the SEIAA in its 388th Meeting held on 12.08.2020 and the Authority after careful consideration, decided to grant Environmental Clearance to the said project Mining of Rough Stone & Gravel subject to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended and subject to the following conditions in addition to the normal conditions:

1. All the condition imposed by the District Collector, Sivagangai Na.Ka.No. M.2/131/2019, Dated: 03.10.2019 should be strictly followed.
2. The EMP Cost shall be deposited in a nationalized bank by opening separate account and head wise expense statement shall be furnished to TNPCB with a copy to SEIAA annually.
3. 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.
4. A detailed post-COVID health management plan for workers as per ICMR and MHA guidelines or the State Govt. guideline may be followed and report shall be furnished.


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Part-A: Conditions to be Complied before commencing mining operations:-


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



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15/8/20
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12. The proponent shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
13. A minimum distance of 50mts. from any civil structure shall be kept from the periphery of any excavation area.
14. The mined out pits should be backfilled where warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed with back filling and tree plantation.
15. Wet drilling method is to be adopted to control dust emissions. Delay detonators and shock tube initiation system for blasting shall be used so as to reduce vibration and dust.
16. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.
17. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
18. A study has to be conducted to assess the optimum blast parameters and blast design to keep the vibration limits less than prescribed levels and only such design and parameters should be implemented while blasting is done. Periodical monitoring of the vibration at specified location to be conducted and records kept for inspection.
19. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF& CC, Govt on 16.11.2009.
20. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
 - i. Roads shall be graded to mitigate the dust emission.
 - ii. Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
21. The following measures are to be implemented to reduce Noise Pollution
 - i. Proper and regular maintenance of vehicles and other equipment
 - ii. Limiting time exposure of workers to excessive noise.
 - iii. The workers employed shall be provided with protection equipment and earmuffs etc.




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- iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
- v. All noise generating machinery the compressor, generator to be enclosed in acoustic enclosure so as to reduce noise in working area.
22. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoEF& CC, GoI to control noise to the prescribed level.
23. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
24. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
25. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.
26. The following measures are to be adopted to control erosion of dumps:-
- Retention/ toe walls shall be provided at the foot of the dumps.
 - Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
27. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous& other wastes (Management, and Trans Boundary Movement) Rules, 2016 and its amendments thereof to the recyclers authorized by TNPCH.
28. Concealing the factual data or failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
29. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
30. Rain water getting accumulated in the quarry floor shall not be discharged directly to the nearby stream or water body. If it is to be let into the nearby water body, it has to be discharged into a silt trap on the surface within the lease area and only the overflow after




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allowing settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.

31. The lease holder shall undertake adequate safeguard measures during extraction of material and ensure that due to this activity, the hydro-geological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area during the mining operation. If at any stage, if it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
32. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
33. To take up environmental monitoring of the proposed quarry site before, during and after the mining activities including vibration study data, water, air & flora/fauna environment, slurry water generated/disposed and method of disposal, involving a reputed academic Institution.
34. It shall be ensured that the total extent of nearby quarries(existing, abandoned and proposed) located within 500 meter radius from the periphery of this quarry is not exceeding 5 hectares within the mining lease period of this application.
35. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 300m radius from the periphery of the quarry site.
36. Free Silica test should be conducted and reported to: TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
37. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
38. Bunds to be provided in the boundary of the project site.





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39. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
40. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
41. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
42. The Project Proponent shall provide solar lighting system to the nearby villages.
43. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
44. Safety equipments to be provided to all the employees.
45. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
46. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
47. The proponent shall furnish the Baseline data covering the Air, Water, Noise and land environment quality for the proposed quarry site before execution of mining lease.
48. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
49. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
50. The proponent has to display the name board at the quarry site showing the details of Proponent, lease period, extent, etc., with respect to the existing activity before execution of mining.
51. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
52. The Proponent shall ensure that the project activity including blasting, mining transportation etc should in no way have adverse impact to the other forests, such as





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- reserve forests and social forests, tree plantation and bio diversity, surrounding water bodies etc.
53. The proponent shall provide Green Belt development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 3m height.
54. The fugitive emissions should be monitored during the mining activity and should be reported to TNPCB once in a month and the operation of the quarry should no way impact the agriculture activity & water bodies near the project site.
55. All the commitment made by the project proponent in the proposal shall be strictly followed.
56. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
57. The Project proponent has to strictly comply the outcome/direction of the Hon'ble NGT, Principle Bench, New Delhi in the O.A No.186 of 2016 (M.A.No.350/2016), O.A. No.200/2016, O.A.No.580/2016 (M.A.No.1182/2016), O.A.No.102/2017, O.A.No.404/2016 (M.A.No. 758/2016, M.A. No. 920 /2016, M.A.No.1122/2016, M.A.No. 12/2017 & M.A.No.843/2017), O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No.981/2016, M.A.No.982/2016 & M.A.No.384/2017).

Part B: General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as


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- loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
 7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
 8. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
 9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
 10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
 11. All Personnel shall be provided with protective respiratory devices including safety shoes, masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
 12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
 13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
 14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
 15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be




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- reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
 17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance.
 18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
 19. The SEIAA, Tamil Nadu may cancel the Environmental Clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this Environmental Clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the Environmental Clearance.
 20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
 21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.




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22. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
23. Any appeal against this Environmental Clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
24. The Environmental Clearance is issued based on the documents furnished by the project proponent. In case any documents found to be incorrect/not in order at a later date the Environmental Clearance issued to the project will be deemed to be revoked/ cancelled.


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Copy to:

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





TMT. P. RAJESWARI, I.F.S.,
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU
3rd Floor, Panagal Maaligai,
No.1, Jeenis Road, Saidapet,
Chennai-15.
Phone No. 044-24359973
Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/F.No.7483/1(a)/EC.No:4707/2021 dated:07.09.2021

To

Thiru.S.Vairavan
S/o.Sundram
Kallippattu, Sembanur (P.O)
Thiruppathur Taluk
Sivagangai District - 630 313

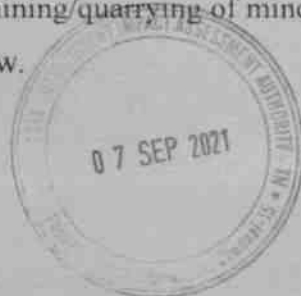
Sir/Madam,

Sub: SEIAA-TN – Proposed Rough Stone quarry lease area over an extent of 3.22.5 Ha at S.F.Nos.81/1, 81/2, 81/3, 81/4, 81/5, 82/1, 82/3, 82/4, 82/6, and 82/7 Sevur Village, Thiruppathur Taluk, Sivagangai District, Tamil Nadu by Thiru.S.Vairavan - issue of Environmental Clearance– Reg.

- Ref:**
1. Online Proposal No. SIA/TN/MIN/142080/2020, Dated: 10.02.2020.
 2. Application for Environmental Clearance dated: 03.03.2020.
 3. Minutes of the 157th SEAC Meeting held on 20.06.2020
 4. Project proponent reply dated: 04.11.2020
 5. Minutes of the 205th SEAC Meeting held on 03.03.2021
 6. Minutes of the 221st meeting of SEAC held on 23.07.2021
 7. Minutes of the 456th Meeting of SEIAA held on 31.08.2021.

Details of Minor Mineral Activity:-

This has reference to your application second 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.



Rajesh D
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1	Name of Project Proponent and address	Thiru.S.Vairavan S/o.Sundram Kallippattu, Sembanur (P.O) Thiruppathur Taluk Sivagangai District - 630 313
2	Location of the Proposed Activity	
	Survey Number	81/1, 81/2, 81/3, 81/4, 81/5, 82/1, 82/3, 82/4, 82/6, and 82/7
	Latitude and Longitude	10°14'31.92" N to 10°14'41.25"N 78°35'45.17" E to 78°35'52.71"E
	Village	Sevur
	Taluk	Thiruppathur
	District	Sivagangai
3	Proposed Activity	
	i. Minor mineral	Rough Stone
	ii. Mining Lease Area	3.22.5Ha
	iii. Approved quantity	162525 cu.m of Rough stone
	iv. Depth of Mining	32m
	v. Type of mining	Opencast semi Mechanized Mining
	vi. Category(B1/B2)	B2
	vii. Precise area communication approved by the District Collector with date	Na.Ka.M.2/97/2019 dated: 19.09.2019
	viii. Mining plan approval by Assistant Director of Geology and Mining, with date	Roc.No.M2/97/2019 dated: 04.12.2019
	ix. Mining period	5 year
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:	22 Employees
6	Utilities	



[Signature]
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	i. Source of Water :	Water Vendors & Existing Bore well
	ii. Quantity of Water Requirement in KLD:	3.0 kLD
	a. Domestic & Drinking purpose b. Green Belt & Dust Suppression	1.5 KLD 0.8 kLD & 0.7kLD
	iii. Power Requirement: a. Domestic Purpose b. Industrial Purpose	TNEB 135294 liters of HSD
7	Cost i. Project Cost ii. EMP Cost iii. CER Cost	Rs. 55.38 Lakhs Rs. 8.90Lakhs Rs.1.28 Lakhs
8	Validity: This Environmental Clearance is granted for the production of 162525 cu.m of Rough Stone for period of five years from the date of execution of the mining lease.	

Affidavit

The Proponent has furnished affidavit in One Hundred Rupees stamp paper attested by the Notary stating that

I, Thiru Thiru.S.Vairavan, S/o.Sundram Kallippattu, Sembanur (P.O) Thiruppathur Taluk Sivagangai District - 630 313, solemnly declare and sincerely affirm that:

I have applied for getting Environmental Clearance to SEIAA, Tamil Nadu for mining lease for the proposed Rough Stone quarry lease area over an extent of 3.22.5 Ha at S.F.Nos.81/1, 81/2, 81/3, 81/4, 81/5, 82/1, 82/3, 82/4, 82/6, and 82/7 Sevir Village, Thiruppathur Taluk, Sivagangai District, Tamil Nadu, Tamil Nadu.

1. I swear to state and confirm that within 10km area of the mine site, I have applied for Environmental Clearance, none of the following in situated.
 - a. Protected areas notified under the Wild Life (Protection) Act, 1972.
 - b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and control of pollution) Act, 1974.
 - c. Eco – sensitive areas as notified.
 - d. Interstate boundaries and international boundaries within 10km radius from the boundary of the proposed side.



Rajesh
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2. I will complete the following corporate environment responsibility (CER) activities before commencement of the quarrying activities.

CER Activity	Project Cost (Rs. In Lakhs)	CER Cost 2.0% of project cost (Rs. In Lakhs)
Developing sports facilities and providing Toilet, RO facilities to govt school, Chithambarapuram Village	64.28	1.28
Total cost Allocation	64.28	1.28

3. The following quarries are located within the radius of 500m from the periphery of my quarry.

S.No	Name and Address of the applicant	Village & Taluk	S.F. No	Extent (in Hects)	Lease status
Details of Existing Quarry:					
1	C. Ammavasai	Sevur Thirupathur	118/1, 118/2A, 118/2B	0.56	Existing
Details of Abandoned Quarry:					
1.	A. Selvam	Sevur Thirupathur	113/4A, 113/4B etc	1.69.0	Abandoned
Present Proposed Quarry:					
1.	S. Vairavan	Sevur Thirupathur	81/1, 81/2, 81/4, 5, 82/1, 3, 4, 6, 7	3.22.5	Proposed

4. There will not be hindrance or disturbance to the people living during quarrying and transportation.
5. There is No approved habitation within 500m radius from the periphery of my quarry.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. The required insurance will be taken in the name of the labourers working in my quarry site.
8. The approach road belongs local Panchayath only and no other private patta road encountered.
9. I will not engage any child labour in my quarry site and I aware that engaging child labour is punishable under the law.
10. All types of safety / protective equipments will be provided to all the labourers working in my quarry.



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11. No permanent structures, temples, etc., are located within 300m radius from the periphery of my quarry.

I ensure to do all the social and Environment commitment as mentioned in the Mining Plan to the best of my knowledge.

Details of Quarries located within 500M radius from the proposed quarry:

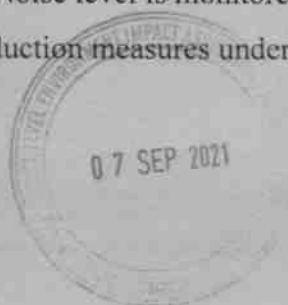
The Project Proponent has submitted a copy of the letter obtained from the Assistant Director of Geology & Mining, Sivagangai District in his Roc.No.M2/97/2019 dated: 23.06.2020 has stated that the details of other quarries within a radius 500m from the boundary of the proposed quarry site as follows:

S.No	Name and Address of the applicant	Village & Taluk	S.F. No	Extent (in Hects)	Lease status
Details of Existing Quarry:					
1	C. Amavasai	Sevur Thirupathur	118/1, 118/2A, 118/2B	0.56	Existing
Details of Abandoned Quarry:					
1.	A. Selvam	Sevur Thirupathur	113/4A, 113/4B etc	1.69.0	Abandoned
Present Proposed Quarry:					
1.	S. Vairavan	Sevur Thirupathur	81/1, 81/2, 81/4, 5, 82/1, 3, 4, 6, 7	3.22.5	Proposed

Appraisal by SEAC:

The proposal was placed in the 221st meeting of SEAC held on 23.07.2021. Based on the presentation made and the documents furnished by the Project proponent, SEAC decided to recommend the project proposal to SEIAA for grant of Environmental Clearance subject to the following specific conditions, in addition to normal conditions:

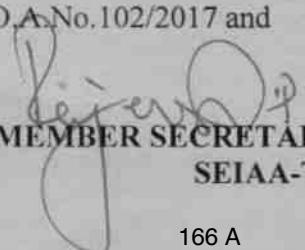
1. Restricting the maximum depth of mining from to 32m considering the environmental impacts due to the mining, safety of the working personnel and following the principle of the sustainable mining and consequently the maximum minable quantities of 162525 cu.m of Rough stone & 23220 cu.m of Top soil are permitted for mining over five years.
2. Fugitive emission measurements should be carried out during the mining operation at regular intervals and submit the consolidated report to SEIAA once in six months.
3. Proponent shall ensure that the Noise level is monitored during mining operation at the project site and adequate noise level reduction measures undertaken.



Rejendra P.
MEMBER SECRETARY
SEIAA-TN

4. The proponent shall erect fencing all around the boundary of the proposed area with gates for entry/exit as per the conditions and shall furnish the photographs/map showing the same before obtaining the CTO from TNPCB.
5. Greenbelt needs to be developed in the periphery of the mines area so that at the closure time the trees would have grown well.
6. Ground water quality monitoring should be conducted once in every six months and the report should be submitted to TNPCB.
7. After mining is completed, proper leveling should be done by the Project proponent & Environmental Management Plan furnished by the Proponent should be strictly followed.
8. The Project proponent shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition that is fit for the growth of fodder, flora, fauna etc.
9. Proper barriers to reduce noise level, dust pollution and to hold down any possible fly material (debris) should be established by providing greenbelt and/or metal sheets along the boundary of the quarrying site and suitable working methodology to be adopted by considering the wind direction.
10. The operation of the quarry should not affect the agricultural activities & water bodies near the project site and a 50m safety distance from water body should be left vacant without any activity.
11. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
12. The Project Proponent shall comply with the mining and other relevant rules and regulations wherever applicable.
13. The proponent shall develop an adequate greenbelt with native species on the periphery of the mine lease area before the commencement of the mining activity, in consultation with DFO of the concerned district/agriculture.
14. 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 concerned District Authorities.
15. The recommendation for the issue of environmental clearance is subject to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in 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




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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).

16. Prior clearance from Forestry & Wild Life including clearance from committee of the National Board for Wildlife as applicable shall be obtained before starting the quarrying operation, if the project site attracts the NBWL clearance, as per the existing law from time to time.
17. To ensure safety measures along the boundary of the quarry site, security guards are to be posted during the entire period of the mining operation.
18. The mine closure plan submitted by the project proponent shall be strictly followed after the lapse of the mining activities.
19. 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 furnish the detailed EMP mentioning all the activities particularly sanitizing facility for school as proposed in the CER and furnish the same before placing the subject to SEIAA.
20. All the conditions imposed by the Assistant Director, Geology & Mining, Virudhunagar District in the mining plan approval and the Precise area communication letter issued by concerned District Collector should be strictly followed.

Discussion by SEIAA and the Remarks:-

The proposal was placed in 456th Authority meeting held on 31.08.2021. After detailed discussions, the Authority noted as follows.

1. The Proponent, Thiru. S.Vairavan, has applied for Environmental clearance for the proposed Rough stone & Gravel quarry lease over an extent of 3.22.5Hain S.F.Nos. 81/1, 81/2, 81/3, 81/4, 81/5, 82/1, 82/3, 82/4, 82/6 & 82/7 of Sevur Village, Thiruppathur Taluk, Sivagangai District. Tamil Nadu.
2. In the 221st meeting of SEAC held on 23.07.2021, the SEAC has recommended the proposal for grant of Environmental Clearance for the Rough stone and Gravel.
3. On verifying the form-1 & approved mining plan, the proposed activity is mentioned as only Rough stone quarry, **whereas in the minutes of the 221st meeting of SEAC held on 23.07.2021, the proposed activity is inadvertently typed as Rough stone and Gravel instead of Rough stone.**



Kejenu
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SEIAA-TN

In view of the above, the Authority accepts the recommendation of SEAC and decided to grant Environmental Clearance subject to the conditions as recommended by SEAC & normal condition in addition to the following condition.

1. As per the recommendation of SEAC and as accepted by the proponent, the ultimate depth of mining is restricted to 32m considering the environmental impacts due to the mining, safety of the working personnel and following the principle of the sustainable mining and consequently the maximum minable quantities of 162525 cu.m of Rough stone is permitted for mining over five years.
2. As per the MoEF&CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent has furnished the detailed EMP, mentioning all the CER activities for Rs. 1.28 Lakhs as committed. All the CER activity shall be carried out before obtaining CTO from TNPCB.

Part-A: Conditions to be Complied before commencing mining operations:-

1. **The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that**

- | |
|--|
| <ol style="list-style-type: none"> I. The project has been accorded Environmental Clearance. II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board. III. Environmental Clearance may also be seen on the website of the SEIAA. IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA. |
|--|

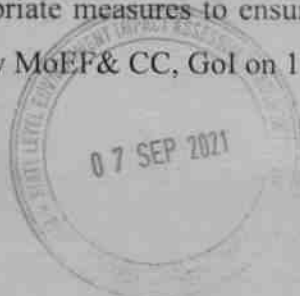
2. Mining activity should be reviewed by the District Collector after three years and decide for further extension.
3. The mine closure plan submitted by the project proponent shall be strictly followed after the lapse of the mine.
4. NOC from the Standing committee of the NBWL shall be obtained, if protected areas are located within 10 Km from the proposed project site.
5. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
6. **A copy of the Environment Clearance letter shall be sent by the proponent to the concerned Panchayat, Town Panchayat / Panchayat union/ Municipal Corporation,**



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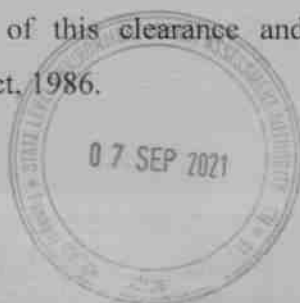
Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the proponent and also kept at the site, for the general public to see.

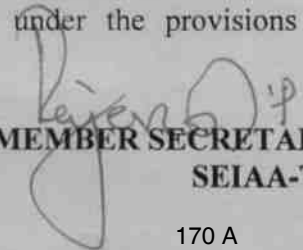
7. Quarry lease area should be demarcated on the ground with wire fencing to show the boundary of the lease area on all sides with red flags on every pillar shall be erected before commencement of quarrying.
8. The proponent shall ensure that First Aid Box is available at site.
9. The excavation activity shall not alter the natural drainage pattern of the area.
10. The excavated pit shall be restored by the project proponent for useful purposes.
11. The proponent shall quarry and remove only in the permitted areas as per the approved Mining Plan details.
12. The quarrying operation shall be restricted between 7AM and 5 PM.
13. 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.
14. A minimum distance of 50mts. from any civil structure shall be kept from the periphery of any excavation area.
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. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
19. 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.
20. The Proponent shall take appropriate measures to ensure that the GLC shall comply with the revised NAAQ norms notified by MoEF& CC, GoI on 16.11.2009.




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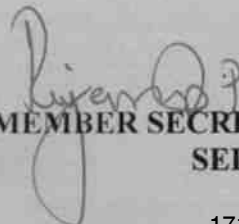
21. The following measures are to be implemented to reduce Air Pollution during transportation of mineral
- Roads shall be graded to mitigate the dust emission.
 - Water shall be sprinkled at regular interval on the main road and other service roads to suppress dust
22. The following measures are to be implemented to reduce Noise Pollution
- Proper and regular maintenance of vehicles and other equipment
 - Limiting time exposure of workers to excessive noise.
 - The workers employed shall be provided with protection equipment and earmuffs etc.
 - 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.
 - All noise generating machinery the compressor, generator to be enclosed in acoustic enclosure so as to reduce noise in working area.
23. Measures should be taken to comply with the provisions laid under Noise Pollution (Regulation and Control) (Amendment) Rules, 2010, dt: 11.01.2010 issued by the MoEF& CC, GoI to control noise to the prescribed levels.
24. Suitable conservation measures to augment groundwater resources in the area shall be planned and implemented in consultation with Regional Director, CGWB. Suitable measures should be taken for rainwater harvesting.
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:-
- Retention/ toe walls shall be provided at the foot of the dumps.
 - Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
28. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous& other wastes (Management, and Trans Boundary Movement) Rules, 2016 and its amendments thereof to the recyclers authorized by TNPCB.
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.




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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 settling of soil be let into the nearby waterways. The silt trap should be of sufficient dimensions to catch all the silt water being pumped out during one season. The silt trap should be cleaned of all the deposited silt at the end of the season and kept ready for taking care of the silt in the next season.
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 the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out. District Collector/mining officer shall ensure this.
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 5 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 300m radius from the periphery of the quarry site.
37. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
38. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF& CC, GOI.
39. Bunds to be provided at the boundary of the project site.




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40. 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.
41. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
42. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
43. The Project Proponent shall provide solar lighting system to the nearby villages.
44. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
45. Safety equipments to be provided to all the employees.
46. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
47. The Assistant/Deputy Director, Department of Geology & mining shall ensure that the proponent has engaged the blaster with valid Blasting license/certificate obtained from the competent authority before execution of mining lease.
48. 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.
49. The proponent shall erect the pillars in accordance with the Rules for depicting GPS details in the earmarked boundary of the quarry site to monitor electronically before execution of mining.
50. 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.
51. 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.
52. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
53. 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.
54. The proponent shall provide Green Belt development at the rate of not less than 400 trees/Hectare. The tree saplings shall be not less than 3m height.

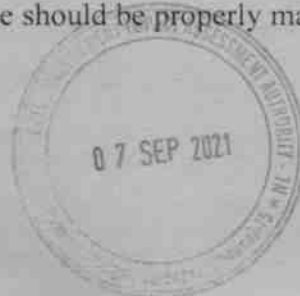



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55. The fugitive emissions should be monitored during the mining activity and should be reported to TNPCB once in a month and the operation of the quarry should no way impact the agriculture activity & water bodies near the project site.
56. All the commitment made by the project proponent in the proposal shall be strictly followed.
57. The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
58. The Project proponent has to strictly comply the outcome/direction of the Hon'ble NGT, Principle Bench, New Delhi in the O.A No.186 of 2016 (M.A.No.350/2016), O.A. No.200/2016, O.A.No.580/2016 (M.A.No.1182/2016), O.A.No.102/2017, O.A.No.404/ 2016 (M.A.No. 758/2016, M.A. No. 920 /2016, M.A.No.1122/2016, M.A.No. 12/2017 & M.A.No.843/2017), O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No.981/2016, M.A.No.982/2016 & M.A.No.384/2017).

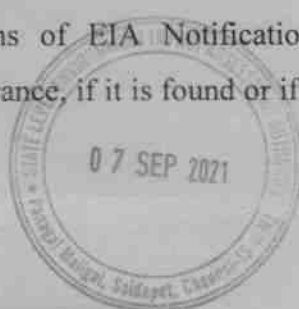
Part B: General Conditions:

1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent from the TNPC Board before commencing the activity.
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
6. Effective safeguards shall be adopted against health risks on account of breeding of vectors in the water bodies created due to excavation of earth.
7. A berm shall be left from the boundary of adjoining field having a width equal to at least half the depth of proposed excavation.
8. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.



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9. Vehicular emissions shall be kept under control and be regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.
10. Access and haul roads to the quarrying area should be restored in a mutually agreeable manner where these are considered unnecessary after extraction has been completed.
11. All Personnel shall be provided with protective respiratory devices including safety shoes, masks, gloves etc. Supervisory people should be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the Environmental Clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this Environmental Clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that



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the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the Environmental Clearance.

20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.
22. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
23. Any appeal against this Environmental Clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
24. The Environmental Clearance is issued based on the documents furnished by the project proponent. In case any documents found to be incorrect/not in order at a later date the Environmental Clearance issued to the project will be deemed to be revoked/ cancelled.


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Copy to:

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary to Government, Environment and Forests Department, Tamil Nadu.
3. The Principal Secretary to Government, Industries Department, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai – 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
6. The Chairman, TNPC Board, 76, Mount Salai, Guindy, Chennai-32
7. The District Collector, Sivagangai District.



8. The Commissioner of Geology and Mines, Guindy, Chennai-32
9. EIA Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. The president/EO/BDO, Sevur Village Panchayat, Thirupattur Taluk, Sivagangai District
11. Spare.

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Thiru. K.V. GIRIDHAR, I.F.S.,
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY – TAMIL NADU

3rd Floor, Panagal Maaligai,
No.1 Jeenis Road, Saidapet,
Chennai-15.

Phone No.044-24359973

Fax No. 044-24359975

ENVIRONMENTAL CLEARANCE

Lr. No.SEIAA-TN/F.No.7402/1(a)/EC.No:4472/2020 dated: 18.12.2020

To

Thiru.RM.Alagappan
S/o.Ramasamy Devar
No.1/5, Konnathanpatti Village
Tirupattur Taluk, Sivagangai - 630 405.

Sir/Madam,

Sub: SEIAA-TN – Proposed Rough Stone quarry over an extent of 1.42.5 Ha in S.F. Nos. 116/3B, 116/3C, 116/3E & 116/3G at Sevur Village, Thiruppathur Taluk, Sivagangai District, Tamil Nadu by Thiru. R.M. Alagappan - issue of Environmental Clearance – Reg.

Ref: 1. Online proposal No.SIA/TN/MIN/ 139915/2020, Dated: 31.01.2020.
2. Your Application for Environmental Clearance dated: 31.01.2020.
3. Minutes of the 185th SEAC meeting held on 07.11.2020.
4. Minutes of the 415th SEIAA meeting held on 08.12.2020.

Details of Minor Mineral Activity:-

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

1	Name of Project Proponent and address	Thiru.RM.Alagappan S/o.Ramasamy Devar No.1/5, Konnathanpatti Village Tirupattur Taluk, Sivagangai - 630 405.
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2	Location of the Proposed Activity	
	Survey Number	116/3B, 116/3C, 116/3E & 116/3G
	Latitude and Longitude	10°24'01.75"N to 10°24'07.51"N 78°46'54.65"E to 78°47'00.35"E
	Village	Sevur
	Taluk	Tiruppattur
	District	Sivagangai
3	Proposed Activity	
	i. Minor mineral	Rough Stone
	ii. Mining Lease Area	1.42.5 ha
	iii. Approved quantity	60,015m ³ of Rough Stone and 4745m ³ of Topsoil
	iv. Depth of Mining	21m
	v. Type of mining	Opencast Mechanized Mining Method
	vi. Category(B1/B2)	B2
	vii. Precise area communication approved by the District Collector with date	Rc. No.M2/760/2013 dt: 09.03.2019
	viii. Mining Plan approved by the Assistant Director of Geology and Mining with date	Rc. No.M2/760/2013 dt: 29.05.2019
	ix. Mining period	5 years
4	Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:-	Not attracted. Affidavit furnished.
5	Man Power requirement per day:	32 Employees
6	Utilities	
	i. Source of Water :	Water Vendors & Existing Bore well
	ii. Quantity of Water Requirement in KLD:	6.0 KLD
	a. Domestic & Drinking purpose	2.0 KLD
	b. Green Belt & Dust Suppression	2.5 KLD & 1.5 KLD



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	iii. Power Requirement: a. Domestic Purpose b. Industrial purpose	TNEB 123750 Liters of HSD
7	Cost i. Project Cost ii. EMP Cost	Rs. 36.70 Lakhs Rs. 9.10 Lakhs
8	<u>Validity:</u> This Environmental Clearance is granted for the production of 60,015m³ of Rough Stone and 4745m³ of Topsoil for the period of 5 Years from the date of execution of the mining lease.	

Affidavit

The Proponent has furnished affidavit in One Hundred Rupees stamp paper attested by the Notary stating that

I, Thiru.RM.Alagappan, S/o.Ramasamy Devar, No.1/5, Konnathanpatti Village, Tirupattur Taluk, Sivagangai - 630 405, solemnly declare and sincerely affirm that:

I have applied for getting Environmental Clearance to SEIAA, Tamil Nadu for mining lease for mining of Rough Stone quarry over an extent of 1.42.5 Ha in S.F. Nos. 116/3B, 116/3C, 116/3E & 116/3G at Sevur Village, Thiruppathur Taluk, Sivagangai District, Tamil Nadu.

1. We swear to state and confirm that within 10km area of the quarry site, I have applied for Environmental Clearance, none of the following is situated.
 - a. Protected areas notified under the Wild Life (Protection) Act, 1972.
 - b. Critically polluted areas as notified by the Central Pollution Control Board constituted under Water (Prevention and Control of Pollution) Act, 1974.
 - c. Eco – Sensitive areas as notified.
 - d. Interstate boundaries within 10km radius from the boundary of the proposed site.

We will complete the following Corporate Environment Responsibility (CER) activities before commencement of the quarrying activities.

CER Activity	Project Cost (Rs. In Lakhs)	CER Cost 2.0% of project cost x (Rs. In Lakhs)
Development the Library facilities /Drinking water	36.70	0.91

facilities in nearby Govt. Higher Secondary School		
Total cost Allocation	36.70	0.91

2. We solemnly declare & affirm that following quarries within 500m radius from the periphery of the quarry site:

S. No.	Name of the application /Lessee	Village, Taluk & S.F. No	Extent in Hectare
Existing Quarries			
1.	Thiru. C. Ammavasai	S.F. No. 118/1, 118/2A & 118/2B	0.56.0
Abandoned /Expired quarries			
1	Thiru. Sevanthiyappan	S.F. Nos. 81/1, 81/2, 81/3, 81/4 & 81/5	2.14.0
Present Proposed quarries			
1	Thiru. RM. Alagappan	S.F. Nos. 116/3B, 116/3C, 116/3E & 116/3G	1.42.5
Future Proposed quarries			
Nil			
Total Extent			4.12.5

3. There will not be hindrance or disturbance to the people living no enrout /nearby our quarry site while transporting the mineral our material and due to quarrying aqctivites.
4. There is no approved habitation within the radius of 300m from the periphery of my quarry.
5. We swear that afforestation will be carried out during the course of quarrying operation and maintained.
6. The required insurance will be taken in the name of the labourers working in my quarry site.
7. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Rough stone.
8. We will not engage any child labour in our quarry site and I aware that engaging child labour is punishable under the law.
9. All types of safety / protective equipments will be provided to all the labourers working in my quarry.
10. No permanent structures, Temples Church, Mosque, Historical Monuments, Burial ground etc., are located within 500m radius from the periphery of my quarry.
- We ensure to do all the social and Environment commitment as mentioned in the Mining Plan to the best of my knowledge.



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Details of 500M radius Proposed quarry:

The Project Proponent has submitted a copy of the letter obtained from the Assistant Director, Department of Geology & Mining, Sivagangai District in his Roc.No.M2/760/2013 dt: 20.01.2020 has stated that the details of other quarries (Proposed / Existing / Abandoned Quarries) within a radius 500m from the boundary of the proposed quarry site as follows:

S. No	Name of the application /Lessee	Village, Taluk & S.F. No	Extent in Hectare	Distance from this proposed quarries
Existing Quarries				
1.	Thiru. C. Amavasai	Sevur Village, Thiruppathur Taluk, Sivagangai District S.F. No. 118/1, 118/2A & 118/2B	0.56.0	
Abandoned /Expired quarries				
1	Thiru. Sevanthiyappan	Sevur Village, Thiruppathur Taluk, Sivagangai District S.F. Nos. 81/1, 81/2, 81/3, 81/4 & 81/5	2.14.0	
Present Proposed quarries				
1	Thiru. RM. Alagappan	Sevur Village, Thiruppathur Taluk, Sivagangai District S.F. Nos. 116/3B, 116/3C, 116/3E & 116/3G	1.42.5	
Total Extent			4.12.5	

Appraisal by SEAC:-

The proposal was placed in this 185th SEAC Meeting held on 07.11.2020. Based on the presentation made and the documents furnished by the proponent, after detailed deliberation, SEAC decided to recommend the project proposal for grant of Environmental Clearance to SEIAA subject to the following conditions in addition to normal conditions:

- Two tanks at a distance of 140 m on the north-west and another big tank at 460 m on the south easternside of the proposed lease area it supporting irrigation activities with command area. Considering this, it is proposed to restrict the ultimate depth to 21 meters below ground level, as in the originally mined out area. The mined-out quantity is restricted to 60, 015 m³ of rough stone and 4745 m³ of Topsoil.**
- Groundwater level and quality should be monitored once in six months in the surrounding wells around the quarry and the record should be maintained and annual report should be submitted to the TNPCB.



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3. After mining is completed, proper levelling should be done by the Project proponent and the Environmental Management Plan furnished by the Proponent should be strictly followed.
4. The proponent should erect fencing all around the boundary of the proposed area with gates for entry/exit as per the conditions and shall furnish the photographs/map showing the same before obtaining the CTO from TNPCB.
5. Proper barrier to reduce noise level, dust pollution and to arrest all fly material (debris) by providing green belt and/or metal sheets along the boundary of the quarrying site and adopting suitable working methodology by considering site specific micro-meteorological conditions.
6. The Project proponent shall, after ceasing mining operations, undertake re-grassing the mining and other areas disturbed due to their mining activities and restore the land to condition fit for growth of fodder, flora, fauna etc
7. The operation of the quarry should not affect the agriculture activities & water bodies near the project site.
8. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
9. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
10. The proponent shall develop adequate green belt with native species on the periphery of the mine lease area before commencement of the mining activity, in consultation with DFO of the concern district/agriculture university.
11. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried well before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.
12. The recommendation for the issue of Environmental Clearance is subject to the outcome of the Hon'ble NGT, Principal Bench, New Delhi in 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).



13. Prior clearance from Forestry & Wild Life including clearance from committee of the National Board for Wild life as applicable shall be obtained before starting the quarrying operation, if the project site attracts the NBWL clearance.
14. To ensure safety measures along the boundary of the quarry site, security guards to be posted during the entire period of mining operation.
15. The mine closure plan submitted by the project proponent shall be strictly followed after the lapse of the mining activity.
16. The project proponent shall submit the CER proposal as per the MoEF&CC guidelines before placing the subject to SEIAA

Discussion by SEIAA and the Remarks:-

The proposal was placed before the SEIAA in its 415th Meeting held on 08.12.2020. The Authority discussed in details and unanimously accepted the recommendations of SEAC and decided to grant Environmental Clearance subject to the conditions as recommended by SEAC and subject to General Conditions in addition to normal conditions.

1. **The ultimate depth of mining is restricted to 21m below ground level and for mined quantity of 60,015m³ of Rough Stone and 4745m³ of Gravel for a period of five years.**
2. 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 furnish the detailed EMP to TNPCB mentioning all the activities as proposed in CER for Rs.26000/- as committed in their affidavit. The CER activities shall be carried out before obtaining CTO form TNPCB.

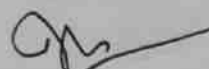
Part-A: Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
 - I. The project has been accorded Environmental Clearance.
 - II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
 - III. Environmental Clearance may also be seen on the website of the SEIAA.
 - IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.




2. The project proponent shall comply the conditions laid down in the Section V, Rule 36 of Tamil Nadu Minor Minerals Concession Rules 1959.
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. 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.
5. The proponent shall ensure that First Aid Box is available at site.
6. The excavation activity shall not alter the natural drainage pattern of the area.
7. The excavated pit shall be restored by the project proponent for useful purposes.
8. The proponent shall quarry and remove only in the permitted and approved areas.
9. The proponent shall do the quarrying as per the approved mining plan.
10. It shall be ensured that the quarrying operation shall be carried out between 7AM and 5 PM.
11. 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.
12. The mined out pits should be backfilled wherever warranted and area should be suitably landscaped to prevent environmental degradation. The mine closure plan as furnished in the proposal shall be strictly followed. The District administration should ensure the fully implementation of mine closure plan before release of lease deed.
13. No drilling and blasting operation shall be carried out under any circumstances.
14. Free silica test should be conducted and reported.
15. Air Sampling at intersection point should be conducted and reported.
16. Bunds to be provided at the boundary of the project site.
17. Rainwater shall be pumped out via settling tank only
18. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area




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19. Earthen bunds and barbed wire fencing around the pits all along the boundary shall be maintained.
20. The CSR funds should be channelized for planting programme, nature conservation support, tribal development and activities that support forest and environment.
21. As per MoEF & CC, GoI, Office Memorandum dated 30.03.2015, prior clearance from Forestry & Wildlife angle including clearance from obtaining committee of the National Board for Wildlife as applicable shall be obtained before starting the quarrying operation, if the project site is located within 10KM from National Park and Sanctuaries.
22. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. A copy of action plan shall be submitted to the Regional Office of the Ministry of Environment and Forests, Chennai.
23. It shall be ensured that the total extent of Mining area including existing, abandoned and proposed shall not exceed 5 Ha within 500 meter radius from the boundary of this quarry within the mining lease period of this application. If the area exceeds, the applicant has to obtain fresh Environmental Clearance submitting EIA Study Report under Category "B1" (As per the order of Hon'ble NGT, PB, New Delhi in O.A No.186 of 2016 (M.A.No.350/2016), O.A. No.200/2016, O.A.No.580/2016 (M.A.No.1182/2016), O.A.No.102/2017, O.A.No.404/ 2016 (M.A.No. 758/2016, M.A. No. 920 /2016, M.A.No.1122/2016, M.A.No. 12/2017 & M.A.No.843/2017), O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No.981/2016, M.A.No.982/2016 & M.A.No.384/2017).
24. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site.
25. Whenever/wherever, "Savudu" /" Red Earth" /"Brick Earth" are removed from tanks, the project proponents should see that the free flow of water from and into the tanks are ensured through maintenance of inlet and outlet channels. Removal Earth should be in smooth, sloppy way towards deeper portion of the tank.
26. The Assistant/Deputy Director of Geology & Mining shall ensure that the total extent of mining area within 500m radius of this quarry not exceeds 5ha before execution of the quarry lease proceedings. (As per the order of Hon'ble NGT, PB, New Delhi in O.A No.186 of 2016 (M.A.No.350/2016), O.A. No.200/2016, O.A.No.580/2016

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(M.A.No.1182/2016), O.A.No.102/2017, O.A.No.404/ 2016 (M.A.No. 758/2016, M.A. No. 920 /2016, M.A.No.1122/2016, M.A.No. 12/2017 & M.A.No.843/2017), O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No.981/2016, M.A.No.982/2016 & M.A.No.384/2017).

27. The Assistant Director of Geology & Mining shall monitor the quantity of minerals excavated and ensure that resources other than the approved minerals shall not be excavated from the approved Mining area. The Department of Geology & Mining is responsible for the enforcement of Tamil Nadu Minor Mineral Concession Rules, 1959 and any violation shall be punished according to the said Act.
28. The Project Proponent shall obtain & furnish the letter /certificate from the Assistant Director of Geology and Mining stating that there is no other Minerals/resources like sand in the quarrying area below the approved depth of Mining before execution of Mining lease.
29. The Proponent shall ensure that the project activity including 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.
30. The Project Proponent is also directed to strictly adhere to the Sustainable Sand Mining Management Guidelines, 2016, wherever applicable.
31. The depth of the mining should be limited to the sill level of the sluice of the tank.
32. Floor of excavated pit should be levelled and sides to be sloped gently in the mine closure phase.
33. All the commitment made by the project proponent in the proposal shall be strictly followed.
34. The mining lease holder shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.

General Conditions:


1. EC is given only on the factual records, documents and the commitment furnished in non judicial stamp paper by the proponent.
2. The Proponent shall obtain the Consent from the TNPC Board before commencing the activity.




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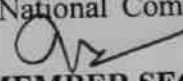
3. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Tamil Nadu.
4. No change in the calendar plan including excavation, quantum of mineral (minor mineral) should be made.
5. Effective safeguard measures, such as regular water sprinkling shall be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

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13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the Environmental Clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this Environmental Clearance, if it is found or if it comes to the knowledge of this SEIAA, TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the Environmental Clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for

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protection of Child Right Rules,2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act,2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter.

22. Any other conditions stipulated by other Statutory/Government authorities shall be complied.
23. Any appeal against this Environmental Clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
24. The Environmental Clearance is issued based on the documents furnished by the project proponent. In case any documents found to be incorrect/not in order at a later date the Environmental Clearance issued to the project will be deemed to be revoked/ cancelled.



सत्यमेव जयते


MEMBER SECRETARY
SEIAA-TN

Copy to:

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





CHENNAI METTEX LAB PRIVATE LIMITED[®]

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN : U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18192

Test Certificate Date : 06.06.2023

Sample Description : Ambient Air Monitoring

Location of Sampling : AAQ1 Core Zone - 10°14'21.24"N 78°35'48.06"E

Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07

Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/10 & 29.11.2023

Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/11 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	62.5	46.9	23.5	8.5	27.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	64.3	47.7	22.1	7.3	25.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	65.5	45.5	23.4	7.9	26.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	61.2	46.4	23.9	8.2	24.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	63.7	45.3	24.1	8.1	24.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	63.9	46.0	23.5	7.5	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	64.7	45.5	24.8	9.2	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	64.9	46.8	23.5	9.7	24.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	63.5	45.9	24.3	9.3	24.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	63.8	45.2	23.6	9.9	25.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	64.1	46.4	24.1	9.1	26.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	64.8	46.2	23.8	8.4	25.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	65.9	46.6	22.8	7.9	24.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	65.7	45.0	22.1	7.3	23.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	66.6	45.3	23.6	7.8	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	66.1	46.7	23.8	6.2	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	66.7	45.0	24.5	6.9	23.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	67.5	46.9	24.3	6.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	60.2	45.7	23.1	7.8	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	62.3	45.6	23.8	8.5	23.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	61.4	46.5	23.6	8.9	24.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	63.7	45.3	24.1	8.2	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	63.5	46.2	23.5	7.8	23.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	62.2	45.6	24.2	7.4	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	64.5	46.1	24.6	8.8	23.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	64.8	46.2	24.8	8.4	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note:BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorized By

P. KAVITHA

NOTE: Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders will be liable for legal action. Unless otherwise stated the submitted results in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only from the completion date of testing... except in case of regulatory samples, which will be retained for a specific period as per statutory requirement; while perishable & environmental testing related remnant samples will be discarded consequent upon completion of testing. Samples are not drawn by us unless otherwise stated. This document cannot be reproduced except in full, without prior written approval of the laboratory. This report is for the exclusive use of Chennai Mettex Lab's customer, and is provided in accordance with the agreement between Chennai Mettex Lab and its Customer.



CHENNAI METTEX LAB PRIVATE LIMITED[®]

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Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18193

Test Certificate Date : 06.06.2023

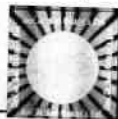
Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ 2 – Near Existing Quarry- 10°14'29.79"N 78°35'52.12"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/12 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/13 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	68.5	40.5	21.7	6.7	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	67.2	41.4	21.1	6.5	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	68.6	41.1	22.3	6.5	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	67.2	41.6	22.7	6.7	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	65.5	41.2	21.4	6.2	21.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	66.8	42.5	21.4	6.8	20.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	64.2	41.2	22.4	7.1	21.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	65.2	42.7	23.1	7.3	19.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	65.9	43.5	21.7	7.4	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	64.7	42.4	21.1	6.9	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	64.9	42.6	20.3	6.2	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	65.2	42.3	23.0	7.1	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	65.1	42.8	21.5	6.5	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	68.4	41.9	22.1	7.8	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	68.9	41.2	21.4	7.1	22.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	69.1	42.7	23.1	6.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	69.2	40.5	21.7	6.4	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	67.2	41.4	22.1	6.2	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	68.2	41.1	20.3	7.2	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	68.1	41.6	22.7	7.0	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	67.7	41.2	22.4	6.2	19.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	67.2	42.5	21.4	6.8	20.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	65.2	41.2	22.4	7.1	21.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	68.1	42.7	20.1	6.3	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	68.9	41.2	21.4	6.1	21.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	65.2	42.7	23.1	6.3	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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

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

End of Report



For Chennai Mettex Lab Private Limited

P. KAVITHA
P. KAVITHA

NOTE: Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders will be liable for legal action. Unless otherwise stated the submitted results in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only from the completion date of testing, except in case of regulatory samples, which will be retained for a specific period as per statutory requirement; while perishable & environmental testing related remnant samples will be discarded consequent upon completion of testing. Samples are not drawn by us unless otherwise stated. This document cannot be reproduced except in full, without prior written approval of the laboratory. This report is for the exclusive use of Chennai Mettex Lab's customer, and is provided in accordance with the agreement between Chennai Mettex Lab and its Customer.



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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN : U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18194 Test Certificate Date : 06.06.2023
Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ3 -Sevoor -10°14'58.07"N 78°36'13.42"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/14 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/15 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	64.9	41.6	21.6	7.9	19.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	64.8	42.8	22.5	7.7	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	65.8	41.2	21.1	6.7	20.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	65.3	42.8	22.1	6.7	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	65.1	40.9	21.4	6.4	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	64.4	41.2	21.8	5.4	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	64.7	42.1	22.0	6.5	19.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	65.2	43.8	23.7	6.3	20.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	64.1	42.7	21.5	7.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	65.5	41.8	22.3	7.7	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	65.6	42.6	22.1	6.6	21.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	65.0	42.8	21.3	6.6	21.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	66.7	43.5	22.5	6.6	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	66.9	42.0	22.9	6.4	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	67.2	39.2	22.0	7.5	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	67.8	42.1	23.7	7.3	20.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	67.5	41.7	21.1	6.9	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	68.2	42.8	22.5	6.7	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	68.9	41.2	21.1	7.7	21.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	66.6	42.3	22.3	7.4	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	64.2	40.9	21.2	7.4	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	64.3	41.2	21.8	5.4	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	63.2	42.6	22.0	6.5	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	63.7	43.1	23.7	6.3	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	65.0	42.8	21.3	6.6	21.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	64.8	42.8	22.5	6.7	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



Signature

Reviewed & Authorized By

Authorized Signatory

NOTE: Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders will be liable for legal action. Unless otherwise stated the submitted results in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days from the completion date of testing .. except in case of regulatory samples, which will be retained for a specific period as per statutory requirement; while perishable & environmental samples will be discarded consequent upon completion of testing. Samples are not drawn by us unless otherwise stated. This document cannot be reproduced except in full, without prior written approval of the laboratory. This report is for the exclusive use of Chennai Mettex Lab's customer, and is provided in accordance with the agreement between Chennai Mettex Lab and its Customer.



CHENNAI METTEX LAB PRIVATE LIMITED[®]

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN : U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18195

Test Certificate Date : 06.06.2023

Sample Description : Ambient Air Monitoring

Location of Sampling : AAQ4 – Thuvar - 10°14'14.50"N 78°34'19.97"E

Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07

Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/16 & 29.11.2023

Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/17 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	63.9	42.5	22.6	7.1	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	63.7	42.7	23.0	7.2	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	61.2	41.8	21.6	6.6	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	64.5	43.4	22.4	6.1	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	65.8	42.6	22.9	6.5	22.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	63.7	42.8	22.1	6.8	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	64.6	41.5	21.2	6.1	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	65.8	42.6	22.6	6.3	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	65.9	41.2	22.1	7.1	21.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	66.5	42.7	21.1	7.1	22.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	64.1	43.4	20.3	7.6	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	61.2	42.1	21.8	6.6	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	62.6	41.6	21.6	6.1	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	62.7	42.5	21.1	7.2	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	63.9	41.5	22.3	7.5	23.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	62.4	40.2	21.3	7.6	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	62.7	42.2	22.8	7.1	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	65.8	43.5	23.3	7.5	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	64.5	41.8	21.6	6.6	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	68.5	43.1	22.8	6.8	20.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	64.2	42.9	22.1	6.1	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	64.1	42.8	22.1	6.8	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	65.5	41.4	21.3	6.4	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	66.2	42.9	22.5	6.2	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	64.5	43.0	20.3	7.3	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	63.7	42.7	23.0	7.2	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorized By

P. KAVITHA
Technical Manager
Authorized Signatory

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN : U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18196 Test Certificate Date : 06.06.2023
Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ5 – Kunnathanpatti - 10°12'38.61"N 78°34'6.39"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/18 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/19 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	65.4	45.6	20.1	7.6	20.	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	65.2	45.8	19.5	7.2	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	66.3	46.2	21.3	7.3	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	66.7	44.4	21.5	6.5	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	65.1	45.7	22.6	6.8	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	64.2	46.3	22.4	6.4	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	62.8	45.8	23.1	7.2	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	63.8	46.7	24.2	7.8	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	65.7	46.1	23.4	7.6	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	67.2	42.3	21.5	6.5	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	64.2	43.2	21.6	6.1	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	64.8	43.5	21.6	6.7	23.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	64.3	45.8	21.5	7.3	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	62.1	42.6	20.9	7.5	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	63.5	41.5	20.7	7.6	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	62.8	42.6	20.6	7.1	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	63.7	44.6	21.5	6.8	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	63.9	43.5	21.6	6.1	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	64.8	43.6	21.4	6.7	22.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	64.1	46.1	23.2	6.3	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	64.5	45.1	21.5	6.8	20.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	65.5	44.7	22.8	6.1	20.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	64.1	44.3	22.4	6.5	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	62.2	42.5	22.6	7.5	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	63.8	43.5	21.9	7.6	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	64.9	41.4	20.4	7.2	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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

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

End of Report

For Chennai Mettex Lab Private Limited



[Signature]

Reviewed & Authorized By
Technical Manager
Authorised Signatory

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Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18197

Test Certificate Date : 06.06.2023

Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ 6 – Thirukolakudi- 10°15'23.29"N 78°37'47.10"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/20 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/21 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	65.2	45.2	21.5	7.9	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	66.4	45.9	20.9	6.5	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	68.1	46.2	21.6	7.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	67.7	47.1	22.1	7.2	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	67.5	45.5	21.4	6.7	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	68.9	43.1	20.8	7.5	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	69.4	48.9	23.5	6.8	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	69.2	46.1	23.6	7.2	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	67.1	46.8	23.1	7.2	22.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	67.5	47.5	21.5	6.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	68.2	46.2	22.6	6.2	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	68.0	46.9	22.1	7.7	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	67.2	48.1	21.8	7.6	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	67.4	47.2	23.2	6.5	23.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	68.2	43.5	21.5	7.2	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	68.9	43.9	21.1	7.4	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	67.2	46.2	23.6	6.1	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	67.7	46.9	21.8	5.7	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	66.2	47.1	22.5	6.2	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	66.4	45.8	21.9	6.2	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	66.8	46.5	22.5	6.5	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	67.2	47.1	22.1	6.6	21.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	69.1	46.6	21.9	6.9	21.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	68.8	46.1	20.4	6.1	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	67.5	46.5	21.9	6.9	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	65.1	46.9	22.7	5.6	22.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report



For Chennai Mettex Lab Private Limited

[Signature]
P. KAVITHA
Technical Manager
Reviewed & Authorized By

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN : U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18198

Test Certificate Date : 06.06.2023

Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ7 – Chandiranpatti- 10°12'11.23"N 78°37'31.07"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/22 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/23 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	69.2	42.2	21.2	6.9	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	68.5	41.5	22.3	6.7	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	68.8	42.9	21.6	6.6	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	67.4	43.7	21.9	6.4	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	68.8	41.5	22.4	7.3	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	69.7	44.6	22.5	7.5	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	68.9	42.2	21.3	7.1	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	67.8	44.3	21.3	7.5	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	66.1	44.5	21.8	4.1	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	65.7	43.3	20.6	5.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	68.2	44.5	21.9	7.8	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	67.7	45.6	21.6	7.9	22.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	68.5	41.9	19.4	6.4	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	66.1	43.7	19.2	6.9	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	69.8	41.6	20.3	6.7	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	67.9	42.3	21.3	6.8	24.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	68.5	42.3	22.6	6.1	24.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	65.7	45.8	21.2	6.4	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	66.7	45.7	18.4	7.3	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	65.0	44.6	20.3	7.3	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	65.5	43.2	22.4	7.6	23.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	66.8	44.3	21.6	7.1	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	64.9	46.9	22.5	7.4	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	66.7	45.7	22.3	7.2	22.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	65.8	43.9	22.5	7.5	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	67.4	44.5	22.9	7.8	23.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

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

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

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
Reviewed & Authorized By

P. KAVITHA
Authorized Signatory

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Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18199

Test Certificate Date : 06.06.2023

Sample Description : Ambient Air Monitoring
Location of Sampling : AAQ8 – Vegupatti- 10°16'33.35"N 78°33'43.86"E
Sampling Plan & Procedure: IS 5182 Part 14:2000 & CML/LAB/ENV/SOP/07
Sampling Instrument ID & Calibration Due Date: CML/ENV/RDS/24 & 29.11.2023
Sampling Instrument ID & Calibration Due Date: CML/ENV/FDS/25 & 29.11.2023

Ambient Air Monitoring Details		Particulate Pollutant			Gaseous Pollutant					Metals Pollutant			Organic Pollutant	
Parameters		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	NH ₃	O ₃	CO	Pb	Ni	As	C ₆ H ₆	BaP
NAAQ Norms		200	100	60	80	80	400	180	4	1	20	6	5	1
Unit		µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	µg/m ³	mg/m ³	µg/m ³	ng/m ³	ng/m ³	µg/m ³	ng/m ³
Date	Period.hrs	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
02.03.2023	7:00-7:00	62.5	38.6	19.3	6.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03.03.2023	7:15-7:15	61.3	38.5	18.6	6.7	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09.03.2023	7:00-7:00	62.4	39.2	19.8	6.4	20.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2023	7:15-7:15	65.2	40.0	20.6	6.9	20.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.03.2023	7:00-7:00	63.5	40.6	20.5	6.8	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2023	7:15-7:15	67.5	41.3	20.3	5.3	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.03.2023	7:00-7:00	68.6	40.9	20.9	5.4	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2023	7:15-7:15	66.7	39.6	21.5	5.6	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.03.2023	7:00-7:00	66.8	39.9	21.3	4.2	21.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.03.2023	7:15-7:15	64.5	40.1	20.5	4.5	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.04.2023	7:00-7:00	65.8	40.2	21.6	4.1	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.04.2023	7:15-7:15	67.3	42.3	20.1	5.4	20.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.04.2023	7:00-7:00	68.1	42.5	20.4	5.5	21.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.04.2023	7:15-7:15	67.5	41.1	20.2	6.6	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.04.2023	7:00-7:00	68.4	40.5	19.7	7.4	21.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.04.2023	7:15-7:15	68.5	40.6	19.6	7.1	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.04.2023	7:00-7:00	66.6	41.9	20.9	8.6	19.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.04.2023	7:15-7:15	67.9	39.7	21.7	5.5	19.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.05.2023	7:00-7:00	65.5	38.6	21.6	5.7	21.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05.05.2023	7:15-7:15	66.1	38.0	22.8	6.2	21.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.05.2023	7:00-7:00	65.8	40.5	21.9	6.3	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.05.2023	7:15-7:15	64.9	40.0	22.7	7.4	21.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18.05.2023	7:00-7:00	67.3	39.6	21.8	6.8	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19.05.2023	7:15-7:15	67.2	40.0	21.1	6.6	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.05.2023	7:00-7:00	65.4	40.5	20.5	6.9	22.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.05.2023	7:15-7:15	66.6	40.6	21.0	7.1	21.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Note: BDL: Below Detection Limit ;DL: Detection Limit ; NH₃: BDL (DL:20); O₃: BDL (DL:20); CO: BDL (DL:1.0); Pb: BDL (DL:0.1); Ni: BDL (DL:1.0); As: BDL (DL:1.0); C₆H₆: BDL (DL:1.0); BaP: BDL (DL:0.1)
Remarks: The values observed for the pollutants given above are within the CPCB standards.

End of Report

For Chennai Mettex Lab Private Limited



P. Kavitha
P. KAVITHA

Reviewed & Authorized By
Authorized Signatory

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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN : U74999TN2008PTC069459
Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

ISSUED TO: ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18200

Test Certificate Date : 06.06.2023

Sample Description : Ambient Noise Monitoring
Location of Sampling : N1 – Core Zone - 10°14'20.74"N 78°35'46.97"E
Location of Sampling : N2 – Near Existing Quarry - 10°14'29.93"N 78°35'51.69"E
Sampling Plan & Procedure: IS 9989:1981 & CML/LAB/ENV/SOP/1
Sampling Instrument : CML/ENV/SLM/001 & CML/ENV/SLM/002

Sampling Date : 21.03.2023

Lotion	N1 – Core zone			N2 – Near Existing Quarry		
	Min	Max	Result	Min	Max	Result
Parameter	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
Time						
06:00-07:00	38.5	44.6	42.5	33.6	40.2	38.0
07:00-08:00	36.7	42.7	40.7	36.1	46.6	44.0
08:00-09:00	40.9	46.3	44.4	37.5	46.9	44.4
09:00-10:00	41.8	48.3	46.2	37.2	48.1	45.4
10:00-11:00	42.5	47.3	45.5	38.1	48.5	45.9
11:00-12:00	44.3	45.3	44.8	38.4	47.2	44.7
12:00-13:00	40.9	45.5	43.8	34.9	43.4	41.0
13:00-14:00	43.4	46.1	45.0	37.2	48.8	46.1
14:00-15:00	41.9	42.9	42.4	36.2	43.7	41.4
15:00-16:00	39.6	40.4	40.0	35.9	46.3	43.7
16:00-17:00	35.1	38.7	37.3	31.6	38.4	36.2
17:00-18:00	35.5	39.9	38.2	32.5	40.9	38.5
18:00-19:00	34.8	45.2	42.6	34.4	43.4	40.9
19:00-20:00	38.1	45.9	43.6	31.2	39.7	37.3
20:00-21:00	35.2	44.9	42.3	36.9	46.5	43.9
21:00-22:00	39.6	45.3	43.3	32.5	40.8	38.4
22:00-23:00	35.4	38.7	37.4	35.4	44.3	41.8
23:00-00:00	32.7	37.6	35.8	34.1	42.4	40.0
00:00-01:00	33.8	38.8	37.0	32.9	40.7	38.4
01:00-02:00	31.3	34.3	33.1	32.3	42.9	40.3
02:00-03:00	32.6	37.1	35.4	33.7	41.2	38.9
03:00-04:00	32.4	36.7	35.1	34.6	38.5	37.0
04:00-05:00	32.4	35.5	34.2	34.1	40.7	38.5
05:00-06:00	33.6	34.8	34.2	35.6	39.5	38.0
Result	Day Means		42.3	Day Means		41.9
	Night Means		35.0	Night Means		38.7

Note: CPCB Norms Industrial Area Day Time:75 dB(A); Night Time:70 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

End of Report

For Chennai Mettex Lab Private Limited



Reviewed & Authorized By
Technical Manager
Authorized Signatory

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TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18201

Test Certificate Date : 06.06.2023

Sample Description : Ambient Noise Monitoring
Location of Sampling : N3 – Sevoor - 10°14'57.23"N 78°36'15.11"E
Location of Sampling : N4 – Thuvar - 10°14'14.20"N 78°34'21.58"E
Sampling Plan & Procedure: IS 9989:1981 & CML/LAB/ENV/SOP/10
Sampling Instrument ID : CML/ENV/SLM/003 & CML/ENV/SLM/004

Sampling Date : 21.03.2023						
Loction Parameter Time	N3 – Sevoor			N4 – Thuvar		
	Min dB(A)	Max dB(A)	Result dB(A)	Min dB(A)	Max dB(A)	Result dB(A)
06:00-07:00	35.1	39.5	37.8	33.8	42.6	39.6
07:00-08:00	35.4	40.2	38.4	35.6	43.3	40.1
08:00-09:00	35.6	41.6	39.6	35.7	44.5	41.0
09:00-10:00	35.1	41.2	39.1	31.6	46.9	42.0
10:00-11:00	34.9	43.4	41.0	36.4	48.3	44.0
11:00-12:00	36.2	45.7	43.2	32.8	45.7	45.6
12:00-13:00	34.1	48.2	45.4	34.6	43.2	42.9
13:00-14:00	32.9	49.3	46.4	32.9	41.4	40.8
14:00-15:00	38.4	49.7	47.0	37.4	49.3	39.0
15:00-16:00	34.6	47.9	45.1	32.6	40.7	46.6
16:00-17:00	32.9	40.8	38.4	32.7	40.3	38.3
17:00-18:00	34.1	43.4	40.9	31.6	38.5	38.0
18:00-19:00	33.6	41.6	39.2	31.8	38.3	36.3
19:00-20:00	32.8	40.8	38.4	32.4	40.4	36.2
20:00-21:00	34.1	43.4	40.9	33.6	41.3	38.0
21:00-22:00	36.9	45.5	43.1	32.9	40.2	39.0
22:00-23:00	32.7	41.9	39.4	31.7	39.7	37.9
23:00-00:00	34.2	43.6	41.1	32.6	40.4	37.3
00:00-01:00	32.6	40.8	38.4	33.9	37.1	38.1
01:00-02:00	31.3	35.5	33.9	35.2	38.7	35.8
02:00-03:00	32.8	36.9	35.3	34.6	35.9	37.3
03:00-04:00	34.1	37.3	36.0	33.7	36.5	35.3
04:00-05:00	35.5	37.1	36.4	32.6	35.5	35.3
05:00-06:00	33.9	38.5	36.8	32.1	42.2	34.3
Result	Day Means		41.4	Day Means		40.3
	Night Means		36.8	Night Means		36.2

Note: CPCB Norms Residential Area Day Time:55 dB(A); Night Time:45 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

End of Report

For Chennai Mettex Lab Private Limited



P. Kavitha
Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
 S.F.Nos. 118/4, 118/5, 118/6A & 119/3
 Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18202

Test Certificate Date : 06.06.2023

Sample Description : Ambient Noise Monitoring
 Location of Sampling : N5 – Kunnathanpatti - 10°12'38.39"N 78°34'8.77"E
 Location of Sampling : N6 – Thirukolakudi - 10°15'22.47"N 78°37'48.97"E
 Sampling Plan & Procedure: IS 9989:1981 & CML/LAB/ENV/SOP/10
 Sampling Instrument ID : CML/ENV/SLM/001 & CML/ENV/SLM/02

Sampling Date : 15.05.2023						
Location	N5 - Kunnathanpatti			N6 – Thirukolakudi		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	31.2	39.9	37.4	34.5	43.2	40.7
07:00-08:00	33.7	41.5	39.2	33.7	40.4	38.2
08:00-09:00	34.5	42.8	40.4	32.8	41.8	39.3
09:00-10:00	35.5	44.5	42.0	33.9	38.1	36.5
10:00-11:00	36.1	45.1	42.6	34.7	40.6	38.6
11:00-12:00	38.2	43.3	41.5	34.1	40.2	38.1
12:00-13:00	38.3	41.7	40.3	32.8	38.5	36.5
13:00-14:00	36.7	42.4	40.4	34.7	43.2	40.8
14:00-15:00	32.7	45.9	43.1	32.6	40.6	38.2
15:00-16:00	31.5	40.5	38.0	31.3	38.9	36.6
16:00-17:00	32.5	41.7	39.2	32.6	41.2	38.8
17:00-18:00	36.5	44.3	42.0	33.5	42.7	40.2
18:00-19:00	34.2	43.7	41.2	34.4	43.2	40.7
19:00-20:00	33.8	41.4	39.1	32.9	40.6	38.3
20:00-21:00	31.2	39.5	37.1	33.6	41.4	39.1
21:00-22:00	32.8	40.6	38.3	31.5	38.6	36.4
22:00-23:00	33.9	41.4	39.1	32.5	40.1	37.8
23:00-00:00	31.4	38.5	36.3	31.7	38.2	36.1
00:00-01:00	32.8	40.1	37.8	32.3	39.3	37.1
01:00-02:00	33.5	36.2	35.1	33.9	38.4	36.7
02:00-03:00	35.7	39.5	38.0	31.5	35.5	33.9
03:00-04:00	36.1	39.2	37.9	32.4	36.3	34.8
04:00-05:00	35.2	38.1	36.9	34.1	35.8	35.0
05:00-06:00	34.6	36.9	35.9	32.6	33.6	33.1
Result	Day Means		40.0	Day Means		38.5
	Night Means		36.8	Night Means		35.2

Note: CPCB Norms Residential Area Day Time:55 dB(A); Night Time:45 dB(A)
 The Noise level in the above location exists within the permissible limits of CPCB.

End of Report

For Chennai Mettex Lab Private Limited



[Signature]
 Reviewed & Authorized By
P. KAVITHA
 Technical Manager
 Authorised Signatory

NOTE: Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders will be liable for legal action. Unless otherwise stated the submitted results in this test report refer only to the sample(s) tested and such sample(s) are retained for 15 days only from the completion date of testing .. except in case of regulatory samples, which will be retained for a specific period as per statutory requirement; while perishable & environmental testing related remnant samples will be discarded consequent upon completion of testing. Samples are not drawn by us unless otherwise stated. This document cannot be reproduced except in full, without prior approval of the laboratory. This report is for the exclusive use of Chennai Mettex Lab's customer, and is provided in accordance with the agreement between Chennai Mettex Lab and its Customer.



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Phone : +91 44 22323163, 22311034, 42179490, 42179491 | CIN : U74999TN2008PTC069459
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TEST REPORT

ISSUED TO: Thiru.C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk, Sivagangai District.

Test Certificate No : CML/23-24/18203 Test Certificate Date : 06.06.2023

Sample Description : Ambient Noise Monitoring
Location of Sampling : N7 - Chandiranpatti- 10°12'11.05"N 78°37'31.69"E
Location of Sampling : N8 - Vegupatti - 10°16'32.87"N 78°33'44.13"E
Sampling Plan & Procedure: IS 9989:1981 & CML/LAB/ENV/SOP/10
Sampling Instrument ID : CML/ENV/SLM/003 & CML/ENV/SLM/004

Sampling Date : 15.05.2023						
Location	N7 - Chandiranpatti			N8 - Vegupatti		
Parameter	Min	Max	Result	Min	Max	Result
Time	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
06:00-07:00	33.9	40.5	38.3	31.5	38.1	35.9
07:00-08:00	36.1	43.6	41.3	32.6	40.7	38.3
08:00-09:00	33.2	44.9	42.2	33.9	41.4	39.1
09:00-10:00	34.7	43.2	40.8	31.4	39.5	37.1
10:00-11:00	31.6	40.9	38.4	32.5	40.2	37.9
11:00-12:00	32.5	41.2	38.7	33.8	41.4	39.1
12:00-13:00	36.2	43.2	41.0	35.6	43.6	41.2
13:00-14:00	35.9	44.8	42.3	31.8	38.4	36.2
14:00-15:00	31.9	39.1	36.8	33.9	41.7	39.4
15:00-16:00	33.6	41.4	39.1	32.5	40.9	38.5
16:00-17:00	31.5	39.2	36.9	34.8	43.6	41.1
17:00-18:00	32.8	40.7	38.3	32.6	40.4	38.1
18:00-19:00	32.6	40.3	38.0	35.1	43.1	40.7
19:00-20:00	32.7	41.7	39.2	36.1	40.2	38.6
20:00-21:00	33.9	42.5	40.1	34.2	43.6	41.1
21:00-22:00	34.2	43.1	40.6	36.5	47.1	44.5
22:00-23:00	36.1	45.9	43.3	33.8	41.2	38.9
23:00-00:00	33.8	41.7	39.3	33.9	42.1	39.7
00:00-01:00	31.9	40.3	37.9	31.5	39.4	37.0
01:00-02:00	33.1	41.9	39.4	32.9	40.2	37.9
02:00-03:00	32.9	33.9	33.4	33.4	41.7	39.3
03:00-04:00	31.3	34.8	33.4	31.7	38.5	36.3
04:00-05:00	33.8	36.5	35.4	32.6	40.8	38.4
05:00-06:00	31.9	38.5	36.3	31.3	38.6	36.3
Result	Day Means		39.7	Day Means		39.2
	Night Means		36.5	Night Means		37.9

Note: CPCB Norms Residential Area Day Time:55 dB(A); Night Time:45 dB(A)
The Noise level in the above location exists within the permissible limits of CPCB.

End of Report

For Chennai Mettex Lab Private Limited



Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory



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TEST REPORT

Page No.1 of 2

ISSUED TO : Thiru. C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk,
Sivagangai District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18204

Date Of Receipt : 25.05.2023

Analysis Commenced On: 25.05.2023

Analysis Completed On : 06.06.2023

Cust. Ref : SRF Dated : 24.05.2023.

Lab No : 24016856

Sample Description : Surface Water (SW-1) – Tank Near Sevoor.
(as stated by customer)

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:1983 (Reaff:2017)	10 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.55
Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	1053 µmhos/cm
Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	5.1 NTU
Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	621 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	192.74 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	32.1 mg/l
Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	27.4 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	277 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	135.5 mg/l
Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	76.1 mg/l
Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.16 mg/l
Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.55 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	17.2 mg/l
Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)

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Lab No: 24016856 T.C No: CML/23-24/18204 Dated : 06.06.2023

Page No. 2 of 2

TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	6.2 mg/l
Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	36 mg/l
Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.3 mg/l
Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	1.2 mg/l
Sulphide as H ₂ S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	15.5 mg/l
Discipline: Biological		Group: Water
Total Coliform	APHA 23 rd Edn. 2017:9221B	410 MPN/100ml
<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	130 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number.		

End of Report


Reviewed & Authorized By

B. ARUNAN
Technical Manager
Authorised Signatory



For Chennai Mettex Lab Private Limited


Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory



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TEST REPORT

Page No.1 of 2

ISSUED TO : Thiru. C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk,
Sivagangai District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18205

Date Of Receipt : 25.05.2023

Analysis Commenced On: 25.05.2023

Analysis Completed On : 06.06.2023

Cust. Ref : SRF Dated : 24.05.2023.

Lab No : 24016857

Sample Description : Surface Water (SW-2) – Tank Near Thuvar.
(as stated by customer)

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:1983 (Reaff:2017)	5 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.02
Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	1281 µmhos/cm
Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	2.2 NTU
Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	455 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	133.34 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	25.1 mg/l
Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	17.2 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	197 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	80.6 mg/l
Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	57.5 mg/l
Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.14 mg/l
Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.22 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	11.5 mg/l
Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)

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Lab No: 24016857

T.C No: CML/23-24/18205

Dated: 06.06.2023

Page No. 2 of 2

TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	2.8 mg/l
Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	24 mg/l
Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.6 mg/l
Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:1 mg/l)
Sulphide as H ₂ S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	13.3 mg/l
Discipline: Biological Group: Water		
Total Coliform	APHA 23 rd Edn. 2017:9221B	360 MPN/100ml
<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	110 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number.		

End of Report

For Chennai Mettext Lab Private Limited


 Reviewed & Authorized By
B. ARUNAN
 Technical Manager
 Authorised Signatory




 Reviewed & Authorized By
P. KAVITHA
 Technical Manager
 Authorised Signatory



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TEST REPORT

Page No.1 of 2

ISSUED TO : Thiru. C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk,
Sivagangai District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18206

Date Of Receipt : 25.05.2023

Analysis Commenced On: 25.05.2023

Analysis Completed On : 06.06.2023

Cust. Ref : SRF Dated : 24.05.2023.

Lab No : 24016858

Sample Description : Ground Water (WW-1) – Near Project Area
(as stated by customer)

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:1983 (Reaff:2017)	10 Hazen
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.97
Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	1203 µmhos/cm
Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	3.9 NTU
Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	710 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	234.3 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	40.2 mg/l
Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	32.6 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	274 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	134.5 mg/l
Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	110 mg/l
Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.29 mg/l
Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.32 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	27.3 mg/l
Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)

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Lab No: 24016858

T.C No: CML/23-24/18206 Dated : 06.06.2023

Page No. 2 of 2

TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
BOD @ 27°C for 3 days	IS 3025 Part 44:1993 (Reaff:2019)	8.9 mg/l
Chemical Oxygen Demand	IS 3025 Part 58:2006 (Reaff:2017)	48 mg/l
Dissolved Oxygen	IS 3025 Part 38:1989 (Reaff:2019)	5.4 mg/l
Barium as Ba	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 34-1988 (Reaff. 2019)	1.5 mg/l
Sulphide as H ₂ S	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 17 -1984 (Reaff:2017)	30.5 mg/l
Discipline: Biological	Group: Water	
Total Coliform	APHA 23 rd Edn. 2017:9221B	470 MPN/100ml
<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	120 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number.		

End of Report

For Chennai Mettex Lab Private Limited


Reviewed & Authorized By
B. ARUNAN
Technical Manager
Authorised Signatory




Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory



CHENNAI METTEX LAB PRIVATE LIMITED[®]

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TEST REPORT

Page No.1 of 2

ISSUED TO : Thiru. C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk,
Sivagangai District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18207

Date Of Receipt : 25.05.2023

Cust. Ref : SRF Dated : 24.05.2023.

Analysis Commenced On: 25.05.2023

Lab No : 24016859

Analysis Completed On : 06.06.2023

Sample Description : Ground Water (WW-2) – Kunnathanpatti
(as stated by customer)

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:1983 (Reaff:2017)	5
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.73
Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	831 µmhos/cm
Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1.2 NTU
Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	490 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	154.04 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	27.3 mg/l
Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	20.9 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	171.5 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	120 mg/l
Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	55 mg/l
Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.11 mg/l
Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.26 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	5.5 mg/l
Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)

...Contd....2



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Lab No: 24016859 T.C No: CML/23-24/18207 Dated : 06.06.2023

Page No. 2 of 2

TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
Ammonia total ammonia-N) (as	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
Sulphide as H ₂ S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
Discipline: Biological Group: Water		
Total Coliform	APHA 23 rd Edn. 2017:9221B	170 MPN/100ml
<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number, < 1.8 MPN/100ml can be taken as "No Microbial Growth".		

End of Report

For Chennai Mettex Lab Private Limited

Reviewed & Authorized By
B. ARUNAN
Technical Manager
Authorised Signatory



Reviewed & Authorized By
P. KAVITHA
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TEST REPORT

ISSUED TO : Thiru. C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk,
Sivagangai District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18208

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Analysis Commenced On: 25.05.2023

Analysis Completed On : 06.06.2023

Cust. Ref : SRF Dated : 24.05.2023.

Lab No : 24016860

Sample Description : Ground Water (BW-1) – Vegupatti
(as stated by customer)

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:1983 (Reaff:2017)	5
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.06
Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	925 µmhos/cm
Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1.9 NTU
Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	546 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	196.44 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	34.9 mg/l
Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	26.6 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	194.6 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	119 mg/l
Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	65.7 mg/l
Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.29 mg/l
Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.21 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	8.7 mg/l
Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)

...Contd....2



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Lab No: 24016860

T.C No: CML/23-24/18208 Dated : 06.06.2023

Page No. 2 of 2

TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
Sulphide as H ₂ S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 29-1986 (Reaff. 2019)	BDL (DL:1.0 mg/l)
Discipline: Biological Group: Water		
Total Coliform	APHA 23 rd Edn. 2017:9221B	120 MPN/100ml
<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number, < 1.8 MPN/100ml can be taken as "No Microbial Growth".		

End of Report

For Chennai Mettex Lab Private Limited

Reviewed & Authorized By

B. ARUNAN
Technical Manager
Authorised Signatory



Reviewed & Authorized By

P. KAVITHA
Technical Manager
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TEST REPORT

ISSUED TO : Thiru. C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk,
Sivanganai District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18209

Date Of Receipt : 25.05.2023

Analysis Commenced On: 25.05.2023

Analysis Completed On : 06.06.2023

Cust. Ref : SRF Dated : 24.05.2023.

Lab No : 24016861

Sample Description : Ground Water (BW-2) – Chandiranpatti.s
(as stated by customer)

TEST	PROTOCOL	RESULTS
Discipline: Chemical		Group: Water
Colour	IS 3025 Part 4:1983 (Reaff:2017)	5
Odour	IS 3025 Part 5:2018	Agreeable
pH at 25°C	IS 3025 Part 11:1983 (Reaff:2017)	7.88
Conductivity @ 25°C	IS 3025 Part 14:2013 (Reaff:2019)	969 µmhos/cm
Turbidity	IS 3025 Part 10:1984 (Reaff:2017)	1.2 NTU
Total Dissolved Solids	IS 3025 Part 16:1984 (Reaff:2017)	572 mg/l
Total Hardness as CaCO ₃	IS 3025 Part 21:2009 (Reaff:2019)	179.29 mg/l
Calcium as Ca	IS 3025 Part 40:1991 (Reaff:2019)	30.5 mg/l
Magnesium as Mg	IS 3025 Part 46:1994 (Reaff:2019)	25.1 mg/l
Total Alkalinity as CaCO ₃	IS 3025 Part 23:1986 (Reaff:2019)	210.1 mg/l
Chloride as Cl	IS 3025 Part 32:1988 (Reaff:2019)	133 mg/l
Sulphate as SO ₄	IS 3025 Part 24:1986 (Reaff:2019)	64.5 mg/l
Iron as Fe	IS 3025 Part 53:2003 (Reaff:2019)	0.22 mg/l
Residual Free Chlorine	IS 3025 Part 26:1986 (Reaff:2019)	BDL (DL:0.1 mg/l)
Fluoride as F	APHA 23 rd Edn. 2017:4500 F,D	0.27 mg/l
Nitrate as NO ₃	IS 3025 Part 34:1988 (Reaff:2019)	7.7 mg/l
Copper as Cu	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.01 mg/l)
Manganese as Mn	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Mercury as Hg	USEPA 200.8	BDL (DL:0.0005 mg/l)
Cadmium as Cd	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.001 mg/l)
Selenium as Se	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)

...Contd....2



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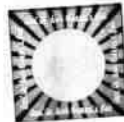
Lab No: 24016861 T.C No: CML/23-24/18209 Dated : 06.06.2023

Page No. 2 of 2

TEST	PROTOCOL	RESULTS
Aluminium as Al	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Lead as Pb	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.005 mg/l)
Zinc as Zn	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Total Chromium as Cr	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.02 mg/l)
Boron as B	IS 3025 Part 65:2014 (Reaff:2019)	BDL(DL : 0.05 mg/l)
Mineral Oil	IS 3025 Part 39-1991 (Reaff. 2019)	BDL(DL : 0.01 mg/l)
Phenolic compounds as C ₆ H ₅ OH	IS 3025 Part 43-1992(Reaff: 2019)	BDL (DL:0.0005 mg/l)
Anionic Detergents (as MBAS)	IS 13428 – 2005 (Reaff:2019) (Annex K)	BDL (DL:0.01 mg/l)
Cyanide as CN	IS 3025 Part 27-1986 (Reaff. 2019)	BDL (DL:0.01 mg/l)
Barium as Ba	IS 3025 Part 44:1993 (Reaff:2019)	BDL(DL:0.05 mg/l)
Ammonia (as total ammonia-N)	IS 3025 Part 58:2006 (Reaff:2017)	BDL (DL:0.01 mg/l)
Sulphide as H ₂ S	IS 3025 Part 38:1989 (Reaff:2019)	BDL (DL:0.01 mg/l)
Molybdenum as Mo	IS 3025 Part 65:2014 (Reaff:2019)	BDL (DL:0.02 mg/l)
Total Arsenic as As	IS 3025 Part 34-1988 (Reaff. 2019)	BDL (DL:0.005 mg/l)
Total Suspended Solids	IS 3025 Part 29-1986 (Reaff: 2019)	BDL (DL:1.0 mg/l)
Discipline: Biological Group: Water		
Total Coliform	APHA 23 rd Edn. 2017:9221B	110 MPN/100ml
<i>Escherichia coli</i>	APHA 23 rd Edn. 2017:9221F	< 1.8 MPN/100ml
Note : APHA – American Public Health Association, BDL – Below Detection Limit, DL – Detection Limit, MPN – Most Probable Number, < 1.8 MPN/100ml can be taken as "No Microbial Growth".		

End of Report


Reviewed & Authorized By
B. ARUNAN
Technical Manager
Authorised Signatory



For Chennai Mettex Lab Private Limited


Reviewed & Authorized By
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Technical Manager
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TEST REPORT

Page No.1 of 1

ISSUED TO : Thiru. C.Ammavasai,
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 Sivagangai District.

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Date Of Receipt : 25.05.2023

Analysis Commenced On: 25.05.2023

Analysis Completed On : 06.06.2023

Cust. Ref : SRF Dated : 24.05.2023.

Lab No : 24016862

Sample Description : Soil – 1 – Core Zone
 (as stated by customer)

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.33
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	455 µmhos/cm
03	Texture :		
	Clay	Gravimetric Method	33.6 %
	Sand		38.7 %
	Silt		27.7 %
04	Water Holding Capacity	By Gravimetric Method	46.1 %
05	Bulk Density	By Cylindrical Method	1.05 g/cm ³
06	Porosity	By Gravimetric Method	41.4 %
07	Calcium as Ca	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	153.5 mg/kg
08	Magnesium as Mg		66.7 mg/kg
09	Manganese as Mn		3.6 mg/kg
10	Zinc as Zn		2.7 mg/kg
11	Boron as B		1.2 mg/kg
12	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	133 mg/kg
13	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.012 %
14	Potassium as K	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	18.2 mg/kg
15	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	1.26 mg/kg
16	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	450 mg/kg
17	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
18	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
19	Copper as Cu		BDL (DL : 1.0 mg/kg)
20	Lead as Pb		0.71 mg/kg
21	Iron as Fe		17.2 mg/kg
22	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.48 %
23	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.44 %
24	Cation Exchange Capacity	USEPA 9080 – 1986	46.8 meq/100g of soil

End of Report

For Chennai Mettex Lab Private Limited



P. Kavitha
 Reviewed & Authorized By
P. KAVITHA
 Technical Manager
 Authorised Signatory

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TEST REPORT

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T.C Date : 06.06.2023

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Cust. Ref : SRF Dated : 24.05.2023.

Analysis Commenced On: 25.05.2023

Lab No : 24016866

Analysis Completed On : 06.06.2023

Sample Description : Soil - 2 - Sevoor
(as stated by customer)

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.98
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	550 µmhos/cm
03	Texture :		
	Clay	Gravimetric Method	39.4 %
	Sand		36.2 %
	Silt		24.4 %
04	Water Holding Capacity	By Gravimetric Method	46.3 %
05	Bulk Density	By Cylindrical Method	1.01 g/cm ³
06	Porosity	By Gravimetric Method	48 %
07	Calcium as Ca	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	169.5 mg/kg
08	Magnesium as Mg		130 mg/kg
09	Manganese as Mn		24 mg/kg
10	Zinc as Zn		1.71 mg/kg
11	Boron as B		1.6 mg/kg
12	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	203.5 mg/kg
13	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0045 %
14	Potassium as K	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	51 mg/kg
15	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.2 mg/kg
16	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	530 mg/kg
17	Cadmium as Cd	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
18	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
19	Copper as Cu		BDL (DL : 1.0 mg/kg)
20	Lead as Pb		0.67 mg/kg
21	Iron as Fe		2.8 mg/kg
22	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.77 %
23	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.61 %
24	Cation Exchange Capacity	USEPA 9080 - 1986	38.6 meq/100g of soil

End of Report

For Chennai Mettex Lab Private Limited



P. Kavitha
Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory

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ISSUED TO : Thiru. C.Ammavasai,
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Sevvur Village, Thiruppattur Taluk,
Sivagangai District.

T.C Date : 06.06.2023

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Analysis Completed On : 06.06.2023

Cust. Ref : SRF Dated : 24.05.2023.

Lab No : 24016864

Sample Description : Soil - 3 - Thuvar
(as stated by customer)

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.10
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	560 µmhos/cm
03	Texture :		
	Clay	Gravimetric Method	37.8 %
	Sand		38.5 %
	Silt		23.7 %
04	Water Holding Capacity	By Gravimetric Method	45.9 %
05	Bulk Density	By Cylindrical Method	0.94 g/cm ³
06	Porosity	By Gravimetric Method	42.9 %
07	Calcium as Ca	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	270 mg/kg
08	Magnesium as Mg		76 mg/kg
09	Manganese as Mn		24.5 mg/kg
10	Zinc as Zn		4.1 mg/kg
11	Boron as B		1.6 mg/kg
12	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	140 mg/kg
13	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.012 %
14	Potassium as K	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	35 mg/kg
15	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	1.06 mg/kg
16	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	463 mg/kg
17	Cadmium as Cd	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
18	Total Chromium as Cr		1.07 mg/kg
19	Copper as Cu		BDL (DL : 1.0 mg/kg)
20	Lead as Pb		0.31 mg/kg
21	Iron as Fe		1.86 mg/kg
22	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.22 %
23	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.29 %
24	Cation Exchange Capacity	USEPA 9080 - 1986	42.8 meq/100g of soil

End of Report

For Chennai Mettext Lab Private Limited




Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory

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CHENNAI METTEX LAB PRIVATE LIMITED[®]

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 Email : test@mettexlab.com | Web : www.mettexlab.com

TEST REPORT

Page No.1 of 1

ISSUED TO : Thiru. C.Ammavasai,
 S.F.Nos. 118/4, 118/5, 118/6A & 119/3
 Sevvur Village, Thiruppattur Taluk,
 Sivagangai District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18213

Date Of Receipt : 25.05.2023

Analysis Commenced On: 25.05.2023

Analysis Completed On : 06.06.2023

Cust. Ref : SRF Dated : 24.05.2023.

Lab No : 24016865

Sample Description : Soil - 4 - Thirukolakudi
 (as stated by customer)

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	8.27
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	467 µmhos/cm
03	Texture :		
	Clay	Gravimetric Method	37.5 %
	Sand		34.7 %
	Silt		27.8 %
04	Water Holding Capacity	By Gravimetric Method	47.4 %
05	Bulk Density	By Cylindrical Method	1.03 g/cm ³
06	Porosity	By Gravimetric Method	46.5 %
07	Calcium as Ca	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	150 mg/kg
08	Magnesium as Mg		133.5 mg/kg
09	Manganese as Mn		40.1 mg/kg
10	Zinc as Zn		2.6 mg/kg
11	Boron as B		1.9 mg/kg
12	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	90.4 mg/kg
13	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.011 %
14	Potassium as K	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	32 mg/kg
15	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	1.9 mg/kg
16	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	374.1 mg/kg
17	Cadmium as Cd	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
18	Total Chromium as Cr		1.31 mg/kg
19	Copper as Cu		BDL (DL : 1.0 mg/kg)
20	Lead as Pb		0.88 mg/kg
21	Iron as Fe		2.9 mg/kg
22	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	3.25 %
23	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.89 %
24	Cation Exchange Capacity	USEPA 9080 - 1986	45.5 meq/100g of soil

End of Report

For Chennai Mettex Lab Private Limited



P. Kavitha
 Reviewed & Authorized By
P. KAVITHA
 Technical Manager
 Authorised Signatory

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Email : test@mettexlab.com | Web : www.mettexlab.com

Page No.1 of 1

TEST REPORT

ISSUED TO : Thiru. C.Ammavasai,
S.F.Nos. 118/4, 118/5, 118/6A & 119/3
Sevvur Village, Thiruppattur Taluk,
Sivagangai District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18214

Date Of Receipt : 25.05.2023

Cust. Ref : SRF Dated : 24.05.2023.

Analysis Commenced On: 25.05.2023

Lab No : 24016866

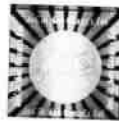
Analysis Completed On : 06.06.2023

Sample Description : Soil - 5 - Chandiranpatti
(as stated by customer)

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	7.69
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	480 µmhos/cm
03	Texture :		
	Clay	Gravimetric Method	35.5 %
	Sand		33.9 %
	Silt		30.6 %
04	Water Holding Capacity	By Gravimetric Method	46.4 %
05	Bulk Density	By Cylindrical Method	1.08 g/cm ³
06	Porosity	By Gravimetric Method	45.5 %
07	Calcium as Ca	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	158 mg/kg
08	Magnesium as Mg		129 mg/kg
09	Manganese as Mn		21.8 mg/kg
10	Zinc as Zn		1.64 mg/kg
11	Boron as B		1.9 mg/kg
12	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	179 mg/kg
13	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.0011 %
14	Potassium as K	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	65.5 mg/kg
15	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.37 mg/kg
16	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	450 mg/kg
17	Cadmium as Cd	USEPA 3050 B - 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
18	Total Chromium as Cr		BDL (DL : 1.0 mg/kg)
19	Copper as Cu		BDL (DL : 1.0 mg/kg)
20	Lead as Pb		0.16 mg/kg
21	Iron as Fe		2.29 mg/kg
22	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	2.67 %
23	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.55 %
24	Cation Exchange Capacity	USEPA 9080 - 1986	45.8 meq/100g of soil

End of Report

For Chennai Mettex Lab Private Limited




Reviewed & Authorized By
P. KAVITHA
Technical Manager
Authorised Signatory

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TEST REPORT

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 S.F.Nos. 118/4, 118/5, 118/6A & 119/3
 Sevvur Village, Thiruppattur Taluk,
 Sivagangai District.

T.C Date : 06.06.2023

T.C No : CML/23-24/18215

Date Of Receipt : 25.05.2023

Cust. Ref : SRF Dated : 24.05.2023.

Analysis Commenced On: 25.05.2023

Lab No : 24016867

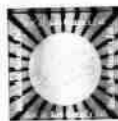
Analysis Completed On : 06.06.2023

Sample Description : Soil – 6 – Vegupatti
(as stated by customer)

S. No	Test Parameters	Protocols	Results
01	pH @ 25°C	IS 2720 Part 26 - 1987 (Reaff:2016)	7.90
02	Conductivity @ 25°C	IS 14767 - 2000 (Reaff : 2016)	528 µmhos/cm
03	Texture :		
	Clay	Gravimetric Method	40.1 %
	Sand		32.2 %
	Silt		27.7 %
04	Water Holding Capacity	By Gravimetric Method	48.5 %
05	Bulk Density	By Cylindrical Method	1.10 g/cm ³
06	Porosity	By Gravimetric Method	47.6 %
07	Calcium as Ca	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	130 mg/kg
08	Magnesium as Mg		96.7 mg/kg
09	Manganese as Mn		22.5 mg/kg
10	Zinc as Zn		4.4 mg/kg
11	Boron as B		0.91 mg/kg
12	Chloride as Cl	APHA 23 rd Edn 2019 4500 Cl B	130.7 mg/kg
13	Total Soluble Sulphate as SO ₄	IS 2720 Part 27 : 1977 (Reaff:2015)	0.015 %
14	Potassium as K	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	44 mg/kg
15	Total Phosphorus as P	IS 10158 : 1982 (Reaff: 2019)	2.8 mg/kg
16	Total Nitrogen as N	IS 14684 : 1999 (Reaff:2019)	477.1 mg/kg
17	Cadmium as Cd	USEPA 3050 B – 1996 & USEPA 6010 C - 2000	BDL (DL : 1.0 mg/kg)
18	Total Chromium as Cr		1.55 mg/kg
19	Copper as Cu		BDL (DL : 1.0 mg/kg)
20	Lead as Pb		0.76 mg/kg
21	Iron as Fe		2.13 mg/kg
22	Organic Matter	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.83 %
23	Organic Carbon	IS : 2720 Part 22: 1972 (Reaff: 2015)	1.06 %
24	Cation Exchange Capacity	USEPA 9080 – 1986	40.1 meq/100g of soil

End of Report

For Chennai Mettex Lab Private Limited



P. Kavitha
 Reviewed & Authorized By
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 Technical Manager
 Authorised Signatory

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National Accreditation Board for Education and Training



Certificate of Accreditation

Geo Exploration & Mining Solutions, Salem

No. 17, Advaita Ashram Road, Fairlands, Salem – 636 004, Tamilnadu, India.

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S.No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals opencast only	1	1 (a) (i)	A
2	Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes	31	7 (c)	B
3	Building and construction projects	38	8(a)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Jan 06, 2023 and posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACO/23/2684 dated Feb 20, 2023. The accreditation needs to be renewed before the expiry date by Geo Exploration & Mining Solutions, Salem following due process of assessment.

Sr. Director, NABET
Dated: Feb 20, 2023

Certificate No.
NABET/EIA/2225/RA 0276

Valid up to
August 06, 2025

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