DRAFT ENVIRONMENTAL IMPACT ASSESSMENT

&

ENVIRONMENT MANAGEMENT PLAN

FOR OBTAINING

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

"B1" CATEGORY (Cluster) – MINOR MINERAL – CLUSTER –

PATTA LAND - FRESH QUARRY

M/s. VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED ROUGH STONE AND GRAVEL QUARRY

Cluster Extent – 21.24.0Ha, Lease Period: 10 Years

Project Proponent

M/s. VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED,

Thiru.A.C.Thangam (Director),

Temple Towers, 2nd Floor, New No.76, North Mada Street, Mylapore, Chennai,
Tamil Nadu State – 600 004.

PROJECT LOCATION	PROPOSED PRODUCTION
S.F No: 121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D **Extent: 11.77.0Ha** Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State.	**For First Five Year Production (As per ToR)** **15,00,030 m³ of Rough stone** **3,98,428m³ of Weathered Rock** **2,07,998m³ of Gravel** **Proposed Depth = 48m Bgl** **For Second Five Year Production** **14,47,320 m³ of Rough stone** **Peak Production = 3,42,684 m³ of Rough Stone** **Proposed Depth = 42m Bgl**

ToR obtained vide

Lr No. SEIAA-TN/F.No.10175/SEAC/ToR-1534/2023 Dated: 09.08.2023

Environmental Consultant
GEO EXPLORATION AND MINING SOLUTIONS
Old No. 260-B, New No. 17,
Advaitha Ashram Road, Alagapuram,
Salem – 636 004, Tamil Nadu, India
Accredited for sector 1 Cat 'A', sector 31 & 38 Cat 'B'
Certificate No : NABET/EIA/2225/RA 0276
Phone: 0427-2431989,
Email: infogeoexploration@gmail.com
Web: www.gemssalem.com

Laboratory
GLOBAL LAB AND CONSULTANCY SERVICES
Approved by ISO:9001:2015, NABL, FSSAI, Experts in QHSE
S.F No:92/3A2, Geetha Nagar, Alagapuram Pudur,
Salem-636016.

Baseline Monitoring Period

Oct 2023 to Dec 2023

DECEMBER 2023

UNDERTAKING

I A.C.Thangam Director of M/s. Vishnusurya Projects and Infra Private Limited given undertaking that this EIA & EMP report prepared for our Rough stone and Gravel quarry situated in S.F.No 121/1A, 121/1B, 128/1, 128/2A, 128/2B,128/2C & 128/2D, over an extent of 11.77.00Ha in Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State based on the ToR issued by the State Level Environmental Impact Assessment Authority (SEIAA), Tamil Nadu vide Letter No Lr No. SEIAA-TN/F.No.10175/SEAC/ToR-1534/2023 Dated: 09.08.2023.

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

Signature of the Project Proponent
For M/s. Vishnusurya Projects and Infra
Private Limited

Thiru.A.C.Thangam
(Director)

Place : Virudhunagar
Dated :

DECLARATION

I Nagamani.S – EIA Co Ordinator declare that the Draft EIA & EMP report for the Rough stone and Gravel quarry in S.F.No 121/1A, 121/1B, 128/1, 128/2A, 128/2B,128/2C & 128/2D, over an extent of 11.77.00Ha in Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District has been prepared by Geo Exploration and Mining Solutions, Salem, Tamil Nadu.

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

Signature of the EIA Co Ordinator

S.Nagamani

EIA Coordinator

M/s. Geo Exploration and Mining Solutions

Place : Salem

Dated :

For easy represantation of Proposed and Existing, Expired and Abandoned Quarries in the Cluster are given unique codes and identifies and studied in this EIA/ EMP Report.

PROPOSED QUARRY					
CODE	**Name of the Owner**	**Village**	**S.F. Nos**	**Extent in Ha**	**Status**
P1	M/s. Vishnusurya Projects and Infra Private Limited Thiru.A.C.Thangam (Director),	Puliyuran	121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D	11.77.0	**Lr No. SEIAA-TN/F.No.10175/SEAC/ToR-1534/2023 Dated: 09.08.2023.**
	TOTAL EXTENT			**11.77.0Ha**	
EXISTING QUARRIES					
CODE	**Name of the Owner**	**Village**	**S.F. Nos**	**Extent in Ha**	**Status**
E-1	M/s. Vishnusurya Projects and Infra Private Limited Thiru.A.C.Thangam (Director),	Puliyuran	114/3(P), 119/1	4.98.00	EC granted **Lr. No.SEIAA-TN/F.No.6946/1(a)/EC.No: 4045/2019 dated: 18.10.2019**
E-2	M/s. Vishnusurya Projects and Infra Private Limited Thiru.A.C.Thangam (Director),	Melakandaman galam	2/4B,2/4C, etc	4.49.0	22.08.2022 to 21.08.2027
	TOTAL EXTENT			**9.47.0**	
ABANDONED QUARRIES					
A-1	TVL.KNR Constructions, Sivagangai	Puliyuran	**121/1A,1B, etc**	4.90.0	KV1/23545/2015 Dated: 02.12.2015 to 01.12.2018
	TOTAL EXTENT			**4.90.0**	
	TOTAL CLUSTER EXTENT			**21.24.0Ha**	

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

TERMS OF REFERENCE (ToR) COMPLIANCE

M/s. Vishnusurya Projects and Infra Private Limited

Lr No. SEIAA-TN/F.No.10175/SEAC/ToR-1534/2023 Dated: 09.08.2023.

ADDITIONAL CONDITIONS		
1	The Proponent shall justify the selection of the site for carrying out the stone quarrying with the total volume arrived for the excavation & production adequate details such as lithology of the deposit, reserve estimation, place for waste dump/mined mineral storage, end-use of mined materials, identified potential customers/end-users and travel path.	**Rough Stone** 31,95,024m^3 **Weathered Gravel** 3,98,428m^3 **Gravel** 2,07,998m^3 Proposal for this Mining Plan Period –First Five Years (As per ToR) 15,00,030m^3 for Rough Stone
2	The proponent is requested to carry out a survey and enumerate on 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., with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.	500m radius map attached with AD & VAO copy letter copy attached.
3	The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc located within 1 km of the proposed quarry.	Chapter 3 water environment and Chapter 2 showing waterbodies of the proposed quarry
4	The Proponent shall carry out Bio diversity study through Department of Ecology and Environmental Sciences, Pondicherry University and the same shall be included in EIA Report.	Chapter-3 Detailed Biodiversity studies in the Draft EIA
5	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.	The affidavit will be submit during appraisal.
ANNEXURE-1		
1	ln the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.	XY-AB : 151m(L) x 190m(B) x 6m(D) XY-CD : 275m(L) x 195m(B) x 54m(D) XY-EF : 139m(L) x 156m(B) x 54m(D) Proposed Depth of Mining for five years (As per ToR) 48m Bgl
2	Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.	Attached Annexure and Chapter 3 Socio economic study showing details of habitation etc.
3	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.	Not applicable DFO letter beyond 10km radius from the mine lease area Reserved Forest: Vidathukulam R.F – 13.10 km - NE

4	In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSlR-Central Institute of Mining & Fuel Research /Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-llT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	Own Patta Land (M/s. Vishnusurya Projects and Infra Private Limited Thiru.A.C.Thangam (Director)
5	However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30m below ground level.	This is fresh quarry depth (as per ToR) 48m
6	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 196l such as blaster. mining mate. mine foreman, I/II Class mines manager appointed by the proponent.	The affidavit for blasting operation is submitted during appraisal.
7	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 30m from the blast site.	Ground Vibration studies chapter-4
8	The EIA Coordinates shall obtain and furnish the details of quarry /quarries operated by the PP in the past, either in the same location or elsewhere in the state with video and Photographic evidences.	Noted and agreed
9	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.	Fresh Lease
10	What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?	Not applicable this is fresh quarry.
11	Quantity of minerals mined out. • Highest production achieved in any one year • Detail of approved depth of mining. • Actual depth of the mining achieved earlier. • Name of the person already mined in that leases area. • If EC and CTO already obtained, the copy of the same shall be submitted. • Whether the mining was carried out as per the approved mine plan (or EC if issued) • with stipulated benches.	XY-AB : 151m(L) x 190m(B) x 6m(D) XY-CD : 275m(L) x 195m(B) x 54m(D) XY-EF : 139m(L) x 156m(B) x 54m(D) Proposed Depth of Mining for five years (As per ToR) 48m Bgl
12	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).	➢ Project area boundary coordinates superimposed on Toposheet Chapter-1 ➢ Surface Features around the project area covering 10km radius Chapter-2 ➢ Geology map of the project area covering 10km radius Chapter-2 ➢ Geomorphology Map of the Study Area covering 10 km radius Chapter-2

13	The PP shall carry out Drone video survey covering the cluster, Green belt, fencing etc.	Noted and agreed
14	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. Fencing will be carried out before execution of lease deed and greenbelt development will be carried out from the 1st Year of Mining Plan Period and periodical compliance with photographs will be submitted to SEIAA every 6 months.
15	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.
16	The PP shall furnish the revised manpower including the statutory & competent persons as required under the provisions of the MMR 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Noted and agreed. Discussed about Organization chart in Chapter 6,
17	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 I km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.	The 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.
18	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 were collected for One Season (Post Monsoon season) Oct 2023 to Dec 2023 as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.
19	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 air pollution, water pollution. & Health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	The Cumulative impact study due to mining operations is explained in chapter - 7
20	Rain water harvesting management with recharging details along with water balance (both) monsoon & non-monsoon) be submitted.	The proposed project area
21	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use and land cover of the study area is discussed in Chapter No. 3. Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2, Table No 2.3.
22	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.	It is Stored in Safety area 7.5m radius
23	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	Not Applicable.

	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.	Project area / Study area is not declared in 'Critically Polluted' Area and does not come under 'Aravalli Range.
24	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	Rainwater harvesting structure will be constructed near the mine office after commencement of mining operation. The water will be collected in the lower part of the pit and it will be utilized for dust suppression and greenbelt development.
25	Impact on local transport infrastructure due to the Project should be indicated.	Transportation details mentioned in Chapter -2
26	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.	Greenbelt details in Chapter-4. It is proposed to plant 7080 trees along boundary and panchayat roads.
27	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.	Mine closure plan is detailed in Chapter:4.
28	As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible.	The flora and fauna study to educate the local students will be submitted during appraisal.
29	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.	Species are proposed to plant in the safety barrier as mentioned in the ToR appendix. Proposed species are given in the Chapter No 4
30	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.	It is a Proposed Lease. Around 7080 trees are proposed to plant.
31	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.	Disaster management Plan details in Chapter-7
32	A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A Risk Assessment and management Plan Chapter-7
33	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Occupational Health impacts chapter- 10
34	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No Public Health Implications anticipated due to this project. Details of CER and CSR are discussed under Chapter 8, EIA Report

35	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.	It is explained in Chapter -3
36	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 against the project
37	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	It is explained in Chapter -3- socio economic study and chapter 8
38	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.	This is fresh quarry no operation in the period.
39	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	Noted & agreed.
40	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.
	NORMAL CONDITIONS-	
1	The PP shall furnish the letter obtained from the Director, Department of Agriculture stating that the proposed mine lease area/ about the productivity status and productive potential of the land.	Noted and agrees
2	The project proponent shall prepare mine closure plan considering quantity of Topsoil & Weathered rock. If any.	Noted, mine closure plan and sections included in chapter-2
3	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25km from the proposed site.	Reserved Forest: Vidathukulam R.F – 13.10 km - NE
	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.	Details chapter 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	Noted & agreed

	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.	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.
Impact study of mining		
12	Detailed study shall be caried 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.
Agriculture & Agro-Biodiversity		
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 committed mentioned in EMP.	Details in Chapter 2,3 and 7
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 patta 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.	Noted and agreed, there is no reserve forest and wildlife in the buffer zone.
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 ground water. 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.	Chapter 4 sub 4.1.3 Soil Environment-Weekly monitoring and daily maintenance.
25	Detailed study shalt 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 activities.	Noted & agreed
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
Risk Assessment		
37	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Detailed under Chapter 7
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.	Details in Study 7.3 Disaster Management Plan in Chapter -7
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.22-65/2017-lA.lll 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	**Not applicable.** This is not a violation category project. This proposal falls under B1 Category

	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.	The applied land for quarrying is a Patta Land. Document is enclosed along with Approved Mining Plan as Annexure Volume 1.
3	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	**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).	Map showing – Project area is with adjacent quarries details is enclosed in Figure No1.1 Project area boundary coordinates superimposed on Toposheet – Figure No. 1.1A Toposheet of the project area covering 10km radius – Figure No. 1.2 Geology map of the project area covering 10km radius - Figure No. 2.11
5	Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.	**Map showing –** Geology map of the project area covering 10km radius - Figure No. 2.11 Geomorphological features are incorporated in the Toposheet map covering 10km radius around the project area Figure No. 2.12
6	Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	The applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.
7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	The proponent has framed their Environmental Policy and the same is discussed in the Chapter No 10.1.
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	It is an opencast quarrying operation proposed to operate in Mechanized method. The rough stone formation is a hard, compact and homogeneous body. The height and width of the bench will be maintained as 5m with 90^0 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. 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
11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given	**Not Applicable.** There is no waste anticipated during this quarry operation. The entire quarried out rough stone will be transported to the needy customers. No Dumps is proposed outside the lease area.
12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	**Not Applicable.** There is no Forest Land involved in the proposed project area. The proposed project area is a 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. Reserved Forest: Vidathukulam R.F – 13.10 km - NE
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.	Reserved Forest: Vidathukulam R.F – 13.10 km - NE
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	Detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery 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.	mine lease)] was carried out and discussed under Chapter No. 3. There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area.
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 direction and location of sensitive receptors. There should be at least one	Baseline Data were collected for Postmonsoon Season (Oct 2023-Dec2023) as per CPCB Notification and MoEF & CC Guidelines. Details in Chapter No. 3.

	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 Model. Details in Chapter No. 4,
24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	Total Water Requirement for this project is given in the chapter No 2, Table No 2.13.
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water for dust suppression, greenbelt development and domestic use will be obtained from accumulated rainwater/seepage water in mine pits. Drinking water will be sourced from the approved water vendors, No 2, Table No 2.13.
26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The rain water collected in the pits after spell of rain will be used for greenbelt development and dust suppression.
27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact Studies and Mitigation Measures of Water Quality discussed in Chapter No. 4.
28	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on 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 60-65m below ground level. The ultimate depth of this projects is 54m from the general ground profile. Maximum depth is proposed in this EIA project is 48m. (As per ToR)
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 98m AMSL Ultimate depth of the mine is 54m AMSL Water level in the area is 60m to 65m BGL
30	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and BGL. A schematic diagram may also be provided for the same.	Progressive greenbelt development plan has been prepared and discussed along with Recommended Species details are given in the Chapter 4, Table No.4.9
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	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.

	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.	Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No.2. .
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Discussed in chapter No 2.
34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	Details in Chapter 10.
35	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.	Details in Chapter 10.
36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	Details in Chapter 4,
37	Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	Environment Management Plan Chapter 10.
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.	The outcome of public hearing will be updated in the final EIA/AMP report
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.	No litigation is pending in any court against this 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.	The proposed capital cost for Environmental Monitoring Programme is Rs 7,60,000/- Details in Chapter 6 .

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.	Details in Chapter 10.
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Details in Chapter 7.
43	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Details in Chapter.8.
44	**Besides the above, the below mentioned general points are also to be followed: -**	
A	Executive Summary of the EIA/EMP Report	Encloses as separate volume
B	All documents to be properly referenced with index and continuous page numbering.	All the documents are properly referenced with index and continuous page numbering.
C	Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.	List of Tables and source of the data collected are given properly.
D	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC / NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project	Baseline monitoring reports are enclosed with mining plan
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.	Will be enclosed along with Final EIA /EMP Report.
G	While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF & CC vide O.M. No. J-11013/41/2006-IA. II(I) Dated: 4th August, 2009, which are available on the website of this Ministry, should be followed.	Instructions issued by MoEF & CC O.M. No. J-11013/41/2006-IA. II (I) Dated: 4th August, 2009 are 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	Noted & agreed.
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.	Surface Plan – Figure No. 2.2. Geological Plan – Figure No 2.9. Working Plan – Figure No 2.9. Closure Plan – Figure No.2.10.

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1.INTRODUCTION

1.0 PREAMBLE

Project history: -

The project proponent A.C.Thangam Director of M/s. Vishnusurya Projects and Infra Private Limited Rough Stone and Gravel Quarry Extent: 11.77.00Ha in S.F.No 121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D, Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District.

- Proponent applied for Rough stone and Gravel quarry lease on 03.02.2023.
- Precise area communication letter was issued by the District Collector vide Rc.No.KV1/148/2023-Mines, Dated: 06.04.2023.
- The Mining plan has been prepared by the Qualified person and got approval vide Letter Rc.No.KV1/148/2023-Mines, Dated: 11.05.2023.
- The Mining plan has been approved for the quantity of 15,00,030m^3 of Rough stone, 3,98,428m^3 of Weathered Gravel and 2,07,998m^3 of Gravel up to the depth of 48m bgl for the period of five years.

As per the EIA Notification, 2006 and subsequent amendments and OM The proposal falls in the B1 Category (Cluster quarries - 1 proposal and 2 Exiting quarries forming Cluster Category {Total Extent of the Cluster is 21.24.0 Ha}- Cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016).

- Proponent applied for Terms of Reference vide Proposal No. SIA/TN/MIN/435200/2023 Dated 30.06.2023 and the ToR Was Granted vide Lr No. SEIAA-TN/F.No.10175/SEAC/ToR-1534/2023 Dated: 09.08.2023

Based on the ToR Baseline Monitoring study has been carried out for one season i.e., **Oct– Dec2023** and this EIA and EMP report is prepared for considering cumulative impacts arising out of these projects, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) to minimize those adverse impacts.

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

1.1 PURPOSE OF THE REPORT

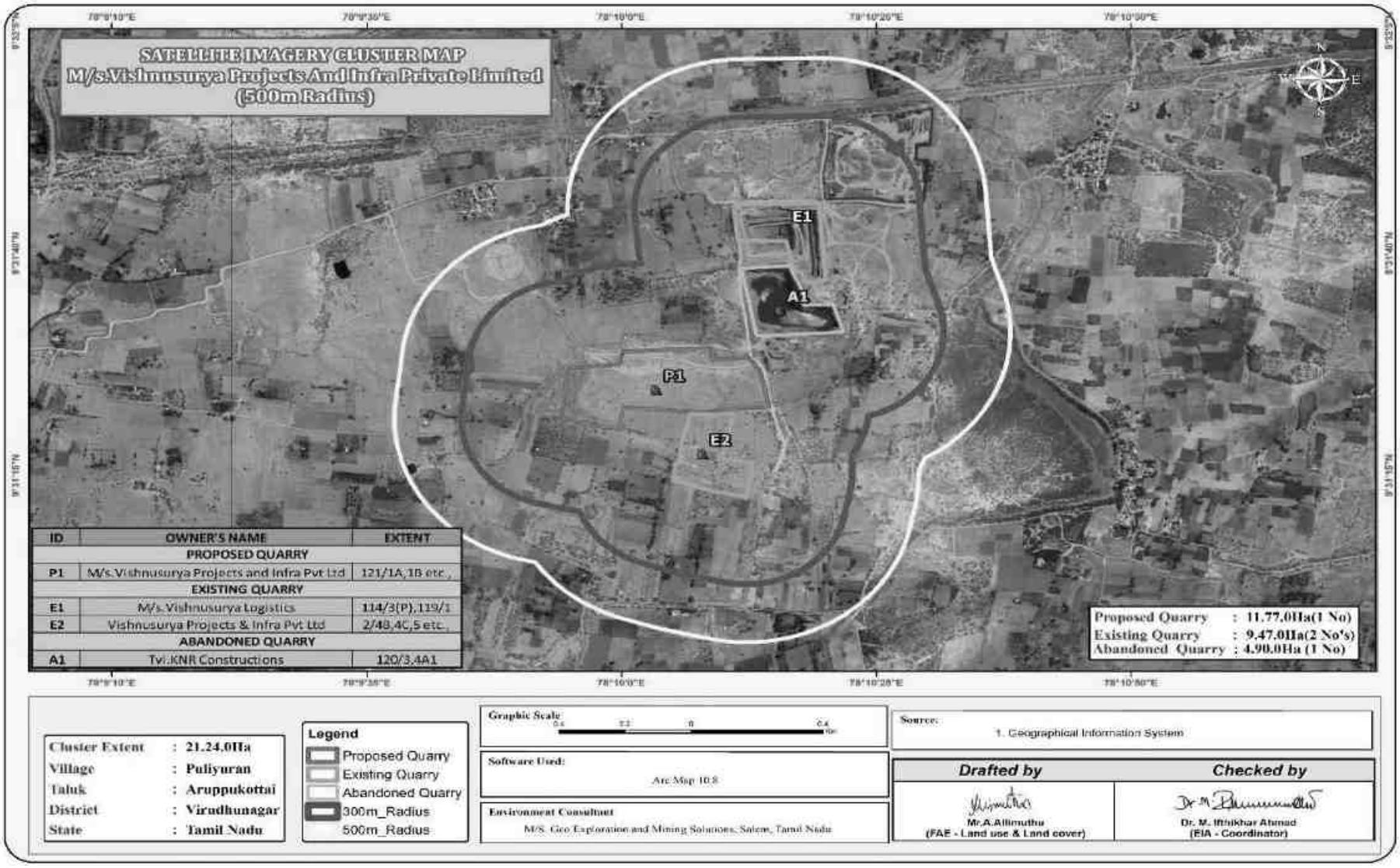
The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14th September 2006 and its subsequent amendments as per Gazette Notification S.O. 1889 of 20thApril 2022, Mining Projects are classified under two categories i.e. A (> 250 Ha) and B (≤ 250 Ha), and 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 B1 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 for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu"

FIGURE 1.1 SATELLITE IMAGERY CLUSTER QUARRIES



1.2 IDENTIFICATION OF PROJECT AND PROJECT PROPONENTS

1.2.1 Identification of Project Proponent

TABLE 1.1: DETAILS OF PROJECT PROPONENT

Name of the Project Proponent	**M/s.Vishnusurya Projects and Infra Private Limited,** Thiru.A.C.Thangam (Director),
Address	Temple Towers, 2nd Floor, New No.76, North Mada Street,Mylapore, Chennai-600 004
Mobile	94450 24403
Email	vishnusuryalogistics@gmail.com
Status	Private Ltd Company. Thiru.A.C. Thangam is the Director of M/s.Vishnusurya Projects Pvt. Ltd.

1.2.2 Identification of Project

TABLE 1.2: SALIENT FEATURES OF THE PROPOSED PROJECT

Name of the Project	**M/s.Vishnusurya Projects and Infra Private Limited,** Rough stone and Gravel quarry		
S.F. No.	121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D		
Extent	**11.77.0 ha**		
Village Taluk and District	Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State.		
Land Type	Own patta land		
Land Ownership	It is a Patta lands. Registered in the name of M/s.Vishnusurya Projects and Infra Private Limited.		
Existing quarry operation	It is a fresh lease application		
Toposheet No	58 – K/02		
Latitude between	**09°31’20.13''N to 09°31’29.29‘’N**		
Longitude between	**78°09’54.10''E to 78°10’14.45''E**		
Elevation of the area	98m AMSL		
Lease period	10 Years		
Mining Plan period	The prepared mining plan period of First five years		
Proposed Depth of Mining for Five years Plan (As per ToR)	48m Bgl		
Resources	**Rough Stone in m^3**	**Weathered Gravel m^3**	**Gravel m^3**
Geological Resources	56,49,600m^3	4,70,800m^3	2,35,400m^3
Mineable Reserves	31,95,024m^3	3,98,428m^3	2,07,998m^3
Proposal for this Mining Plan Period –First Five Years (As per ToR)	15,00,030m^3	3,98,428m^3	2,07,998m^3
Proposal for this Mining Plan Period –Second Five Years (As per ToR)	14,47,320 m^3	-	-
Peak Production	3,42,684m^3	1,79,992 m^3	92,870 m^3
Ultimate Pit Dimension	XY-AB : 151m(L) x 190m(B) x 54m(D) XY-CD: 275m(L) x 195m(B) x 54m(D) XY-EF: 139m(L) x 156m(B) x 54m(D)		
First Five-Year Pit Dimension	XY-AB : 151m(L) x 190m(B) x 6m(D) XY-CD: 275m(L) x 195m(B) x 54m(D) XY- EF: 139m(L) x 156m(B) x 54m(D)		
Water Level in the region	60 – 65 m bgl		
Method of Mining	Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives		

Topography	The lease applied area is exhibiting plain terrain. The area has gentle sloping towards East side and altitude of the area is 98m above from Mean Sea Level. The area is covered by 2m thickness of Gravel and 4m Weathered Gravel and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pits.	
Machinery proposed	Jack Hammer	6 Nos
	Compressor	2Nos
	Wagon Drill	1 Nos
	Excavator with Bucket and Rock Breaker	3 No
	Taurus	6 Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone.	
Proposed Manpower Deployment	41Nos	
Project Cost	Rs. 4,79,73,000/-	
EMP Cost	Rs. 7,60,000/-	
Total Project cost	Rs. 4,87,33,000/-	
CER Cost	Rs. 5,00,000/-	
Nearby Water Bodies	❖ Odai is situated on the Northwest side of the area, hence 50m safety distance has been provided. ❖ Tank-480m-E ❖ Tank-2.0km-E ❖ Odai - 3.2km- NE ❖ Gundar River- 3.5km- NE ❖ CRZ – 52.7km-SE	
Greenbelt Development Plan	Proposed to plant 5,890 Nos of trees considering 500 Nos of trees/ Ha criteria The plantation will be developed around the Panchayat Road of the lease applied area.	
Proposed Water Requirement	2.4 KLD	
Nearest Habitation	440m – North West	
Nearest Reserve Forest	Katturani R.F -40km-NE	
Nearest Wild Life Sanctuary	➢ Sirivilliputhur (Giant squirrel) Wildlife -49.5km- NW ➢ Kanjirankulam Bird Sanctuary -37.7km- SE	

Source: Approved Mining & Land Documents.

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 & Slurry Explosive during blasting. Hydraulic Excavator and tippers are used for Loading and transportation. Rock Breakers are deployed to avoid secondary blasting.

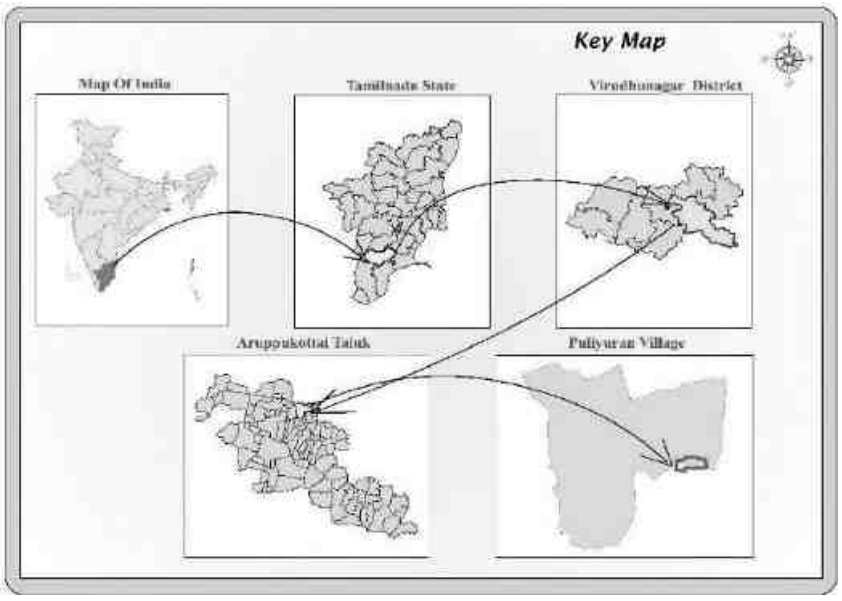
The peak production of rough stone is 3,42,684m^3 maximum in a year (1,142.28m^3 per day/ 95 Tippers per day considering 12m^3 per load). The depth of the mining is 48m Bgl (as per ToR).

1.3.2 Location of the Project

- The project site is located in Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District.
- The lease applied area is about 25.0km South-eastern side of Virudhunagar and 8.0km Eastern side of Aruppukkottai and 2.0km Eastern side of Puliyuran Village.

18.0km		8.0km		2.0km	
Virudhunagar	→	Aruppukkottai	→	Puliyuran	→ Lease Applied area
	Southeast		Southeast		Northwest

FIGURE 1.2 LOCATION MAP OF THE PROJECT SITE



Source: Survey of India Toposheet 58-A/15 & 16

FIGURE 1.3: TOPOSHEET MAP OF THE STUDY AREA 10 KM RADIUS

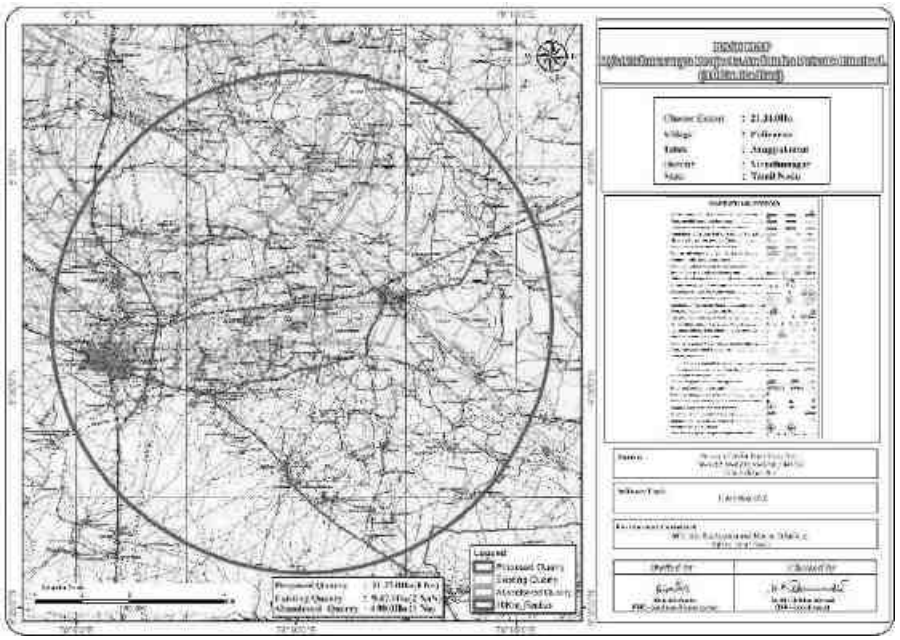
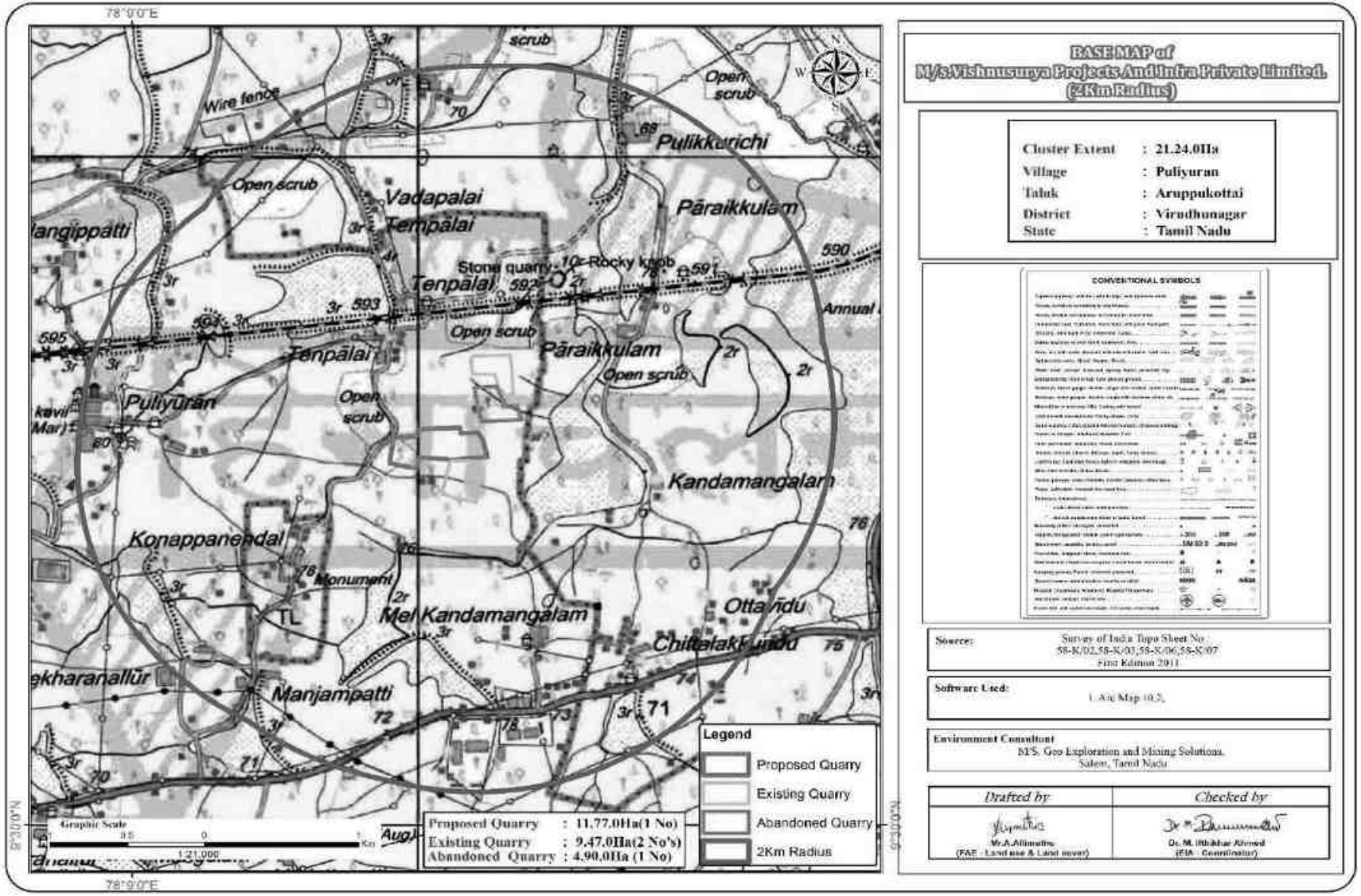


FIGURE 1.4: TOPOSHEET MAP OF THE STUDY AREA 2KM RADIUS



1.4 ENVIRONMENTAL CLEARANCE

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

- Screening,
- Scoping
- Public consultation &
- Appraisal

SCREENING :

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 03.02.2023.
- Precise Area Communication Letter was issued by the District Collector, Virudhunagar Rc.No.KV1/148/2023-Mines, Dated: 06.04.2023.
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Coimbatore District, vide Rc.No. KV1/148/2023-Mines, Dated: 11.05.2023.
- The proposed project falls under "B1" Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/435200/2023 Dated 30.06.2023.

SCOPING:

- The proposal was placed in 394th SEAC meeting held on 21.07.2023 and the committee recommended for issue of ToR.
- The proposal was considered in 645th meeting of Authority held on 09.08.2023 and issued ToR vide Lr No. SEIAA-TN/F.No.10175/SEAC/ToR-1534/2023 Dated: 09.08.2023.

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 is submitted along with this Draft EIA/ EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

APPRAISAL –

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

1.5 TERMS OF REFERENCE (ToR)

The ToR was issued by the SEIAA vide Lr No. SEIAA-TN/F.No.10175/SEAC/ToR-1534/2023 Dated: 09.08.2023. The Details of the ToR Compliance is given in the Page No.

1.6 POST ENVIRONMENT CLEARANCE MONITORING

The proponent shall submit a half-yearly compliance report in respect of stipulated Environmental Clearance terms and conditions to MoEF & CC Regional Office & SEIAA after grant of EC on 1st June and 1st December of each calendar year as per MoEF & CC Notification S.O. 5845 (E) Dated: 26.11.2018.

1.7 GENERIC STRUCTURE OF EIA DOCUMENT

The overall contents of the EIA report follow the list of contents prescribed in the EIA Notification 2006 and the "Environmental Impact Assessment Guidance Manual for Mining of Minerals" published by MoEF & CC.

1.8 THE SCOPE OF THE STUDY

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures. 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 summer season (March 2023 to 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 1.3: ENVIRONMENT ATTRIBUTES

Sl.No.	Attributes	Parameters	Source and Frequency
1	Ambient Air Quality	PM_{10}, PM $_{2.5}$, SO_2, NO_2	Continuous 24-hourly samples twice a week for three months at 7 locations (1 Core & 6 Buffer)
2	Meteorology	Wind speed and direction, temperature, relative humidity and rainfall	Near project site continuous for three months with hourly recording and from secondary sources of IMD station
3	Water quality	Physical, Chemical and Bacteriological parameters	Grab samples were collected at 6 locations – 2 Surface water and 4 Ground water samples; once during study period.
4	Ecology	Existing terrestrial and aquatic flora and fauna within 10 km radius circle.	Limited primary survey and secondary data was collected from the Forest department.
5	Noise levels	Noise levels in dB(A)	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 analysis done for the risk associated with mining.

Source: Field Monitoring Data

1.8.1 Regulatory Compliance & Applicable Laws/Regulations for all Proposed Quarries

- Application for Quarrying Lease as per Tamil Nadu Minor Mineral Concession Rules, 1959.
- Obtained Precise Area Communication Letter as per Tamil Nadu Minor Mineral Concession Rules, 1959 for Preparation of Mining Plan and obtaining Environmental Clearance.
- The Mining Plan has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959.
- ToR vide Lr No. SEIAA-TN/F.No.10175/SEAC/ToR-1534/2023 Dated: 09.08.2023.

****

2. PROJECT DESCRIPTION

2.0 GENERAL

The Proposed Rough Stone and gravel Quarry require Environmental Clearance. There are one proposed, and two existing quarries forming a cluster; calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1st July 2016 and the total extent of cluster is 21.24.0 ha.

As the extent of cluster are more than 5ha, 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 this project. Method of mining is 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 project site is located in Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District.
- The lease applied area is about 25.0km South-eastern side of Virudhunagar and 8.0km Eastern side of Aruppukkottai and 2.0km East side of Puliyuran Village.

	18.0km		8.0km		1.0km	
Virudhunagar	→	Aruppukkottai	→	Melakandamangalam	→	Lease Applied area
	Southeast		Southeast		Northwest	

TABLE 2.1: SITE CONNECTIVITY

Nearest Roadway	NH38- Madurai– Aruppukottai Road -6.0km-W SH42- Srivilliputhur to Parthibanur Road-2.0km-S
Nearest Village	Konappanenthal Village– 730m- SW
Nearest Town	Aruppukkottai – 8.0km-SW
Nearest Railway Station	Tiruchuli – 4.0km-NE
Nearest Airport	Madurai – 35.0km – NW
Seaport	Kochi – 215 km – NW

Source: Survey of India Toposheet

TABLE 2.2: CO-ORDINATES – PROJECT BOUNDARY

Pillar No.	Latitude	Longitude
1	$09^0$31’21.30”N	$78^0$09’54.10”E
2	$09^0$31’26.87”N	$78^0$09’54.76”E
3	$09^0$31’27.01”N	$78^0$09’54.89”E
4	$09^0$31’27.43”N	$78^0$09’59.72”E

5	$09^0$31’28.90”N	$78^0$10’00.16”E
6	$09^0$31’29.17”N	$78^0$10’06.69”E
7	$09^0$31’29.29”N	$78^0$10’08.68”E
8	$09^0$31’27.92”N	$78^0$10’09.03”E
9	$09^0$31’28.19”N	$78^0$10’12.40”E
10	$09^0$31’26.86”N	$78^0$10’13.49”E
11	$09^0$31’24.96”N	$78^0$10’14.01”E
12	$09^0$31’22.70”N	$78^0$10’14.45”E
13	$09^0$31’22.62”N	$78^0$10’13.86”E
14	$09^0$31’22.57”N	$78^0$10’12.31”E
15	$09^0$31’22.04”N	$78^0$10’08.01”E
16	$09^0$31’22.59”N	$78^0$10’00.19”E
17	$09^0$31’20.13”N	$78^0$09’59.76”E
18	$09^0$31’20.63”N	$78^0$09’56.97”E
Datum: UTM-WGS84, Zone 44 North		

Source: Approved Mining Plan

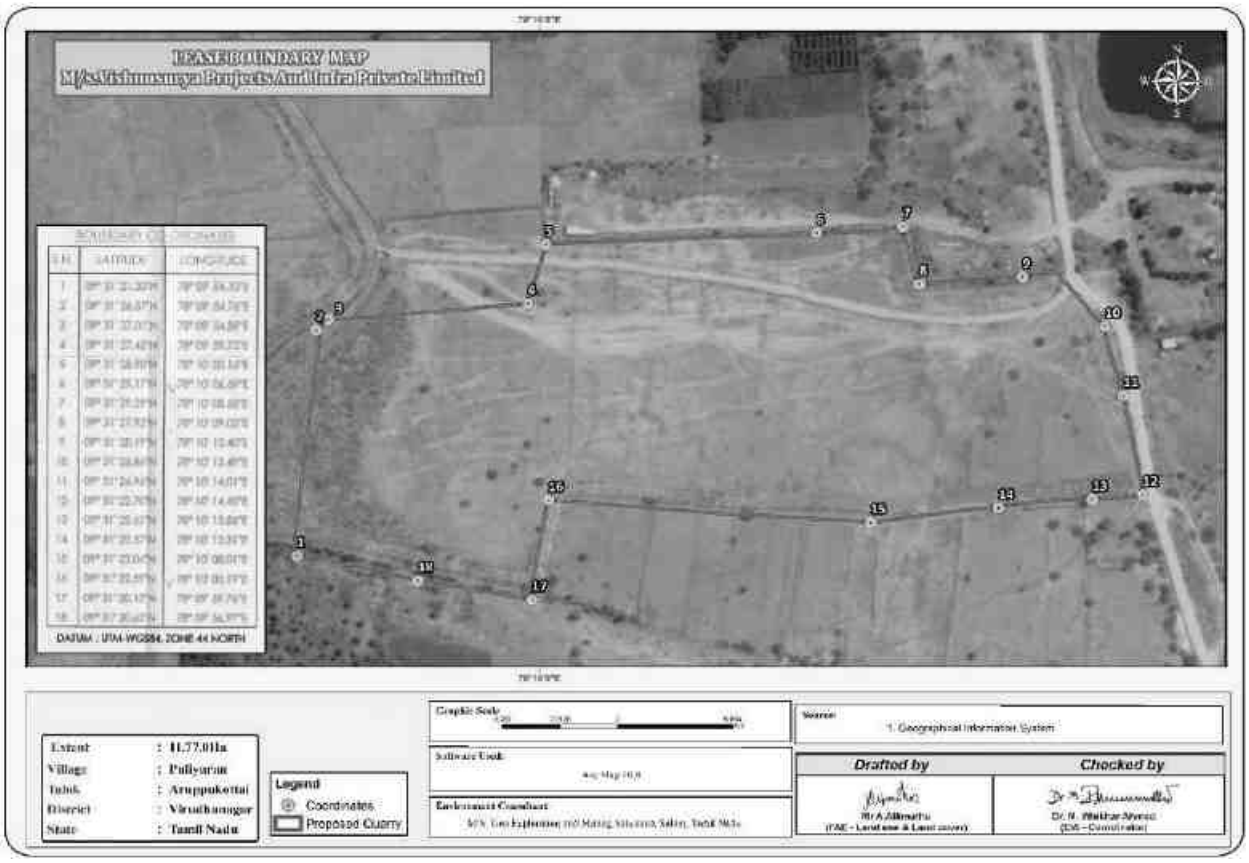
FIGURE 2.1: TOPOGRAPHICAL VIEW OF PROJECT AREA

Project Site

Crusher material stored temporarily in the project site

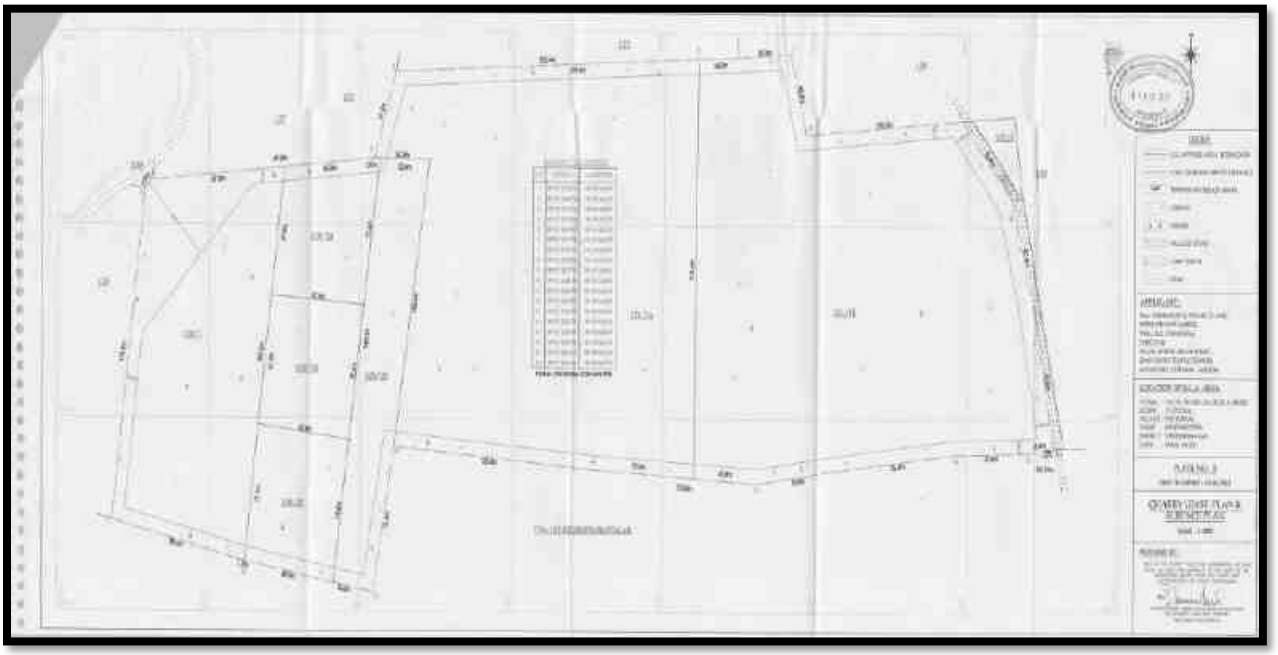
Mine Lease Fencing Photographs

FIGURE 2.2: GOOGLE IMAGE OF THE PROJECT AREA



Source: Google Earth Imagery

FIGURE 2.3: QUARRY LEASE PLAN / SURFACE PLAN



Source: Approved Mining Plan

FIGURE 2.4: VILLAGE MAP SUPERIMPOSED ON GOOGLE EARTH IMAGE

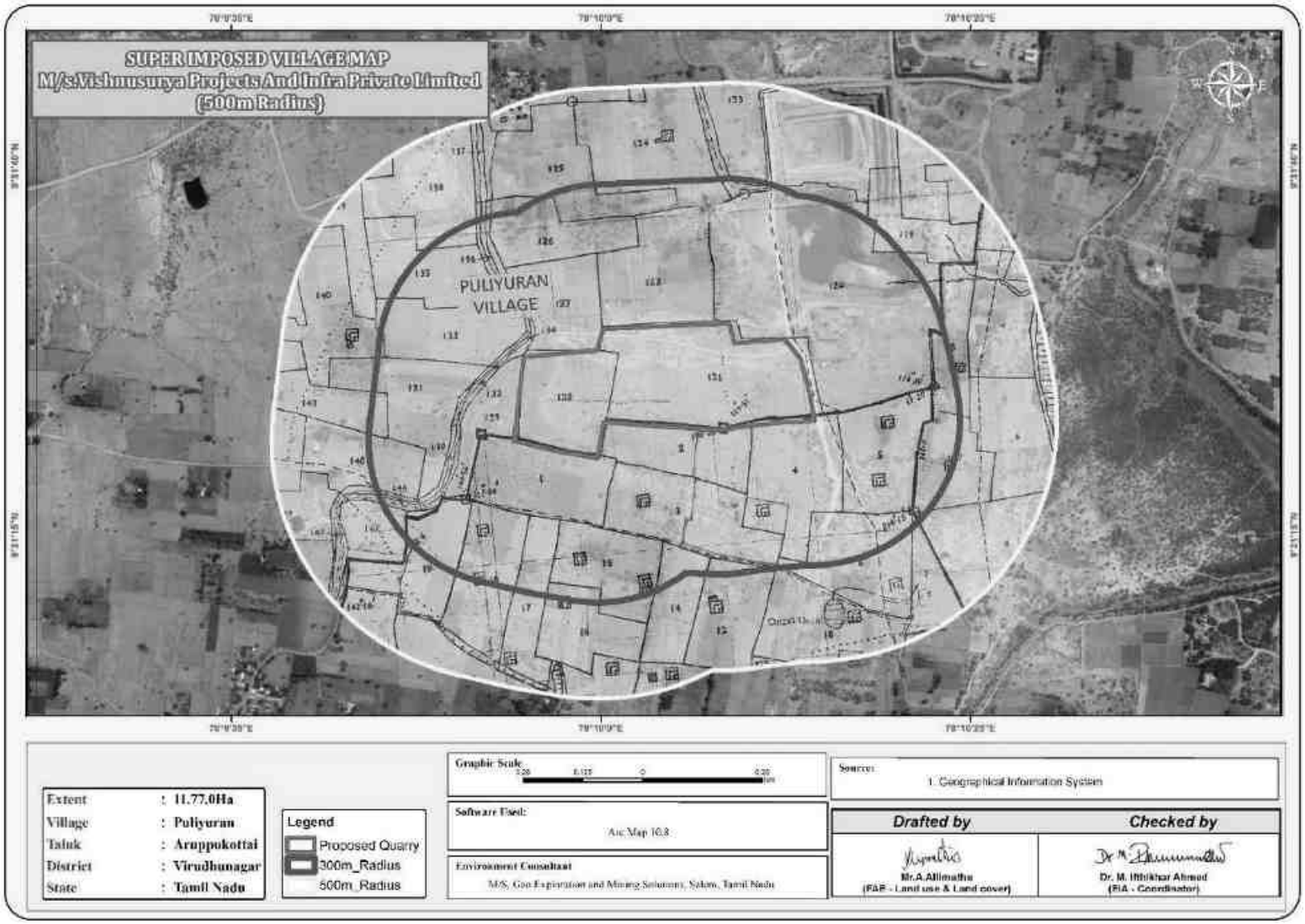


FIGURE 2.5: IMAGE SHOWING SURFACE FEATURES AROUND 10 KM RADIUS

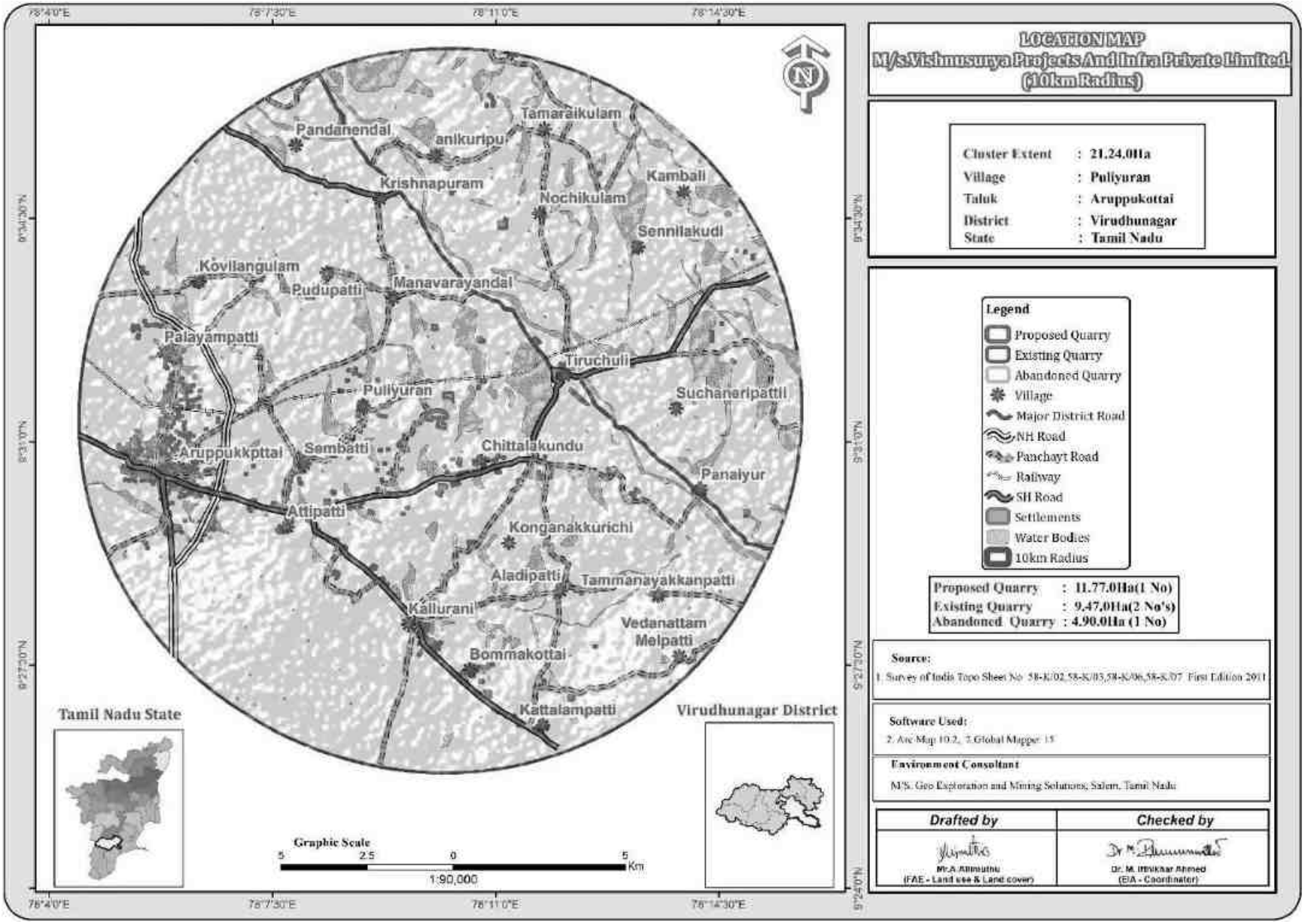


FIGURE 2.6: IMAGE SHOWING SURFACE FEATURES AROUND 5 KM RADIUS

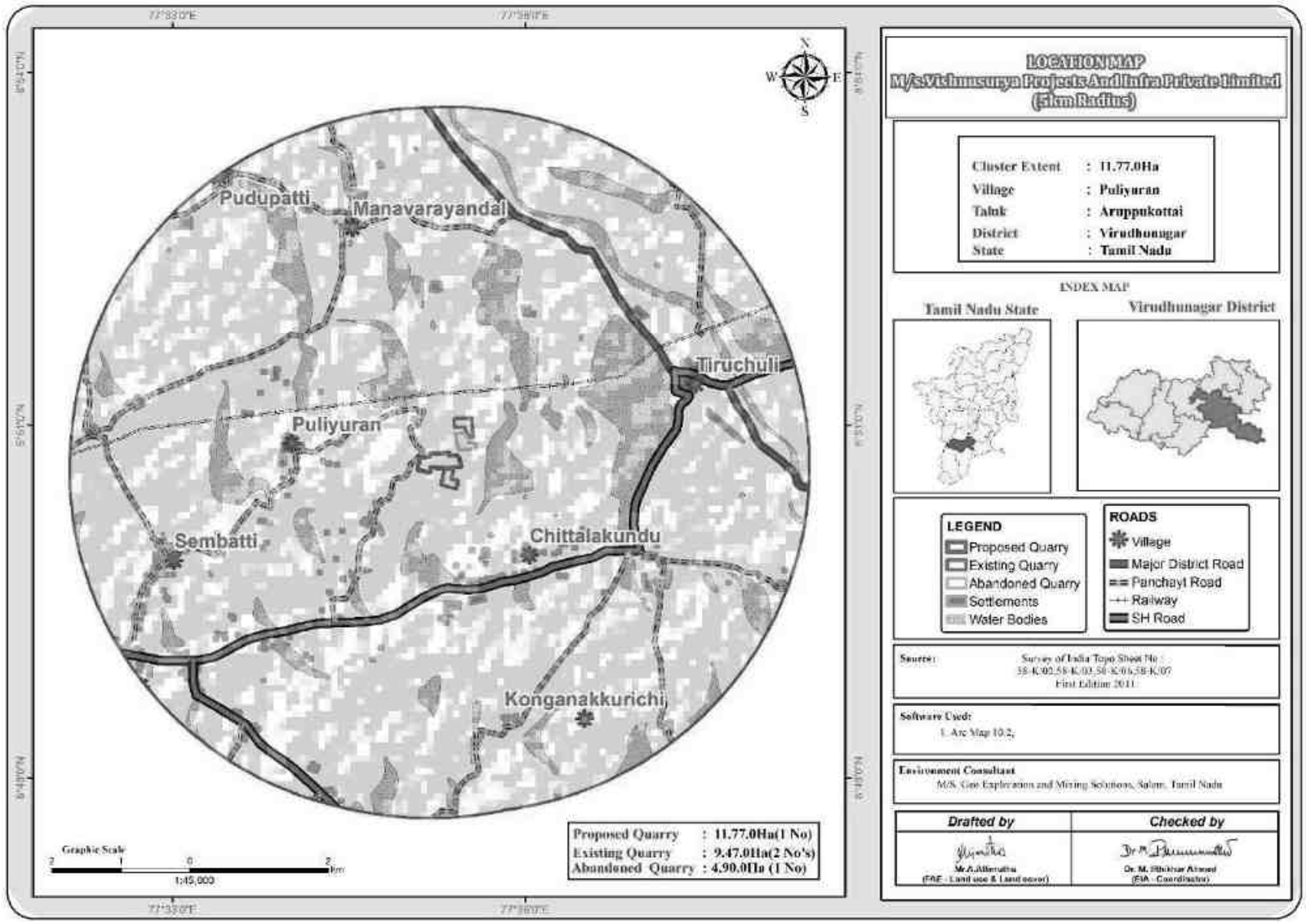
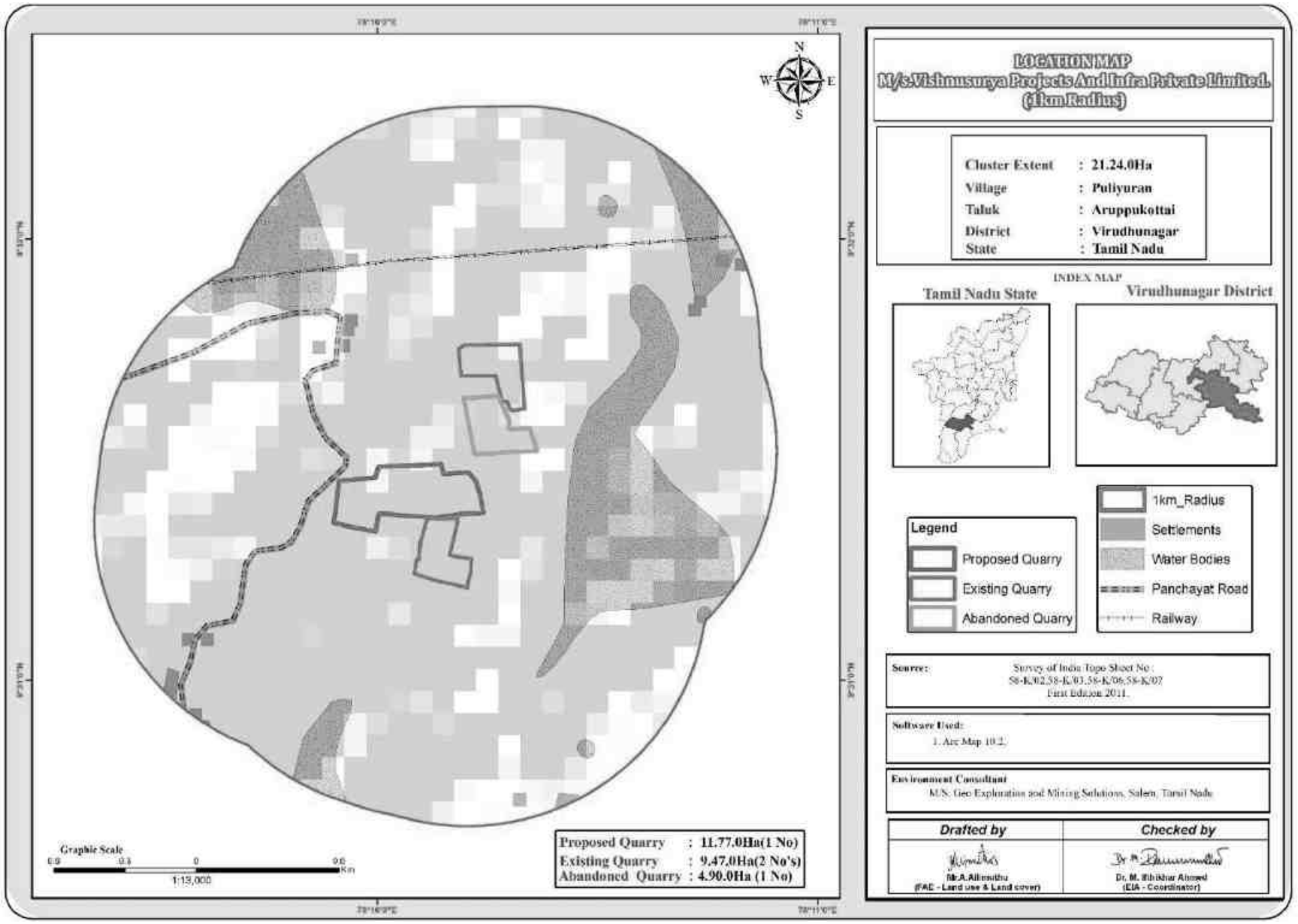


FIGURE 2.7: IMAGE SHOWING SURFACE FEATURES AROUND 1KM RADIUS



2.2.1 Project Area

- The project is site specific & no beneficiation or processing in the project site.
- There is no forest land involved in the proposed projects and is devoid of major vegetation and trees.

TABLE 2.3: LAND USE PATTERN

Description	Present area (Ha)	Area required during the first five years of plan period (Ha)	Area at the end of lease period (Ha)
Quarrying Pit	Nil	10.21.0	10.21.0
Infrastructure	Nil	0.01.0	0.01.0
Roads	Nil	0.02.0	0.02.0
Green Belt	Nil	0.40.0	0.80.0
Unutilized Area	11.77.0	1.13.0	0.73.0
Grand Total	**11.77.0**	**11.77.0**	**11.77.0**

Source: Approved Mining

2.2.2 Size or Magnitude of Operation

TABLE 2.4: RESOURCES AND RESERVES

PARTICULARS	DETAILS		
	Rough Stone	Weathered Gravel m^3	Gravel in m^3
Geological Resources	56,49,600	4,70,800	2,35,400
Mineable Reserves	31,95,024	3,98,428	2,07,998
Production for First five-year plan period (As per ToR)	15,00,030	3,98,428	2,07,998
Production for Second five-year plan period	14,47,320	-	-
Peak Production	3,42,684	1,79,992	92,870
Mining Plan Period / Lease Applied Period	Lease period 10 years and mining plan period of First five years		
Number of Working Days	300 Days		
Production per day	1000	443	231
No of Lorry loads ($12m^3$ per load)	82	37	19
Total Depth of Mining	48m below ground level		

Source: Approved mining plan.

2.3 GEOLOGY

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body N40°E – S40°W with dipping towards SE70°.

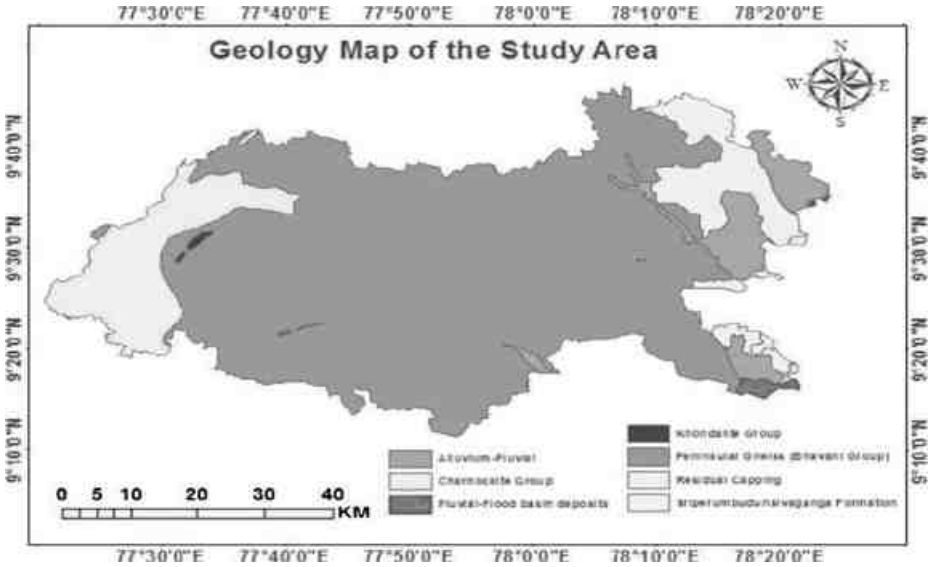
Regional stratigraphic sequence:

AGE FORMATION

Recent - Quaternary formation (Gravel)

---------Unconformity----------

Archaean - Charnockite Peninsular Gneiss complex



Geomorphology

Virudhunagar district is bordered by Western Ghats (Ridge and valley complex) in the West. Vally fill area is observed in Watrap block. A major part of the district constitutes a plain terrain with a gentle slope toward East and Southeast, except for the hilly terrain in the west. The prominent geomorphic units identified in the district through interpretation of Satellite imagery are; 1. Flood Plain, 2. Bazada, 3. Pediment, 4. Shallow & deep buried Pediments and 6. Structural Hills.

Source: http://cgwb.gov.in/District_Profile/TamilNadu/Virudhunagar.pdf)

The district is divisible into three geomorphological units viz the western most hill ranges (denudational hills of Western Ghats), uplands (pediments) and the plains (pediplains). The hill ranges rise upto 2019 meters above mean sea level at Kottaimalai. The other notable hill is Andipatti hill with a NE-SW trend, in the northwestern part of the district. The Vaippar and Gundar rivers which flow to the east are ephemeral streams. The drainage pattern is subdendritic.

2.3.2 Local Geology

The study area follows the regional trend and mainly comprises of Hard Rock Formation as a homogeneous formation / Batholith formation of Charnockite. The lease applied area is exhibits flat terrain. The area has gentle sloping towards southeastern side. The maximum altitude of the area is 72m above Mean Sea level. The area is covered by the Gravel which is maximum thickness of 2m depth. Massive Charnockite is found after 2m (Gravel formation) which is clearly inferred from the existing quarry pits in the cluster.

2.3.3 Hydrogeology

Virudhunagar district is underlain entirely by Archaean Crystalline formations with Recent alluvial deposits occurring along the river and streams courses. Weathered, fissured and fractured crystalline rock sand their alluvial deposits constitute the important aquifer systems in the district. The hard consolidated crystalline rocks of Archaean age represent weathered, fissured and fractured formations of gneisses, granites, charnockites and other associated

rocks. The Specific capacity of large diameter wells tested in crystalline rocks from 31 to 200 lpm / m. of drawdown. The yield characteristics of wells vary considerably depending on the topographic set-up, lithology and the degree of weathering.

Source: https://Virudhunagar.nic.in/departments/geology-mining/

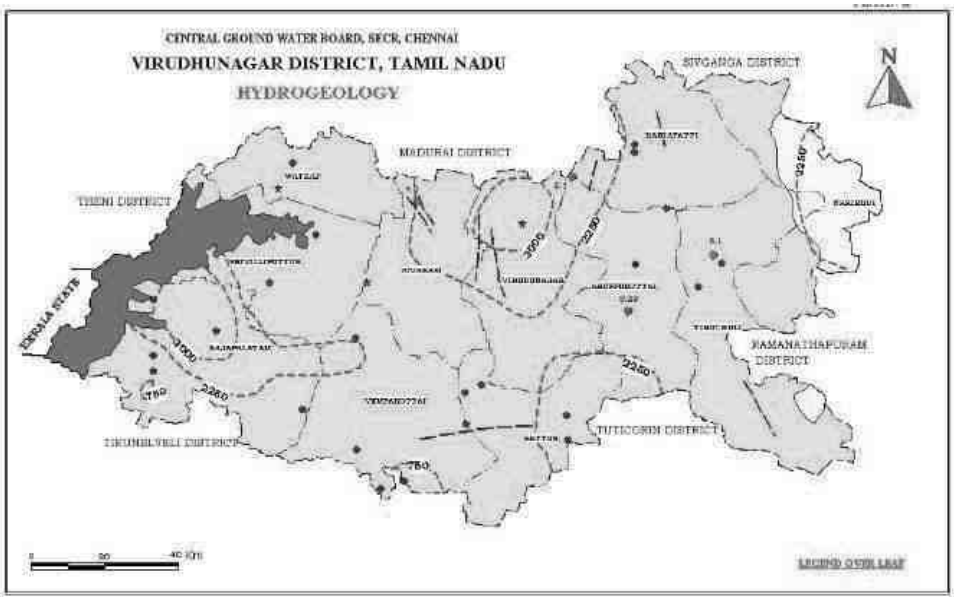


FIGURE 2.8: REGIONAL GEOLOGY MAP

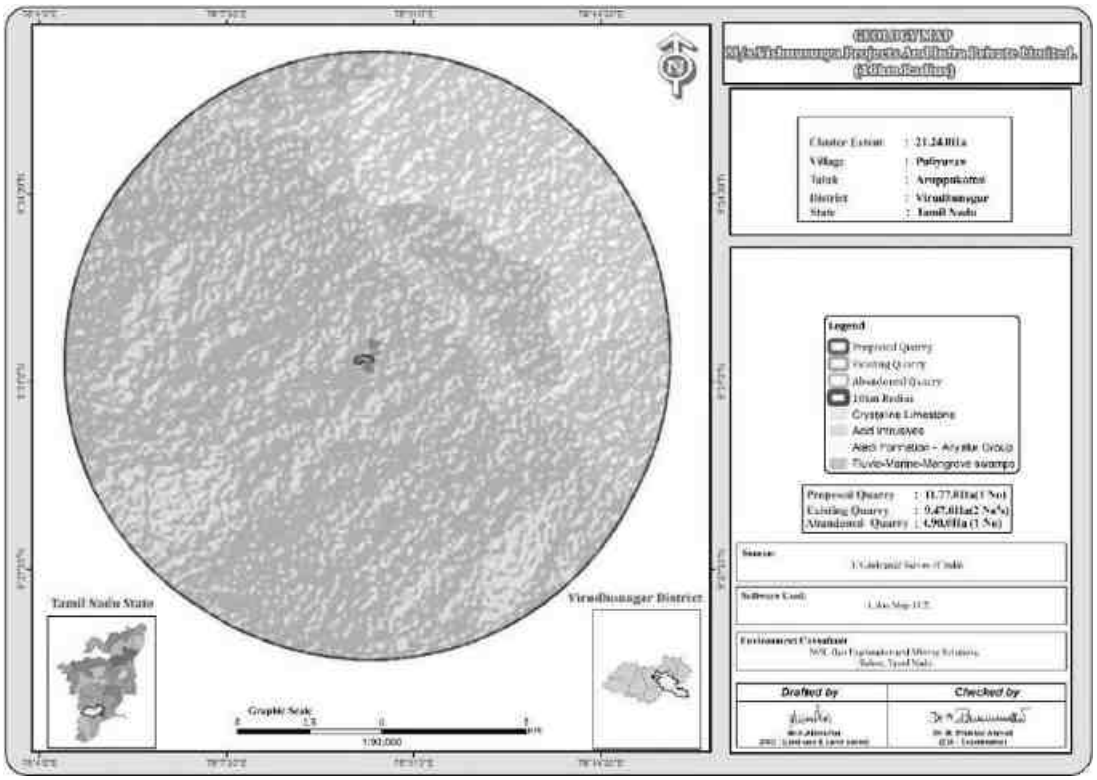
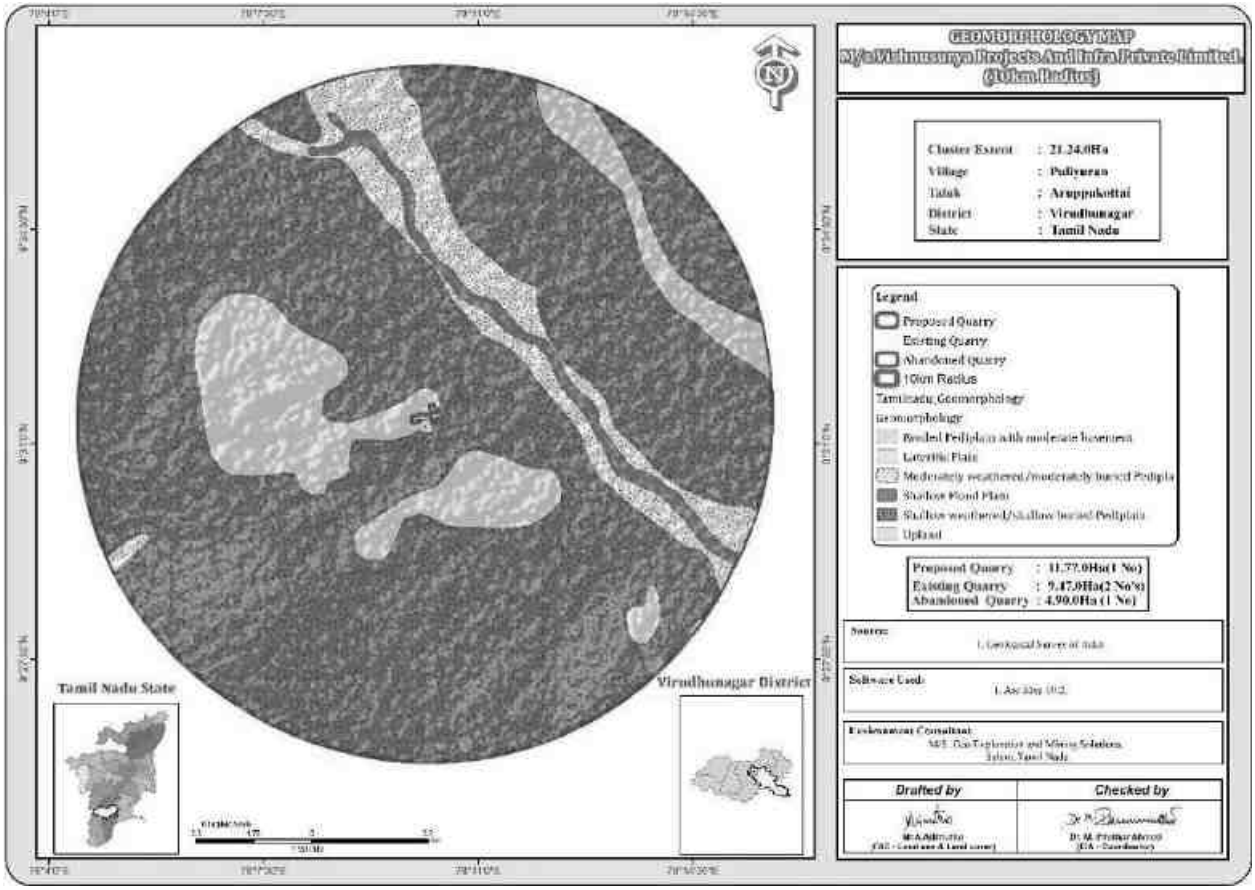


FIGURE 2.9: GEOMORPHOLOGY MAP



2.4 RESOURCES AND RESERVES

The Resources and Reserves of Rough Stone and Gravel were calculated based on Cross-Section Method by plotting sections to cover the maximum lease area. 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) and safety distance as per precise area communication letter and deducting the locked up reserves during bench formation (Also called as Bench Loss) and the Mineable Reserves is calculated considering there is no waste / overburden / side burden (100% Recovery Anticipated).

TABLE 2.5: RESOURCES AND RESERVES

Description	Rough Stone m^3	Weathered Gravel m^3	Gravel m^3
Geological Resource in m^3	56,49,600	4,70,800	2,35,400
Mineable Resource in m^3	31,95,024	3,98,428	2,07,998
Year wise production for First five-year plan period (As per ToR)	15,00,030	3,98,428	2,07,998
Year wise production for Second five-year plan period (As per ToR)	14,47,320	-	-

Source: Approved Mining Plan

TABLE 2.6: YEAR-WISE PRODUCTION PLAN

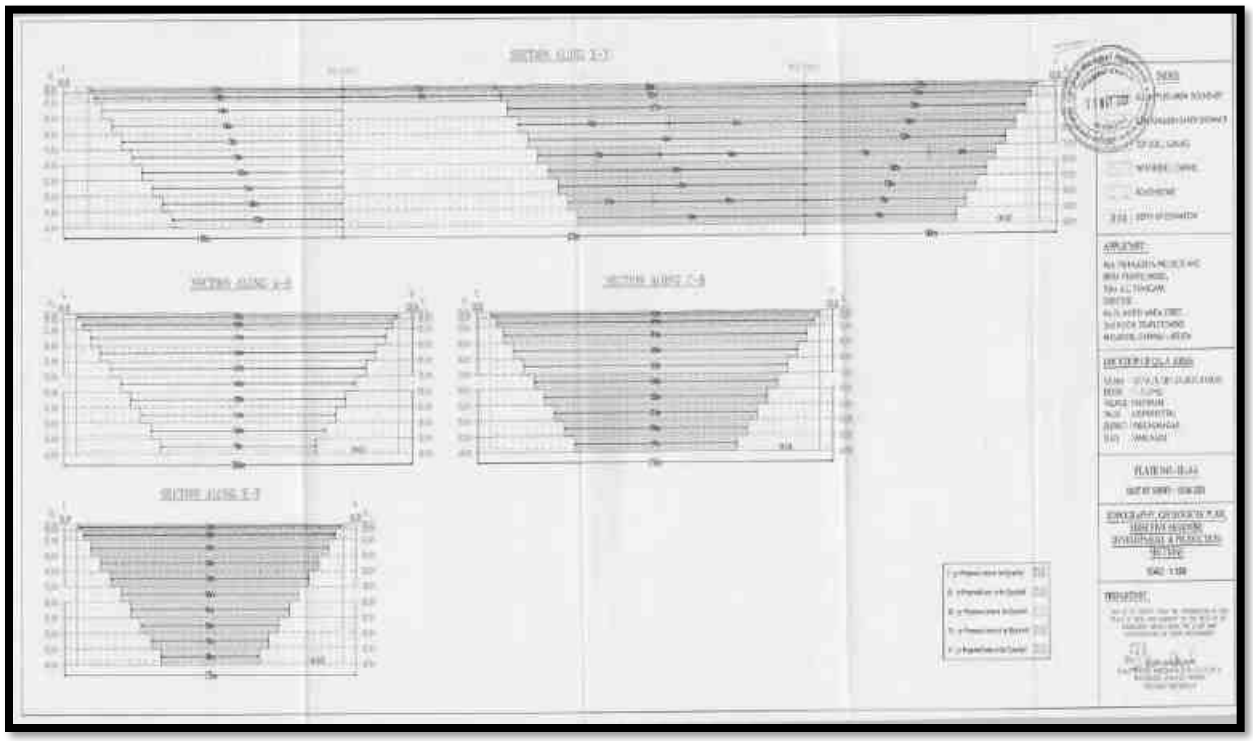
Year	Rough Stone (m^3)	Weathered Gravel (m^3)	Gravel (m^3)	
I	3,21,144	81,600	43,368	**Depth – 48m BGL**
II	3,21,420	1,36,836	71,760	
III	3,21,510	1,79,992	92,870	
IV	3,25,680	-	-	
V	2,10,276	-	-	
TOTAL	**15,00,030**	**3,98,428**	**2,07,998**	
VI	3,15,504	-	-	**Depth – 42m BGL**
VII	3,17,040	-	-	
VII	3,17,064	-	-	
IX	3,42,684	-	-	
X	1,55,028	-	-	
Total	**14,47,320**	**-**	**-**	
Grand Total	**29,47,350**	**3,98,428**	**2,07,998**	

Source: Approved Mining Plan

Disposal of Waste

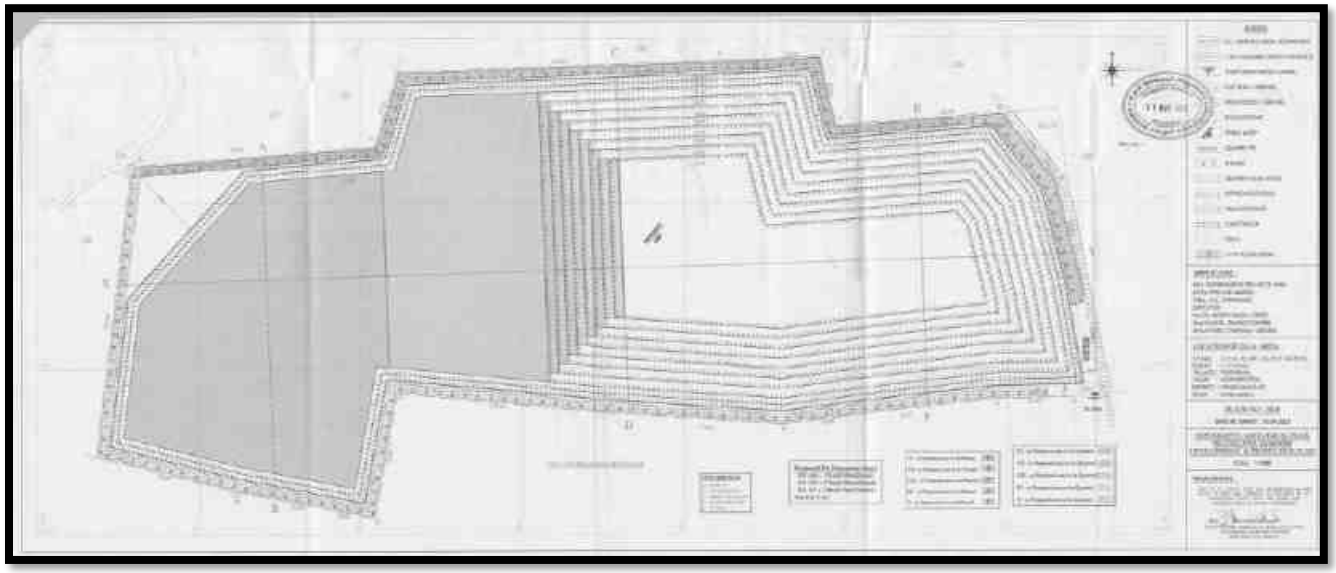
The overburden in the form of Gravel is about 2,07,998m³ up to depth 2m and Weathered Rock is about 3,98,428m³ up to depth 4m for during this lease period of three years, the Gravel and Weathered Gravel will be directly loaded into Trucks for the filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government.

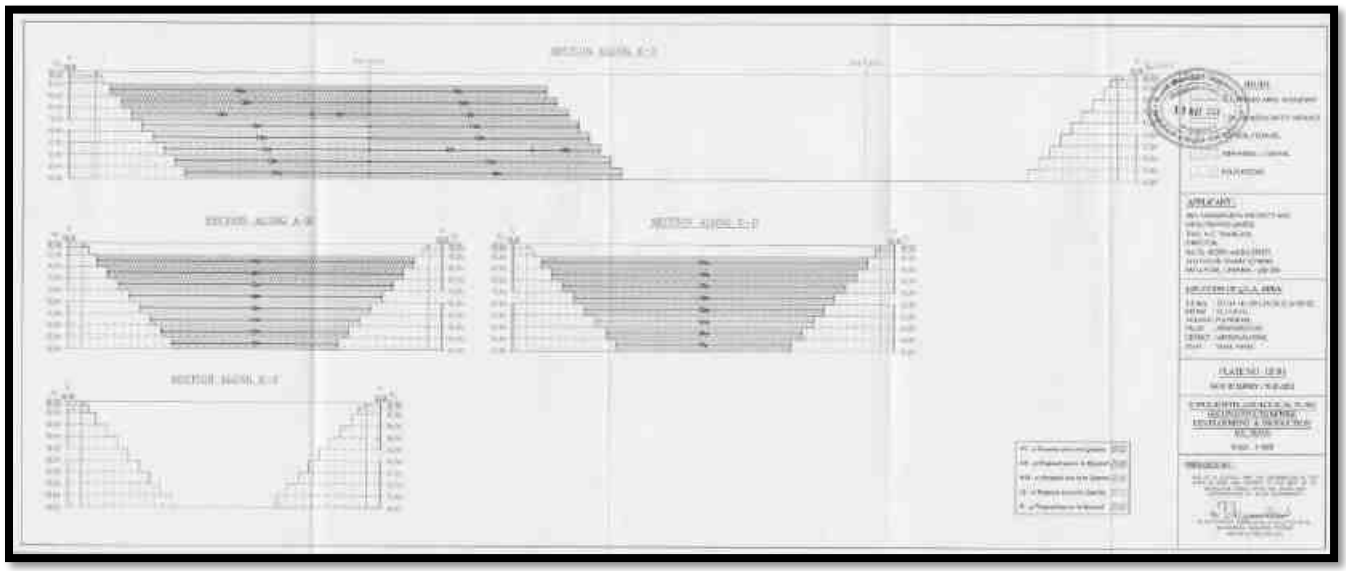
FIGURE 2.10: TOPOGRAPHY, GEOLOGICAL, YEAR-WISE DEVELOPMENT PRODUCTION PLAN AND SECTIONS -For FIRST FIVE YEAR PLAN



Source: Approved Mining Plan

FIGURE 2.10A: TOPOGRAPHY, GEOLOGICAL, YEAR-WISE DEVELOPMENT PRODUCTION PLAN AND SECTIONS -For SECOND FIVE YEAR PLAN





Conceptual Mining Plan/ Final Mine Closure Plan

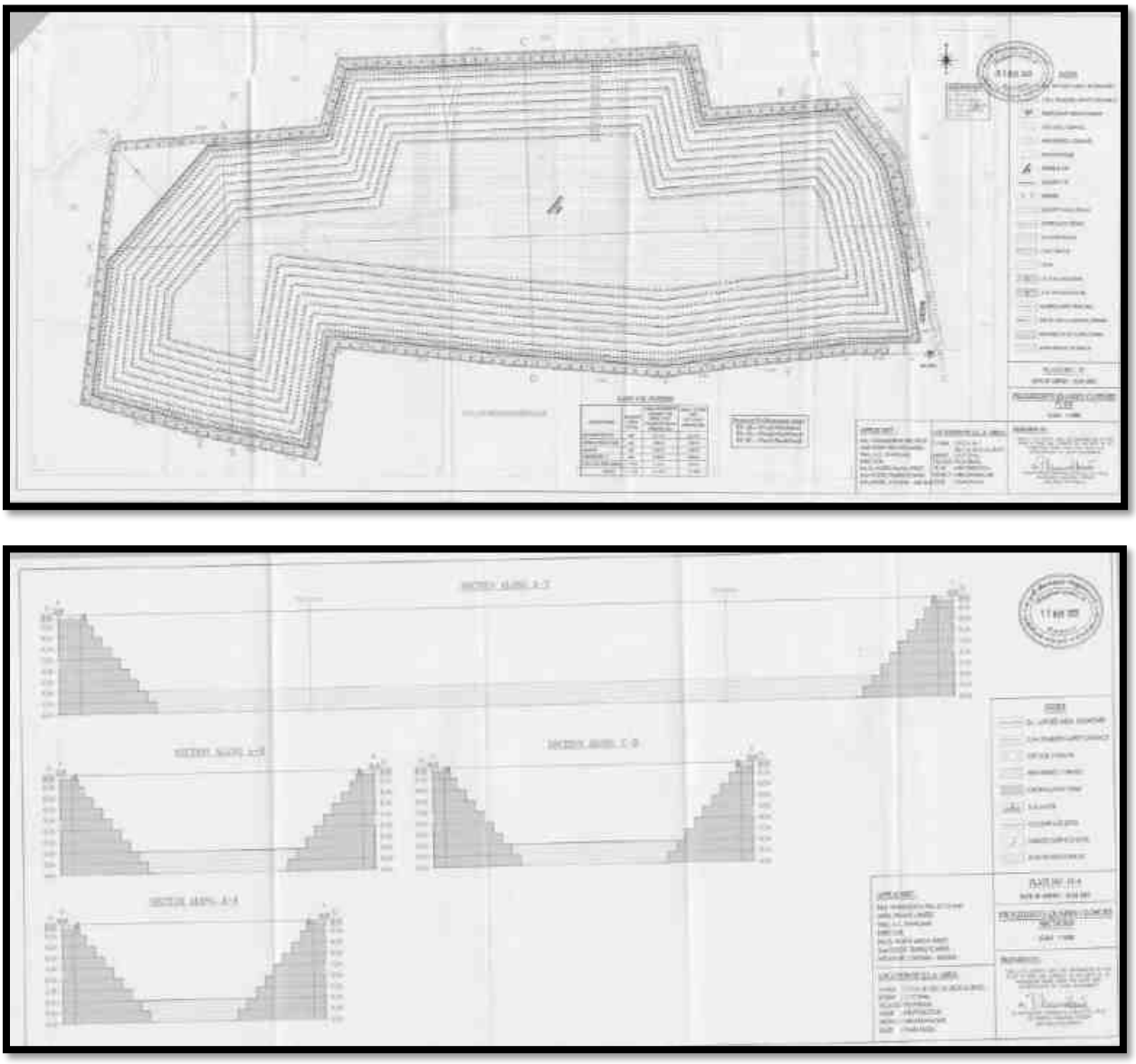
The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.

TABLE 2.7: ULTIMATE PIT DIMENSION

Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
XY-AB	151	190	54m bgl
XY-CD	275	195	54 m bgl
XY-EF	139	156	54 m bgl

Source: Approved Mining Plan

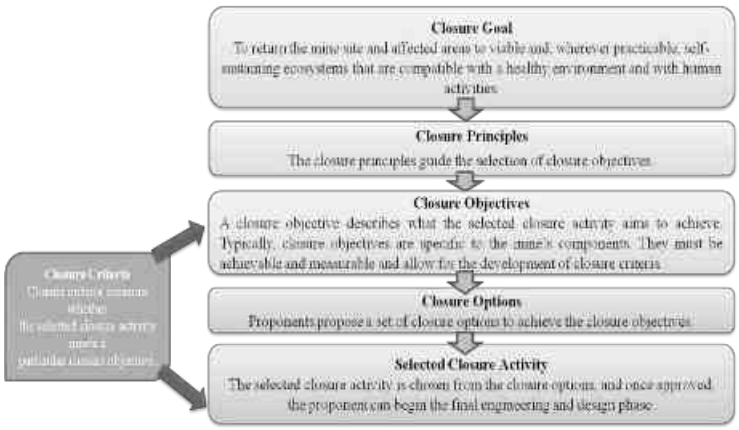
FIGURE 2.11: CLOSURE PLAN AND SECTIONS



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
- 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

2.5 METHOD OF MINING

Opencast Mechanized Mining Method is proposed by formation of 5.0-meter height bench with a bench width not less than the bench height. Bench slope will be maintained as 60^0.

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 Excavator attached with rock breaker/ bucket with tipper combination will be involved for the excavation/breaking of Rough stone after blasting. 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.

It is recommended to obtain necessary statutory permission from the Department of Geology and Mining for Using Heavy Earth Moving Machineries, Blasting and appointment of Mines Manager etc.,

2.5.1 Drilling & Blasting Parameters

Drilling will be carried out using Jack hammer and compressor, the depth of the hole will be maximum 1.5m Drilling & Blasting will be carried out as per parameters given below: -

Spacing	–	1.2m
Burden	–	1.0 m
Depth of hole	–	1.5 m
Charge per hole	–	0.50 – 0.75kg
Powder factor	–	6.0 tonnes/kg
Diameter of hole	–	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 for Five years	=	**15,00,030**m^3
	=	**15,00,030**/5
	=	**60,001**/300
	=	200* 2.6
	=	520 Tonnes per day
Therefore, Number of Holes per day	=	520/9
	=	58Holes per day

Explosives per hole = ½ kg hence 29kg of Explosives will be utilized maximum production.

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.

Storage of Explosives –

No proposal for storage of explosives within the project area, the project proponent will made agreement with authorized explosives agencies for carrying out blasting activities and competent person as per DGMS guidelines will be employed for safety and supervision of overall quarrying activities.

The explosives will be sourced from the blasting agency on daily basis and the blasting will be carried out under the supervision of competent qualified Blaster and it will be ensured that there shall be no balance of explosive stock; any balance stock will be taken back by the supplier.

2.5.2 Extent of Mechanization

TABLE 2.8 PROPOSED MACHINERY DEPLOYMENT

S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	6	1.2m to 2.0m	Compressed air
2	Compressor	2	400psi	Diesel Drive
3	Excavator with Bucket and Rock Breaker	3	300 HP	Diesel Drive
4	Taurus	6	20 Tonnes	Diesel Drive
5	Wagon Drill	1	110mm	TAM Rock

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 will be constructed as per the Mine Rule after the grant of quarry lease in all the proposed quarries.

2.6.2 Drainage Pattern

There are no streams, canals or water bodies crossing within the project area. The drainage pattern of the area is dendritic – sub dendritic.

2.6.3 Traffic Density

The traffic survey conducted based on the transportation route of material, the Rough Stone is proposed to be transported mainly through

Traffic density measurements were performed at two locations

1. Purenore to Konnappanendal Road Panchayat Road
2. Kandamangalam Road & panchayat Road Road

Traffic density measurement was 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.2.9: TRAFFIC SURVEY LOCATIONS

Station Code	Road Name	Distance and Direction	Type of Road
TS1	Purenore to Konnappanendal Road	640m & SW	Panchayat Road
TS2	Kandamangalam Road & panchayat Road	1.5Km& SE	Panchayat Road

Source: On-site monitoring by GEMS FAE & TM

TABLE 2.10: EXISTING TRAFFIC VOLUME

Station code	HMV		LMV		2/3 Wheelers		Total PCU
	No	PCU	No	PCU	No	PCU	

TS1	100	300	50	50	125	63	413
TS2	200	600	100	100	150	75	775

Source: On-site monitoring by GEMS FAE & TM

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

TABLE 2.11: ROUGH STONE & GRAVEL HOURLY TRANSPORTATION REQUIREMENT

Transportation of Rough Stone & Gravel per day		
Capacity of trucks	No. of Trips per day	Volume in PCU
20 tonnes	102	306

FIGURE.2.12: MINERAL TRANSPORTATION ROUTE MAP

Proposed Transportation Route:

1. The Rough stone will be transported to the Crusher which is located 120m Northeast side of the project site.
2. Existing approach road is located on the south side this road connecting in the Purenore to Konnappanendal Road (Total Stretch of the approach road = 1km)
3. Kandamangalam Road & panchayat Road connecting in the panchayat Road at a distance of 2km the total Stretch of the Transportation route is about 1.5to 2km from the project site
4. No Major Habitation, Schools in the proposed transportation route.

TABLE 2.12: SUMMARY OF TRAFFIC VOLUME

Route	Existing Traffic volume in PCU	Incremental traffic due to the project	Total traffic volume	Hourly Capacity in PCU as per IRC – 1960guidelines
Purenore to Konnappanendal Road	413	306	719	1500
Kandamangalam Road & panchayat Road	775	306	1081	1200

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

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

2.6.4 Mineral Beneficiation and Processing

There is no proposal for the mineral processing or ore beneficiation in any of the proposed project.

2.7 PROJECT REQUIREMENT

2.7.1 Water Source & Requirement

Detail of water requirements in KLD as given below:

TABLE 2.13: WATER REQUIREMENT FOR THE PROJECT

Purpose	Quantity	Source
Dust Suppression	0.9KLD	From Existing bore wells from nearby area
Green Belt	0.8KLD	From Existing bore wells from nearby area
Sanitation & Drinking	0.7KLD	From existing, bore wells and drinking water will be sourced from Approved water vendors.
Total	**2.4 KLD**	

Source: Prefeasibility report

2.7.2 Power and Other Infrastructure Requirement

Power is not required for the mining operation; the mining operation will be carried out using Diesel Generator and Earth moving machineries using diesel. 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 by project proponent.

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 plant.

2.7.3 Fuel Requirement

One Excavator will excavate 25m^3 of Broken up rough stone per hour and 60m^3 of Weathered rock and Gravel per hour.

Peak production of Rough stone = 228m^3

Peak production of Weathered Gravel = 200m^3

Peak production of Gravel = 103m^3

Peak production for the overburden (Gravel + Weathered rock) = 303

Type of machinery	Working hours	Average Diesel consumption/ Hour	Quantity of Diesel in Ltrs
Working hours of Excavator (Aprx)	228m^3/20m^3=11 Hrs (Rough stone)	18 Ltrs	205
	303/60m^3 = 1-5 Hrs	18 Ltrs	18
Compressor	Working hours per day 2 Hrs	8 Ltrs	16
Tippers, Motor pumps to drain water	Occasionally		20
Total Diesel Consumption			**259**

The Maximum diesel consumption is around 260 Ltrs per day considering the peak production.

2.7.4 Project Cost

The Environmental Management plan has been prepared considering the mode of working, Safety of the employees and Monitoring periods the total Cost is 4,87,33,000/- Crores.

2.8 EMPLOYMENT REQUIREMENT:

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 mine's regulations, 1961.

TABLE 2.14: PROPOSED MANPOWER DEPLOYMENT

Designation	No of persons
Mines Manager/Mines Foreman	1
Mine Mate and Blaster	2
Jack hammer operator	12
Excavator Operator	3
Drivers	6
Wagon drill operator	2
Labour & Helper	4
Cleaner & Co-operator	9
Security	2
Total	**41**

Source: Approved Mining Plan & Pre-Feasibility report.

2.9 PROJECT IMPLEMENTATION SCHEDULE

The mining operation will commence after the grant of Environmental Clearance, Consent to operate (CTO), Execution of Lease Deed and Obtaining permission from the DGMS (Notice of Opening).

TABLE 2.15: EXPECTED TIME SCHEDULE

Sl.No.	Particulars	Time Schedule (In Month)					Remarks if any
		1st	2nd	3rd	4th	5th	
1	Environmental Clearance						
2	Consent to Operate						
3	Execution of Lease deed						
4	Permission from DGMS						
Time line may vary; subjected to rules and regulations /& other unforeseen circumstances							

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

3. DESCRIPTION OF ENVIRONMENT

3.0 GENERAL

The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering Oct 2023 to Dec 2023 with CPCB guidelines for the following attributes –

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

Environmental data has been collected with reference to cluster quarries by Global Lab and Consultancy Services, – An accredited by ISO/IEC 17025:2017 (NABL) Laboratory.

Study Area

An area of 10 km radius (aerial distance) from the periphery of the cluster is considered for EIA study. The study area has been divided into two zones viz **core zone** and **buffer zone**.

- Core zone is considered as cluster area
- 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 Post monsoon season i.e., Oct 2023 to Dec 2023.

Study Methodology

- The project area was surveyed in detail with the help of Total Station Survey instruments and pillars were marked. The boundary coordinates were superimposed on the satellite imagery to understand the relief of the area, besides Land use pattern of the area was studied through the Bhuvan (ISRO)
- Soil samples were collected and analysed for relevant physio-chemical characteristics in order to assess the impact due to mining activities and to recommend saplings for Greenbelt development.
- Ground water samples were collected from the existing bore wells, Surface water was collected from water bodies in the buffer zone and analysed as per CPCB Guidelines.
- An onsite meteorological station was setup in cluster area, to collect data about wind speed, wind direction, temperature, relative humidity, rainfall and general weather conditions were recorded throughout the study period.
- Air quality Data's were collected by installation of Respiratory Dust Samplers (RDS) for Fugitive dust, PM_{10} and SO_2, NO_X with gaseous attachments & Fine Dust Samplers (FDS) for $PM_{2.5}$ and other parameters as per NAAQ norms and analysed for primary air pollutants to work out the existing status of air quality.
- The Noise level measurements were also made at various locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone.
- Baseline biological studies were carried out to assess the ecology of the study area to study the existing flora and fauna pattern of the area.

- Socio-Economic survey was conducted at village and household level in the study area to understand the present socio-economic conditions and assess the extent of impact due to the proposed mining project.

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

TABLE 3.1: MONITORING ATTRIBUTES AND FREQUENCY OF MONITORING

Attribute	Parameters	Frequency of Monitoring	No. of Locations	Protocol
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data's from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
*Soil	Physio-Chemical Characteristics	Once during the study period	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	PM10 PM2.5 SO2 NOX Fugitive Dust	24 hourly twice a week (Oct 2023 to Dec 2023)	7 (1 core & 6 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
*Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	7 (1 core & 6 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrate & Transect Study Secondary Data – Forest Working Plan
Socio Economic Aspects	Socio–Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

Source: On-site monitoring/sampling by Global Lab and Consultancy Services association with GEMS

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

3.1 LAND ENVIRONMENT

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

3.1.1 Land Use/ Land Cover

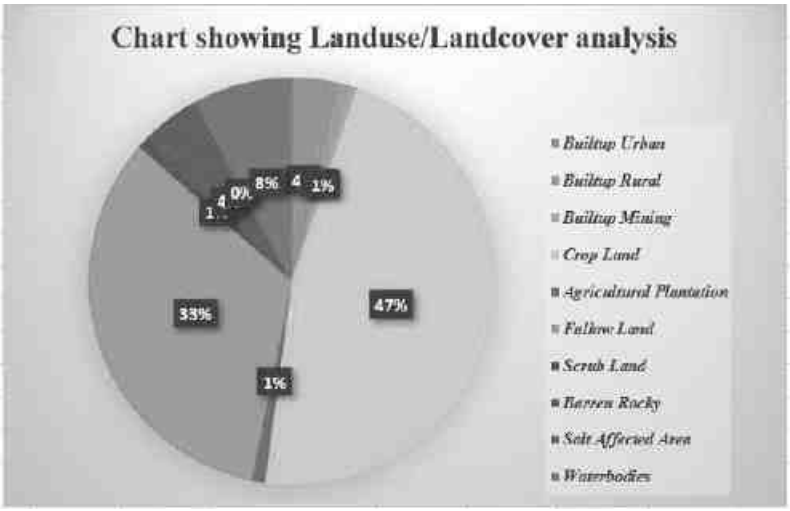
A visual interpretation technique has been adopted for land use classification based on the keys suggested in the chapter – V of the guidelines issued by NNRMS Bangalore & Level III classification with 1:50,000 scale for the preparation of land use mapping. Land use pattern of the area was studied through LISS III imagery of Bhuvan (ISRO). The 10 km radius map of study area was taken for analysis of Land use cover.

TABLE 3.2: LAND USE / LAND COVER TABLE 10 Km RADIUS

S.No	Classification	Area_Ha	Area_%
BUILTUP			
1	Builtup Urban	1226.24	3.71
2	Builtup Rural	294.89	0.89
3	Builtup Mining	190.13	0.58
AGRICULTURAL LAND			
4	Crop Land	15499.70	46.94
5	Agricultural Plantation	357.11	1.08
6	Fallow Land	10983.36	33.26
BARREN/WASTELAND			
7	Scrub Land	259.48	0.79
8	Barren Rocky	1422.72	4.31
9	Salt Affected Area	185.71	0.56
WATERBODIES			
10	Waterbodies	2602.46	7.88
		33021.80	100.00

Source: Survey of India Toposheet and Landsat Satellite Imagery

FIGURE 3.1: PIE DIAGRAM OF LAND USE AND LAND COVER



From the above table, pie diagram and land use map it is inferred that the majority of the land in the study area is Agriculture land (includes crop & fallow land) 81.28% followed by Built-up Lands – 4.61%, Scrub land – 0.79%, and Water bodies 7.88%. Barren Rocky 4.31% and Salt affected land is about 0.56%

The total mining area within the study area is 190.13ha i.e., 0.58%. The cluster area of 21.24.0 ha contributes about 0.11% of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

3.1.2 Topography

The project area is almost plain terrain having gentle slope towards South side, the North east of the area is existing Rough stone and gravel quarry. The North east side of the area is side casted upto the maximum 0.96m to utilize temporary storage of Crushed materials.

3.1.3 Drainage Pattern of the Area

The drainage pattern of the area is dendritic – sub dendritic. Drainage pattern is the pattern formed by the streams, rivers, and lakes in a particular drainage basin. They are governed by the topography of the land, whether a particular region is dominated by hard or soft rocks, and the gradient of the land. There are no streams, canals or water bodies crossing within the project area.

3.1.4 Seismic Sensitivity

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

3.1.5 Environmental Features in the Study Area

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

FIGURE 3.2: PHYSIOGRAPHIC MAP 10KM RADIUS

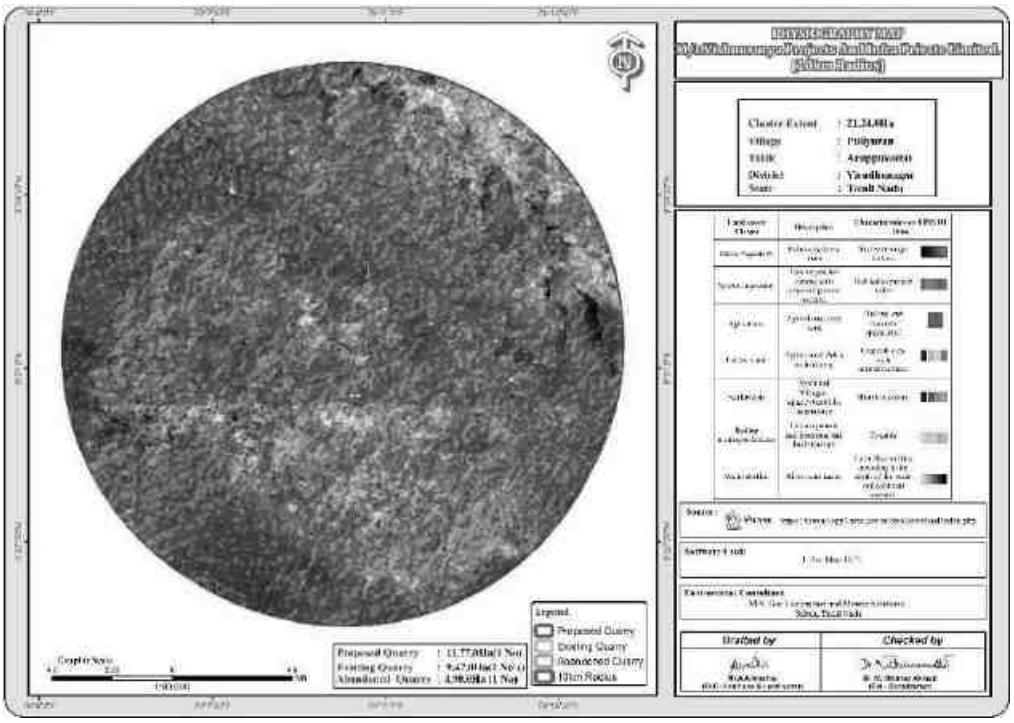


FIGURE 3.3: LAND USE LAND COVER MAP 10KM RADIUS

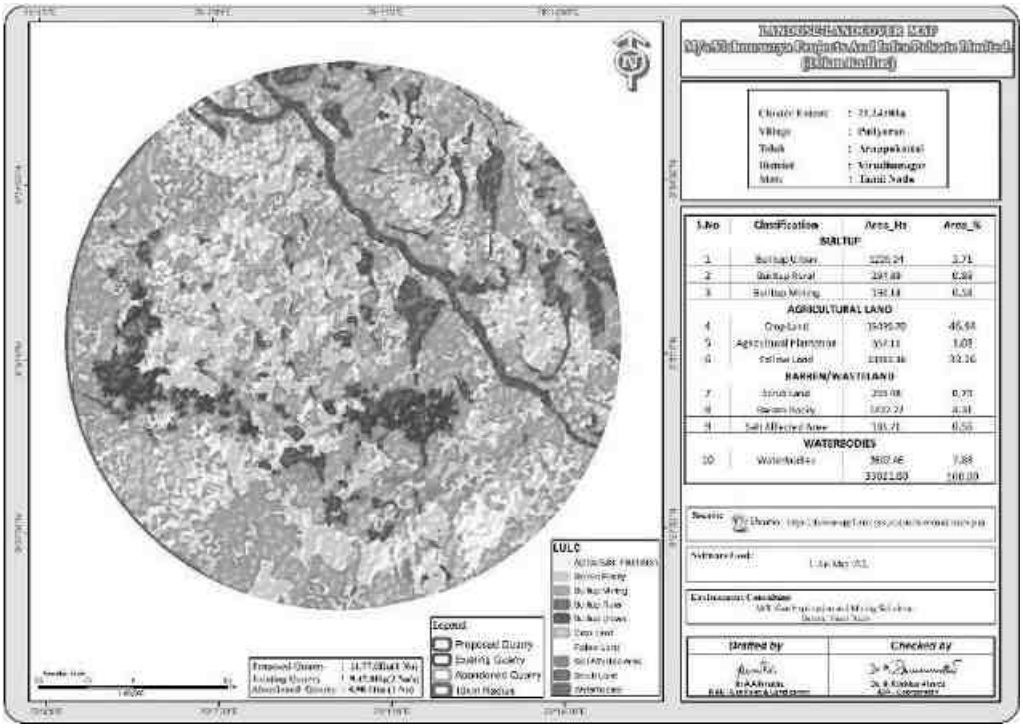


TABLE 3.3: DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE CLUSTER

Sl.No	Sensitive Ecological Features	Name	Arial Distance in km from Cluster
1	National Park / Wild life Sanctuaries	• Sirivilliputhur (Giant squirrel) Wildlife • Kanjirankulam Bird Sanctuary	49.5km- NW 37km- SE
2	Reserve Forest	Katturani R.F Vidathukulam R.F	40km-NE 13.10 km - NE
3	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	None	Nil within 10Km Radius
4	Critically Polluted Areas	Coimbatore - SIDCO Industrial Estate	Around 203 km- North West
5	Mangroves	None	Nil within 10km Radius
6	Mountains/Hills	None	Nil within 10km Radius
7	Notified Archaeological Sites	None	Nil within 10km Radius
8	Industries/ Thermal Power Plants	None	Nil within 10km Radius
9	Defence Installation	None	Nil within 10km Radius

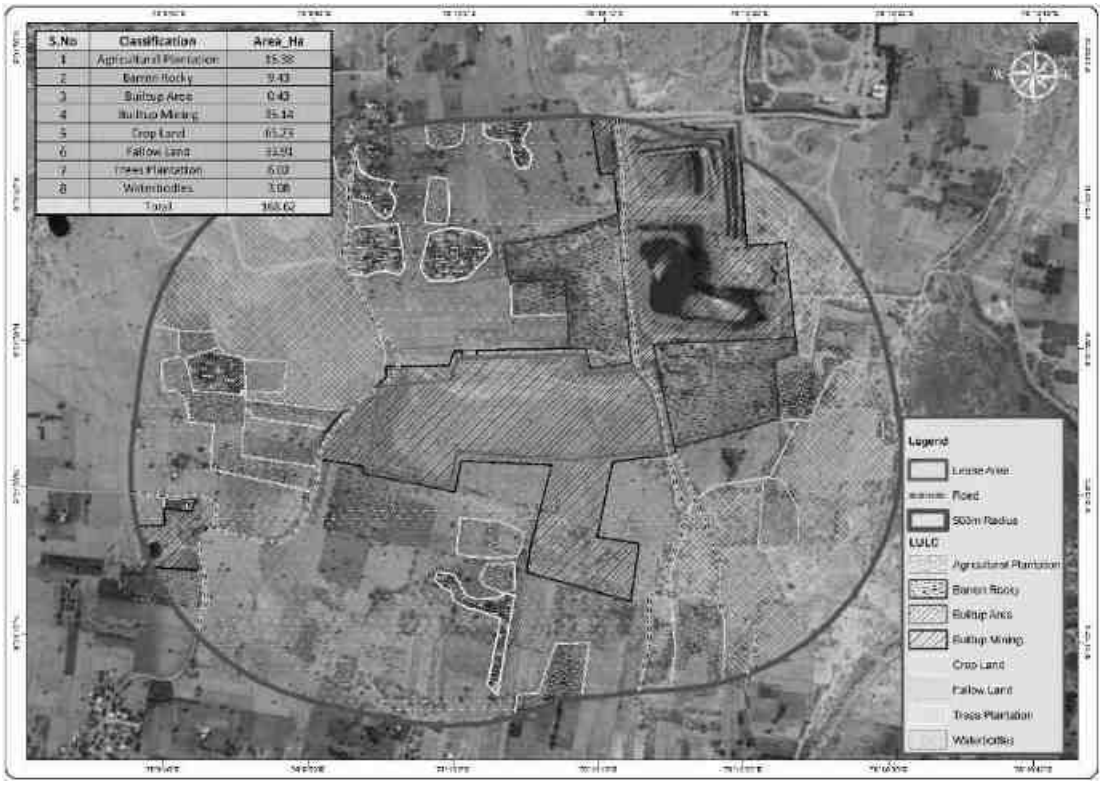
Source: Survey of India Toposheet

TABLE 3.4: NEARBY WATER BODIES FROM THE PROPOSED PROJECT SITE

Sl.No	NAME	DISTANCE & DIRECTION
1	Odai	50m & W
2	Onayi Urani	330m & SE
3	Pungankulam Kanmoi	720m & S
4	Tank	810m & N
5	Keelakadamangalam Tank	1.8Km & NE
6	Odai	3.5Km & NE

Source: Village Cadastral Map and Field Survey

FIGURE 3.4: LAND USE LAND COVER MAP 500m RADIUS



Land use Landcover of the area within 500m radius were studied in detailed that the majority of the land within 500m is Crop land (56.95ha) followed by agriculture plantation and Barren land and Mining areas are contributing majority of the land use.

3.1.6 Soil Environment

Soil quality of the study area is one of the important components of the land environment. The composite soil samples were collected from the study area and analysed for different parameters. The locations of the monitoring sites are detailed in Table 3.5 and Figure 3.3.

The objective of the soil sampling is -

To determine the baseline soil characteristics of the study area; study the impact of proposed activity on soil characteristics and study the impact on soil more importantly agriculture production point of view.

TABLE 3.5: SOIL SAMPLING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	S-1	Core Zone	Project Area	9°31'22.67"N 78°10'5.63"E
2	S-2	Thenpalai	670m NW	9°31'49.84"N 78° 9'55.39"E
3	S-3	Tiruchuli	3.8km East	9°31'54.31"N 78°12'11.75"E
4	S-4	Sempatti	3.8km West	9°30'50.96"N 78° 7'50.81"E
5	S-5	kallurani	5.3km South	9°28'20.86"N 78° 9'50.38"E
6	S-6	Chokkampatti	6.2km North	9°34'52.16"N 78°10'17.08"E

Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS.

Methodology –

For studying soil quality, sampling locations were selected to assess the existing soil conditions in and around the project site representing various land use conditions. The samples were collected by auger boring into the soil up to 90-cm depth. 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 samples were sent to laboratory for analysis. The samples were filled in Polythene bags, coded and sent to laboratory for analysis and the details of methodology in respect are given in below Table 3.6.

TABLE 3.6: METHODOLOGY OF SAMPLING COLLECTION

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

Source: On-site monitoring/sampling Global Lab and Consultancy Services in association with GEMS

Soil Testing Result –

The samples were analysed as per the standard methods prescribed in "Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India". The important properties analysed for soil are bulk density, porosity, infiltration rate, pH and Organic matter, kjeldahi Nitrogen, Phosphorous and Potassium. The standard classifications of soil are presented below in Figure 3.4 and the physico-chemical characteristics of the soil & Test Results in Table 3.7.

FIGURE 3.5: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS

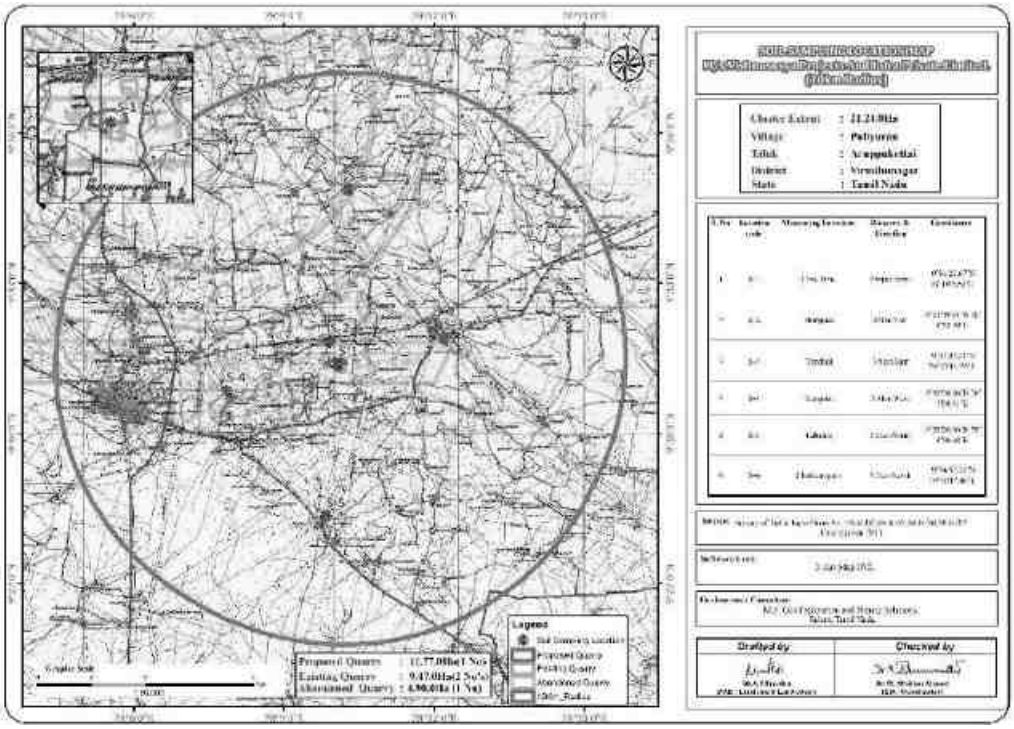


FIGURE 3.6: SOIL MAP

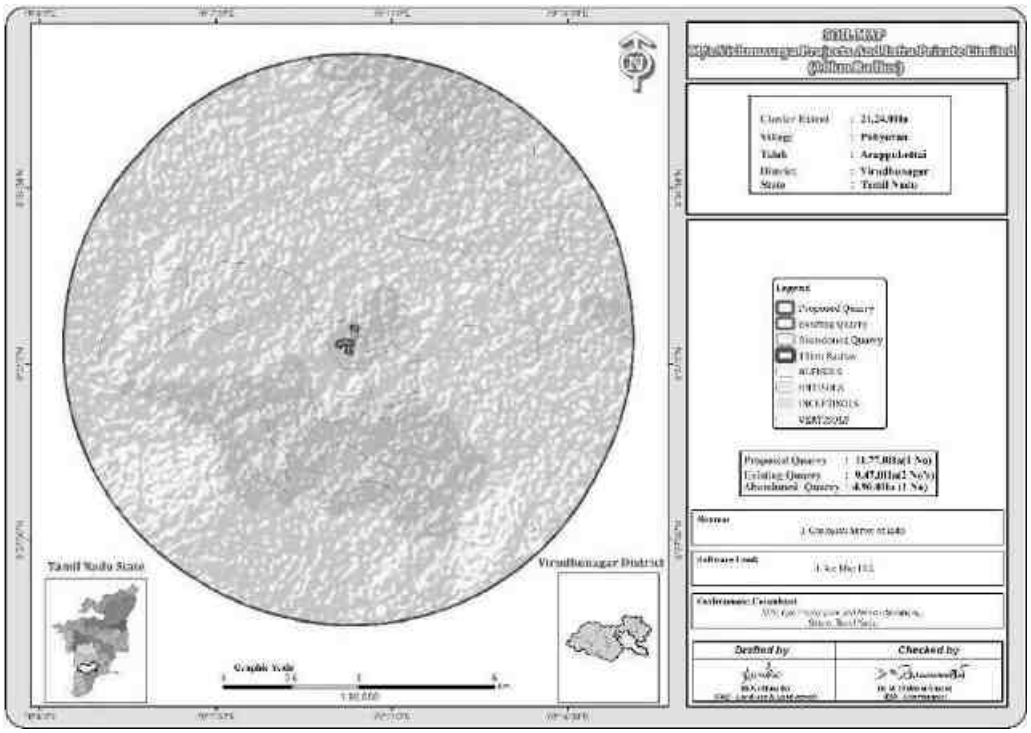


TABLE 3.7: SOIL QUALITY OF THE STUDY AREA

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	S-1 Core Zone	S-2 Thenpalai	S-3 Thiruchuli	S-4 Sempatti	S-5 Kallurani	S-6 Chokkampatti
1	Organic Matter	GLCS/SOP/S/003	%	1.89	2.06	2.4	2.75	2.06	2.2
2	pH	IS 2720 (Part 26)	-	5.49	6.02	4.09	4.37	5.06	5.41
3	Specific Electrical Conductivity	IS 14767	µS/cm	280	301	320	331	312	343
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	13.9	15.3	16.2	15.9	14.8	14.9
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.39	1.47	1.44	1.56	1.37	1.58
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	5.6	6.2	6.8	7.4	7.8	7.6
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	2.2	3.0	2.6	2.4	2.6	2.8
8	Sulphate as SO4	GLCS/SOP/S/009	mg/100g	8.5	6.6	9.8	12.0	11.8	11.3
9	Chloride	GLCS/SOP/S/004	meq/l	9.3	9.7	10.1	10.4	9.8	10.5
10	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	19.6	20.6	20.4	19.8	20.8	20.0
11	Bulk Density	GLCS/SOP/S/017	g/cc	1.02	1.19	1.21	1.05	1.09	1.19
12	Texture: Sand	GLCS/SOP/S/015	%	34.45	37.21	36.30	31.76	36.73	39.59
13	Texture: Slit	GLCS/SOP/S/015	%	42.15	39.84	40.21	45.94	40.20	37.32
14	Texture: Clay	GLCS/SOP/S/015	%	23.40	22.95	23.49	22.60	23.08	23.09
15	Water Holding Capacity	GLCS/SOP/S/016	%	38	41	42	43	40	44
16	Available Nitrogen as N	GLCS/SOP/S/029	kg/hc	137.9	163	175.6	188.1	163	200
17	Permeability	By Permeameter	%	41.6	43	44	45	42	46
18	Exchangeable Manganese	USEPA Method	mg/kg	17.8	19.0	1.0	13.6	25.2	27.0
19	Exchangeable Zinc	USEPA Method	mg/kg	37.4	25.8	39.9	34.1	43.2	38.6
20	Cadmium as Cd	USEPA Method	mg/kg	18.5	12.2	21.5	34.1	19.8	20.7
21	Chromium as Cr	USEPA Method	mg/kg	33.11	21.9	23.5	29.7	27.4	23.1
22	Copper as Cu	USEPA Method	mg/kg	12.8	11.9	11.5	17.5	19.3	17.3
23	Lead as Pb	USEPA Method	mg/kg	0.7	BDL(DL:0.5)	4.0	0.5	0.9	1.4
24	Iron as Fe	USEPA Method	mg/kg	40.6	10.2	44.9	40.9	46.8	20.7
25	Organic Carbon	USEPA 6010D	mg/kg	1.1	1.2	1.4	1.6	1.2	1.3
26	Boron as B	GLCS/SOP/S/003	%	3.2	3.2	10.0	6.8	4.0	1.0

Source: Sampling Results by Global Lab and Consultancy Services.

FIGURE 3.7: SOIL SAMPLE COLLECTION




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 (22.60 % 23.49 %) to Sandy Loam Soil and Bulk Density of Soils in the study area varied between 1.02– 1.21 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e., ranging from 38– 44 %.

Chemical Characteristics –

- The nature of soil is slightly alkaline to strongly alkaline with pH range 4.09 to 6.02
- The available Nitrogen content range between 137.9 to 200 kg/hc
- The available Phosphorus content range between 13.9 to 16.2 mg/kg
- The available Potassium range between 1.37 mg/kg to 1.58 meq/l

Observation :

The pH of the Soil indicates that the soil is Neutral and arid region and ideal for plant growth.

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:

Onayi Urani and Pungankulam Kanmoi is the surface water body in the study area and the rainfall over the area is moderate, the rainwater storage in open wells and trenches are in practice over the area and the stored water acts as source of drinking water for few months after rainy season.

3.2.2 Ground Water Resources:

Groundwater occurs in all the crystalline formations of oldest Achaeans and Recent Alluvium. The occurrence and behaviour of groundwater are controlled by rainfall, topography, geomorphology, geology, structures etc., The weathering is controlled by the intensity of weathering and fracturing. Dug wells as wells as bore wells are more common ground water abstraction structures in the area. The diameter of the dug well is in the range of 7 to 10 m and depth of dug wells range from 7.2 to 13 m bgl. The dug wells yield up to 1 lps in summer months and few wells remains dry. The yield is adequate for irrigation for one or two crops in monsoon period.

3.2.3 Methodology

Reconnaissance survey was undertaken and monitoring locations were finalized based on;

- Drainage pattern;
- Location of Residential areas representing different activities/likely impact areas; and
- Likely areas, which can represent baseline conditions

Two (2) surface water and Four (4) ground water samples were collected from the study area and were analysed for physio-chemical, heavy metals and bacteriological parameters in order to assess the effect of mining and other activities on surface and ground water. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and 'Standard methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA). The water sampling locations are given in Table 3.8 and shown as Figure 3.5.

TABLE 3.8: WATER SAMPLING LOCATIONS

S.NO	CODE	LOCATIONS	DISTANCE & DIRECTION	CO-ORDINATES
SURFACE WATER				
1	SW-1	Periya Kanmoi	8km SW	9°29'51.30"N 78° 5'48.59"E
2	SW-2	Lake Near Tiruchuli	3.2km East	9°32'4.68"N 78°11'51.73"E
GROUND WATER				
3	WW-1	Near Project Area	440m SE	9°31'10.24"N 78°10'21.56"E
4	WW-2	Erampatti	4.8km NW	9°33'22.35"N 78° 8'7.39"E
5	BW-1	Near Project Area	300m West	9°31'26.70"N 78° 9'45.25"E
6	BW-2	kallurani	5.3km South	9°28'16.96"N 78° 9'53.29"E

Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS

FIGURE 3.8: WATER SAMPLE COLLECTION

FIGURE 3.9: WATER SAMPLING LOCATIONS AROUND 10 KM RADIUS

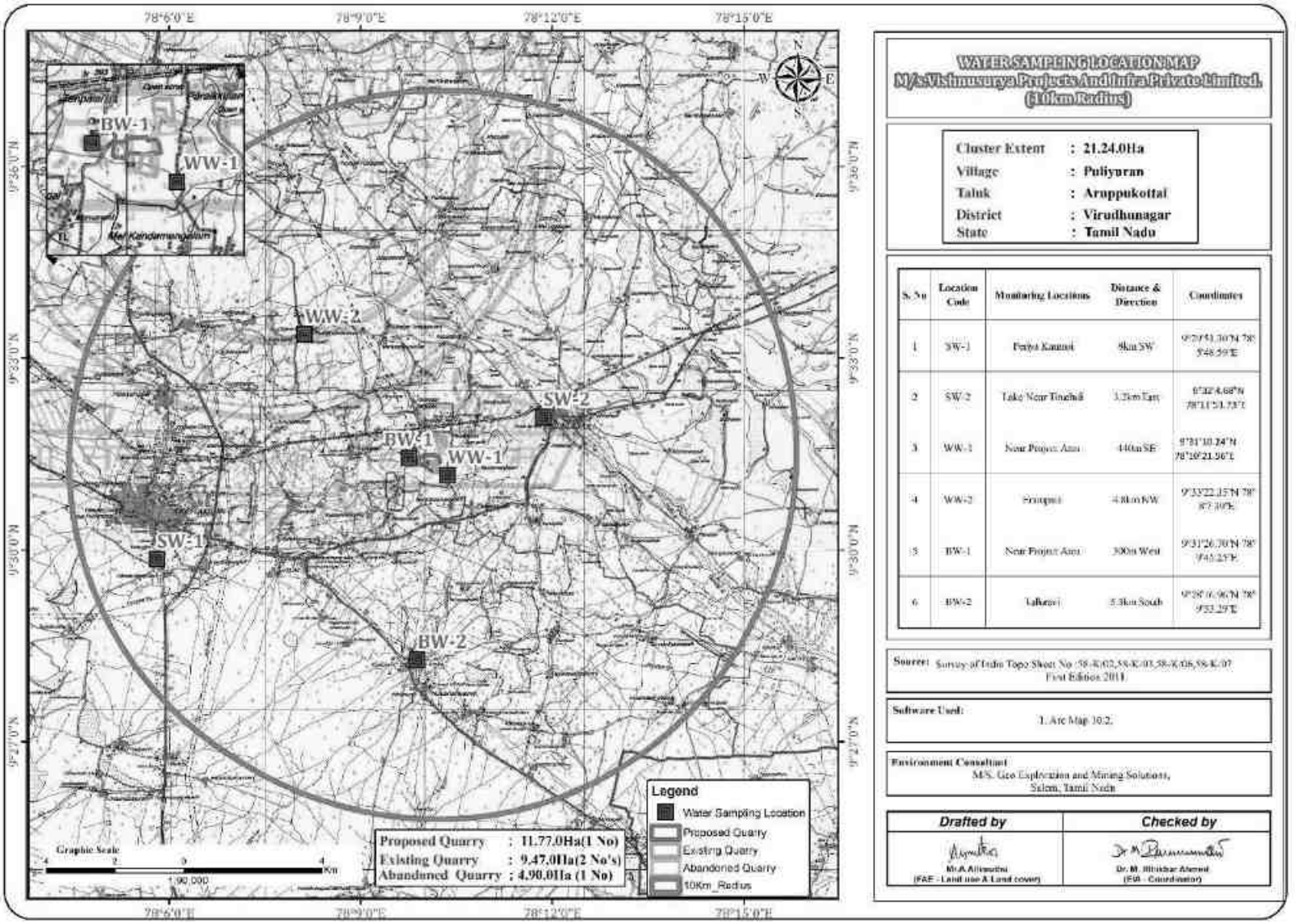


TABLE 3.9: GROUND WATER SAMPLING RESULTS

வ.எண்	சோதனை	சோதனை முறை	UNIT	WW1-Near Project area	WW2- Erampatti	BW1-Near Near Project area	BW2-Naduvelampalayam
1	Color	IS 3025 PART 4	Hazen	<5	<5	< 5	< 5
2	Odor	IS 3025 PART 5	-	Agreeable	Agreeable	Agreeable	Agreeable
3	pH	IS 3025 PART11	-	7.55	7.34	7.21	7.24
4	Conductivity	IS 3025 PART14	µs/cm	1032	1010	876	1364
5	Turbidity	IS 3025 PART10	NTU	<1	<1	<1	<1
6	Total Dissolved Solids	IS 3025 PART16	mg/l	608	595	516	887
7	Total Alkalinity as $CaCO_3$	IS 3025 PART 23	mg/l	160.8	152.7	<2	370
8	Total Hardness as $CaCO_3$	IS 3025 PART 21	mg/l	232	216	128.6	420
9	Calcium as Ca	IS 3025 PART40	mg/l	62.5	67.3	196	84
10	Magnesium as Mg	IS 3025 PART 46	mg/l	18.4	11.6	52.9	51
11	Chloride as Cl^-	IS 3025 PART 32	mg/l	187.8	137.6	15.5	130
12	Sulphate as SO_4^-	IS 3025 PART24	mg/l	45.4	45.99	149	24
13	Iron as Fe	IS 3025 PART 53	mg/l	0.29	0.29	41.95	BDL(DL:0.1)
14	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	0.20	BDL(DL:0.1)
15	Free Residual Chlorine as Cl_2	IS 3025 PART 26	mg/l	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:0.1)	BDL(DL:1.0)
16	Fluoride as F	GLCS/SOP/W/015	mg/l	0.28	0.26	BDL(DL:1.0)	BDL(DL:0.1)
17	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	0.24	BDL(DL:0.1)
18	Nitrate as NO_3	IS 3025 PART 34	mg/l	BDL(DL :2.0)	BDL(DL :2.0)	BDL(DL :2.0)	BDL(DL:2.0)
19	Total Suspended Solids	IS 3025 PART 17	mg/l	<2	<2	BDL(DL:0.1)	BDL(DL:2.0)
20	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
21	Anionic Detergents	IS 13428	mg/l	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)
22	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
23	Sulphide	GLCS/SOP/W/66	mg/l	BDL(DL:1)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)
24	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
25	Mercury (Hg)	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)
26	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
27	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)
28	Aluminium as Al	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
29	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
30	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
31	Total Chromium as Cr	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
32	Barium as Ba	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
33	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
34	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.02)	BDL(DL:0.002)	BDL(DL:0.002)	BDL(DL:0.002)
35	Ammonia as NH_3	IS 3025 PART 34	mg/l	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)

Source: sampling by Global Lab and Consultancy Services in association with GEMS

TABLE 3.10: SURFACE WATER SAMPLING RESULTS

வ.எண்	சோதனை	சோதனை முறை	UNIT	SW-1 Periya kanmoi	SW-2 Lake Near Tiruchuli
1	Color	IS 3025 PART 4	Hazen	<5	6
2	Odor	IS 3025 PART 5	-	Agreeable	Agreeable
3	pH	IS 3025 PART11	-	8.03	7.89
4	Conductivity	IS 3025 PART14	µs/cm	1228	1317
5	Turbidity	IS 3025 PART10	NTU	3	4
6	Total Dissolved Solids	IS 3025 PART16	mg/l	724	777
7	Total Alkalinity as $CaCO_3$	IS 3025 PART 23	mg/l	176.8	196.9
8	Total Hardness as $CaCO_3$	IS 3025 PART 21	mg/l	248	264
9	Calcium as Ca	IS 3025 PART40	mg/l	68.9	64.1
10	Magnesium as Mg	IS 3025 PART 46	mg/l	18.4	25.2
11	Chloride as Cl^-	IS 3025 PART 32	mg/l	267	294
12	Sulphate as SO_4^-	IS 3025 PART24	mg/l	43.9	50.3
13	Iron as Fe	IS 3025 PART 53	mg/l	0.31	0.30
14	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)	BDL(DL:0.1)
15	Free Residual Chlorine as Cl_2	IS 3025 PART 26	mg/l	BDL(DL:1.0)	BDL(DL:1.0)
16	Fluoride as F	GLCS/SOP/W/015	mg/l	0.29	0.34
17	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)	BDL(DL:0.1)
18	Nitrate as NO_3	IS 3025 PART 34	mg/l	BDL(DL :2.0)	BDL(DL :2.0)
19	Dissolved Oxygen	IS 3025 PART 38	mg/l	4.8	3.9
20	Bio-Chemical Oxygen Demand	IS 3025 PART 44	mg/l	16.8	15.0
21	Chemical Oxygen Demand	IS 3025 PART 58	mg/l	48.1	44.1
22	Ammonia as NH3	IS 3025 PART 34	mg/l	BDL(DL:1.0)	BDL(DL:1.0)
23	Total Suspended Solids	IS 3025 PART 17	mg/l	10	12
24	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)	BDL(DL:0.1)
25	Anionic Detergents	IS 13428	mg/l	BDL(DL:0.05)	BDL(DL:0.05)
26	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)	BDL(DL:0.02)
27	Sulphide	GLCS/SOP/W/66	mg/l	5.6	4.8
28	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)
29	Mercury (Hg)	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)
30	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)
31	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)
32	Aluminium as Al	GLCS/SOP/W/62	mg/l	0.037	BDL(DL:0.01)
33	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)
34	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)
35	Total Chromium as Cr	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)
36	Barium as Ba	GLCS/SOP/W/62	mg/l	0.132	BDL(DL:0.01)
37	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)	BDL(DL:0.01)
38	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)	BDL(DL:0.002)

Source: sampling by Global Lab and Consultancy Services in association with GEMS

3.2.4 Interpretation& Conclusion

Surface Water

The pH varied from 7.89 to 8.03 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

Total Dissolved Solids:

Total Dissolved Solids varied from 724 to 777mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

Other parameters:

Chloride content is 267 – 294mg/l. Nitrates varied from BDL (DL :2.0) while sulphates varied from 43.9 to 50.3mg/l.

Ground Water

The pH of the water samples collected ranged from 7.21 to 7.55 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 516– 887mg/l in all samples. Total hardness varied between 128.6– 420mg/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 60-65m. The maximum depth proposed out of proposed projects is 48m below ground level.

Ground water levels and Flow Direction based on the Bore well and open well Data's

In general, the ground water movement is based on the gradient i.e., water moves from the highest static ground water elevation to lowest static ground water elevation point. The ground water movement is important aspect to locating the recharge and discharge areas. Therefore, the data has been collected in the study area. Water level measured in the eight open well and 7 borewells.

The average water level in the open well is varies from = 12.8m to 14.4m bgl

The water level in the bore well is varies from = 66 to 68.2m bgl

Based on the water level contour map of the open well and bore well the water flow direction in the particular region is towards North side.

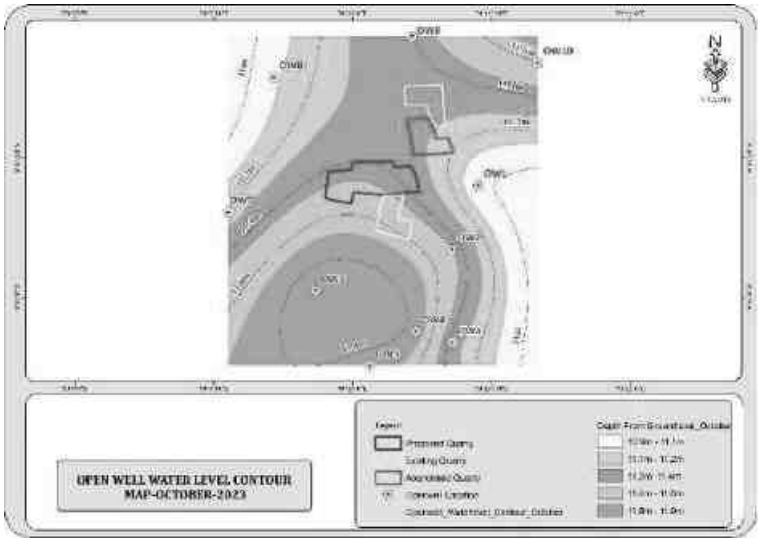
The water level in the area is above 60m hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

TABLE 3.11: POST MONSOON SEASON WATER LEVEL OF OPEN WELLS 1 KM RADIUS

S.NO	LABEL	LONGITUDE	LATITUDE	Mar-23	Apr-23	May-23
1	OW1	9° 31' 24.135"N	78° 10' 27.26"E	11	11.5	12
2	OW2	9° 31' 10.330"N	78° 10' 21.47"E	11.5	12	12.5
3	OW3	9° 30' 50.232"N	78° 10' 21.57"E	11.3	11.8	12.3
4	OW4	9° 30' 52.640"N	78° 10' 13.79"E	11.8	12.3	12.8
5	OW5	9° 30' 45.339"N	78° 10' 03.79"E	11.7	12.2	12.7
6	OW6	9° 31' 01.441"N	78° 09' 52.16"E	11.9	12.4	12.9
7	OW7	9° 31' 18.329"N	78° 09' 33.18"E	11.2	11.7	12.2
8	OW8	9° 31' 47.420"N	78° 09' 43.00"E	11.1	11.6	12.1
9	OW9	9° 31' 56.281"N	78° 10' 12.77"E	11.4	11.9	12.4
10	OW10	9° 31' 50.550"N	78° 10' 40.08"E	11.6	12.1	12.6

Source: Onsite monitoring data

FIGURE 3.10: OPEN WELL CONTOUR MAP -OCT- DEC 2023



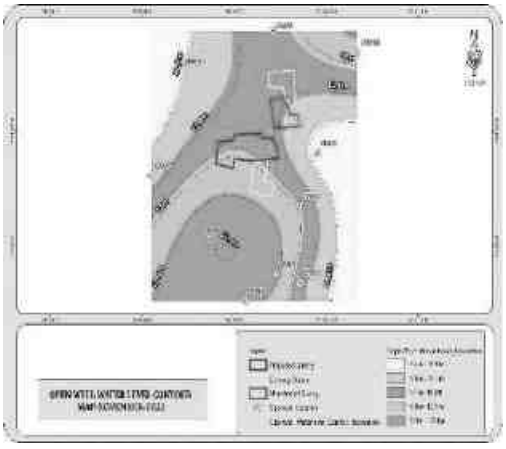


TABLE 3.12: POST MONSOON SEASON WATER LEVEL OF BOREWELLS 1 KM RADIUS

S.NO	LABEL	LONGITUDE	LATITUDE	Oct-23	Nov-23	Dec-23
1	BW1	9° 31' 52.224"N	78° 10' 01.80"E	56	56.5	57
2	BW2	9° 31' 46.515"N	78° 09' 43.73"E	56.3	56.8	57.3
3	BW3	9° 32' 10.362"N	78° 09' 52.61"E	56.5	57	57.5
4	BW4	9° 31' 49.757"N	78° 10' 42.54"E	56.1	56.6	57.1
5	BW5	9° 31' 08.534"N	78° 10' 40.62"E	57	57.5	58
6	BW6	9° 30' 43.302"N	78° 10' 25.30"E	57.2	57.7	58.2
7	BW7	9° 30' 59.470"N	78° 10' 05.77"E	57.6	58.1	58.6
8	BW8	9° 30' 56.507"N	78° 09' 33.33"E	57.8	58.3	58.8
9	BW9	9° 31' 07.134"N	78° 09' 36.29"E	56.4	56.9	57.4
10	BW10	9° 31' 18.131"N	78° 09' 32.89"E	57.9	58.4	58.9

Source: Onsite monitoring data

FIGURE 3.11: BOREWELL CONTOUR MAP – OCT- DEC 2023

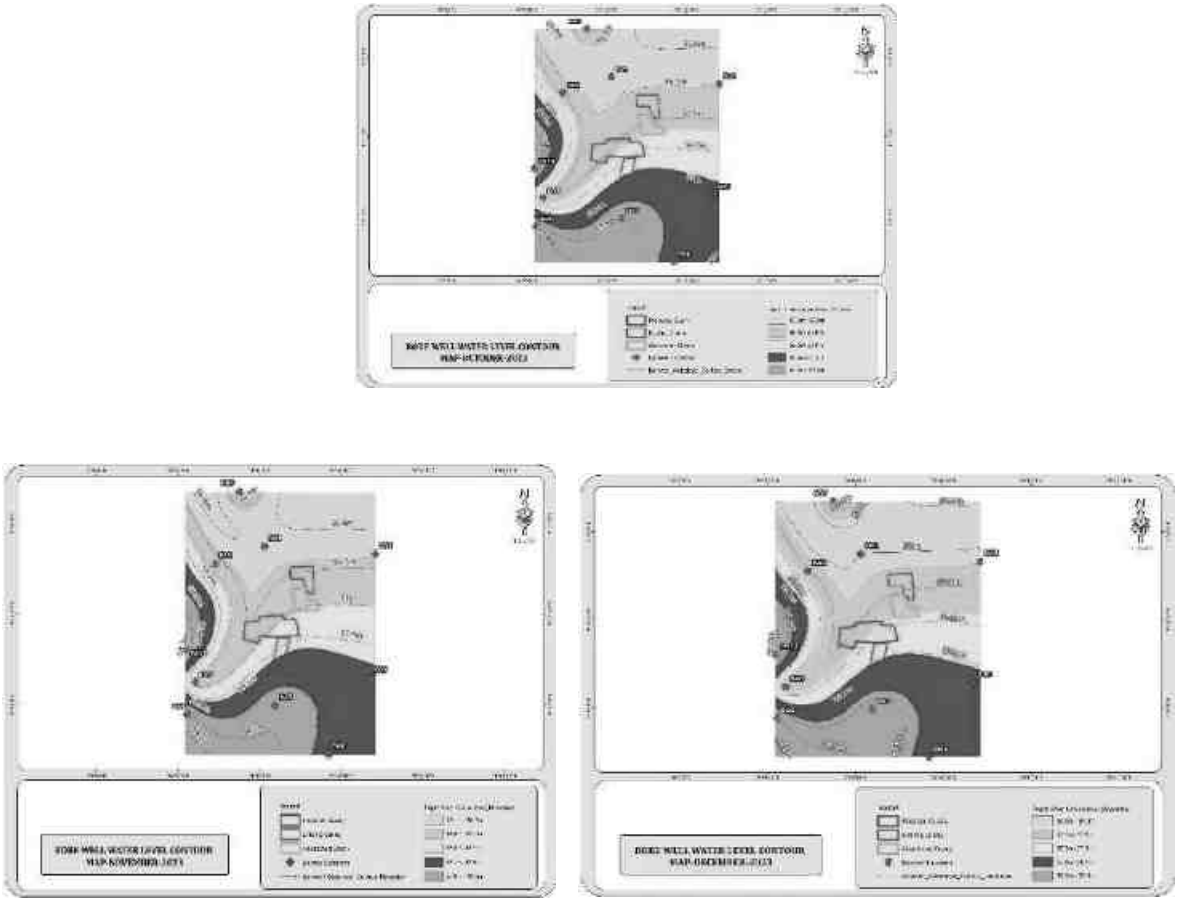
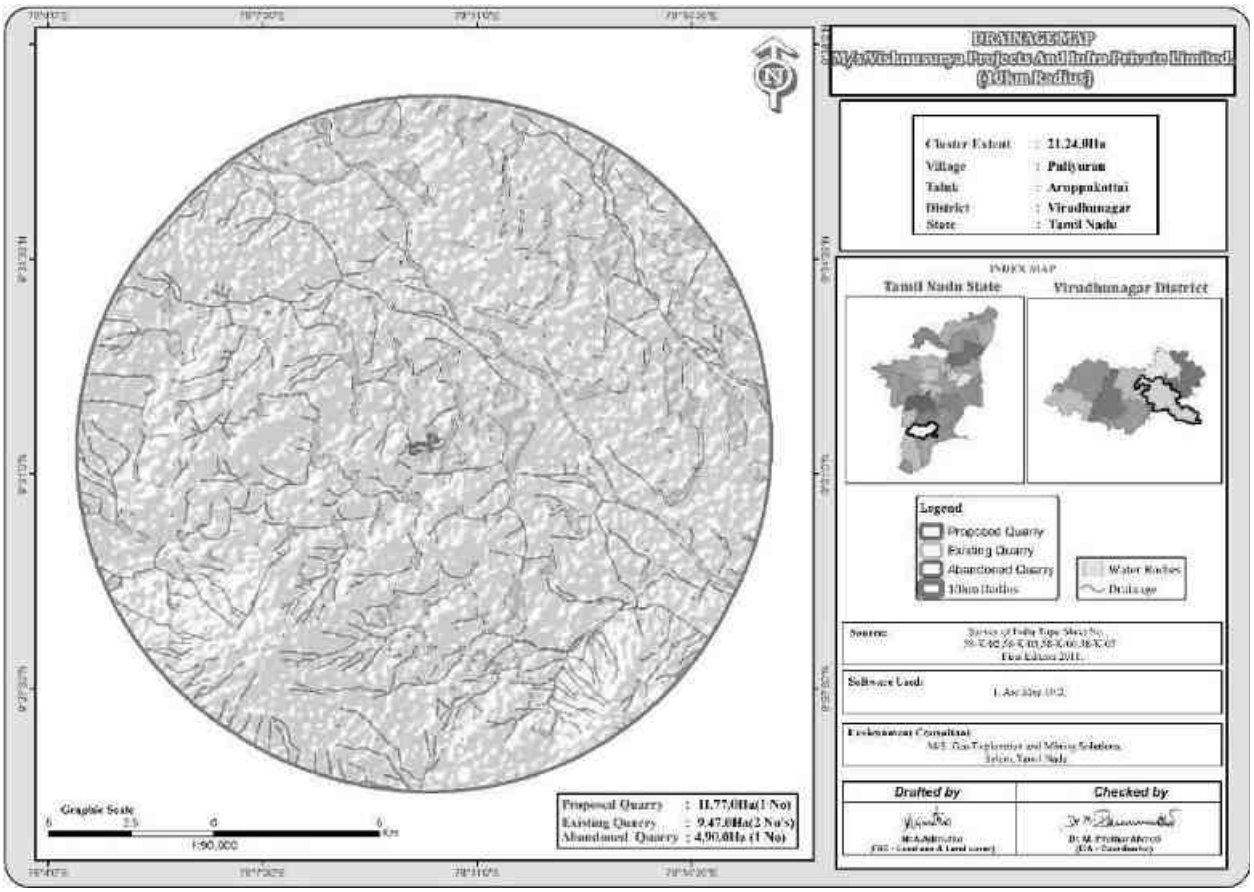
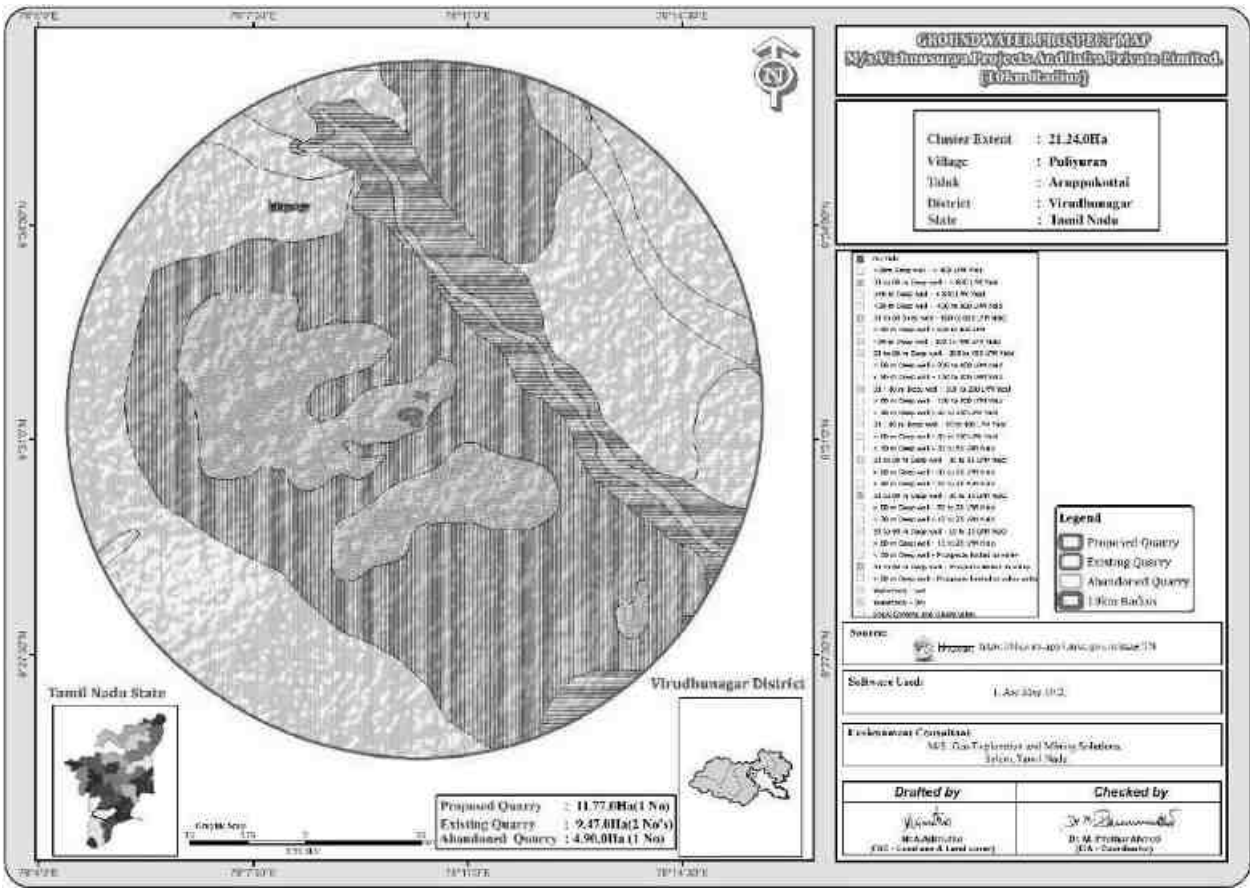


FIGURE 3.12: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE



Remarks : it is inferred that the area is dendritic to sub dendritic pattern

FIGURE 3.13: GROUND WATER PROSPECT MAP



Remarks : Water table in the area is 80m as per the Bhuvan Data

Geophysical Resistivity Survey

3.2.5.1 Methodology and Data Acquisition

The Geophysical Electrical Resistivity survey conducted in the area Schlumberger configuration, Vertical Electrical Sounding (VES) method. Schlumberger electrode set up was employed for making sounding measurements. Since it is least influenced by lateral in homogeneities 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 farm 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 in homogeneities 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,

$\rho_r = F\rho_w = a\, Ø^m \rho_w$

ρr = Resistivity of Rocks

ρw = Resistivity of water in pores of rock

F = Formation Factor

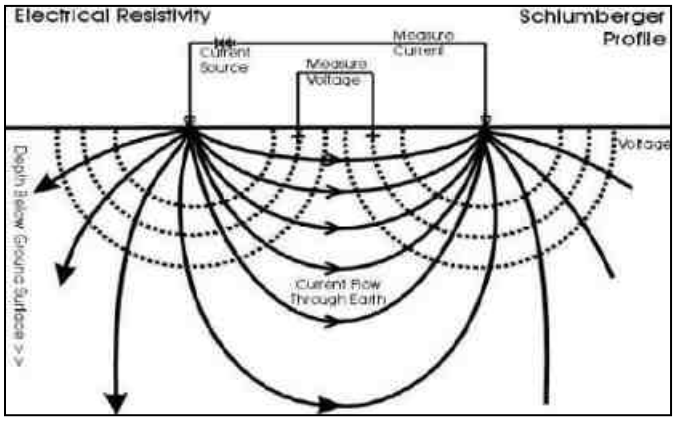
Ø = Fractional pore volume

A = Constants with values ranging from 0.5 to 2.5

3.2.5.2 Survey Layout

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 nose ration can be enhanced by √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 60-65m. The maximum depth proposed out of proposed projects 48m BGL. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

3.2.5.4 Geophysical Data Interpretation

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

It is inferred that the existing quarries in the surrounding area reaches maximum of 45m and the water table is not intersected, only the seepage water during rainy season encountered from the upper layer and it will be used for the Greenbelt development, Dust suppression and quarrying operation.

3.3 AIR ENVIRONMENT

The existing ambient air quality of the area is important for evaluating the impact of mining activities on the ambient air quality.

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the cluster forms the baseline information. The prime objective of the baseline air quality study was to establish the existing ambient air quality of the study area. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of proposed projects in cluster.

3.3.1 Meteorology & Climate

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

A temporary meteorological station was installed at project site by covering cluster quarries. The station was installed at a height of 3 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis.

Climate

- The Virudhunagar lies on 102m above sea level the climate here is considered to be a local steppe climate. The average annual temperature is 28.6 °C | 83.4 °F.
- The precipitation here is around 829 mm |32.6 inch per year. The driest month is May, with 9 mm |0.4inch. The greatest amount of precipitation occurs in October, with an average of 144 mm | 5.6 inch.
- The warmest month of the year is October, with an average temperature of 32.2°C | 89.9 °F.
- The lowest average temperatures in the year occur in December, when it is around 22°C | 71.6°F.
- The difference in precipitation between the driest month and the wettest month is 107mm | 7inch. The variation in temperatures throughout the year is 3.4°C | 38.1 °F.

Source: https://en.climate-data.org/asia/india/tamil-nadu/virudhunagar

Rainfall

TABLE 3.13: RAINFALL DATA

Actual Rainfall in mm					Normal Rainfall in mm
2017	2018	2019	2020	2021	
800.0	759.5	713.7	855.0	968.4	985

Source: https://www.twadboard.tn.gov.in/content/Virudhunagar

TABLE 3.14: METEOROLOGICAL DATA RECORDED AT SITE

S. No	Parameters		March-2023	Apri-2023	May 2023
1	Temperature (^{0}C)	Max	31.45	33.26	31.48
		Min	27.09	28.42	27.32
		Avg.	29.27	30.84	29.4
2	Relative Humidity (%)	Avg.	60.06	65.25	74.69
3	Wind Speed (m/s)	Max	4.98	4.44	5.52
		Min	2.02	2.05	1.57
		Avg.	3.5	3.24	3.54
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind direction		NE,S	SSE,S	SW,SSW

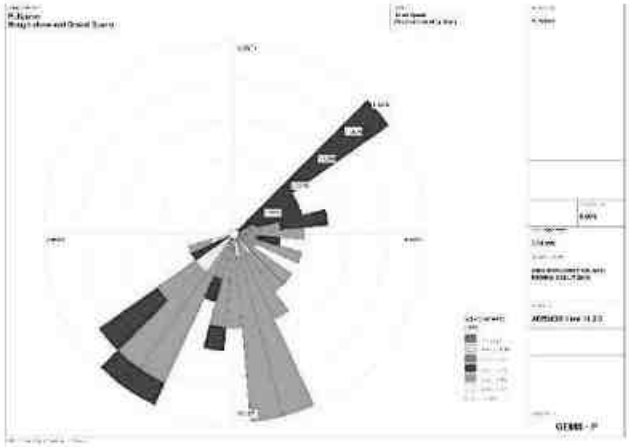
Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS.

Correlation between Secondary and Primary Data

The average rainfall over the period of five years 985mm. The meteorological data collected at the site is almost similar to that of secondary data collected from IMD Virudhunagar _Agro. A comparison of site data generated during the three months with that of IMD, Virudhunagar _Agro.

Wind rose diagram of the study site is depicted in Figure. 3.14. Predominant downwind direction of the area during study season is East-North-East to West South West.

FIGURE 3.14: WINDROSE DIAGRAM



In the abstract of collected data wind rose were drawn on presented in figure No.3.14 during the monitoring period in the study area.

1. Predominant winds were from NE, S, SSE, S, SW, SSW
2. Wind velocity readings were recorded between 0.50 to 5.70m/s
3. Calm conditions prevail of about 0 % of the monitoring period
4. Temperature readings ranging from 27.09 to 33.26 °C
5. Relative humidity ranging from 60.06 to 74.69 %
6. The monitoring was carried out continuously for three months.

3.3.2 Methodology and Objective

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

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

3.3.3 Sampling and Analytical Techniques

TABLE 3.15: METHODOLOGY AND INSTRUMENT USED FOR AAQ ANALYSIS

Parameter	Method	Instrument
PM2.5	Gravimetric Method Beta attenuation Method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM10	Gravimetric Method Beta attenuation Method	Respirable Dust Sampler Make –Thermo Environmental Instruments – TEI 108
SO2	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NOx	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 Global Lab and Consultancy Services & 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/m3)	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	Nitrogen Dioxide (µg/m3)	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	Particulate matter (size less than 10µm) PM10 (µg/m3)	Annual Avg. 24 hours	60.0 100.0	60.0 100.0
4	Particulate matter (size less than 2.5 µm PM2.5 (µg/m3)	Annual Avg. 24 hours	40.0 60.0	40.0 60.0

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

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

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

3.3.4 Frequency & Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at 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 PM_{10}, $PM_{2.5}$, Sulphur Dioxide (SO_2) & Nitrogen Dioxide (NO_2) Monitoring has been carried out as per the CPCB, MoEF guidelines and notifications.

The equipment was placed preferably at a height of at least 3 ± 0.5m above the ground level at each monitoring station, for negating the effects of wind-blown ground dust. The equipment was placed at open space free from trees and vegetation which otherwise act as a sink of pollutants resulting in lower levels in monitoring results.

3.3.5 Ambient Air Quality Monitoring Stations

Seven (7) monitoring stations were set up in the study area as depicted in Figure 3.15 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

TABLE 3.17: AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	**AAQ-1**	Core Zone	Project Area	9°31'27.85"N 78°10'5.82"E
2	**AAQ-2**	Thenpalai	670m NW	9°31'48.48"N 78° 9'54.97"E
3	**AAQ-3**	Tiruchuli	3.8km East	9°31'53.81"N 78°12'11.49"E
4	**AAQ-4**	Sempatti	3.8km West	9°30'46.58"N 78° 7'54.06"E
5	**AAQ-5**	kallurani	5.3km South	9°28'19.77"N 78° 9'49.62"E
6	**AAQ-6**	Erampatti	4.8km NW	9°33'21.11"N 78° 8'6.17"E
7	**AAQ-7**	Tamilpadi	3.4km SE	9°30'33.62"N 78°11'50.53"E

Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS.

FIGURE 3.15: AIR QUALITY MONITORING PHOTOGRAPHS

FIGURE 3.16: AMBIENT AIR QUALITY LOCATIONS AROUND 10 KM RADIUS

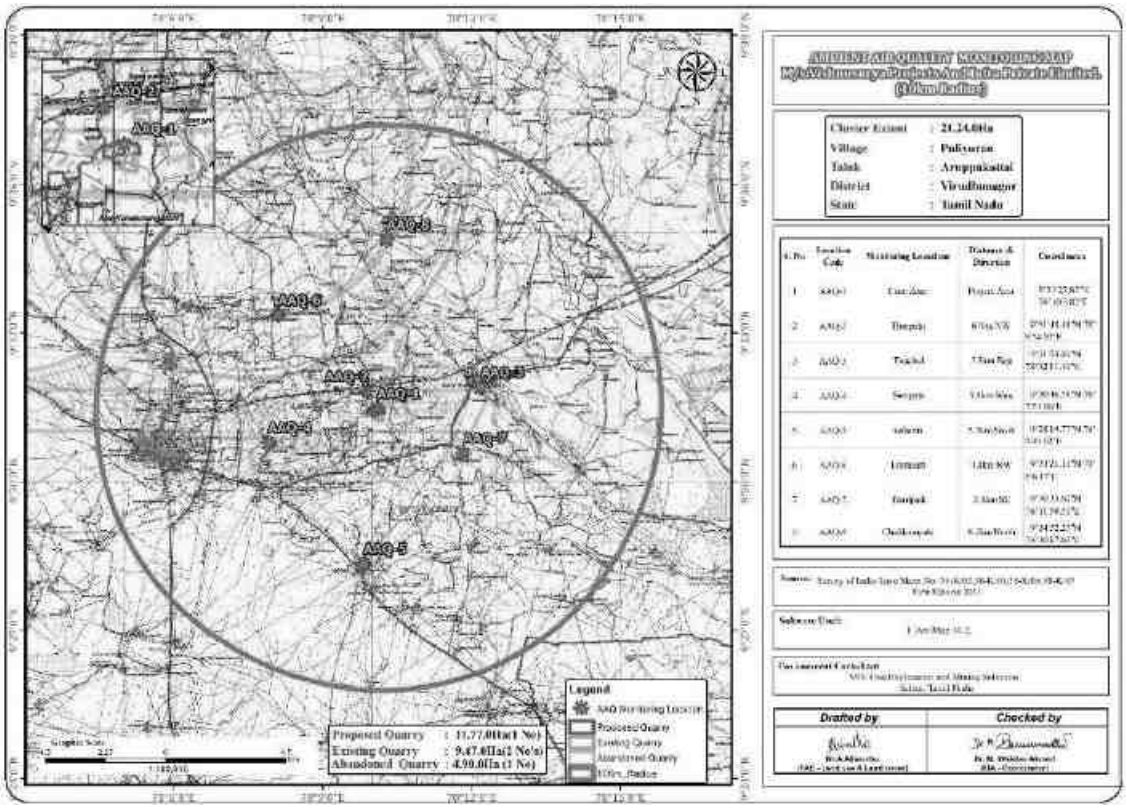


TABLE 3.18: SUMMARY OF AAQ 1 to AAQ 7

PM10	**AAQ1**	**AAQ2**	**AAQ3**	**AAQ4**	**AAQ5**	**AAQ6**	**AAQ7**
Arithmetic Mean	41.4	40.7	40.9	40.2	40.7	40.7	39.6
Minimum	38.3	37.4	36.4	35.2	37.3	36.3	36.4
Maximum	44.3	43.7	43.1	43.8	43.8	43.6	42.5
NAAQ Norms	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PM2.5	**AAQ1**	**AAQ2**	**AAQ3**	**AAQ4**	**AAQ5**	**AAQ6**	**AAQ7**
Arithmetic Mean	20.9	20.2	20.3	20.2	40.7	40.4	18.4
Minimum	18.3	17.5	16.7	17.5	17.5	16.7	15.6
Maximum	27.2	23.3	23.3	28.0	22.5	23.3	22.9
NAAQ Norms	60.0	60.0	60.0	60.0	60.0	60.0	60.0
SO2	**AAQ1**	**AAQ2**	**AAQ3**	**AAQ4**	**AAQ5**	**AAQ6**	**AAQ7**
Arithmetic Mean	5.5	5.6	5.9	5.6	5.6	5.7	5.6
Minimum	4.1	4.4	4.3	4.1	4.4	4.1	4.1
Maximum	6.7	7.4	7.4	7.5	7.1	7.4	7.2
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0
NO2	**AAQ1**	**AAQ2**	**AAQ3**	**AAQ4**	**AAQ5**	**AAQ6**	**AAQ7**
Arithmetic Mean	20.8	20.7	21.1	20.7	20.4	20.6	20.8
Minimum	19.0	17.4	19.2	17.3	18.3	17.6	17.9
Maximum	23.3	23.2	27.2	23.8	21.8	22.5	22.9
NAAQ Norms	80.0	80.0	80.0	80.0	80.0	80.0	80.0

TABLE 3.19: ABSTRACT OF AMBIENT AIR QUALITY DATA

	Parameter	PM10	PM2.5	SO_2	NO_2
1	No. of Observations	260	260	260	260
2	98th Percentile Value	43.8	23.5	7.4	23.5
3	Arithmetic Mean	41.2	20.4	6.0	21.2
4	Geometric Mean	41.1	20.3	5.9	21.1
5	Standard Deviation	1.9	1.9	1.0	1.2
6	Minimum	38.1	17.2	4.6	19.3
7	Maximum	43.8	23.5	7.4	23.5
8	**NAAQ Norms***	**100.0**	**60.0**	**80.0**	**80.0**
	% Values exceeding Norms*	0.0	0.0	0.0	0.0

FIGURE 3.17: BAR DIAGRAM OF SUMMARY OF AAQ 1 – AAQ7

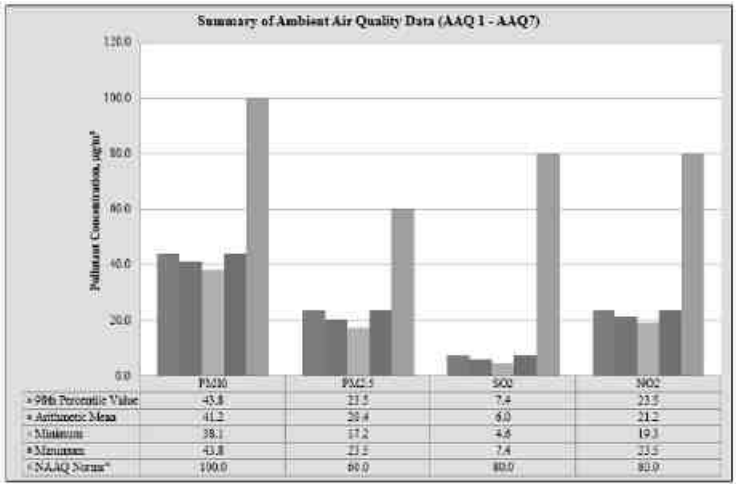


FIGURE 3.18: BAR DIAGRAM OF PARTICULATE MATTER $PM_{2.5}$

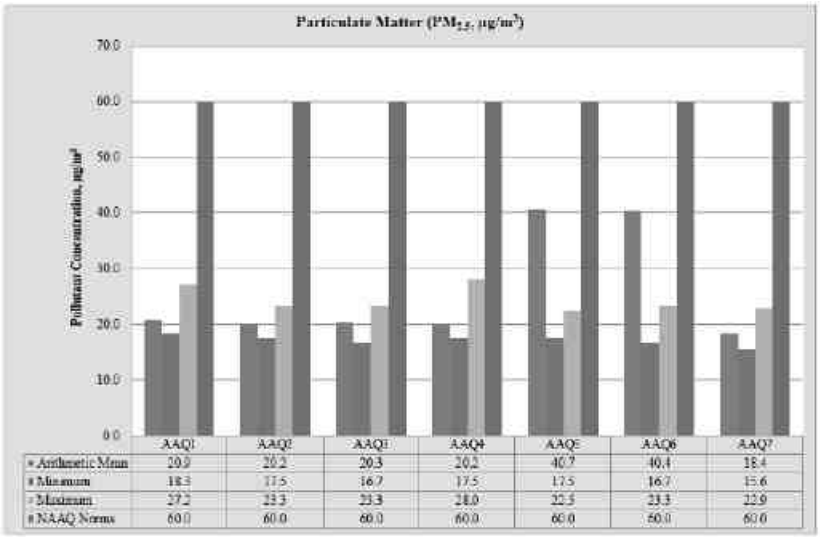


FIGURE 3.19: BAR DIAGRAM OF PARTICULATE MATTER PM_{10}

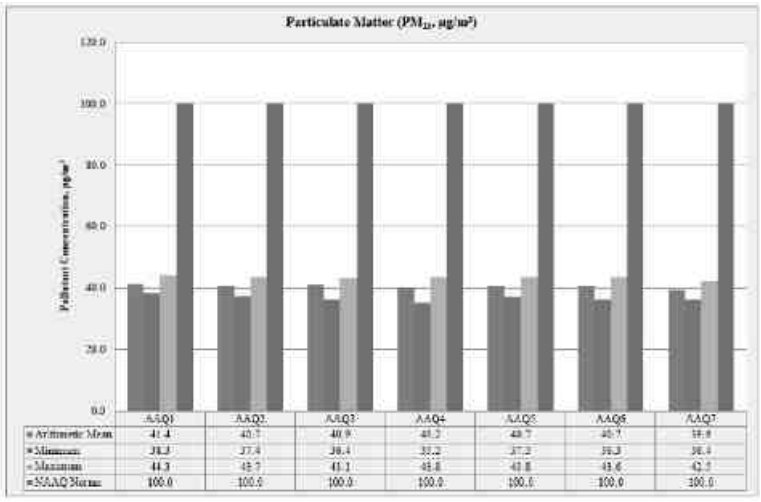


FIGURE 3.20: BAR DIAGRAM OF GASEOUS POLLUTANT SO_2

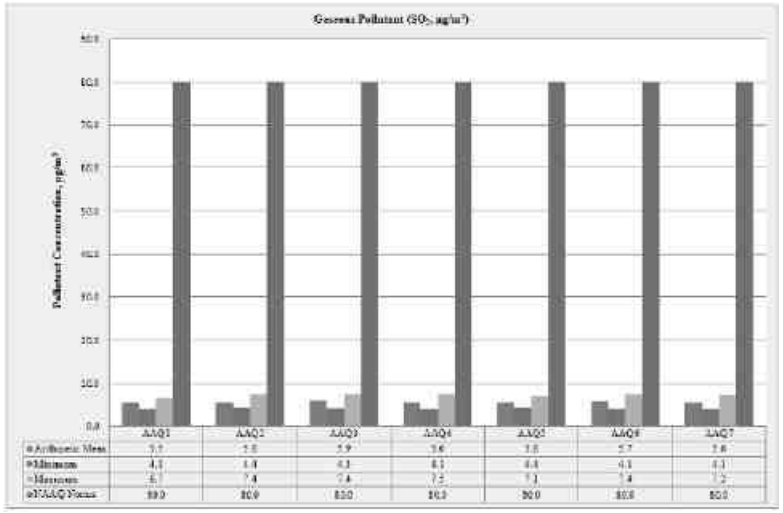
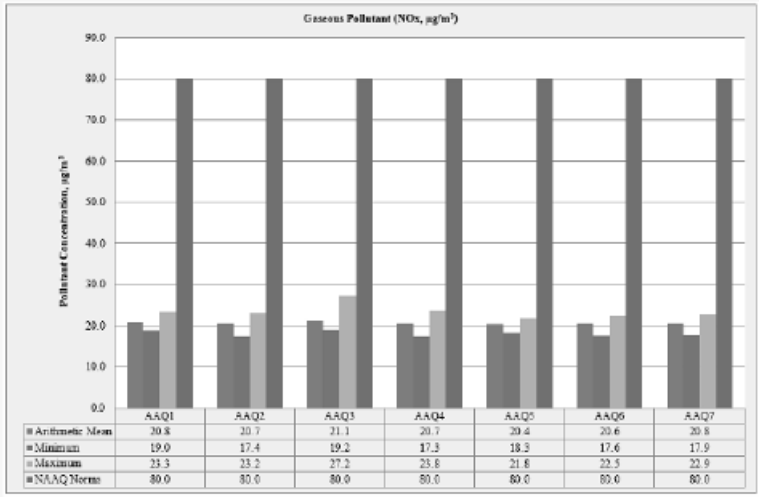


FIGURE 3.21: BAR DIAGRAM OF GASEOUS POLLUTANT NO_x



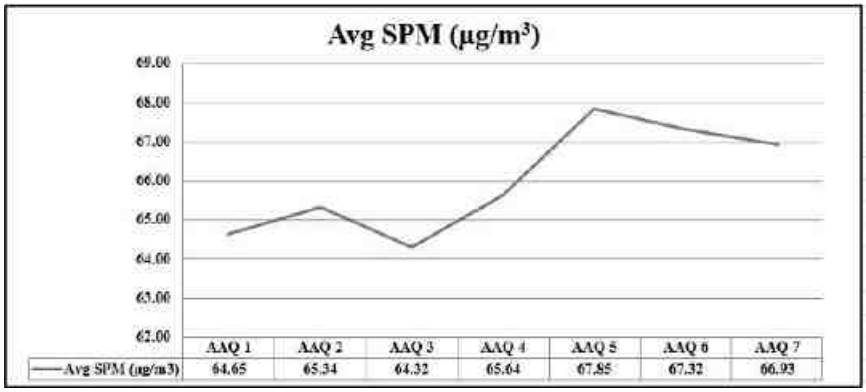
3.3.7 FUGITIVE DUST EMISSION –

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

TABLE 3.20: FUGITIVE DUST SAMPLE VALUES IN µg/m³

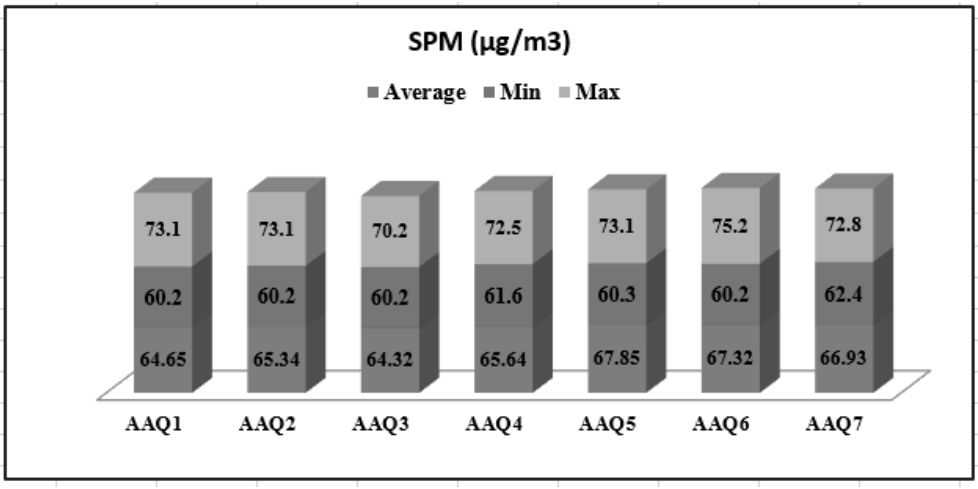
SPM (µg/m³)	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7
Average	64.65	65.34	64.32	65.64	67.85	67.32	66.93
Min	60.2	60.2	60.2	61.6	60.3	60.2	62.4
Max	73.1	73.1	70.2	72.5	73.1	75.2	72.8

FIGURE 3.22: LINE DIAGRAM OF AVERAGE SPM VALUES



Source: Calculations from Lab Analysis Reports

FIGURE 3.23: BAR DIAGRAM OF SPM VALUES



3.3.6 Interpretations & Conclusion

As per monitoring data, PM_{10} ranges from 35.2 µg/m³ to 44.3 µg/m³, $PM_{2.5}$ data ranges from 15.6 µg/m³ to 28.0 µg/m³, SO_2 ranges from 4.1µg/m³ to µg/m³ and NO_2 data ranges from 17.3 µg/m³ to 27.2 µg/m³. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

3.4 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 measurement was carried out at each ambient air quality station. The main aim of the noise level monitoring is

- To assess the ambient Noise level in the study area
- Type of noise pollution generated in the core zone
- To predict the temporal changes in the ambient noise level in the area

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 3.21: DETAILS OF SURFACE NOISE MONITORING LOCATIONS

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	N1	Core Zone	Project Area	9°31'22.78"N 78°10'1.70"E
2	N2	Thenpalai	670m NW	9°31'48.23"N 78° 9'54.90"E
3	N3	Tiruchuli	3.8km East	9°31'53.91"N 78°12'12.65"E
4	N4	Sempatti	3.8km West	9°30'46.12"N 78° 7'54.25"E
5	N5	kallurani	5.3km South	9°28'20.28"N 78° 9'49.85"E
6	N6	Erampatti	4.8km NW	9°33'21.35"N 78° 8'6.97"E
7	N7	Tamilpadi	3.4km SE	9°30'33.94"N 78°11'50.58"E
8	N8	Chokkampatti	6.2km North	9°34'52.14"N 78°10'17.51"E

Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS.

3.4.2 Method of Monitoring

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

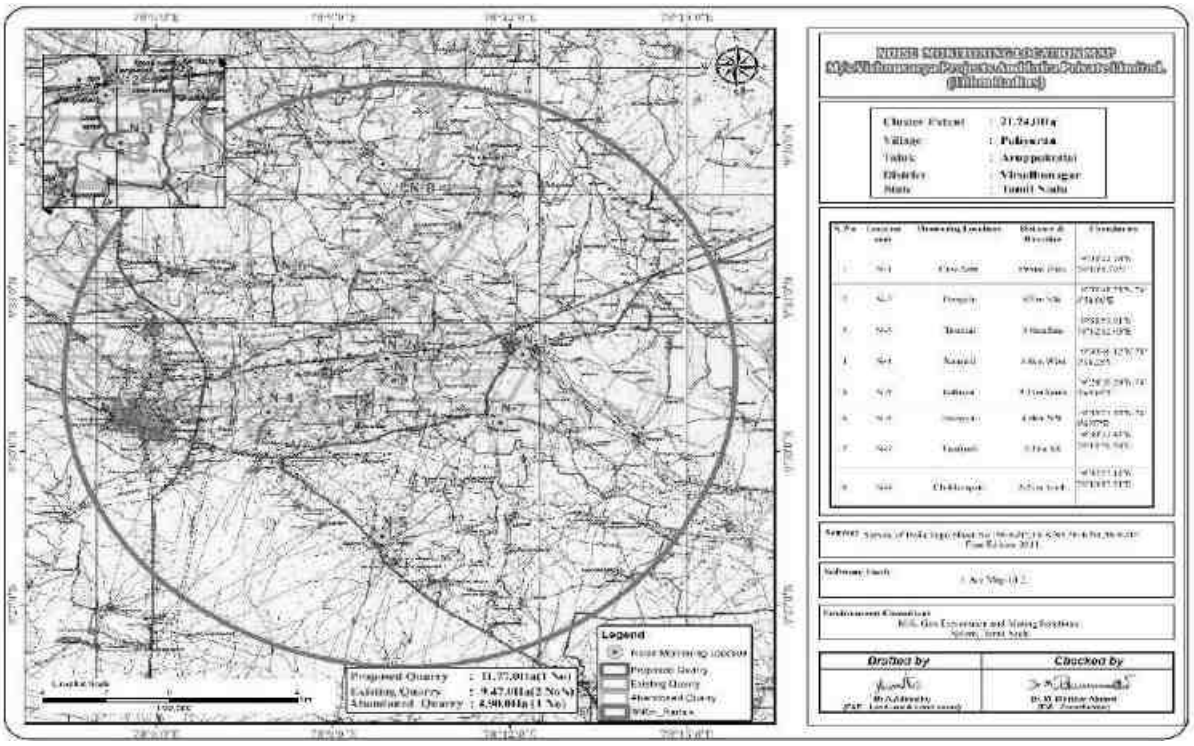
$Leq = 10 \text{ Log } L / T\sum (10Ln/10)$

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

T = Time interval of observation

Measured noise levels, displayed as a function of time, is useful for describing the acoustical climate of the community. Noise levels recorded at each station with a time interval of about 60minutes are computed for equivalent noise levels. Equivalent noise level is a single number descriptor for describing time varying noise levels.

FIGURE 3.24: NOISE MONITORING STATIONS AROUND 10 KM RADIUS



3.4.3 Analysis of Ambient Noise Level in the Study Area

The Digital Sound pressure level has been measured by a sound level meter (Model: HTC SL-1352)

An analysis of the different Leq data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in below Table 3.32.

Day time: 6:00 hours to 22.00 hours.

Night time: 22:00 hours to 6.00 hours.

TABLE 3.22: AMBIENT NOISE QUALITY RESULT

S. No	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
1	Core Zone	49.44	37.47	**Industrial Day Time- 75 dB (A) Night Time- 70 dB (A)**
2	Thenpalai	47.15	37.71	
3	Tiruchuli	46.90	34.43	
4	Sempatti	48.64	35.30	
5	kallurani	47.48	35.21	**Residential Day Time– 55 dB (A) Night Time- 45 dB (A)**
6	Erampatti	49.30	35.84	
7	Tamilpadi	47.83	37.20	
8	Chokkampatti	48.75	36.74	

Source: On-site monitoring/sampling by Global Lab and Consultancy Services in association with GEMS

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

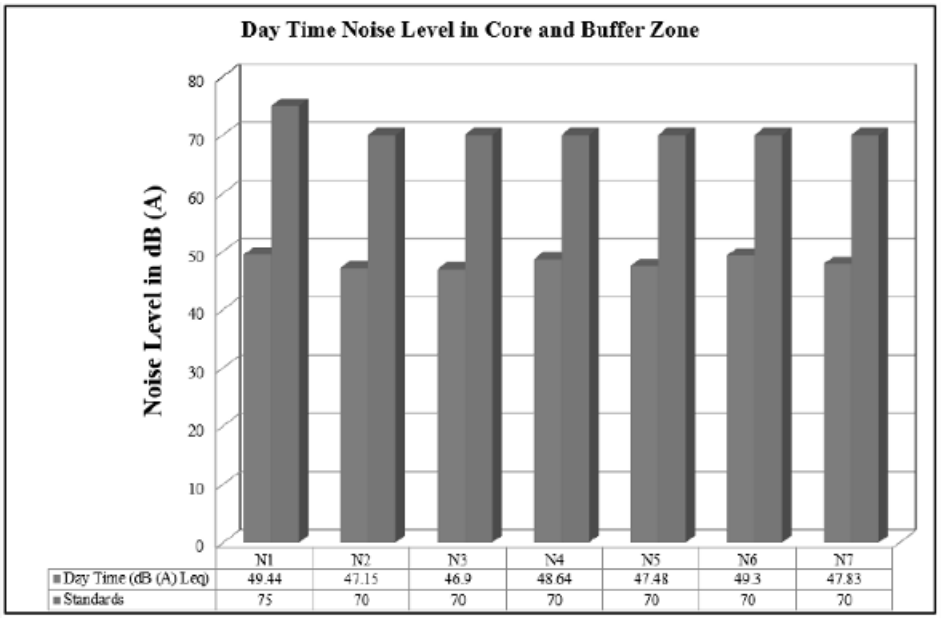
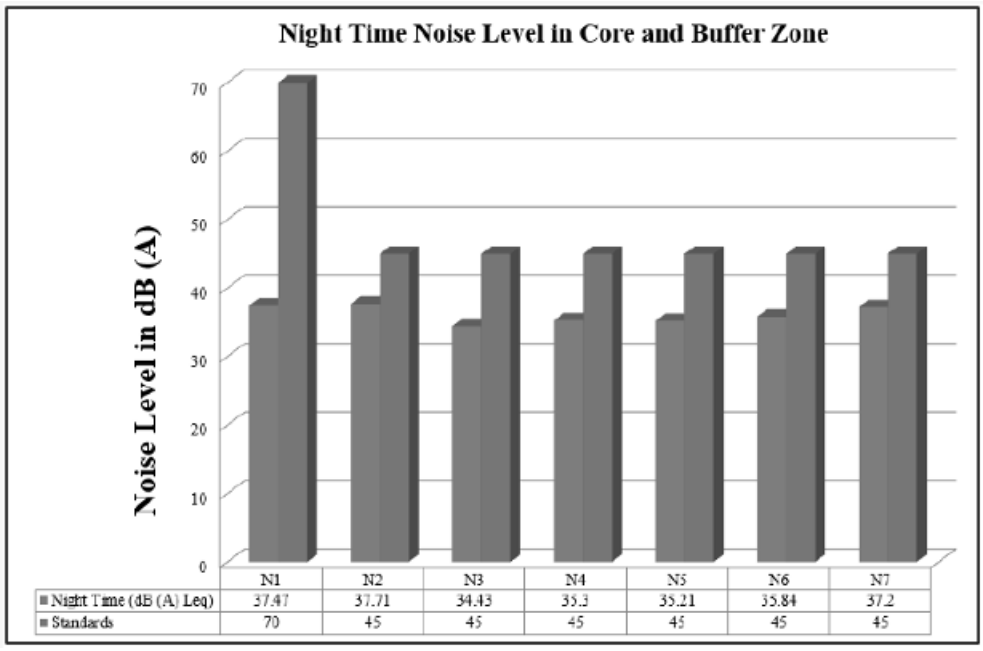


FIGURE 3.26: NIGHT TIME NOISE LEVELS IN CORE AND BUFFER ZONE



3.4.4 Interpretation & Conclusion:

Ambient noise levels were measured at 8 (Eight) locations around the proposed project area. Noise levels recorded in core zone during day time were from 49.44 dB (A) Leq and during night time were from 37.47 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 46.9 to 49.3 dB (A) Leq and during night time were from 34.43 to 37.71 dB (A) Leq. Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

3.5 ECOLOGICAL ENVIRONMENT

3.5.1.Study area Ecology

In this project, the total area of the Cluster within 10km radius from the periphery of this quarry is reported as **21.24.0 Ha with cluster of quarries**. In such Cluster situation, a common Ecology and Biodiversity study for the entire cluster of quarries is enough to capture all the possible externalities. The common EIA/EMP data can be used for all quarries fall under this cluster but the present work was carried out on the detailed study of the impacts Puliyuram Village Rough stone and gravel on the ecology and biodiversity of the core lease area with the proper mitigation and sustainable management plan. The proposed mine lease is an plain terrain. 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: 3.23. Flora in the Core Zone of Puliyuran Village, Cluster area, Rough Stone quarry

SI.No	English Name	Vernacular Name	Scientific Name	Family Name
Trees				
1.	Velvet mesquite	Mullu Maram	*Prosopis juliflora*	Fabaceae
2.	Indian mulberry	Nuna maram	*Morinda tinctoria*	Rubiaceae
3.	Neem or Indian lilac	Vembu maram	*Azadirachta indica*	Meliaceae
4.	Gum arabic tree	Karuvelam	*Vachellia nilotica*	Fabaceae
Shrubs				
1.	Avaram	Avarai	*Senna auriculata*	Fabaceae
2.	Devil's trumpet	Umathai	*Datura metel*	Solanaceae
3.	Coromandel Boxwood	Karai	*Canthium coromandelicum*	Rubiaceae
4.	Milk Weed	Erukku	*Calotropis gigantea*	Apocynaceae
Herbs				
1.	Common leucas	Thumbai	*Leucas aspera*	Lamiaceae
2.	Fish poison	Kolinchi	*Tephrosia purpurea*	Fabaceae
3.	Coat buttons	Thatha poo	*Tridax procumbens*	Asteraceae
4.	Devil‘s thorn	Nerunji	*Tribulus terrestris*	Zygophyllales
5.	Asthma-plant	Amman pacharisi	*Euphorbia hirta*	Euphorbiaceae
6.	Indian doab	Arugampul	*Cynodon dactylon*	Poaceae
7.	Malabar catmint	Pie Viratti	*Anisomeles malabarica*	Lamiaceae
Grasses				
1.	Eragrostis	Pullu	*Eragrostis ferruginea*	Poaceae
2.	Great brome	Thodappam	*Bromus diandrus*	Poaceae
3.	Eragrostis	Pullu	*Eragrostis ferruginea*	Poaceae

Creeper				
1.	Nut grass	Korai	*Cyperus rotandus*	Poaceae
2.	Stinking passionflower	Poonai puduku chedi	*Passiflora foetida L*	Passifloraceae

3.5.5.1. Flora Composition in the Core Zone

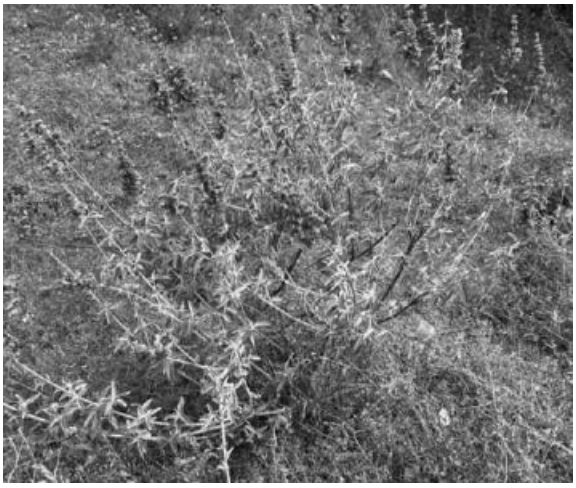
Taxonomically a total of 20 species belonging to 12 families have been recorded from the core mining lease area. The proposed applied lease area exhibiting plain terrain. This land is fit for vegetation and cultivation. Based on the habitat classification of the enumerated plants the majority of species were Herbs 7 followed by Trees 4, Shrubs 4, Grasses 3, and Creepers 2. Details of flora with the scientific name were mentioned in Table No. 3.23. The result of the core zone of flora studies shows that Fabaceae and Poaceae, Lamiaceae are the main dominating species in the study area mentioned in Table No.3.53. No species found as threatened category.

a. Prosopis juliflora

b. Morinda tinctoria

c. Calotropis gigantea

d. Canthium coromandelicum



e.Anisomeles malabarica

f. Euphorbia hirta

Fig No: 3.27 Flora species observation in the core zone area

Table No: 3.24. Inventory of Floral Diversity in the Buffer Zone

SI.No	English Name	Vernacular Name	Scientific Name	Family Name
Trees				
1.	Phoenix sylvestris	Pereatchai	*Phoenix sylvestris*	Arecaceae
2.	Velvet mesquite	Velikatthaan	*Prosopis juliflora*	Fabaceae
3.	Coconut	Thennai maram	*Cocos nucifera*	Arecaceae
4.	Neem or Indian lilac	Vembu	*Azadirachta indica*	Meliaceae
5.	Indian mulberry	Nuna maram	*Morinda tinctoria*	Rubiaceae
6.	Indian plum	Elanthai maram	*Ziziphus mauritiana*	Rhamnaceae
7.	Pongamia pinnata	Pongam	*Millettia pinnata*	Fabaceae
8.	Oil cake tree	Wunja	*Albizia amara*	Fabaceae
9.	Eucalyptus	Thailam maram	*Eucalyptus tereticornis*	Myrtaceae
10.	Asian Palmyra palm	Panai maram	*Borassus flabellifer*	Arecaceae
11.	River tamarind	Savunda	*Leucaenaleucocephala*	Fabaceae
12.	Sacred Tree	Flame of Forest	*Butea monosperma*	Fabaceae
13.	Madras thorn	Kudukapuli	*Pithecellobium dulce*	Fabaceae
14.	Portia tree	Poovarasan	*Thespesia Populnea*	Malvaceae
15.	Royal poinciana	Cemmayir Konra	*Delonix regia*	Fabaceae
16.	Lemon	Ezhumuchaipalam	*Citrus lemon*	Rutaceae
17.	Jamun Fruit Plant	Naval maram	*Syzygium cumini*	Myrtaceae
18.	Gum arabic tree	Karuvelam	*Acacia nilotica*	Fabaceae
19.	Kassod Tree	Manjal Konrai	*Cassia siamea*	Fabaceae
20.	Butterfly Tree	Mandarai	*Bauhinia purpurea*	Fabaceae
21.	Common guava	Koyya	*Psidium guajava*	Myrtaceae
22.	Frywood	Vaagai	*Albizia lebbeck*	Mimosaceae
23.	Bamboo	Moongil	*Bambusoideae*	Poaceae
24.	Teak	Thekku	*Tectona grandis*	Verbenaceae
25.	Singapore Cherry	Ten pazham	*Muntingia calabura*	Malvaceae
26.	Curry tree	Karuveppilai	*Murraya koenigii*	Rutaceae
27.	Mango	Manga	*Mangifera indica*	Anacardiaceae
28.	Banyan	Alamaram	*Ficus benghalensis*	Moraceae
29.	Horsetail She-oak	Savukku maram	*Casuarina equisetifolia*	Casuarinaceae
30.	Indian bael	Vilvam	*Aegle marmelos*	Rutaceae

31.	Indian gooseberry	Nelli	*Phyllanthus emblica*	Phyllanthaceae
32.	Guava	Koyya	*Psidium guajava*	Myrtaceae
33.	Sugar apple	Sitapalam	*Annona squamosal*	Annonaceae
34.	White-bark acacia	Velvelam	*Acacia leucophloea*	Mimosaceae
35.	Papaya	Pappali maram	*Carica papaya*	Caricaceae
36.	Banana tree	Vazhaimaram	*Musa acuminata*	Musaceae
37.	Jack fruit	Palamaram	*Artocarpus heterophyllus*	Moraceae
38.	Tamarind	Puliyamaram	*Tamarindus indica*	Legumes
Shrubs				
1.	Avaram	Avarai	*Senna auriculata*	Fabaceae
2.	Common Wireweed	Arivalmanai poondu	*Sida acuta*	Malvaceae
3.	Bush Morning Glory	Neiveli Kattamani	*Ipomoea carnea*	Convolvulaceae
4.	Roundleaf Burr-Bush	Adayoti	*Triumfetta rotundifolia*	Malvaceae
5.	Chinese chastetree	Nochi	*Vitex negundo*	Lamiaceae
6.	Bellyache bush	Kaatamanaku	*Jatropagossypifolia*	Euphorbiaceae
7.	Malabar nut	Adhatoda	*Justicia adhatoda*	Acanthaceae
8.	Fish poison	Kolinchi	*Tephrosia purpurea*	Fabaceae
9.	Jackal jujube	Surai Ilantai	*Ziziphus oenoplia*	Rhamnaceae
10.	Milk Weed	Erukku	*Calotropis gigantea*	Apocynaceae
11.	Peacock Flower	Mayil Kontai	*Caesalpinia pulcherrima*	Fabaceae
12.	Henna Tree	Maruthani	*Lawsonia inermis*	Lythraceae
13.	Night shade plan	Sundaika	*Solanum torvum*	Solanaceae
14.	Mesquite	Seemai karuvelam	*Prosopis juliflora*	Fabaceae
15.	Triangular spruge	Chaturakalli	*Euphorbia antiquorum*	Euphorbiaceae
16.	Yellow elder	Manjarali Sonnapatti	*Tecoma stans*	Bignoniaceae
17.	Pinwheelflower	Nandiar vattai	*Tabernaemontana coronaria*	Apocynaceae
18.	Martynia annua	Thael kodukkukaai	*Martynia annua*	Martyniaceae
19.	Great bougainvillea	Kaakithapoo	*Bougainvillea spectabilis*	Nyctaginaceae
20.	Scarlet jungle flame	Sinduram	*Ixora coccinea*	Rubiaceae
21.	Devil's trumpet	Umathai	*Datura metel*	Solanaceae
22.	Jhahrberi	Narielandai	*Ziziphus nummularia*	Rhamnaceae
23.	Castor bean	Amanakku	*Ricinus communis*	Euphorbiaceae
24.	Shoe flower	Chemparuthi	*Hibiscu rosa-sinensis*	Malvaceae
25.	Nalta jute	Perattikkirai	*Corcorus olitorius*	Tiliaceae

26.	Firecracker Flower	kanak Ambaram	*Crossandra infundibuliformis*	Acanthaceae
27.	Blue snakeweed	Seemai nayaroovi	*Stachytarpheta indica*	Verbenaceae
28.	Touch-me-not	Thottalchinungi	*Mimosa pudica*	Mimosaceae
29.	Rough cocklebur	Marul-umattai	*Xanthium strumarium*	Asteraceae
30.	Indian mallow	Thuthi	*Abutilon indicum*	Meliaceae
31.	Tomato	Thakkali	*Lycopersicon esculentum*	Solanaceae
32.	Apple of sodom	Vellerukku	*Calotropis procera*	Asclepiadaceae
33.	Indian shot	Kalvalai	*Canna indica*	Cannaceae
34.	Pignut	Wild thulasi	*Hyptis suaveolens*	Lamiacea
35.	Wild jujube	Nari-y-ilantai	*Zizyphus nummularia*	Rhamnaceae
36.	Indian Oleander	Arali	*Nerium indicum*	Apocynaceae
37.	West Indian Lantana	Unni chedi	*Lantana camara*	Verbenaceae
38.	Kapok Bush	Seiyanavruvi	*Aerva javanica*	Amaranthaceae
Herbs				
1.	Tickweed	Nai kadugu	*Celome viscosa*	Capparidaceae
2.	Indian Mercury	Kuppamani	*Acalypha indica*	Euphorbiaceae
3.	Purple pitcher plant	Kavali	*Tephrosia purpurea*	Fabaceae
4.	Septicweed	Kattuttakarai	*Senna occidentalis*	Fabaceae
5.	Red Pea Eggplant	Vellai tuduvalai	*Solanum trilobatum*	Solanaceae
6.	Bladder Cherry	Kupanti	*Physalis minima*	Solanaceae
7.	Shaggy Button Weed	Nattai-churi	*Borreria hispida*	Rubiaceae
8.	Chamber bitter	Malai Kizhanelli	*Phyllanthus urinaria L.*	Euphorbiaceae
9.	Carrot grass	Vishapoondu	*Parthenium hysterophorus*	Asteraceae
10.	Egyptian senna	Mayurkondrai	*Cassia tora*	Caesalpiniacea
11.	Green amaranth	Kuppaikeerai	*Amaranthus viridis*	Amaranthaceae
12.	Aloe barbadensis	Katrazhai	*Aloe vera*	Asphodelaceae
13.	Billygoat weed	Aappakkoti	*Ageratum conyzoides*	Asteraceae
14.	False daisy	Karisalankanni	*Eclipta prostrata*	Asteraceae
15.	Arrowleaf sida	Jelly Leaf	*Sida rhombifolia*	Malvaceae
16.	Indian doab	Arugampul	*Cynodon dactylon*	Poaceae
17.	Rough cocklebur	Marul-umattai	*Xanthium strumarium*	Asteraceae
18.	Monarch redstem	Kalluruvi	*Ammannia baccifera*	Lythraceae
19.	Goatweed	Kallurukki	*Scoparia dulcis*	Plantaginaceae
20.	Cracker plant	Kiranti nayan	*Ruellia tuberosa*	Acanthaceae

21.	East Indian globe thistle	kottai-k-karantai	*Sphaeranthus indicus*	Asteraceae
22.	Benghal dayflower	Kanavachai	*Commelina benghalensis*	Commelinacea
23.	Mexican prickly poppy	Kudiyotti	*Argemone mexicana*	Papaveraceae
24.	Mountain knotgrass	Sirupulai	*Aerva lanata*	Amaranthaceae
25.	Common leucas	Thumbai	*Leucas aspera*	Lamiaceae
26.	Fish poison	Kollukkai Vela	*Tephrosia purpurea*	Fabaceae
27.	Painted euphorbia	Pal perukki	*Euphorbia heterophyla*	Euphorbiaceae
28.	Pig weed	Mukkarattai Keerai	*Boerheavia diffusa*	Nyctaginaceae
29.	Asthma-plant	Amman pacharisi	*Euphorbia hirta*	Euphorbiaceae
30.	Rushfoil	Reilpoondu	*Croton sparsiflorus*	Euphorbiaceae
31.	Poor land lasted	Kunnakora	*Cyperus compressus*	Cyperaceae
32.	Marsh Barbel	Neermulli	*Hygrophila auriculata*	Acanthaceae
33.	Bhringaraj	Karisalankanni	*Eclipta alba*	Asteraceae
34.	Slender dwarf morning-glory	Vishnukranthi	*Evolvulus alsinoides*	Convolvulaceae
35.	Spiny amaranth	Mullukkirai	*Amaranthus spinosus*	Amaranthaceae
36.	Lady's Fingers	Vendaka	*Abelmoschus esculentus*	Malvaceae
37.	Holy basil	Thulasi	*Ocimum tenuiflorum*	Lamiaceae
38.	Tridax daisy	Thatha poo	*Tridax procumbens*	Asteraceae
39.	Indian Turnsole	Tetkotukki	*Indian heliotrope*	Boraginaceae
40.	Cleome gynandra	Kattu Kadugu	*Cleome gynandra*	Cleomaceae
41.	Globe Amaranth	Vaadamalli	*Gomphrena globosa*	Amaranthaceae
42.	Dwarf morning-glory	Vishnukranti	*Evolvulus alsinoides*	Convolvulaceae
43.	Indian nettle	Nayuruvi	*Achyranthes aspera*	Amaranthaceae
44.	Negro Coffee	Payaverai	*Cassia occidentalis*	Caesalpiniacea
45.	Gale of the wind	Keelaneeli	*Phyllanthus niruri*	Phyllanthaceae
46.	Threelobe False Mallow	Pinnaku keerai	*Malvastrum coromandelianum*	Malvaceae
47.	Indian Whitehead	Vella ragu	*Enicostema axillare*	Gentianaceae
Climber/ Creepers				
1.	Madras Pea Pumpkin	Musumuskkai	*Mukia mederaspatna*	Cucurbitaceae
2.	Rosary pea	Kundumani	*abrus precatorius*	Fabaceae
3.	Bitter apple	Peikkumatti	*Citrullus colocynthis*	Cucurbitaceae
4.	Wild water lemon	Poonai puduku chedi	*Passiflora foetida*	Passifloraceae
5.	Stemmed vine	Perandai	*Cissus quadrangularis*	Vitaceae
6.	Butterfly pea	Sangu poo	*Clitoria ternatea*	Fabaceae

7.	Bitter melon	Paagarkaai	*Momordica charantia*	Cucurbitaceae
8.	Balloon vine	Mudakathan	*Cardiospermum halicacabum*	Sapindaceae
9.	Stinking passionflower	Poonai puduku chedi	*Passiflora foetida L*	Passifloraceae
10.	Ivy gourd	Kovai	*Coccinia grandis*	Cucurbitaceae
Grass				
1.	Great brome	Thodappam	*Bromus diandrus*	Poaceae
2.	Finger grass	Kuruthupillu	*Chloris dolichostachya*	Poaceae
3.	Windmill grass	Chevvarakupul	*Chloris barbata*	Amaranthaceae
4.	Purple love grass	Bunchgrass	*Eragrostis spectabilis*	Poaceae
5.	Narrowleaf cattail	Sambu	*Typha angustifolia*	Typhaceae
6.	Watergrass	Mukkutikorei	*Bulbostylis barbatta*	Cyperaceae
7.	Eragrostis	Pullu	*Eragrostis ferruginea*	Poaceae
8.	Marvel grass	Marvel grass	*Dichanthium annulatum*	Poaceae
Cactus				
1.	Prickly pear	Nagathali	*Opuntia*	Cactaceae

Source:

Nair.N.C and A.N. Henry, Flora of Tamil Nadu 1983, Series 1, Botanical Survey of India, Southern Circle.
Species observation in the field study and secondary data.

3.5.6 Analysis of Flora (Buffer Zone)

Similar habitats may be found in the buffer area as well, although there is a wider variety of plants there than in the core zone area. The buffer zone was fully dominated by species like Prosopis juliflora, Azadirachta indica, Jatropha curcas, Pongamia pinnata, Calotropis gigantea, and Morinda tinctoria, etc. The buffer zone study area contains a total of 142 species that have been recorded from the buffer zone. The floral (142) varieties among them Trees 38, Herbs 47, Shrubs 38, Climbers/ Creepers 10, Grasses 10, and Cactus 1 were identified. The result of the buffer zone of flora studies shows that Fabaceae and Solanaceae, Euphorbiaceae is the main dominating species in the study area mentioned in Table No.3.24. There are no impacts due to this mining activity. 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 primary survey (site observations) and discussion with local people. The total number of different plant life forms under trees, shrubs, herbs, and climbers is shown in Table 3.525 and their % distribution is shown in Figure 3.27.

Table 3.25 Number of floral life forms in the Study Area

S. No	Plant Life Form	Number of Species
1	Trees	38
2	Shrubs	38
3	Herbs	47
4	Climber	10
6	Grass	8
7	Cactus	1
Total No. of Species		**142**
Total No. of Family		51

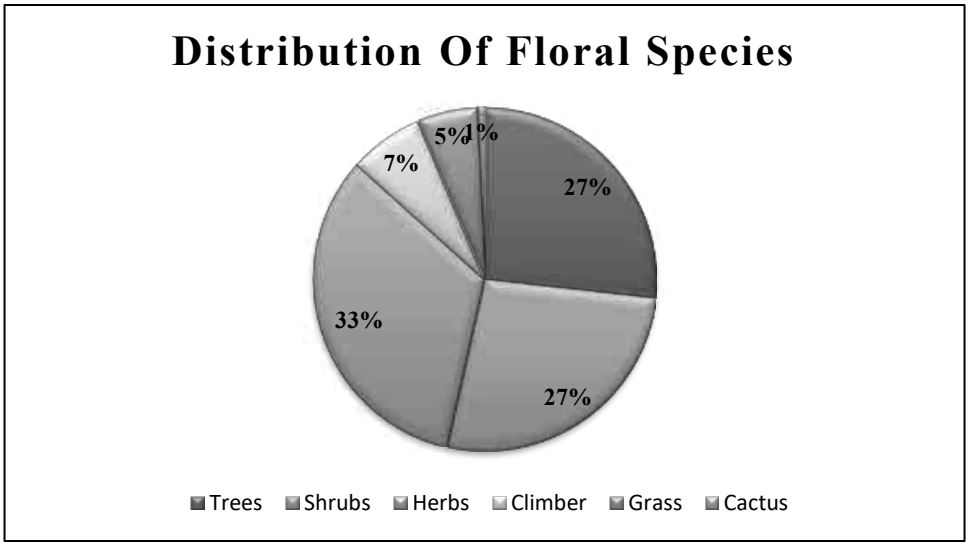


Fig No. 3.28: Graph showing % distribution of floral life forms


a.Azadirachta indica


b.Borassus flabellifer


c.Nerium indicum


d.Jatropagossypifolia


e.Eucalyptus tereticornis

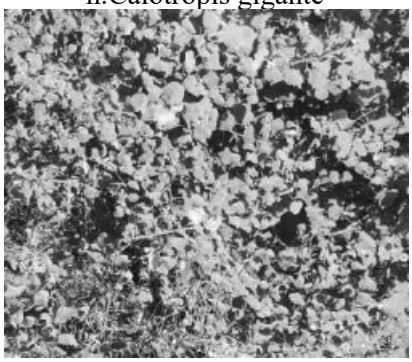

f.Bambusoideae

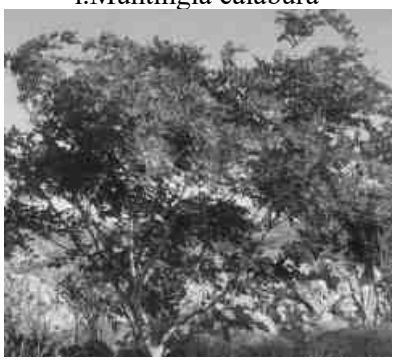

g.Heliotropium indicum

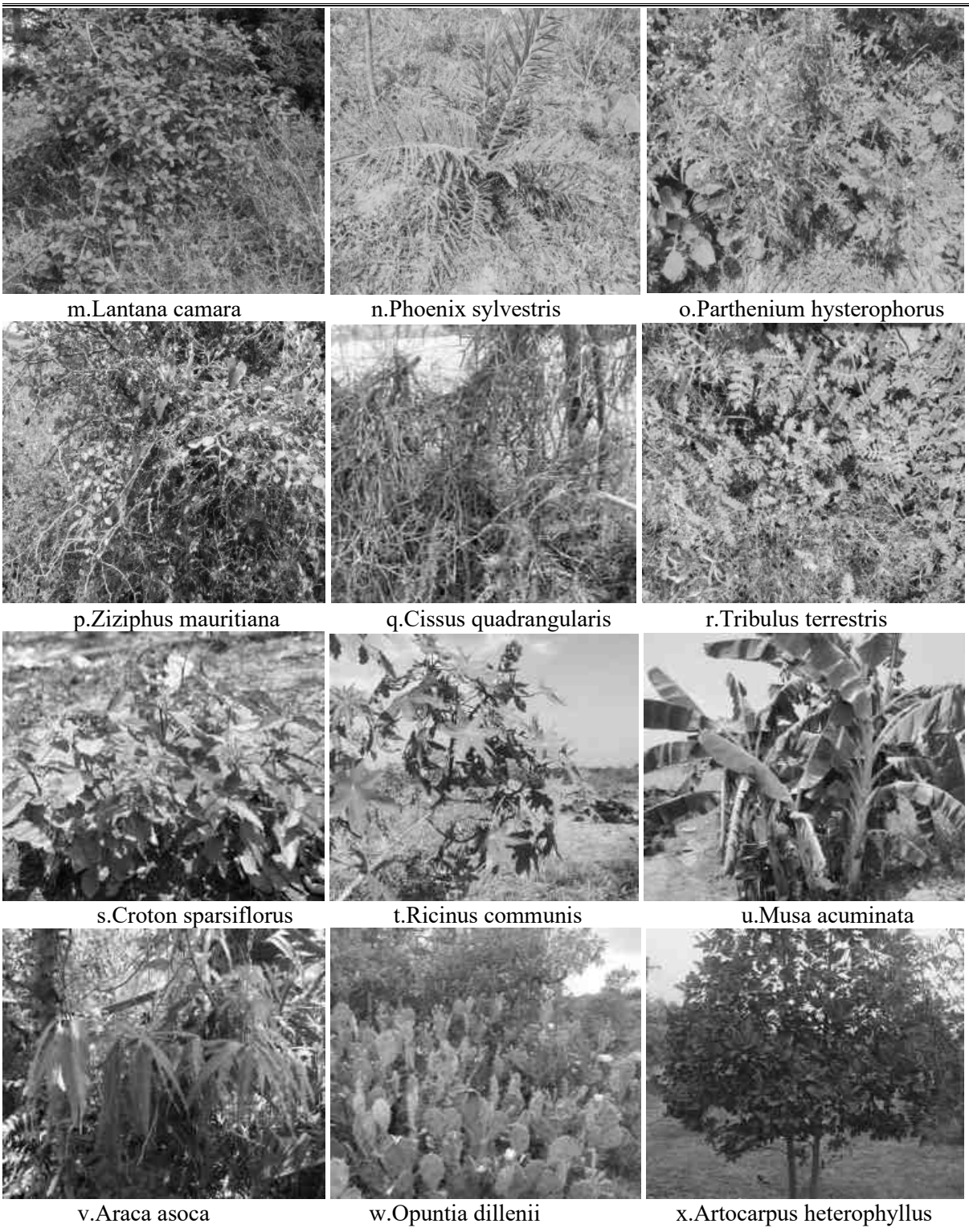

h.Calotropis gigante


i.Muntingia calabura


j.Ficus benghalensis


k.Abutilon indicum


l.Millettia pinnata



m.Lantana camara n.Phoenix sylvestris o.Parthenium hysterophorus

p.Ziziphus mauritiana q.Cissus quadrangularis r.Tribulus terrestris

s.Croton sparsiflorus t.Ricinus communis u.Musa acuminata

v.Araca asoca w.Opuntia dillenii x.Artocarpus heterophyllus

Fig No: 3.29. Flora species observation in the Core zone area

3.5.7. 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.

3.5.8. 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. There are no protected forests within the project area. Hence submission of clearance from the National Board of Wildlife does not arise. No Wildlife Sanctuary in the study area. In addition, No Biosphere Reserves, Wildlife corridors, or, Tiger / Elephant reserves within 10 km of the project area. No 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.

3.6. 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.

3.6.1. 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 & 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: 3.26. Fauna in the Core zone of Puliyuran Village, Cluster area, Rough Stone quarry

SI. No	Common Name	Scientific Name	Schedule list WLPC 1972
Insects			
1.	Common Tiger	*Danaus genutia*	NL
2.	Red-veined darter	*Sympetrum fonscolombii*	NL
3.	Tawny coster	*Danaus chrysippus*	Schedule IV

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

*NL- Not listed, LC- Least Concern

3.6.2. 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.

The list of Mammals (*directly sighted animals & Secondary data) is given in table No.3.27. The list of bird species recorded during the field survey and literature from the study area are given in Table 3.28. The list of reptilian species recorded during the field survey and literature from the study area is given in Table 3.29. The list of insect species recorded during the field survey and literature from the study area are given in Table 3.30. The list of Butterflies species recorded during the field survey and literature from the study area are given in Table 3.31. 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 33 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 six amphibian was observed during the extensive field visit Sphaerotheca breviceps, Euphlyctis 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 3.27. List of Fauna & Their Conservation Status,

Mammals: (*directly sighted animals & Secondary data)

SI. No	Scientific Name	Common Name	Schedule list WLPA 1972	IUCN conservation statu
1.	*Rattus norwegicus*	Brown rat	Schedule IV	Least Concern
2.	*Funambulus palmarum*	Indian palm squirrel	Schedule IV	Least Concern
3.	*Herpestes javanicus*	Asian Small Mongoose	Schedule (Part II)	Not listed
4.	*Lepus nigricollis*	Indian hare	Schedule (Part II)	Least Concern
5.	*Bos Indicus*	Indian Cow	Not listed	Not listed
6.	*Mus booduga*	Indian Field Mouse	Schedule IV	Least Concern
7.	*Bandicota bengalens*	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 3.28. Listed birds

SI. No	Common Name	Scientific Name	Schedule list WLPA 1972	IUCN Red List data
1.	Koel	*Eudynamys*	Schedule IV	LC
2.	Cattle egret	*Bubulcus ibis*	NL	LC
3.	Common myna	*Acridotheres tristis*	NL	LC
4.	Paddy Bird	*Ardea grayii grayii*	Schedule IV	LC
5.	House crow	*Corvussplendens*	NL	LC
6.	Asian green bee-eater	*Meropsorientalis*	NL	LC
7.	Small blue Kingfisher	*Alcedo atthis*	Schedule IV	LC
8.	Rose-ringed parkeet	*Psittacula krameri*	NL	LC
9.	Common quail	*Coturnix coturnix*	Schedule IV	LC
10.	Small Sunbird	*Nectarinia asiatica*	Schedule IV	LC
11.	Black drongo	*Dicrurus macrocercus*	Schedule IV	LC
12.	Indian Robin	*Saxicoloides fulicata*	Schedule IV	LC
13.	Woodpecker bird	*Picidae*	Schedule IV	LC
14.	Two-tailed Sparrow	*Dicrurus macrocercus*	Schedule IV	LC
15.	Grey Francolin	*Francolinus pondicerianus*	Schedule IV	LC
16.	Pond Heron	*Ardeola grayii*	Schedule IV	LC
17.	Common Coot	*Fulica atra*	Schedule IV	LC

18.	House sparrow	*Passer domesticus*	Schedule IV	LC
19.	Indian Robin	*Saxicoloides fulicatus*	Schedule IV	LC
20.	Indian Roller	*Coracias benghalensis*	Schedule IV	LC
21.	Cuckoo	*Cuculuscanorus*	Schedule IV	LC
22.	House Sparrow	*Passer domesticus*	Schedule IV	LC

Table 3.29. List of Reptiles either spotted or reported from the study area.

(*indicates direct observations & Secondary data)

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

Table 3.30. List of insects either spotted or reported from the study area

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

Table.3.31. List of Butterflies reported from the study area

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

3.8. Aquatic Ecology

The study area has few seasonal pond, 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 3.32

Table No.3.32. Description of Macrophytes

S.No	Scientific name	Common Name	Vernacular Name (Tamil)	IUCN Red List of Threatened Species
1	*Aponogetonnatans*	Floating laceplant	Kottikizhnagu	NA
2	*Cyperus exaltatus*	Tall Flat Sedge	Koraikizhangu	LC
3	*Nymphaea nouchali*	Blue waterlily	Nellambal	LC
4	*Carex cruciata*	Cross Grass	Koraipullu	NA
5	*Chrysopogon aciculatus*	Golden false beardgrass	Kampuputpi	NA
7	*Nymphaea nauchali*	Blue lotus	Alli	LC
8	*Hydrilla verticillata*	Waterthymes	Amiranappaci	LC
9	*Nelumbo nucifera*	Sacred lotus	Chenthaamarai	LC
10	*Eichornia crassipe*	Water hyacinth	Agayatamarai	NA
11	*Marsilea quadrifolia*	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. 3.33. Amphibians Observed/Recorded from the Study Area

SI. No	Scientific Name	Common Name	Schedule list WLPC 1972
1.	*Sphaerotheca breviceps*	Indian Burrowing frog	Schedule IV
2.	*Euphlyctis hexadactylus*	Green pond frog	Schedule IV
3.	*Bufomelanostictus*	Common Indian Toad	Schedule IV
4.	*Hoplobatrachus tigerinu*	Indian bull Frog	Schedule IV
5.	*Microhyla ornata*	Ornate Narrow-mouthed Frog	Schedule IV
6.	*Sphaerotheca rolandea*	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

3.8.4. Other Aquatic Fauna

3.8.4.1. Fishes

The fish species were seen during the primary field investigation near the study's area. Table 3.64. lists fish species such as Rohu, Catla, Catfish, and others.

Table No. 3.34. Fish Species reported in the study area

S.No	Common Name	Scientific Name	Family
1.	Ponthia	*Puntius sophore*	Cyprinidae
2.	Rohu	*Labeo rohita*	Cyprinidae
3.	Catla	*Catla Catla*	Cyprinidae
4.	Catfish	*Siluriformes*	-

3.5.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 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. There are no protected forests within the project area. Hence submission of clearance from the National Board of Wildlife does not arise.

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

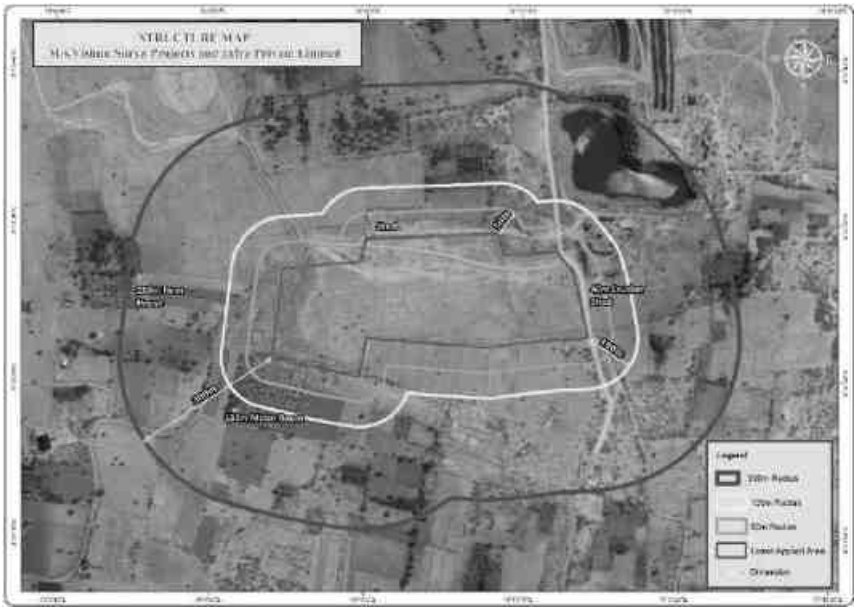
The observations and assessment of the overall ecological scenario involve details such as classification of Biogeographic zone, eco-region, habitat types and land cover, distances from natural habitats, vegetation/forest types,

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

Socio-economic study is an essential part of environmental study. It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project. It is expected that the Socio-Economic Status of the area will substantially improve because of this proposed project. As the proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area and, thus, improve their standard of living.

FIGURE.3.30 STRUCTURE STUDY IN 300m RADIUS



Distance	No of Structures	Structure belongs to owner	Structure not belongs to owner	Type of Structure
0 – 50m	2	1	1	1 – Shed & 1 – Crusher Shed
50- 100m	-	-	-	-
100-200m	1	-	1	1 – Motor room
200 – 300m	1	-	1	1 – Farm House

3.6.1 Objectives of the Study

The objectives of the socio-economic study are as follows:

- To study the socio-economic status of the people living in the study area.
- To assess the impact of the project on Quality of life of the people in the study area.
- To recommend Community Development measures needs to be taken up in the study Area.

3.6.2 Scope of Work

- To study the Socio-economic Environment of the area from the secondary sources;
- Data Collection & Analysis
- Prediction of project impact
- Mitigation Measures

3.6.3 District Profile

Virudhunagar district is located in the southern part of Tamil Nadu. It has an area of 4241 sq kms. It was a part of Tirunelveli district before 1910, after which it became a part of Ramanathapuram district which is later trifurcated in to Ramanathapuram, Pasumpon Muthuramalinga Thevar and Kamarajar districts (G.O. Ms. No. 347, dated 8th March 1985).

The district is divided into two Revenue Divisions comprising four taluks each. The Aruppukkotai Revenue Division comprised of Kariapatti, Tiruchuli, Aruppukkottai and Virudhunagar taluks, and Sivakasi Revenue Division include Sattur, Sivakasi, Srivilliputhur and Rajapalayam taluks.

There are 6 Assembly Constituencies in the district. Rajapalayam Assembly Constituency is reserved for the Scheduled Castes. Aruppukkottai, Sattur, Virudhunagar, Sivakasi and Srivilliputhur are the other Assembly Constituencies.

3.6.4 Study area:

PULIYURAN VILLAGE

Puliyuran village is situated in Teshil Aruppukkottai, District Virudhunagar and in State of Tamil Nadu India. Village has population of 2534 as per census data of 2011, in which male population is 1291 and female population is 1243. Total geographical area of Puliyuran village is 948.35 Hectares. Population density of Puliyuran is 3 persons per Hectares. Total number of house hold in village is 664.

In Puliyuran village population of children with age 0-6 is 271 which makes up 9.24 % of total population of village. Average Sex Ratio of Puliyuran village is 971 which is lower than Tamil Nadu state average of 996. Child Sex Ratio for the Puliyuran as per census is 922, lower than Tamil Nadu average of 943.

Sex Ratio of Puliyuran Village -Census 2011

In Puliyuran village population of children with age 0-6 is 318 which makes up 12.55 % of total population of village. Average Sex Ratio of Puliyuran village is 963 which is lower than Tamil Nadu state average of 996. Child Sex Ratio for the Puliyuran as per census is 893, lower than Tamil Nadu average of 943.

Literacy of Puliyuran Village

Puliyuran village has lower literacy rate compared to Tamil Nadu. In 2011, literacy rate of Puliyuran village was 73.06 % compared to 80.09 % of Tamil Nadu. In Puliyuran Male literacy stands at 83.70 % while female literacy rate was 62.12 %.

Population	Area (Ha)	Density (P/Ha)	Sex Ratio	Literacy
2534	948.35	3	963	73.06%

Source: https://etrace.in/census/village/puliyuran-aruppukkottai-district-virudhunagar-tamil-nadu-641630/

Workers profile of Puliyuran Village

In Puliyuran village out of total population, 1320 were engaged in work activities. 62.05 % of workers describe their work as Main Work (Employment or Earning more than 6 Months) while 37.95 % were involved in Marginal activity providing livelihood for less than 6 months. Of 1320 workers engaged in Main Work, 20 were cultivators (owner or co-owner) while 348 were Agricultural labourer.

TABLE 3.35: PULIYURAN VILLAGE CENSUS 2011 DATA

Description	Census 2011 Data
Village Name	Puliyuran
Tehsil Name	Aruppukkottai
District Name	Virudhunagar
State Name	Tamil Nadu
Total Population	2534
Total Area	948 (Hectares)
Total No of House Holds	664
Total Male Population	1291
Total Female Population	1243
0-6 Age group Total Population	318
0-6 Age group Male Population	168
0-6 Age group Female Population	150
Total Person Literates	1619
Total Male Literates	940
Total Male Literates	679
Total Person Illiterates	915
Total Male Illiterates	351
Total Male Illiterates	564
Scheduled Cast Persons	984
Scheduled Cast Males	485
Scheduled Cast Females	499
Scheduled Tribe Persons	0
Scheduled Tribe Males	0
Scheduled Tribe Females	0

Source:https://etrace.in/census/village/puliyuran-aruppukkottai-district-virudhunagar-tamil-nadu-641630/

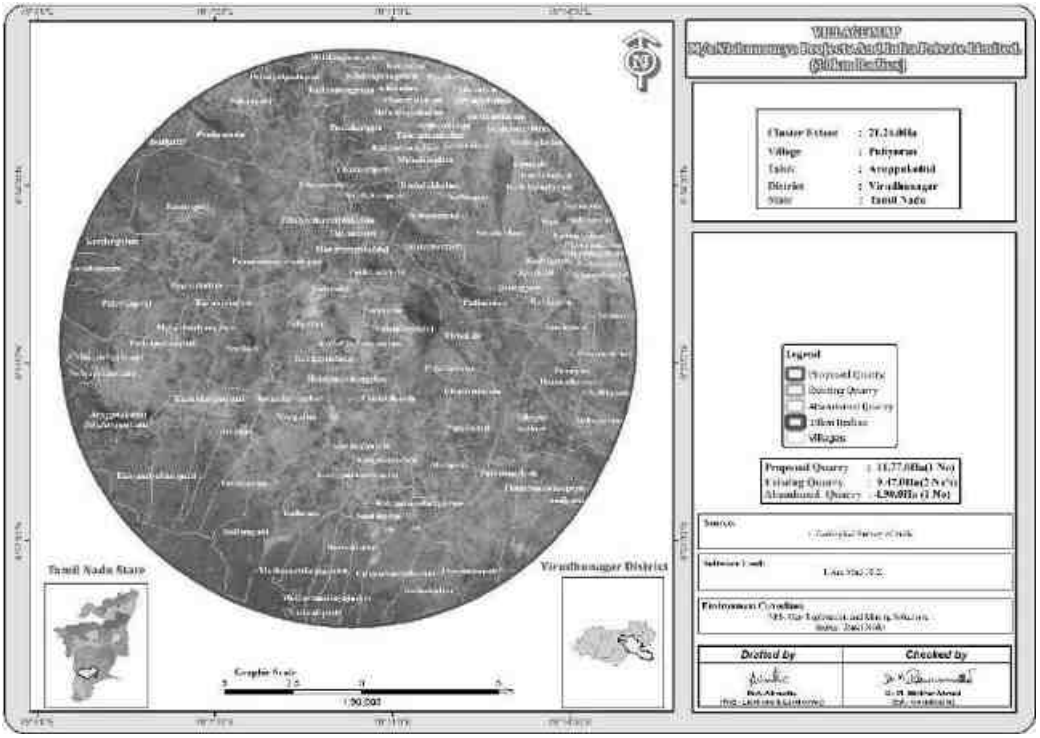
Sex-ratio	963
Literacy	73.06%
Male Literacy	83.7%
Female Literacy	62.12%
Scheduled Tribes (ST) %	0
Scheduled Caste (SC) %	38.83%

TABLE 3.36 PULIYURAN WORKING POPULATION ---CENSUS 2011

Worker categories	Total	Male	Female
Total Workers	1320	753	567
Main Workers	819	511	308
Main Workers Cultivators	20	15	5
Agriculture Labourer	348	178	170
Household Industries	1	0	1
Other Workers	450	318	132
Marginal Workers	501	242	259
Non Working Persons	1214	538	676

Source:https://etrace.in/census/village/puliyuran-aruppukkottai-district-virudhunagar-tamil-nadu-641630/

FIGURE. 3.31 VILLAGE MAP OF 10KM RADIUS



3.6.6 Recommendation and Suggestion

- The main activities in the area are agriculture, quarry operation and Crushing units there are 3 Numbers of quarries operated in the region and now only 1 quarry is operating at present which will expire lease period in 2024 November. Hence starting up of new mine in this region is necessary at current scenario
- 2 number of Crushers operating within 100m and the demand of rough stone is high to the crushing units 100 Nos of peoples depending upon the crushing units in the area and crushers are meeting scarcity due to supply demand in the region.

- Due to the project about 41 Nos of peoples will benefitted directly due to employment and more than 20 Nos of peoples and Crushers will benefitted through this project
- As part of CER activities proponent intends to spend Rs 5 Laksh for the improvement of School sanitation facilities, Greenbelt development and other needs.
- At the end of the life of the mine the mined-out pit will act as temporary reservoir, the collected rain water in the mine pit may utilized for the nearby agriculture lands

Apart from the following general activities will be conducted

- Awareness program to be conducted to make the population aware to get education and a better livelihood.
- Vocational training programme can be organized to make the people self - employed, particularly for women and unemployed youth.
- On the basis of qualification and skills local community may be preferred. Long term and short-term employments can be generated.
- While developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.

3.6.7 Summary & Conclusion

The socio-economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis. The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.0 GENERAL

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

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

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

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

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

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

4.1 LAND ENVIRONMENT:

4.1.2 Anticipated Impact

- 10.21.0 Ha of the land will be under mining sine the Permanent or temporary change on land use and land cover will occur
- 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

4.1.2 Mitigation Measures

- The 10.21.0 Ha of the land will be converted into temporary reservoir which will full fill the water scarcity in the drought season and the nearby agriculture land will benefitted by the supply of water
- About 5900 Nos of trees will be planted in the lease area and approach road will retain the eco system.
- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development in the production
- Construction of garland drains all around the quarry pits and construction of silt trap 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.,
- Fencing will be constructed before starting the mining operation and it will be maintained in the conceptual stage Security will be posted round the clock, to prevent inherent entry of the public and cattle.

4.1.3 Soil Environment

4.1.4 Impact on Soil Environment

- Removal of vegetation cover
- Soil Erosion in the project site during rainy season due to quarry operation

4.1.5 Mitigation Measures

- Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry. 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 (Silt pond). 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 is no waste anticipated in this Rough Stone and gravel quarrying operation. The entire quarried out materials will be utilized (100%).

4.2 WATER ENVIRONMENT

4.2.1 Anticipated Impact

- The major sources of water pollution normally associated due to mining and allied operations are:
    - Generation of waste water from vehicle washing.
    - Washouts from surface exposure or working areas
    - Domestic sewage
    - Disturbance to drainage course in the project area
    - Mine Pit water discharge
- Increase in sediment load during monsoon in downstream of lease area

- This being a mining project, there will be no process effluent. Waste from washing of machinery may result in discharge of Oil & grease, suspended solids.
- The sewage from soak pit may percolate to the ground water table and contaminate it.
- Surface drainage may be affected due to Mining
- Abstraction of water may lead to depletion of water table
- 1.4 KLD water will be utilized for the quarrying operation

4.2.2 Mitigation Measures

- Water for the quarrying operation such as sprinkling on haul roads, Greenbelt development will be sourced from the lower part of the mine pit which is specifically allotted to collect the rain water.
- Garland drain, settling tank will be constructed along the proposed 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.
- Periodic (every 6 month once) analysis of quarry pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits.
- Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
- De-silting will be carried out before and immediately after the monsoon season.

4.3 AIR ENVIRONMENT

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 PM_{10} & $PM_{2.5}$ and emissions of Sulphur dioxide (SO_2) & 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.

Prediction of impacts on air environment has been carried out taking into consideration cumulative production all the quarries falls in the Cluster. Air environment and net increase in emissions by Open pit source modelling in AERMOD Software AERMOD 9.61.

4.3.2.1 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 Rough Stone. 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.

4.3.2 Frame work of Computation & Model details

Suspended Particulate Matter (SPM) is the major pollutant occurred during quarrying activities. The prediction included the impact of Excavation, Drilling, Blasting (Occasionally), loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and Cloud cover.

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

TABLE 4.1: ESTIMATED EMISSION RATE

PM_{10}			
Activity	**Source type**	**Value**	**Unit**
Drilling	Point Source	0.149514164	g/s
Blasting	Point Source	0.018072829	g/s
Mineral Loading	Point Source	0.051421008	g/s
Haul Road	Line Source	0.002549756	g/s/m
Overall Mine	Area Source	0.128559281	g/s
SO_2			
Activity	**Source type**	**Value**	**Unit**
Overall Mine	Area Source	0.004724511	g/s
NO_X			
Overall Mine	Area Source	0.001208115	g/s

FIGURE 4.1: AERMOD TERRAIN MAP

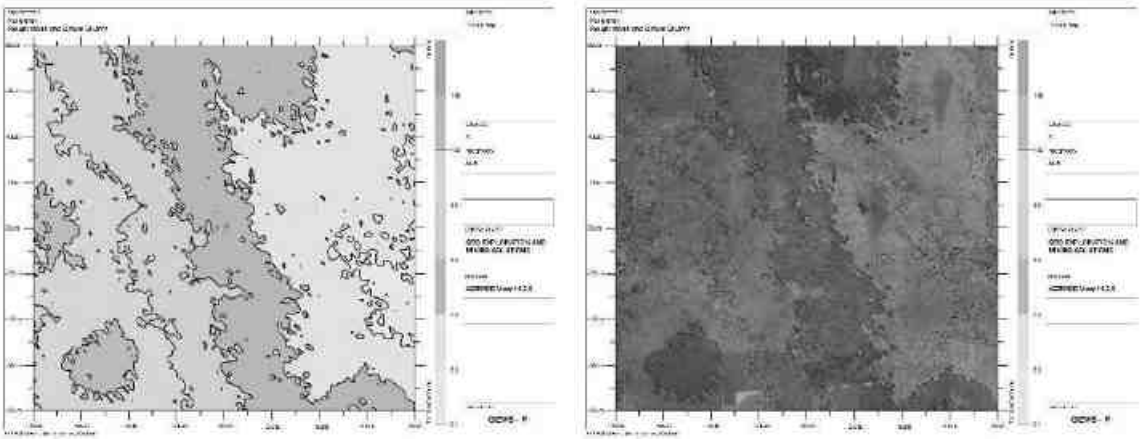


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM_{10}

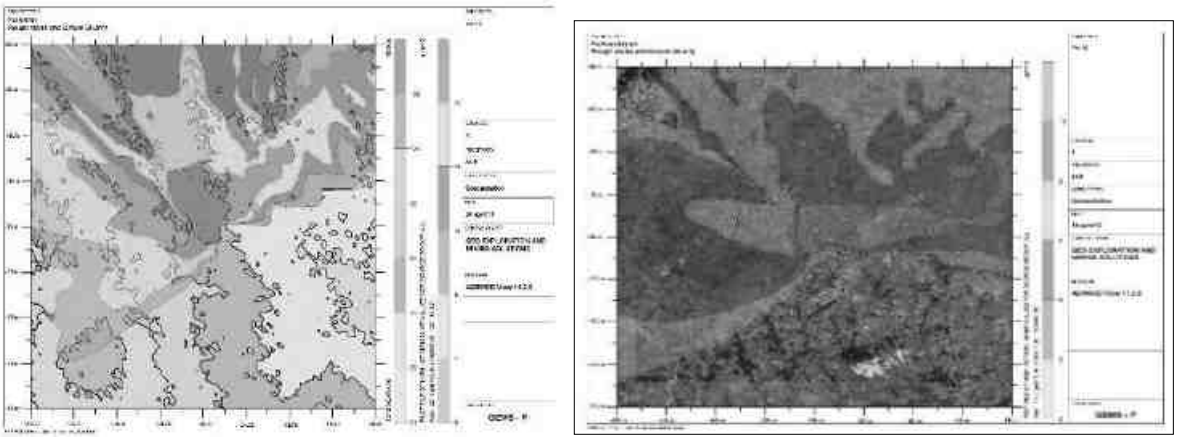


FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM_{25}

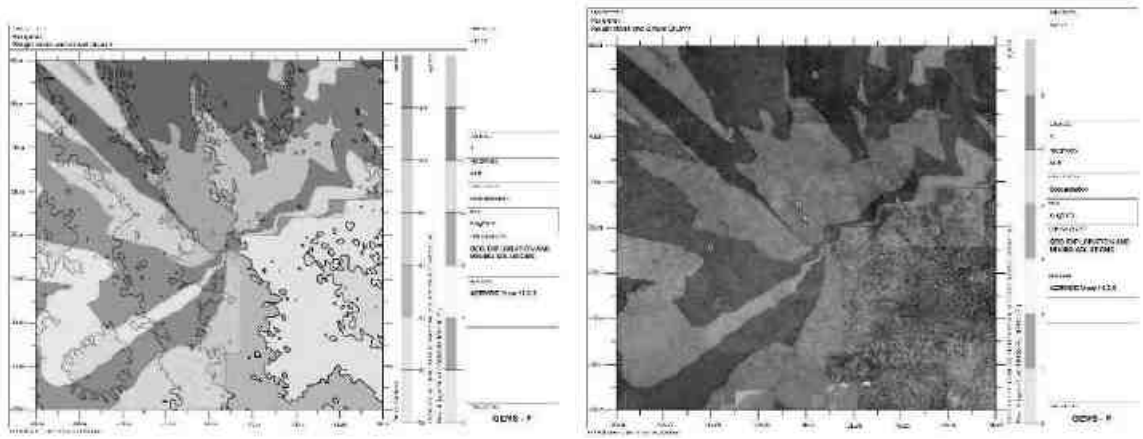


FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF NO_X

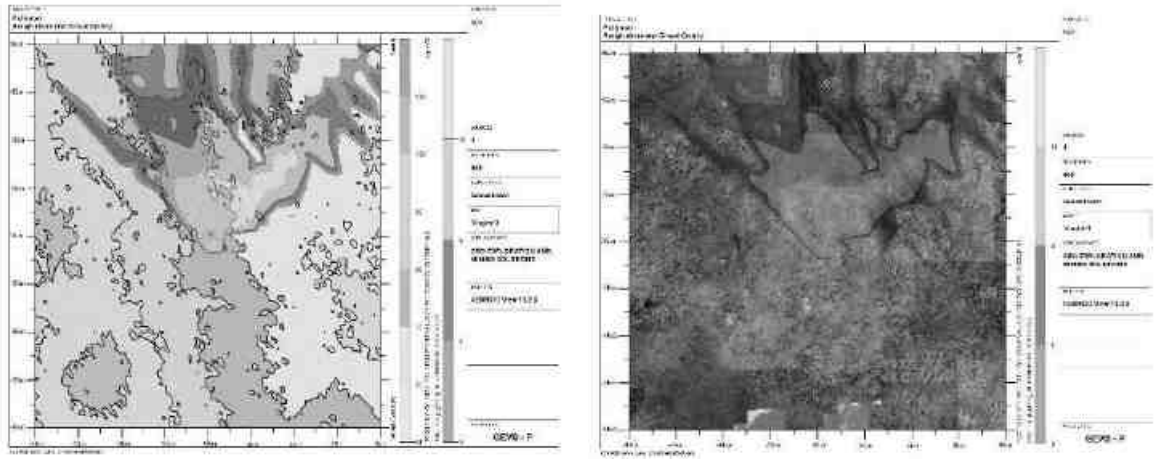


FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF SO2

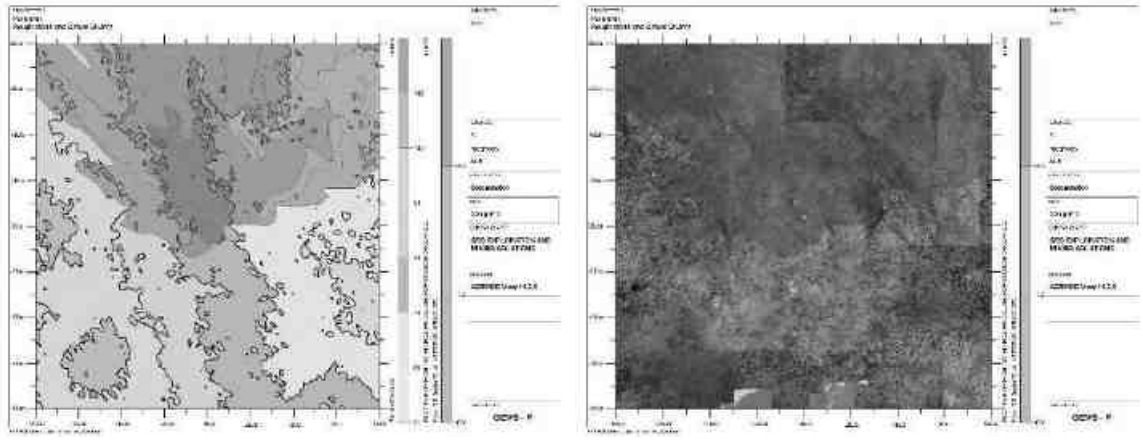
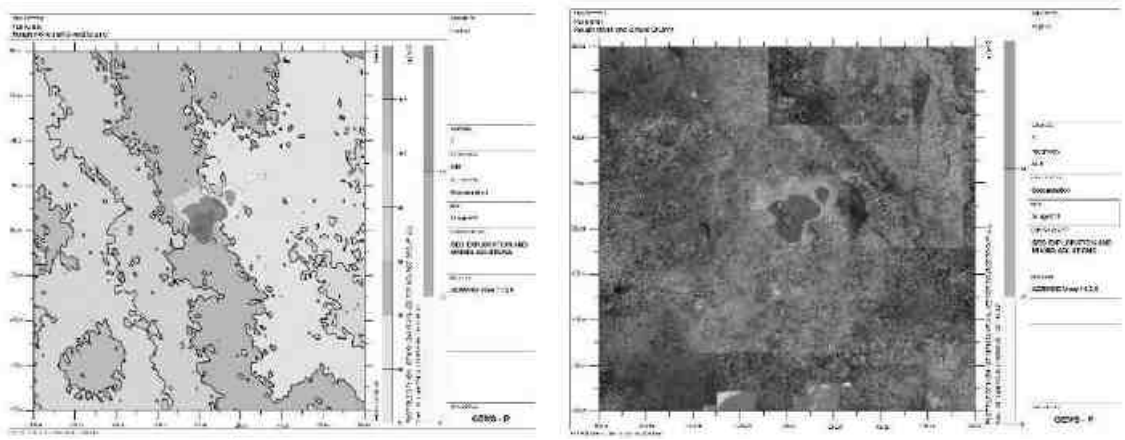


FIGURE 4.5: PREDICTED INCREMENTAL CONCENTRATION OF FUGITIVE DUST



4.3.2.1 Model Results

The post project Resultant Concentrations of PM_{10}, $PM_{2.5}$, SO_2 & NO_X (GLC) is given in Table below:

TABLE 4.2: INCREMENTAL & RESULTANT GLC OF PM_{10}

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM_{10} ($\mu g/m^3$)	Incremental value of PM_{10} due to mining ($\mu g/m^3$)	Total PM_{10} ($\mu g/m^3$)
AAQ1	9°31'27.85"N 78°10'5.82"E	36	63	41.4	20.98	62.4
AAQ2	9°31'48.48"N 78° 9'54.97"E	-296	700	40.7	20.26	61.0
AAQ3	9°31'54.04"N 78°12'11.49"E	3902	872	40.9	2	42.9
AAQ4	9°30'46.58"N 78° 7'54.06"E	-4020	-1210	40.2	5.7	45.9
AAQ5	9°28'19.77"N 78° 9'49.62"E	-466	-5756	40.7	0	40.7
AAQ6	9°33'32.08"N 78° 8'22.08"E	-3157	3910	40.7	11.05	51.7
AAQ7	9°30'33.62"N 78°11'50.53"E	3257	-1613	41.4	20.98	62.4

TABLE 4.3: INCREMENTAL & RESULTANT GLC OF $PM_{2.5}$

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline $PM_{2.5}$ ($\mu g/m^3$)	Incremental value of $PM_{2.5}$ due to mining ($\mu g/m^3$)	Total $PM_{2.5}$ ($\mu g/m^3$)
AAQ1	9°31'27.85"N 78°10'5.82"E	36	63	20.9	9.8	30.7
AAQ2	9°31'48.48"N 78° 9'54.97"E	-296	700	20.2	9.34	29.6
AAQ3	9°31'54.04"N 78°12'11.49"E	3902	872	20.3	2.47	22.8
AAQ4	9°30'46.58"N 78° 7'54.06"E	-4020	-1210	20.2	4	24.2
AAQ5	9°28'19.77"N 78° 9'49.62"E	-466	-5756	40.7	0.55	41.2
AAQ6	9°33'32.08"N 78° 8'22.08"E	-3157	3910	40.4	6.15	46.5
AAQ7	9°30'33.62"N 78°11'50.53"E	3257	-1613	18.4	0	18.4

TABLE 4.4: INCREMENTAL & RESULTANT GLC OF SO2

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline SO_2 ($\mu g/m^3$)	Incremental value due to mining ($\mu g/m^3$)	Total SO_2 ($\mu g/m^3$)
AAQ1	9°31'27.85"N 78°10'5.82"E	36	63	5.5	3.46	8.9

AAQ2	9°31'48.48"N 78° 9'54.97"E	-296	700	5.6	3.11	8.7
AAQ3	9°31'54.04"N 78°12'11.49"E	3902	872	5.9	0	5.9
AAQ4	9°30'46.58"N 78° 7'54.06"E	-4020	-1210	5.6	0	5.6
AAQ5	9°28'19.77"N 78° 9'49.62"E	-466	-5756	5.6	0	5.6
AAQ6	9°33'32.08"N 78° 8'22.08"E	-3157	3910	5.7	0.83	6.5
AAQ7	9°30'33.62"N 78°11'50.53"E	3257	-1613	5.6	0	5.6

TABLE 4.5: INCREMENTAL & RESULTANT GLC OF NOX

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline NOx ($\mu g/m^3$)	Incremental value due to mining ($\mu g/m^3$)	Total NOx ($\mu g/m^3$)
AAQ1	9°31'27.85"N 78°10'5.82"E	36	63	20.8	13.73	34.5
AAQ2	9°31'48.48"N 78° 9'54.97"E	-296	700	20.7	13.2	33.9
AAQ3	9°31'54.04"N 78°12'11.49"E	3902	872	21.1	0	21.1
AAQ4	9°30'46.58"N 78° 7'54.06"E	-4020	-1210	20.7	0	20.7
AAQ5	9°28'19.77"N 78° 9'49.62"E	-466	-5756	20.4	0	20.4
AAQ6	9°33'32.08"N 78° 8'22.08"E	-3157	3910	20.6	0	20.6
AAQ7	9°30'33.62"N 78°11'50.53"E	3257	-1613	20.8	0	20.8

TABLE 4.6: INCREMENTAL & RESULTANT GLC OF FUGITIVE DUST

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline Fugitive ($\mu g/m^3$)	Incremental value due to mining ($\mu g/m^3$)	Total Fugitive Dust ($\mu g/m^3$)
AAQ1	9°31'27.85"N 78°10'5.82"E	36	63	64.65	3.46	68.1
AAQ2	9°31'48.48"N 78° 9'54.97"E	-296	700	65.34	3.11	68.4
AAQ3	9°31'54.04"N 78°12'11.49"E	3902	872	64.32	0	64.3
AAQ4	9°30'46.58"N 78° 7'54.06"E	-4020	-1210	65.64	0	65.6
AAQ5	9°28'19.77"N 78° 9'49.62"E	-466	-5756	67.85	0	67.9
AAQ6	9°33'32.08"N 78° 8'22.08"E	-3157	3910	67.32	0.83	68.1
AAQ7	9°30'33.62"N 78°11'50.53"E	3257	-1613	66.93	0	66.9

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

4.3.4. Common Mitigation Measures for Respective Individual Proposed Projects

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 taurpaulin
- 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-metaled 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

4.4 NOISE ENVIRONMENT

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.

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

4.4.1 Anticipated Impact from all Proposed Projects

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

- Source data
- Receptor data
- Attenuation factor

Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4-8.

TABLE 4.7: 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 nose prediction modelling.

TABLE 4.8: PREDICTED NOISE INCREMENTAL VALUES

Location ID	N1	N2	N3	N4	N5	N6	N7	N8
Maximum Monitored Value (Day) dB(A)	55.5	53.3	55.4	56.9	54.1	56.3	54.7	56.9
Incremental Value dB(A)	52.14	43.58	28.50	28.50	25.61	26.48	29.47	24.25
Total Predicted Noise level dB(A)	19.86	53.74	55.41	56.91	54.11	56.30	54.71	24.25

The incremental noise level is found within the range of 55.5 dB (A) in Core Zone and 24.5 – 43.58dB (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 are within permissible limits of Industrial area (core zone) & Residential area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.).

4.4.2 Common Mitigation Measures for Respective Individual Proposed Projects

The following noise mitigation measures are proposed for control of Noise

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;
- The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;
- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;
- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured though training and awareness.
- 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 proposed project areas is listed in below table. The ground vibrations due to the blasting in the quarry are calculated using the empirical equation.

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

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

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

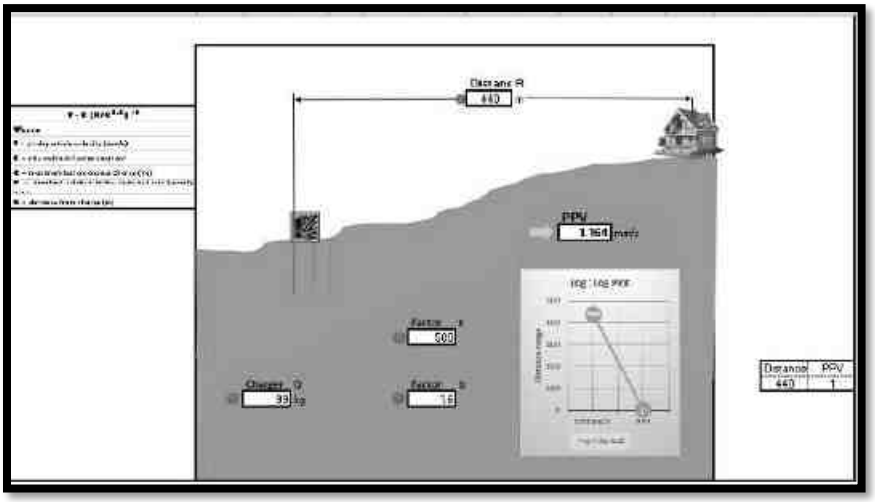
B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

TABLE 4.9: PREDICTED PPV VALUES DUE TO BLASTING

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	99	440-NW	1.164

FIGURE 4.6: GROUND VIBRATION PREDICTION



From the above graph, the charge per blast of 99kg 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. But the all the project proponents ensure that the charge per blast shall be less than 85 kg and carry out blasting twice or thrice a day based on the onsite conditions under the supervision of competent person employed. However, as per statutory

requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

4.4.3.1 Common Mitigation Measures for Respective Individual Proposed Projects

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

4.5 ECOLOGY AND BIODIVERSITY

There is a requirement to establish a stable ecosystem with both ecological and economic returns. Minimization of soil erosion and dust pollution enhances the beauty of the core and the buffer zone. To achieve this, it is planned to increase plantation activities. The basic objectives of plantations are as follows:-

- Improvement of Soil quality
- Quick vegetative cover to check soil erosion
- Improvement in mining site stability
- Conservation of biological diversity
- As dust receptor which likely to produce during mining.

4.5.2 Mitigation Measures

4.5.2.1. General Guidelines for Green Belt Development

Green belt is plantation of trees for reducing the air pollution as they absorb both gaseous and particulate pollutant, thus removing them from atmosphere. Green plants form a surface capable of absorbing air pollutants and forming sinks for pollutants. It improves the aesthetic value of local environment. Under present project, green belts have been planned with emphasis on creating biodiversity; enhance natural surroundings and mitigating pollution. Regional tree saplings in eco-friendly bags like *Pterocarpus marsupium*, *Pongamia pinnata*, *Limonia acidissima*, and *Cassia roxburghii* will be planted along the Lease boundary and avenues as well as over non-active dumps with intervals 3m in between with the GPS Coordinates. The greenbelt development plan aims to overall improvement in the environmental conditions of the region.

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

4.5.2.2. Species Recommendation for Plantation granted in the district.
Following points have been considered while recommending the species for plantation

- The natural growth of existing species and the survival rate of various species.
- Suitability of a particular plant species for a particular type of area.
- Creating biodiversity.
- Fast-growing, thick canopy copy, perennial, and evergreen large leaf area.
- Efficient in absorbing pollutants without major effects on natural growth.
- The following species may be considered primary for plantations best suited for the prevailing climate condition in the area.

Table No 4.10. List of plant species proposed for Greenbelt development

S. No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1.	*Cassia roxburghii*	Fabaceae	Sengondrai	T
2.	*Syrygium cumini*	Myrtaceae	Naval	T

3.	*Morinda pubescens*	Rubiaceae	Nuna	T
4.	*Thespesia Populnea*	Malvaceae	Puvarasu	T
5.	*Borassus flabellifer*	Arecaceae	Panai	T
6.	*Saraca asoca*	Fabaceae	Asoca	T
7.	*Limonia acidissima*	Rutaceae	Odhiam	T
8.	*Lannea coromandelica*	Anacardiaceae	Vila maram	T
9.	*Pongamia pinnata*	Fabaceae	Pungam	T
10.	*Pterocarpus marsupium*	Fabaceae	Vengai	T

4.5.3. 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.

4.5.3.1. 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 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.

4.5.3.2. 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.

4.5.4. Impact on Aquatic Biodiversity

Mining activities will not disturb the aquatic ecology as there is no effluent discharge proposed from the Rough stone & Gravel quarry. There is no natural perennial surface water body within the mine lease area, like wetlands, rivers streams, lakes, and farmer sites. There is no impact on fish habitats and the food WEB/ food chain in the water body and Reservoir. Kindly refer the Chapter 3, clause No 3.8**.** Aquatic biodiversity is observed in the study area.

Table No. 4.11. Overall Ecological impact assessments of Puliyuran Village, Cluster area Rough stone & Gravel Quarry, Aruppukkottai Taluk, Virudhunagar District.

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 and livestock. Kindly refer to the conclusion.
2.	Impact on soil flora & vegetation around the project site.	'No '
3.	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.
4.	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.
5.	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/ coastline/estuary/sea	'No '
6.	The proposed project restricts access to waterholes for wildlife	'No '
7.	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.
8.	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.
9.	Risk of fall/slip or cause death to wild animals due to project activities.	'No'
10.	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.
11.	Mining projects affect the forest-based livelihood/ any specific forest product on which local livelihood depended.	'No'
12.	The project likely to affect migration routes.	'No 'migration route observed during the monitoring period.
13.	The project is likely to affect the flora of an area, which have medicinal value	'No'
14.	Forestland is to be diverted, has carbon high sequestration.	'No 'There was no forest land diverted.
15.	The project is likely to affect wetlands, Fish breeding grounds, and marine ecology.	'No'. Wetland was not present in the near core Mining lease area. No breeding and nesting ground is present in the core mining area.

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

TABLE 4.12: RECOMMENDED SPECIES FOR GREENBELT DEVELOPMENT PLAN

SI.No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1	*Azadirachta indica*	Meliaceae	Neem, Vembu	Tree
2	*Albiziafalcatoria*	Fabaceae	Tamarind, Puliyamaram	Tree
3	*Polyalthialongifolia*	Annonaceae	Kattumaram	Tree

4	*Borassus Flabellifer*	Arecaceae	Palmyra Palm	Tree

The 7.5m Safety distance along the boundary has been identified to be utilized for subsequent Afforestation. However, the afforestation should always be carried out in a systematic and scientific manner. Regional trees like Neem, Pongamia, Pinnata, and Casuarina will be planted along the Lease boundary and avenue plantation will be carried out in respective proposed projects. The rate of survival expected to be 120% in this area. Afforestation Plan is given in Table No.4.16 and budget of green belt development plan are given in Table No.4.17

TABLE 4.13: GREENBELT DEVELOPMENT PLAN

Plantation details	Required	No. of trees Provided (Considering 80% Survival rate)	1st year
No of Plants	5900	7080	7080
Yearly %	100%	120%	100%

TABLE 4.14: BUDGET FOR GREENBELT DEVELOPMENT PLAN

ACTIVITY		YEAR										RATE	AMOUNT (Rs.)
		I	II	III	IV	V	VI	VII	VIII	IX	X		
Plantation under safety zone	**Nos.**	90	90	90	90	90	90	90	90	90	90	@100 Rs Per sapling	90,000
	Cost	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000		
Plantation in the quarried out top benches, approach & panchayat road	Nos.	50	50	50	50	50	50	50	50	50	50		50,000
	Cost	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000		
Wire Fencing (In Mtrs) 1620		4,86,000	-	-	-	-						@300 Rs Per Meter	4,86,000
Garland drain (In Mtrs) 1490		4,47,000	-	-	-	-						@300 Rs Per Meter	4,47,000
TOTAL													**10,73,000**

4.6 SOCIO ECONOMIC

4.6.1 Anticipated Impact from all Proposed Projects

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

4.6.2 Common Mitigation Measures for Respective Individual Proposed Projects

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

4.7 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, regulatory agencies, and the public
- To protect public health and safety of the surrounding habitation
- To minimize environmental damage
- To conserve valuable attributes and aesthetics

- To overcome adverse socio-economic impacts.

4.9.1 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 mine 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.

5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

5.0 INTRODUCTION

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

5.1 FACTORS BEHIND THE SELECTION OF PROJECT SITE

Rough Stone and Gravel Quarry Project at Puliyuran Village is a mining project for excavation of Rough Stone, which is site specific. All the proposed mining lease areas have following advantages: -

- The mineral deposit occurs in a non-forest area.
- There is no habitation within the project area; hence no R & R issues exist.
- There is no river, stream, nallah and water bodies in the applied mine lease areas.
- Availability of skilled, semi-skilled and unskilled workers in this region.
- All the basic amenities such as medical, firefighting, education, transportation, communication and infrastructural facilities are 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 – II, there is no major history of landslides, earthquake, subsidence etc., recorded in the past history.

5.2 ANALYSIS OF ALTERNATIVE SITE

No alternatives are suggested as all the mine sites are mineral specific

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. All the applied mining lease areas have following advantages –

- As the mineral deposition is homogeneous and batholith formation, therefore opencast method of working is preferred over underground method
- The material will be loaded 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 these projects. 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.

6. ENVIRONMENTAL MONITORING PROGRAMME

6.0 GENERAL

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

The main objective of environmental monitoring is to ensure that the obtained results in respect of environmental attributes and prevailing conditions during operation stage are in conformity with the prediction during the planning stage. In case of substantial deviation from the earlier prediction of results, this forms as base data to identify the cause and suggest remedial measures. Environmental monitoring is mandatory to meet compliance of statutory provisions under the Environment (Protection) Act, 1986, relevant conditions regarding monitoring covered under EC orders issued by the SEIAA as well as the conditions set forth under the order issued by Tamil Nadu Pollution Control Board while granting CTO.

6.1 METHODOLOGY OF MONITORING MECHANISM

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

An Environment monitoring cell (EMC) will be constituted to monitor the implementation of EMP and other environmental protection measures in all the proposed quarries.

The responsibilities of this cell will be:

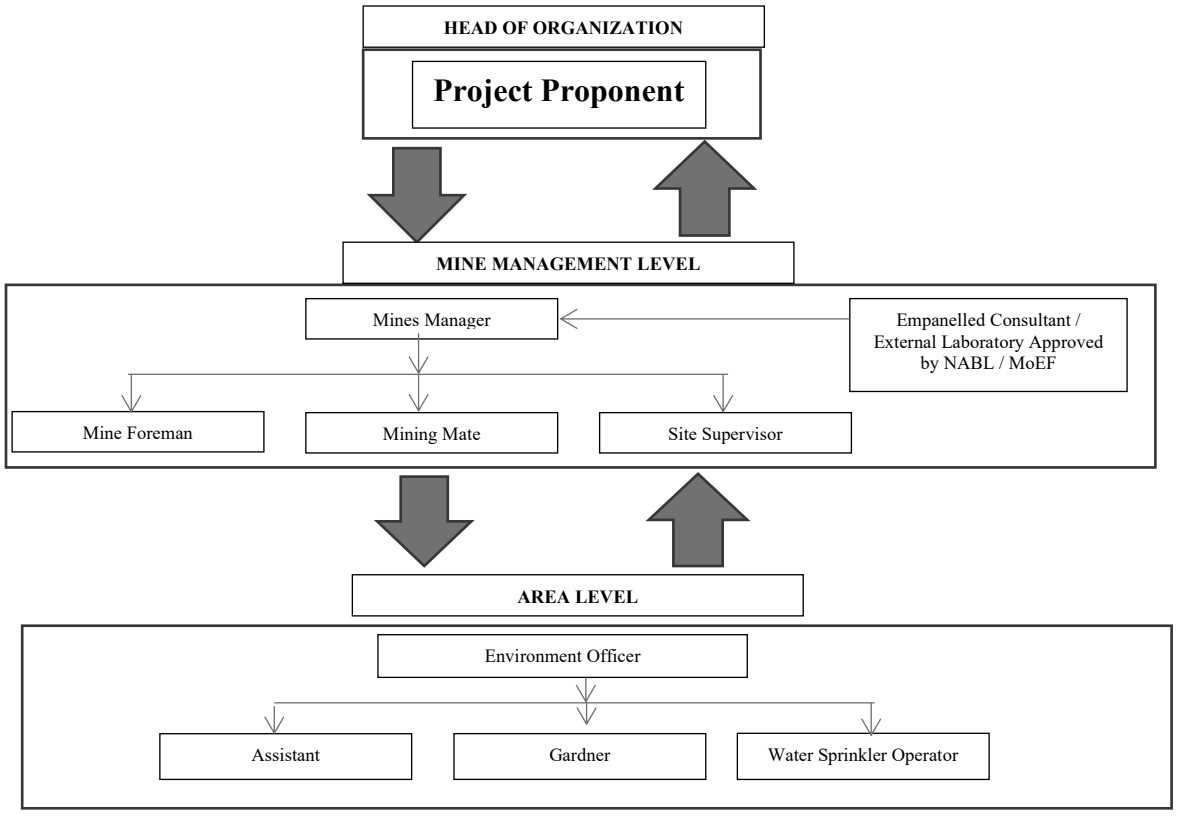
- Implementation of pollution control measures
- Monitoring programme implementation
- Post-plantation care
- To check the efficiency of pollution control measures taken
- Any other activity as may be related to environment
- Seeking expert's advice when needed.

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

The sampling and analysis report of the monitored environmental attributes will be submitted to the Tamil Nadu Pollution Control Board (TNPCB) at a frequency of half-yearly and yearly by each proposed project proponent. The half-yearly reports are 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).

FIGURE 6.1: PROPOSED ENVIRONMENTAL MONITORING CELL



* The Environmental Monitoring Cell will be formed in all the proposed projects

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 FOR ALL PROPOSED PROJECTS

SI No.	Recommendations	Time Period	Schedule
1	Land Environment Control Measures	Before commissioning of the project	Immediately after the commencement of project
2	Soil Quality Control Measures	Before commissioning of the project	Immediately after the commencement of project
3	Water Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
4	Air Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
5	Noise Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress

6	Ecological Environment	Phase wise implementation every year along with mine operations	Immediately and as project progress

6.3 MONITORING SCHEDULE AND FREQUENCY

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

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

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

The details of monitoring are detailed in Table 6.2

TABLE 6.2: PROPOSED MONITORING SCHEDULE POST EC FOR P1

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 BUDGETARY PROVISION FOR EMP

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 capital cost for Environmental Monitoring Programme is Rs 76,000/- and the recurring cost is Rs 3,80,000/- per annum for each Proposed Project.

TABLE 6.3 ENVIRONMENT MONITORING BUDGET

PROPOSAL – P1			
Sl.No.	**Parameter**	**Capital Cost**	**Recurring Cost per annum**
1	Air Quality	Rs. 7,60,000/-	Rs. 7,60,000/-
2	Meteorology		

3	Water Quality		
4	Hydrology		
5	Soil Quality		
6	Noise Quality		
7	Vibration Study		
Total		**Rs 7,60,000/-**	**Rs 7,60,000/-**

Source: Approved Mining Plan

6.5 REPORTING SCHEDULES OF MONITORED DATA

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

Periodical reports to be submitted to: -

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

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

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

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 whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad for all proposed projects. 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 these proposed mining & allied activities with detailed analysis of causes and control measures for the mine is given in below Table 7.1.

TABLE 7.1 RISK ASSESSMENT& CONTROL MEASURES

S. No	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy mining machineries	Improper handling and unsafe working practice	All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations; Workers will be sent to the Training in the nearby Group Vocational Training Centre Entry of unauthorized persons will be prohibited; Fire-fighting and first-aid provisions in the mine office complex and mining area;

			Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use Working of quarry, as per approved plans and regularly updating the mine plans; Cleaning of mine faces on daily basis shall be daily done in order to avoid any overhang or undercut; Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager; Maintenance and testing of all mining equipment as per manufacturer 's guidelines.
2	Drilling	Improper and unsafe practices Due to high pressure of compressed air, hoses may burst Drill Rod may break	Safe operating procedure established for drilling (SOP) will be strictly followed. Only trained operators will be deployed. No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places, Drilling shall not be carried on simultaneously on the benches at places directly one above the other. Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual. All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition. Operator shall regularly use all the personal protective equipment.
4	Blasting	Fly rock, ground vibration, Noise and dust. Improper charging, stemming & Blasting/ fining of blast holes Vibration due to movement of vehicles	Restrict maximum charge per delay as per regulations and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blasting 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 will be distinctly demarcated (by means of red flags)
5	Transportation	Potential hazards and unsafe workings contributing to accident and injuries Overloading of material While reversal & overtaking of vehicle Operator of truck leaving his cabin when it is loaded.	Before commencing work, drivers personally check the 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 horn with one spotter at every tipping point Loading according to the vehicle capacity Periodical maintenance of vehicles as per operator manual
6	Natural calamities	Unexpected happenings	Escape Routes will be provided to prevent inundation of storm water Fire Extinguishers & Sand Buckets

7	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.

Source: Analysed and Proposed by FAE & EC

7.3 DISASTER MANAGEMENT PLAN FOR P1

Natural disasters like Earthquake, Landslides have not been recorded in the past history as the terrain is categorized under seismic zone II. The area is far away from the sea hence the disaster due to heavy floods and tsunamis are not anticipated

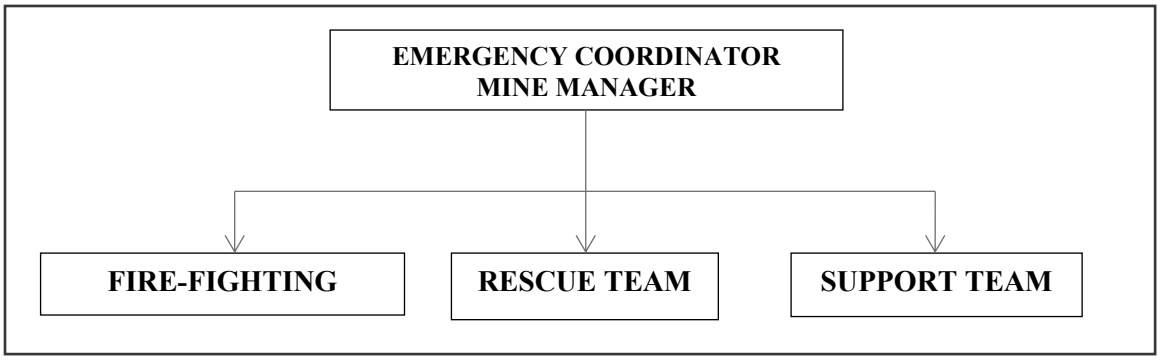
The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

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

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

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

FIGURE 7.1: DISASTER MANAGEMENT TEAM LAYOUT FOR P1



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

TABLE 7.2: PROPOSED TEAMS TO DEAL WITH EMERGENCY SITUATION

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

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

Roles and responsibilities of emergency team –

(a) Emergency coordinator (EC)

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

(b) Incident controller (IC)

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

(c) Communication and advisory team

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

(d) Roll call coordinator

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

(e) Search and rescue team

There shall be a group of people trained and equipped to 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 has been proposed at strategic locations within the mine.

TABLE 7.3: PROPOSED FIRE EXTINGUISHERS AT DIFFERENT LOCATIONS -P1

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.
- Observance of all safety precautions for blasting and storage of explosives as per MMR 1961.
- Entry of unauthorized persons into mine & allied areas is completely prohibited.
- Fire-fighting and first-aid provisions in the mines office complex and mining area are provided.

- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring.
- Training and refresher courses for all the employees working in hazardous premises.
- Working of mine, as per approved plans and regularly updating the mine plans.
- Cleaning of mine faces is regularly done.
- Handling of explosives, charging and blasting are carried out only by qualified persons following SOP.
- Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
- Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- A blasting SIREN is used at the time of blasting for audio signal.
- Before blasting and after blasting, red and green flags are displayed as visual signals.
- Warning notice boards indicating the time of blasting and NOT TO TRESPASS are displayed at prominent places.
- Regular maintenance and testing of all mining equipment were carried out as per manufacturer's guidelines.

7.4 CUMULATIVE IMPACT STUDY

For easy representation of Proposed and Existing Quarries in the Cluster are given unique codes and identifies and studied in this EIA EMP Report.

TABLE 7.4: LIST OF QUARRIES WITHIN 500 METER RADIUS

PROPOSED QUARRY					
CODE	**Name of the Owner**	**Village**	**S.F. Nos**	**Extent in Ha**	**Status**
P1	M/s. Vishnusurya Projects and Infra Private Limited Thiru.A.C.Thangam (Director),	Puliyuran	121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D	11.77.0	**Lr No. SEIAA-TN/F.No.10175/SEAC/ToR-1534/2023 Dated: 09.08.2023.**
	TOTAL EXTENT			**11.77.0Ha**	
EXISTING QUARRIES					
CODE	**Name of the Owner**	**Village**	**S.F. Nos**	**Extent in Ha**	**Status**
E-1	M/s. Vishnusurya Projects and Infra Private Limited Thiru.A.C.Thangam (Director),	Puliyuran	114/3(P), 119/1	4.98.00	**EC granted Lr. No.SEIAA-TN/F.No.6946/1(a)/EC.No: 4045/2019 dated: 18.10.2019**

E-2	M/s. Vishnusurya Projects and Infra Private Limited Thiru.A.C.Thangam (Director),	Melakandamangalam	2/4B,2/4C, etc	4.49.0	22.08.2022 to 21.08.2027
	TOTAL EXTENT			**9.47.0**	
ABANDONED QUARRIES					
A-1	TVL.KNR Constructions, Sivagangai	Puliyuran	**121/1A,1B, etc**	4.90.0	KV1/23545/2015 Dated: 02.12.2015 to 01.12.2018
	TOTAL EXTENT			**4.90.0**	
	TOTAL CLUSTER EXTENT			**21.24.0Ha**	

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

TABLE 7.5: SALIENT FEATURES OF PROPOSAL "P1"

Name of the Project	M/s.Vishnusurya Projects and Infra Private Limited Rough stone and Gravel quarry		
S.F. No.	121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D		
Extent	**11.77.0 ha**		
Village Taluk and District	Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State.		
Land Type	Own patta land		
Land Ownership	It is a Patta land. Registered in the name of M/s.Vishnusurya Projects and Infra Private Limited.		
Existing quarry operation	It is a fresh lease application		
Toposheet No	58 – K/02		
Latitude between	**09°31'20.13"N to 09°31'29.29"N**		
Longitude between	**78°09'54.10"E to 78°10'14.45"E**		
Elevation of the area	98m AMSL		
Lease period	10 Years		
Mining Plan period	The prepared mining plan period of First five years		
Proposed Depth of Mining for five years	48m Bgl		
Resources	**Rough Stone in m^3**	**Weathered Gravel m^3**	**Gravel m^3**
Geological Resources	56,49,600m^3	4,70,800m^3	2,35,400m^3
Mineable Reserves	31,95,024m^3	3,98,428m^3	2,07,998m^3
Proposal for this Mining Plan Period –First Five Years (As per ToR)	15,00,030m^3	3,98,428m^3	2,07,998m^3
Proposal for this Mining Plan Period –Second Five Years	14,47,320 m^3	-	-
Peak Production	3,42,684m^3	1,79,992 m^3	92,870 m^3
Ultimate Pit Dimension	XY-AB : 151m(L) x 190m(B) x 54m(D) XY-CD : 275m(L) x 195m(B) x 54m(D) XY- EF : 139m(L) x 156m(B) x 54m(D)		
First Five Year Pit Dimension	XY-AB : 151m(L) x 190m(B) x 6m(D) XY-CD : 275m(L) x 195m(B) x 54m(D) XY- EF : 139m(L) x 156m(B) x 54m(D)		
Water Level in the region	60 – 65 m bgl		
Method of Mining	Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives		
Topography	The lease applied area is exhibiting plain terrain. The area has gentle sloping towards East side and altitude of the area is 98m above from Mean Sea Level. The area is covered by 2m thickness of Gravel and 4m Weathered Gravel and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pits.		
Machinery proposed	Jack Hammer	6 Nos	
	Compressor	2Nos	
	Wagon Drill	1 Nos	
	Excavator with Bucket and Rock Breaker	3 No	
	Taurus	6 Nos	
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone.		
Proposed Manpower Deployment	41Nos		

Project Cost	Rs. 4,79,73,000/-
EMP Cost	Rs. 7,60,000/-
Total Project cost	Rs. 4,87,33,000/-
CER Cost	Rs. 5,00,000/-
Nearby Water Bodies	❖ Odai is situated on the Northwest side of the area, hence 50m safety distance has been provided. ❖ Tank-480m-E ❖ Tank-2.0km-E ❖ Odai - 3.2km- NE ❖ Gundar River- 3.5km- NE ❖ CRZ – 52.7km-SE
Greenbelt Development Plan	Proposed to plant 5,890 Nos of trees considering 500 Nos of trees/ Ha criteria The plantation will be developed around the Panchayat Road of the lease applied area.
Proposed Water Requirement	2.4 KLD
Nearest Habitation	440m – North West
Nearest Reserve Forest	Katturani R.F -40km-NE
Nearest Wild Life Sanctuary	➢ Sirivilliputhur (Giant squirrel) Wildlife -49.5km- NW ➢ Kanjirankulam Bird Sanctuary -37.7km- SE

Source: Approved Mining Plan

TABLE 7.6: SALIENT FEATURES OF PROPOSAL "E1"

Name of the Project	M/s.Vishnusurya Projects and Infra Private Limited Rough stone and Gravel quarry		
S.F. No.	114/3(P), 119/1		
Extent	**4.98.0 ha**		
Village Taluk and District	Melakandamangalam Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State.		
Land Type	It is a Patta land.- Non forest		
Land Ownership	It is a Patta land, Registered the Name of Company (M/S. Vishnusurya Logistics Private Limited) vide Patta Nos.1607.		
EC Granted	**Lr. No.SEIAA-TN/F.No.6946/1(a)/EC.No: 4045/2019 dated: 18.10.2019**		
Toposheet No	58 – K/02		
Latitude between	**9° 31' 36.7"N to 9° 31' 44.7"N**		
Longitude between	**78° 10' 11.1"E to78° 10' 19.3"E**		
Elevation of the area	70m AMSL		
Lease period	5 Years		
Mining Plan period	5 years		
Utimate Depth of Mining	55m [1m top soil+6m Gravel + 48m Rough stone] for a mining period of Five years.		
Reources	**Rough Stone in m^3**	**Earth m^3**	**Gravel m^3**
Geological Resources	24,08,928	50,186	3,01,116
Mineable Reserves	7,41,180	9,152	54,912
Five Year Plan Period Production As per in Approved mining plan	7,41,180	9,152	54,912
Peak Production	1,63,728m^3	68,700 m^3	8,736 m^3
Ultimate Pit Dimension	260m (L) x 111.5m (W) x 55m(D) bgl 149m (L) x 79m (W) x 49m(D) bgl		
Water Level in the region	60 – 65 m bgl		
Method of Mining	Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives		
Topography	The area applied for mining lease is a gentle plain terrain. The area has gentle sloping towards South eastern side. The altitude of the area is 70m above the MSL. The area is a dry barren land devoid of Agriculture and Habitations.		

Machinery proposed	Excavator	1 Nos
	Tipper	3Nos
	Tractor compressor for drilling	2 No
	Dewatering Pump	1Nos
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.	
Proposed Manpower Deployment	21Nos	
A. Fixed Asset Cost	Rs. 1,95,000	
B. Operational Cost	Rs.12,05,68,718	
C.EMP Cost	Rs. 2,25,000	
Total Project cost	**Rs. 12, 09, 88,718/-**	
CER Cost	Rs. 5,00,000,/-	
Nearby Water Bodies	Gundur River – 3.0Km- North eastern side One seasonal Odai -10m – North side One tank – 400m-south eastern side	
Greenbelt Development Plan	Proposed to plant 2245 Nos of trees considering 500 Nos of trees/ Ha criteria The plantation will be developed around the Panchyat Road of the lease applied area.	
Proposed Water Requirement	6.40KLD	
Nearest Habitation	760m – North East	
Nearest Reserve Forest	There is no forest within the radius of 10Km	
Nearest Wild Life Sanctuary	There are no Bird sanctuaries, National parks as per Wild life protection Act 1972, within the radius of 10Km.	

TABLE 7.7: SALIENT FEATURES OF PROPOSAL "E2"

Name of the Project	M/s.Vishnusurya Projects and Infra Private Limited Rough stone and Gravel quarry		
S.F. No.	2/4B, 2/4C, 2/5, 3/2A, 3/2B1, 3/2B2, 3/3A, 3/3B, 4/5 & 3/4B		
Extent	**4.49.0 ha**		
Village Taluk and District	Melakandamangalam Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State.		
Land Type	Own patta land		
Land Ownership	It is a Patta lands. Registered in the name of M/s.Vishnusurya Projects And Infra Private Limited, vide Patta Nos.1217, 1147, 1169, 1162 & 1223		
Existing quarry operation	It is a fresh lease application		
Toposheet No	58 – K/02		
Latitude between	**09°31'12.53"N to 09°31'22.03"N**		
Longitude between	**78°10'05.07"E to 78°10'12.79"E**		
Elevation of the area	122m AMSL		
Lease period	5 Years		
Mining Plan period	5 years		
Proposed Depth of Mining	54m (2m Gravel + 4m Weathered Gravel + 48m Rough stone) below ground level		
Reources	**Rough Stone in m^3**	**Weathered Gravel m^3**	**Gravel m^3**
Geological Resources	21,06,528m^3	1,75,544m^3	87,772m^3
Mineable Reserves	8,34,312m^3	1,38,312m^3	73,414m^3
Year wise Production	8,34,312m^3	1,38,312m^3	73,414m^3

Peak Production	1,73,448 m^3	68,700 m^3	37,908 m^3
Ultimate Pit Dimension	214m (L) x 237m (W) x 54m(D) bgl		
Water Level in the region	65 – 60 m bgl		
Method of Mining	Opencast Mechanized Mining Method involving small drilling and Controlled blasting using Slurry Explosives		
Topography	The lease applied area is flat terrain. The area has gentle sloping towards Eastern side and altitude of the area is 122m above from Mean Sea level. The area is covered by 2m thickness of Gravel, 4m Weathered Gravel and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pit.		
Machinery proposed	Jack Hammer	8 Nos	
	Compressor	2Nos	
	Wagon Drill	2 Nos	
	Excavator with Bucket and Rock Breaker	2 No	
	Taurus	6 Nos	
Blasting Method	Controlled Blasting Method by shot hole drilling and small dia of 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No deep hole drilling is proposed.		
Proposed Manpower Deployment	43Nos		
Project Cost	Rs. 1,30,83,000/-		
EMP Cost	Rs. 3,80,000/-		
Total Project cost	Rs. 1,43,63,000/-		
CER Cost	Rs. 5,00,000,/-		
Nearby Water Bodies	Seasonal Odai	120m West	
	Seasonal Odai	340m SE	
	Odai	3.3km SE	
	Noyyal River	9km North	
	Pallapalayam Lake	8.5km NE	
Greenbelt Development Plan	Proposed to plant 2245 Nos of trees considering 500 Nos of trees/ Ha criteria The plantation will be developed around the Panchyat Road of the lease applied area.		
Proposed Water Requirement	6.0 KLD		
Nearest Habitation	780m – North West		
Nearest Reserve Forest	Katturani R.F -40km-NE		
Nearest Wild Life Sanctuary	Srivilliputhur (Giant squirrel) wild life-50km-NW		

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.

Air Environment –

Calculating the Cumulative Load of Mining within the cluster is as shown in table 7.16 & 7.17.

TABLE 7.17: CUMULATIVE PRODUCTION LOAD OF ROUGH STONE

Quarry	Production for 5/10 year plan period	Per Year Production in m^3	Per Day Production in m^3	Number of Lorry Load Per Day
P1	29,47,350	2,94,735	982	82
Total	**29,47,350**	**2,94,735**	**1000**	**82**
E1	7,41,180	148,236	494	41
E2	8,34,312	166,862	556	46
Total	**15,75,492**	**3,15,098**	**1,050**	**87**
Grand Total	**45,22,842**	**6,09,833**	**2,050**	**169**

TABLE 7.17: CUMULATIVE PRODUCTION LOAD OF GRAVEL

Quarry	Production for three year plan period	Per Year Production in m^3	Per Day Production in m^3	Number of Lorry Load Per Day
P1	2,07,998	69,332	231	19
Total	**2,07,998**	**69,332**	**231**	**19**
E1	54,912	18,304	61	5
E2	73,414	24,471	82	7
Total	**1,28,326**	**42,775**	**143**	**12**
Grand Total	**3,36,324**	**1,12,108**	**374**	**31**

TABLE 7.13: CUMULATIVE PRODUCTION LOAD OF WEATHERED ROCK

Quarry	Production during three year plan period	Per Year Production in m^3	Per Day Production in m^3	Number of Lorry Load Per Day
P1	3,98,428	1,32,809	443	37
E1	9,152	9,152	31	3
E2	1,38,312	46,104	154	13
Total	**5,45,892**	**1,88,065**	**628**	**106**

On a cumulative basis considering the proposed quarries, it can be seen that the overall production of Rough Stone is 1000m^3 per day and overall production of Gravel is 231m^3 per day with a capacity of 82trips of Rough Stone per day and 19 Trips per day of Gravel and weathered rock 37 Trips per day from the cluster.

Note: Per day production of Rough Stone is calculated for 5 Years Lease Period and for Gravel production with 3 years, Weathered rock 3 years of production period. And the load of existing quarries is covered under existing environment of the cluster.

Based on the above production quantities the emissions due to various activities in all the 2 mines 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 7.18.

TABLE 7.18: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS

EMISSION ESTIMATION FOR QUARRY "P1"				
	Activity	**Source type**	**Value**	**Unit**
Estimated Emission Rate for PM_{10}	Drilling	Point Source	0.149514164	g/s
	Blasting	Point Source	0.018072829	g/s
	Mineral Loading	Point Source	0.051421008	g/s
	Haul Road	Line Source	0.002549756	g/s/m
	Overall Mine	Area Source	0.128559281	g/s
Estimated Emission Rate for SO_2	Overall Mine	Area Source	0.004724511	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.001208115	g/s
EMISSION ESTIMATION FOR QUARRY "E1"				
	Activity	**Source type**	**Value**	**Unit**
Estimated Emission Rate for PM_{10}	Drilling	Point Source	0.119798416	g/s
	Blasting	Point Source	0.005968564	g/s
	Mineral Loading	Point Source	0.046871217	g/s
	Haul Road	Line Source	0.002508925	g/s/m
	Overall Mine	Area Source	0.080007759	g/s
Estimated Emission Rate for SO_2	Overall Mine	Area Source	0.00194006	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.000209277	g/s
EMISSION ESTIMATION FOR QUARRY "E2"				
	Activity	**Source type**	**Value**	**Unit**
Estimated Emission Rate for PM_{10}	Drilling	Point Source	0.121889130	g/s
	Blasting	Point Source	0.006507877	g/s
	Mineral Loading	Point Source	0.047834126	g/s

	Haul Road	Line Source	0.002514961	g/s/m
	Overall Mine	Area Source	0.078193745	g/s
Estimated Emission Rate for SO_2	Overall Mine	Area Source	0.002263588	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.000225223	g/s

Source: Emission Calculation

TABLE 7.19: INCREMENTAL & RESULTANT GLC WITHIN CLUSTER

PM_{10} in µg/m^3	
Background	41.4
Incremental	20.98
Resultant	62.4
NAAQ Norms	**100 µg/m^3**
$PM_{2.5}$ in µg/m^3	
Background	20.9
Incremental	9.8
Resultant	30.7
NAAQ Norms	**60 µg/ m^3**
So2 in µg/m^3	
Background	5.5
Incremental	3.46
Resultant	8.9
NAAQ Norms	**80 µg/ m^3**
No2 in µg/m^3	
Background	20.8
Incremental	13.73
Resultant	34.5
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 500 m radius.

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

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

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.

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

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 7.20: 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 P1	49.4	50.6	53.0	55
Habitation Near E1	47.5	50.6	54.3	
Habitation Near E2	45.2	54.1	54.6	

Source: Lab Monitoring Data

The incremental noise level is found within the range of 50.6 – 54.1 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 6 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 6 mines 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.
nearby the mining areas and may cause injury to persons or damage to the structures. Nearest Habitations from 6 mines respectively are as in below Table 7.21.

TABLE 7.21: NEAREST HABITATION FROM EACH MINE

Location ID	Distance & Direction
Habitation Near P1	440m-North West
Habitation Near E1	760m North East
Habitation Near E2	780 m North West

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 7.22: GROUND VIBRATIONS AT 3MINES

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	99	440m-NW	1.164
E1	214	760m NE	0.899
E2	241	780m NW	0.949

Source: Blasting Calculations

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 6 mines shall contribute towards CER and the community shall develop.

TABLE 7.23: SOCIO ECONOMIC BENEFITS FROM 3MINES

Location ID	Project Cost	CER
P1	Rs. 4,87,33,000/-	Rs.5,00,000
Total	**Rs. 4,87,33,000/-**	**Rs.5,00,000**

E1	Rs. 12, 09, 88,718/-	Rs.5,00,000
E2	Rs. 1,43,63,000/-	Rs.5,00,000
Total	**Rs. 135,351,718/-**	**Rs.10,00,000**
Grand Total	**Rs. 184,084,718/-**	**Rs.15,00,000/-**

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

- Proposed Projects shall fund towards CER – **Rs 5,00,000/-**
- Existing Projects shall fund towards CER – **Rs.10,00,000/-**
- Projects in Cluster shall fund towards CER – **Rs 15,00,000/-**

TABLE 7.24: EMPLOYMENT BENEFITS FROM 6MINES

Description	Employment
P1	41
Total	**41**
E1	21
E2	43
Total	**64**
Grand Total	**105**

A total of 41people will get employment due to one proposed mines in cluster and 64 people are already employed at existing mines.

TABLE 7.25: GREENBELT DEVELOPMENT BENEFITS FROM 3 MINES

CODE	No of Trees proposed to be planted	No. of trees Provided (Considering 80% Survival rate)	Area Covered Sq.m	Name of the Species	No. of Trees expected to be grown
P1	5900	120%	8,000	Neem, Pinnata, Casuarina	7080
Total	**5900**	**120%**	**8,000**		**7080**
E1	2500	80%	-	Neem, Pinnata, Casuarina	2990
E2	2250	80%	3700	Neem, Pinnata, Casuarina	2700
Total	**4,750**		**3,700**		**5,690**
G.Total	**10650**		**11,700**		**12,770**

Source: approved Mining Plan

Based on the Proposed Mining Plans it's anticipated that there shall growth of native species of Neem, Pinnata, Casuarina, etc in the Cluster at a rate of 10,650Trees Planted over a period of 5 Years with Survival Rate of 120% and expected growth is around 12,770 Trees over an area of 11700 Sq.m. in cluster quarries.

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 7.26: 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

8.PROJECT BENEFITS

8.0 GENERAL

The Proposed Project for Quarrying Rough Stone and gravel at Puliyuran Village aims to produce 29,47,350m^3 Rough Stone over a period of 10 Years and Weathered Gravel 3,98,428m^3, Gravel 2,07,998m^3 for period of 3 years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

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

8.1 EMPLOYMENT POTENTIAL

It is proposed to provide employment to about 41 persons for carrying out mining operations and give preference to the local people in providing employment in the three proposed quarries in the cluster. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

8.2 SOCIO-ECONOMIC WELFARE MEASURES PROPOSED

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

8.3 IMPROVEMENT IN PHYSICAL INFRASTRUCTURE

The proposed quarries are located in Puliyuran Village, Aruppukottai Taluk and Virudhunagar 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 proposed mine.

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

8.4 IMPROVEMENT IN SOCIAL INFRASTRUCTURE

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

8.5 OTHER TANGIBLE BENEFITS

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

- Indirect employment opportunities to local people in contractual works like construction of infrastructural facilities, transportation, sanitation, for supply of goods and services to the mine and other community services.
- Additional housing demand for rental accommodation will increase
- Cultural, recreation and aesthetic facilities will also improve

- Improvement in communication, transport, education, community development and medical facilities and overall change in employment and income opportunity
- The State Government will also benefit directly from the proposed mine, through increased revenue from royalties, cess, DMF, GST etc.,

CORPORATE SOCIAL RESPONSIBILITY

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

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

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

CSR Cost Estimation

- CSR activities will be taken up in the Puliyuran village mainly contributing to education, health, training of women self-help groups and contribution to infrastructure etc., CSR budget is allocated as 2.5% of the profit.

CORPORATE ENVIRONMENT RESPONSIBILITY

For the existing quarries Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.
As per para 6 (II) of the office memorandum, all the mines being a green field project & Capital Investment is ≤ 100 crores, they shall contribute 2% of Capital Investment towards CER.

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

TABLE 8.1 CER – ACTION PLAN

Code	CER
P1	Rs 5,00,000/-

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

9. ENVIRONMENTAL COST BENEFIT ANALYSIS

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

10.B ENVIRONMENTAL MANAGEMENT PLAN – M/S.VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED

10.0. GENERAL

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

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

10.1. ENVIRONMENTAL POLICY

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

The Proponent M/s.Vishnusurya Projects and Infra Private Limited will –

- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities
- Implement a program to train employees in general environmental issues and individual workplace environmental responsibilities.
- Allocate necessary resources to ensure the implementation of the environmental policy.
- Ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts.
- Implement monitoring 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 –

Landscape of the area will be changed due to the quarrying operation, restoration of the land by converting the quarry pit into temporary reservoir and the remaining part of the area (un utilized areas, infrastructure, haul Roads) will be utilized for greenbelt development. Aesthetic of the Environment will not be affected. There is no major vegetation in the project area during the course of quarrying operation and after completion of the quarrying operation thick plantation will be developed under greenbelt development programme.

TABLE 10.1.B: PROPOSED CONTROLS FOR LAND ENVIRONMENT

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

Source: Proposed by FAE's & EIA Coordinator

10.3. SOIL MANAGEMENT

There is no overburden or waste anticipated from proposed project.

TABLE 10.2.B: PROPOSED CONTROLS FOR SOIL MANAGEMENT

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

Source: Proposed by FAE's & EIA Coordinator

10.4. WATER MANAGEMENT

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash is anticipated and domestic sewage from mine office. The quarrying operation is proposed upto a depth of 48 m BGL, the water table in the area is 60 m – 65 m below ground level, hence the proposed projects will not intersect the Ground water table during entire quarry period.

TABLE 10.3.B: 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 proposed quarrying activity would result in the increase of particulate matter concentrations due to fugitive dust. Daily water sprinkling 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

TABLE 10.4.B: 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 POLLUTION CONTROL

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

TABLE 10.5.: PROPOSED CONTROLS FOR NOISE ENVIRONMENT

CONTROL	RESPONSIBILITY
Development of thick greenbelt all along the Buffer Zone (7.5 Meters) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Foreman
Deployment of mining equipment with an inbuilt mechanism to reduce noise	Mines Manager
Provision of earmuff / ear plugs to workers working in noise prone zones in the mines	Mining Mate
Provision of effective silencers for mining machinery and transport vehicles	Mines Manager

Provision of sound proof AC operator cabins to HEMM	Mines Manager
Sharp drill bits are used to minimize noise from drilling	Mines Foreman
Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting	Mines Manager
Annual ambient noise level monitoring are carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	Mines Manager
Reduce maximum instantaneous charge using delays while blasting	Mining Mate
Change the burden and spacing by altering the drilling pattern and/or delay layout, or altering the hole inclination	Mines Manager
Undertake noise or vibration monitoring	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

10.7. GROUND VIBRATION AND FLY ROCK CONTROL

The Rough stone quarry operation creates vibration due to the blasting and movement of Heavy Earth moving machineries, fly rocks due to the blasting.

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 5900nos. of saplings is proposed to be planted for the Mining plan period in safety barrier of applied mine lease area with survival rate 120%. 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

Plantation details	Required	No. of trees Provided (Considering 80% Survival rate)	1st year
No of Plants	5900	7080	7080
Yearly %	100%	120%	100%

Source: Approved Mining plan

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.B: RECOMMENDED SPECIES TO PLANT IN THE GREENBELT

S.No	Botanical Name	Local Name	Importance
1	Azadirachta indica	Neem, Vembu	Neem oil & neem products
2	Tamarindus indica	Tamarind	Edible & Medicinal and other Uses
3	Polyalthia longifolia	Nettilinkam	Tall and evergreen tree
4	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 detailed 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.B: MEDICAL EXAMINATION SCHEDULE

Sl.No	Activities	1st Year	2nd Year	3rd Year	4th Year	5th 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.B: 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	117700	117700
	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	150000	15000
	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 Governers @ Rs. 5000/- per Tipper/Dumper deployed - 6 Units	30000	1500
	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	235400
	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	3763032
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 managent	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	117700	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	2354000	10000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 7080Trees - (1170 Inside Lease Area & 5910 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)	234000	35100
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	1773000	177300

	4. Implementation of Final Mine Closure Actity 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	160950	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	8539188	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) - 41Employees	164000	41000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	41000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	23540
	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	588500	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 (1st Class / 2nd 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			**6988900**	**5432572**

*Marked cost is already discussed in the mining plan hence that is not included in the total Environmental Management plan cost Total Cost for the five years

Year	**Total Cost**
1st	**$** 12421472
2nd	**$** 5704200.6
3rd	**$** 5989410.6
4th	**$** 6288881.2
5th	**$** 6764275.2
Total	**$ 372 Lakhs**

Cost inflation 5% per annum

Note: This Environmental Management plan cost will vary according to the public consultation comments

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.

11. SUMMARY AND CONCLUSION

M/s. Vishnusurya Projects Rough Stone and Gravel Quarry Extent:11.77.00Ha consisting of 1 Proposed,2 Existing Quarries 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.

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 for carrying out public hearing for the grant of Environmental Clearance from SEIAA, Tamil Nadu".

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 March2023– May2023 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 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 41 people directly in the proposed projects and indirectly around 100 people.

As discussed, it is safe to say that the proposed quarries are 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 M/s. Vishnusurya Projects and Infra Private Limited Rough Stone and Gravel Quarry Extent: 11.77.00Ha Extent:11.77.00Ha.

12. DISCLOSURE OF CONSULTANT

The Project Proponent –

M/s.Vishnusurya Projects and Infra Private Limited I 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 for the proposed projects.

Name and address of the consultancy:

GEO EXPLORATION AND MINING SOLUTIONS

No 17, Advaitha 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	Mr. Nagamani .S	In-house	**1**	**B**	GEO	B
2	Dr. M. Ifthikhar Ahmed	In-house	**1** **38**	**A** **B**	SC	A
3	Mr. Devanathan.D	In-house	-	-	AP EB	B A
4	Mr. Vadivel. E	In-house	-	-	HG	B
5	Mr. Govindasamy.P	In-house	-	-	WP	B
6	Mr.Ilavarasan S	In-house	-	-	LU	B
7	Mr.Allimuthu.A	In-house	-	-	SE	B
8	Mr.Senthilkumar.N	Empanelled			AQ	B
9	Mr.Vikram Krishna J.R	Empanelled	-	-	NV RH SHW	A 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 Draft EIA/EMP for M/s. Vishnusurya Projects Rough Stone and Gravel Quarry Extent:11.77.00Ha in Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State. It is also certified that information furnished in the above EIA study are true and correct to the best of our knowledge.

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

Name**:** **Mr. Nagamani .S**

Designation**:** **EIA Coordinator**

Date & Signature:

Period of Involvement: **August 2023to till date**

Associated Team Member with EIA Coordinator:

1. **Mr. S. Nagamani**
2. **Mr.Shaik Nawas**

FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

Sl. No.	Functional Area	Involvement	Name of the Expert/s	Signature
1	AP	▪ Identification of different sources of air pollution due to the proposed mine activity ▪ Prediction of air pollution and propose mitigation measures / control measures	Mr. D.Devanathan	
2	WP	▪ Suggesting water treatment systems, drainage facilities ▪ Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures.	Mr.P.Govindasamy	
3	HG	▪ Interpretation of ground water table and predict impact and propose mitigation measures. ▪ Analysis and description of aquifer Characteristics	Mr.E.Vadivel	
4	GEO	▪ Field Survey for assessing the regional and local geology of the area. ▪ Preparation of mineral and geological maps. ▪ Geology and Geo morphological analysis/description and Stratigraphy/Lithology.	Mr. S. Nagamani	
5	SE	▪ Revision in secondary data as per Census of India, 2011. ▪ Impact Assessment & Preventive Management Plan ▪ Corporate Environment Responsibility.	Mr. A. Allimuthu	
6	EB	▪ Collection of Baseline data of Flora and Fauna. ▪ Identification of species labelled as Rare, Endangered and threatened as per IUCN list. ▪ Impact of the project on flora and fauna. ▪ Suggesting species for greenbelt development.	Mr. D.Devanathan	

7	RH	▪ Identification of hazards and hazardous substances ▪ Risks and consequences analysis ▪ Vulnerability assessment ▪ Preparation of Emergency Preparedness Plan ▪ Management plan for safety.	Mr. J. R. Vikram Krishna	
8	LU	▪ Construction of Land use Map ▪ Impact of project on surrounding land use ▪ Suggesting post closure sustainable land use and mitigative measures.	Mr.S.Ilavarasan	
9	NV	▪ Identify impacts due to noise and vibrations ▪ Suggesting appropriate mitigation measures for EMP.	Mr. J. R. Vikram Krishna	
10	AQ	▪ Identifying different source of emissions and propose predictions of incremental GLC using AERMOD. ▪ Recommending mitigations measures for EMP	Mr. N. Senthilkumar	
11	SC	▪ Assessing the impact on soil environment and proposed mitigation measures for soil conservation	Dr. M. Ifthikhar Ahmed	
12	SHW	▪ Identify source of generation of non-hazardous solid waste and hazardous waste. ▪ Suggesting measures for minimization of generation of waste and how it can be reused or recycled.	Mr. J. R. Vikram Krishna	

LIST OF TEAM MEMBERS ENGAGED IN THIS PROJECT

Sl.No.	Name	Functional Area	Involvement	Signature
1	Mr. S. Nagamani	GEO, EIA Coordinator	▪ 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.Shaik Nawas	SC	▪ 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	

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 Draft EIA/EMP for M/s. Vishnusurya Projects Rough Stone and Gravel Quarry Extent:11.77.00Ha in Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State. It is also certified that information furnished in the EIA study are true and correct to the best of our knowledge.

Signature& Date:

Name:	**Dr. M. Ifthikhar Ahmed**
Designation:	**Managing Partner**
Name of the EIA Consultant Organization:	**M/s. Geo Exploration and Mining Solutions**
NABET Certificate No & Issue Date:	**NABET/EIA/2225/RA 0276 Dated: 20-2-2023**
Validity:	**Valid till 06.08.2025**

ANNEXURE

M/s. VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED ROUGH STONE AND GRAVEL QUARRY

S.F No: 121/1A, 121/1B, 128/1, 128/2A, 128/2B,

128/2C & 128/2D

Puliyuran Village, Aruppukkottai Taluk,

Virudhunagar District

EXTENT = 11.77.0Ha

ToR obtained

Lr No. SEIAA-TN/F.No.10175/SEAC/ToR-1534/2023 Dated: 09.08.2023

Project Proponent

Thiru.A.C.Thangam (Director),

Temple Towers, 2nd Floor,

New No.76, North Mada Street,

Mylapore, Chennai,

Tamil Nadu State – 600 004.

LIST OF ANNEXURES

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.10175/SEAC/ToR-1534/2023 Dated:09.08.2023

To

Thiru. A.C.Thangam (Director),
No:76, North Mada Street,
2nd Floor, Temple Tower,
Mylapore, Chennai-600004,
TamilNadu

Sir / Madam,

Sub: SEIAA. Tamil Nadu – Terms of Reference with Public Hearing (ToR) for the Proposed Rough Stone Quarry over an extent of 11.77.0 Ha at S.F.Nos.121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D, of Puliyuram Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu by Thiru A.C.Thangam , Director , M/s. Vishnusurya Project and Infra Private Limited, - 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/435200/2023, 30.06.2023.
2. Your application submitted for Terms of Reference dated: 04.07.2023
3. Minutes of the 394th meeting of SEAC held on 21.07.2023.
4. Minutes of the 645th meeting of Authority held on 09.08.2023.

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

The proponent, Thiru A.C.Thangam , Director , M/s. Vishnusurya Project and Infra Private Limited has submitted application for ToR, in Form-I, Pre- Feasibility report for the Rough Stone

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Quarry over an extent of 11.77.0 Ha at S.F.Nos.121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D, of Puliyuram Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu.

Discussion by SEAC and the Remarks:-

Proposed Rough Stone Quarry over an extent of 11.77.0 Ha at S.F.Nos. 121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D, of Puliyuram Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu by Thiru A.C.Thangam , Director , M/s. Vishnusurya Project and Infra Private Limited - For Terms of Reference.

(SIA/TN/MIN/435200/2023, 30.06.2023)

The proposal was placed in this 395th meeting of SEAC held on 27.07.2023. The Project Proponent made a detailed presentation on the proposed project. The details of the project furnished by the proponent are available on the PARIVESH web portal (parivesh.nic.in).

The SEAC noted the following:

1. The Project Proponent, M/s. Vishnusurya Project and Infra private limited has applied for Terms of Reference for the Proposed Rough Stone Quarry over an extent of 11.77.0 Ha at S.F.Nos. 121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D, of Puliyuram Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu.
2. The proposed quarry/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006 as amended.
3. Mine plan period is approved for 10 years. The approved production for 1st five -year period is 16,09,920 m^3 of Rough stone & 2,07,998 m^3 of Gravel and 2nd five-year period is 15,85,104 m^3 of Rough stone for the ultimate depth of 54m (2m Gravel +4m weathered rock+ 48m Rough stone).

Based on the presentation and details furnished by the project proponent, SEAC decided to grant **Terms of Reference (ToR) with Public Hearing, restricting the ultimate depth to 50m BGL and** subject to the following ToRs, in addition to (i) the standard terms of reference for EIA study shown **in Annexure-I** and (ii) the Standard ToR for non-coal mining projects and details issued by the MoEF&CC to be included in EIA/EMP Report:

1. The Proponent shall justify the selection of the site for carrying out the stone quarrying with the total volume arrived for the excavation & production adequate details such as lithology of the deposit, reserve estimation, place for waste dump/mined mineral storage, end-use of mined materials, identified potential customers/end-users and travel path.

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2. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc.
3. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc located within 1 km of the proposed quarry.
4. The Proponent shall carry out Bio diversity study through Department of Ecology and Environmental Sciences, Pondicherry University and the same shall be included in EIA Report.
5. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.

ANNEXURE-I

1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following:
   (i) Original pit dimension
   (ii) Quantity achieved Vs EC Approved Quantity
   (iii) Balance Quantity as per Mineable Reserve calculated.
   (iv) Mined out Depth as on date Vs EC Permitted depth
   (v) Details of illegal/illicit mining
   (vi) Violation in the quarry during the past working.
   (vii) Quantity of material mined out outside the mine lease area
   (viii) Condition of Safety zone/benches
   (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m.
2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site.
3. The 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.
4. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the

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PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.

5. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level.
6. 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.
7. 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.
8. 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.
9. 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.
10. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
11. Quantity of minerals mined out.
    - Highest production achieved in any one year
    - Detail of approved depth of mining.
    - Actual depth of the mining achieved earlier.
    - Name of the person already mined in that leases area.
    - If EC and CTO already obtained, the copy of the same shall be submitted.

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- Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.

12. 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).
13. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc.,
14. 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.
15. 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.
16. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
17. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided.
18. 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.
19. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control &

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health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.

20. Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.
21. 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.
22. 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.
23. 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.
24. 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.
25. Impact on local transport infrastructure due to the Project should be indicated.
26. 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.
27. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific.
28. 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.
29. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with

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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.

30. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner
31. 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.
32. 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.
33. 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.
34. 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.
35. 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.
36. Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
37. 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.
38. 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.

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39. 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.

40. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

Appendix -I
List of Native Trees Suggested for Planting

No	Scientific Name	Tamil Name	Tamil Name
1	*Aegle marmelos*	Vilvam	வில்வம்
2	*Adenaanthera pavonina*	Manjadi	மஞ்சாடி, ஆனைக்குன்றிமணி
3	*Albizia lebbeck*	Vaagai	வாகை
4	*Albizia amara*	Usil	உசில்
5	*Bauhinia purpurea*	Manthaarai	மந்தாரை
6	*Bauhinia racemosa*	Aathi	ஆத்தி
7	*Bauhinia tomentos*	Iruvathi	இருவாத்தி
8	*Buchanania axillaris*	Kattuma	காட்டுமா
9	*Borassus flabellifer*	Panai	பனை
10	*Butea monosperma*	Murukkamaram	முருக்கமரம்
11	*Bobax ceiba*	Ilavu, Sevvilavu	இலவு
12	*Calophyllum inophyllum*	Punnai	புன்னை
13	*Cassia fistula*	Sarakondrai	சரக்கொன்றை
14	*Cassia roxburghii*	Sengondrai	செங்கொன்றை
15	*Chloroxylon sweitenia*	Purasamaram	புரசு மரம்
16	*Cochlospermum religiosum*	Kongu, Manjalllavu	கோங்கு, மஞ்சள் இலவு
17	*Cordia dichotoma*	Naruvuli	நருவுளி
18	*Cretova adansoni*	Mavalingum	மாவிலங்கம்
19	*Dillenia indica*	Uva, Uzha	உசா
20	*Dillenia pentagyna*	SiruUva, Sitruzha	சிறு உசா
21	*Diospyro sebenum*	Karungali	கருங்காலி
22	*Diospyro schloroxylon*	Vagunu	வாகனை
23	*Ficus amplissima*	Kalltchi	கல் இச்சி
24	*Hibiscus tiliaceou*	Aatrupoovarasu	ஆற்றுப்பூவரசு
25	*Hardwickia binata*	Aacha	ஆச்சா
26	*Holoptelia integrifolia*	Aayili	ஆயா மரம், ஆயிலி
27	*Lannea coromandelica*	Odhiam	ஓதியம்
28	*Lagerstroemia speciosa*	Poo Marudhu	பூ மருது
29	*Lepisanthus tetraphylla*	Neikottaimaram	நெய் கொட்டை மரம்
30	*Limonia acidissima*	Vila maram	விலா மரம்
31	*Litsea glutinos*	Pisinpattai	அரம்பா பிசின்பட்டை
32	*Madhuca longifolia*	Illuppai	இலுப்பை
33	*Manilkara hexandra*	UlakkaiPaalai	உலக்கை பாலை
34	*Mimusops elengi*	Magizhamaram	மகிழமரம்
35	*Mitragyna parvifolia*	Kadambu	கடம்பு
36	*Morinda pubescens*	Nuna	நுணா
37	*Morinda citrifolia*	Vellai Nuna	வெள்ளை நுணா
38	*Phoenix sylvestre*	Eachai	ஈச்சமரம்
39	*Pongamia pinnat*	Pungam	புங்கம்

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40	*Premna mollissima*	Munnai	முன்னை
41	*Premna serratifolia*	Narumunnai	நறு முன்னை
42	*Premna tomentosa*	Malaipoovarasu	மலை பூவரசு
43	*Prosopis cinerea*	Vanni maram	வன்னி மரம்
44	*Pterocarpus marsupium*	Vengai	வேங்கை
45	*Pterospermum canescens*	Vennangu, Tada	வெண்ணாங்கு
46	*Pterospermum xylocarpum*	Polavu	புலவு
47	*Putiranjiva roxburghi*	Karipala	கரிபாலா
48	*Salvadora persica*	Ugaa Maram	உகா மரம்
49	*Sapindus emarginatus*	Manipungan, Soapukai	மணிப்புங்கன் சோப்புக்காய்
50	*Saraca asoca*	Asoca	அசோகா
51	*Streblus asper*	Piray maram	பிராய் மரம்
52	*Strychnos nuxvomic*	Yetti	எட்டி
53	*Strychnos potatorum*	Therthang Kottai	தேத்தான் கொட்டை
54	*Syzygium cumini*	Naval	நாவல்
55	*Terminalia belleric*	Thandri	தான்றி
56	*Terminalia arjuna*	Ven marudhu	வெண் மருது
57	*Toona ciliate*	Sandhana vembu	சந்தன வேம்பு
58	*Thespesia populnea*	Puvarasu	பூவரசு
59	*Walsuratrifoliata*	valsura	வால்சுரா
60	*Wrightia tinctoria*	Veppalai	வெப்பாலை
61	*Pithecellobium dulce*	Kodukkapuli	கொடுக்காப்புளி

Discussion by SEIAA and the Remarks:-

Proposed Rough Stone Quarry over an extent of 11.77.0Ha at S.F.Nos.121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D, of Pulivuram Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu by Thiru A.C.Thangam , Director , M/s. Vishnusurya Project and Infra Private Limited - For Terms of Reference

The subject was placed in this 645th meeting of Authority held on 09 .08.2023. The Authority noted that the subject was placed in the 395th meeting of SEAC held on 27.07.2023 and the SEAC has furnished its recommendation for the grant of **Terms of Reference (ToR) with Public Hearing** for the EIA study subject to the conditions stated therein.

After detailed discussions, the Authority accepts the recommendation of SEAC and decided to **grant Terms of Reference (ToR) along with Public Hearing for the restricted ultimate depth of 45m**

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BGL 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 PP shall furnish the letter obtained from the Director, Department of Agriculture stating that the proposed mine lease area/ about the productivity status and productive potential of the land.
2. The project proponent shall prepare mine closure plan considering quantity of Topsoil & Weathered rock. If any.
3. 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 hierarchical system or administrative order of the Company to deal with the environmental

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

8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.

9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.

10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.

11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.

12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.

13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of Net Present Value (NPV) and Compensatory Afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.

14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.

15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.

16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other

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protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.

17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.

18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.

19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should
also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.

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

21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should
be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government.

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

22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.

23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of Vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.

24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.

25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.

26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.

27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.

28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central

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Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.

30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.

31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.

32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.

34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.

35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.

36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.

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37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.

38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.

39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.

40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.

41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.

42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.

43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.

44) Besides the above, the below mentioned general points are also to be followed:-

a) Executive Summary of the EIA/EMP Report

b) All documents to be properly referenced with index and continuous page numbering.

c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.

d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.

e) Where the documents provided are in a language other than English, an English translation should be provided.

f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.

g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&CC vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.

h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I

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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 shall be submitted along with EIA report.
9. Obtain a letter /certificate from the Assistant Director of Geology and Mining standing that there is no other Minerals/resources like sand in the quarrying area within the approved depth of mining and below depth of mining and the same shall be furnished in the EIA report.
10. EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.

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11. Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.
12. The EIA study report shall include the surrounding mining activity, if any.
13. Modeling study for Air, Water and noise shall be carried out in this field and incremental increase in the above study shall be substantiated with mitigation measures.
14. A study on the geological resources available shall be carried out and reported.
15. A specific study on agriculture & livelihood shall be carried out and reported.
16. Impact of soil erosion, soil physical chemical and biological property changes may be assumed.
17. Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of is acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
18. Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
19. Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
20. Likely impact of the project on air, water, land, flora-fauna and nearby population
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.
27. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.
28. The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.
29. A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.
30. Reserve funds should be earmarked for proper closure plan.
31. A detailed plan on plastic waste management shall be furnished. Further, the proponent should

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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 willtake further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
- The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance.
- The TORs with public hearing prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29th August, 2017.

MEMBER SECRETARY
SEIAA-TN

Copy to:

1. The Additional Chief Secretary to Government, Environment & 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, Virudhunagar District.
7. Stock File.

From
Thiru.T.Selvasekar, M.Sc.,
Assistant Director,
Geology and Mining,
Virudhunagar.

To
Thiru.A.C.Thangam Director,
M/s.Vishnusurya Projects and Infra Private Limited,
No.76, North Mada Street,
2ND Flood, Temple Towers,
Mylapore, Chennai-600 004.

Roc.No:KV1/148/2023, Dated: 11.05.2023.

Sir,

Sub: Mines and Minerals - Minor Mineral - Virudhunagar District - Aruppukottai Taluk – Puliyuran Village – Patta Land - S.F.Nos: 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50) Extent 11.77.00 Hectares – Quarry lease application preferred by Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited for quarrying Rough Stone and Gravel - Details of quarries in 500 meter radius - Regarding.

Ref:
1. Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited Application dated: 03.02.2023.
2. The Assistant Director, Geology and Mining, Virudhunagar Rc.No.KV1/148/2023, Dated: 06.04.2023.
3. Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited letter, dated: 10.05.2023.

******

Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited has preferred an application for the grant of quarrying lease to quarry Rough Stone and Gravel over an extent of 11.77.00 Hectares of Patta Land in S.F.Nos: 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50) of Puliyuran Village, Aruppukottai Taluk & Virudhunagar District for a period of 10 (Ten) Years Under Rule 19 of Tamil Nadu Minor Mineral Concession Rules 1959.

The applicant Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited in the reference 3rd cited has requested to furnish details of quarries situated within 500 m radial distance from the applied area.

As per his request the details of quarry situated within 500 meter radius from the proposed area for obtaining Environmental Clearance as detailed below.

1) Details of quarry within 500 m radius from the applied area

S. No	Quarry detail	Village	S.F. No.& Extent (Hect)	Proceedings No. & Lease Period
I	**Existing Quarries:**			
1	M/s. Vishnusurya Logistics Pvt,Ltd 76, Temple Towers 2nd Floor , North Mada Street, Mailapoor Chennai - 600 004.	Puliyuran	114/3(P), 119/1 **(4.98.00)**	KV1/722/2018 Dated: 02.11.2019 11.11.2019 to 10.11.2024
2.	Vishnusurya Projects & Infra Pvt Ltd., Temple Towers 2nd Thalam 26, North Mada Street, Mailapoor, Chennai.	Melakanda mangalam	2/4B, 2/4C, 2/5, 3/2A 3/2B1 3/2B2 3/3A 3/3B, 4/5 3/4B **(4.49.00)**	KV1/411/2020 Dated: 12.08.2022 22.08.2022 to 21.08.2027
II	**Abandoned Quarry:**			
1	Tvl. KNR Constructions Ltd., 5-253 Linda garden, Nethaji Nagar, Manamadurai, Sivagandai District.	Puliyuran	120/3, 120/4A1 **(4.90.00)**	KV1/23545/2015 Dated: 26-11-2015 02-12-2015 to 01-12-2018
III	**Present Proposed Quarry :**			
1.	Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited, No.76, North Mada Street, 2ND Flood, Temple Towers, Mylapore, Chennai-600 004.	Puliyuran	121/1A, 121/1B, 128/1), 128/2A, 128/2B, 128/2C, 128/2D **(11.77.00)**	KV1/148/2023 Dated: 06.04.2023.

Assistant Director,
Geology and Mining,
Virudhunagar.

Copy to:
The Member Secretary,
State Level Environmental Impact Assessment Authority,
PanagalMaligai,
No. I Jeenis Road, Saidapet,
Chennai-15.

TOPOGRAPHICAL VIEW OF PULIYURAN ROGH STONE & GRAVEL QUARRY LEASE APPLIED AREA

Name of the Applicant : **M/s. Vishnusurya Projects and Infra Private Limited.,**
Thiru. A.C. Thangam (Director)

Address : No.76, North Mada Street,
2nd Floor, Temple Towers,
Mylapore, Chennai – 600 004.

Location:

S.F.Nos.	:	121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D
Extent	:	11.77.0 Ha
Village	:	Puliyuran
Taluk	:	Aruppukkottai
District	:	Virudhunagar

Signature of the applicant

For M/s. Vishnusurya Projects and Infra Private Limited

A.C.Thangam

(Director)

Village Administrative Officer
SEMPATTI
Aruppukottai Taluk.

(Village Administrative Officer)

Attestation

சான்று

சென்னை 600 004, மைலாப்பூர், வடக்கு மாட வீதி, எண்.76 டெம்பிள் டவர்ஸ் 2 வது தளத்தில் இயங்கி வரும் திருவாளர் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் என்ற நிறுவனத்தின் பெயரில் விருதுநகர் மாவட்டம், அருப்புக்கோட்டை வட்டம், எண் 17, புலியூரான் கிராமத்தில் பட்டா எண் 1833 மற்றும் 1761 ன் படி புல எண்கள் 121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C, 128/2D -இல் மொத்த விஸ்தீரணம் 11.77.00 ஹெக்டேர் நிலங்கள் கிராம கணக்கில் தாக்கலாகியுள்ளது.

மேற்படி புல எண்கள் 121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C, 128/2D - ல் மொத்த் விஸ்தீரணம் 11.77.00 ஹெக்டேர் கொண்ட பரப்பில் சுற்றிலும் 300 மீட்டர் தூரத்திற்கு கிராம நத்தம், உயர்மின் அழுத்தம், தேசிய (ம) மாநில நெடுஞ்சாலைகள், அரசு புராதன சின்னங்கள், குடியிருப்புகள் ஆகியவை ஏதும் இல்லை என சான்று அளிக்கிறேன்.

நாள் : 17.05.2023

இடம் : அருப்புக்கோட்டை

வட்டாட்சியர்
TAHSILDAR
ARUPPUKOTTAI
அருப்புக்கோட்டை

From
Thiru.T.Selvasekar, M.Sc.,
Assistant Director,
Geology and Mining,
Virudhunagar.

To
Thiru.A.C.Thangam
Director,
M/s.Vishnusurya Projects and Infra Private Limited,
No.76, North Mada Street,
2nd Flood, Temple Towers,
Mylapore, Chennai-600 004.

Roc.No:KV1/148/2023, Dated: 11.05.2023.

Sir,

Sub: Mines and Minerals - Minor Mineral - Virudhunagar District - Aruppukottai Taluk – Puliyuran Village – Patta Land - S.F.Nos: 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50) Extent 11.77.00 Hectares – Quarry lease application preferred by Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited for quarrying Rough Stone and Gravel - Approval of Mining Plan - Regarding.

Ref:
1. Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited Application dated: 03.02.2023.
2. The Assistant Director, Geology and Mining, Virudhunagar Rc.No.KV1/148/2023, Dated: 06.04.2023.
3. Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited letter, dated: 10.05.2023.

******

Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited has preferred an application for the grant of quarrying lease to quarry Rough Stone and Gravel over an extent of 11.77.00 Hectares of Patta Land in S.F.Nos:121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50) of Puliyuran Village, Aruppukottai Taluk & Virudhunagar District for a period of 10 (Ten) Years Under Rule 19 of Tamil Nadu Minor Mineral Concession Rules 1959.

2) The application was examined and consented to grant lease to quarrying Rough Stone and Gravel over an extent of 11.77.00 Hectares of Patta Land in S.F.Nos: 121/1A (4.04.50), 121/1B (3.99.50),

128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50) for a period of 10 (Ten) years subject to produce Mining Plan for approval and to obtain Environment Clearance from SEIAA in the reference 2nd cited.

3) The applicant has submitted the Mining Plan, prepared as per guidelines issued by the Commissioner of Geology and Mining and as per Rules and Acts. The Geological and Mineable reserves are discussed in Part – A 8. The applicant can quarry the mineral in the following measurements:-

Mineable Reserves (As per Mining Plan)

Section	Bench	Length (m)	Width (m)	Depth (m)	Mineable Reserves of Rough Stone (m^3)	Weathered Gravel (m^3)	Gravel (m^3)
XY-AB	I	151	190	2	-	-	57380
	II	148	184	4	-	108928	-
	III	144	176	6	152064	-	-
	IV	138	164	6	135792	-	-
	V	132	152	6	120384	-	-
	VI	126	140	6	105840	-	-
	VII	120	128	6	92160	-	-
	VIII	114	116	6	79344	-	-
	IX	108	104	6	67392	-	-
	X	102	92	6	56304	-	-
	Total				**809280**	**108928**	**57380**
XY-CD	I	275	195	2	-	-	107250
	II	275	189	4	-	207900	-
	III	275	181	6	298650	-	-
	IV	275	169	6	278850	-	-
	V	275	157	6	259050	-	-
	VI	275	145	6	239250	-	-
	VII	275	133	6	219450	-	-
	VIII	275	121	6	199650	-	-
	IX	275	109	6	179850	-	-
	X	275	97	6	160050	-	-
	Total				**1834800**	**207900**	**107250**
XY-EF	I	139	156	2	-	-	43368
	II	136	150	4	-	81600	-
	III	132	142	6	112464	-	-
	IV	126	130	6	98280	-	-
	V	120	118	6	84960	-	-
	VI	114	106	6	72504	-	-
	VII	108	94	6	60912	-	-
	VIII	102	82	6	50184	-	-
	IX	96	70	6	40320	-	-
	X	90	58	6	31320	-	-
	Total				**550944**	**81600**	**43368**
Grand Total					**3195024**	**398428**	**207998**

Yearwise Development and Production (As per Mining Plan)

FIRST FIVE YEARWISE DEVELOPMENT AND PRODUCTION DETAILS								
Year	**Section**	**Bench**	**Length (m)**	**Width (m)**	**Depth (m)**	**Recoverable Reserves of Rough Stone (m^3)**	**Weathered Gravel (m^3)**	**Gravel (m^3)**
I	XY-EF	I	139	156	2	-	-	43368
		II	136	150	4	-	81600	-
		III	132	142	6	112464	-	-
		IV	126	130	6	98280	-	-
		V	120	118	6	84960	-	-
		VI	40	106	6	25440	-	-
		Total				**321144**	**81600**	**43368**
II		VI	74	106	6	47064	-	-
	XY-CD	I	184	195	2	-	-	71760
		II	181	189	4	-	136836	-
		III	177	181	6	192222	-	-
		IV	81	169	6	82134	-	-
		Total				**321420**	**136836**	**71760**
III		I	91	195	2	-	-	35490
		II	94	189	4	-	71064	-
		IV	90	169	6	91260	-	-
		V	165	157	6	155430	-	-
		VI	86	145	6	74820	-	-
	XY-AB	I	151	190	2	-	-	57380
		II	148	184	4	-	108928	-
		Total				**321510**	**179992**	**92870**
IV	XY-CD	VI	73	145	6	63510	-	-
		VII	153	133	6	122094	-	-
		VIII	147	121	6	106722	-	-
		IX	51	109	6	33354	-	-
		Total				**325680**	-	-
V		IX	90	109	6	58860	-	-
		X	135	97	6	78570	-	-
	XY-EF	VII	108	94	6	60912	-	-
		VIII	102	82	6	50184	-	-
		IX	96	70	6	40320	-	-
		X	90	58	6	31320	-	-
		Total				**320166**	-	-
Grand Total						**1609920**	**398428**	**207998**

SECOND FIVE YEARWISE DEVELOPMENT AND PRODUCTION DETAILS						
Year	**Section**	**Bench**	**Length (m)**	**Width (m)**	**Depth (m)**	**Recoverable Reserves of Rough Stone (m^3)**
VI	XY-CD	III	98	181	6	106428
		IV	104	169	6	105456
		V	110	157	6	103620
		Total				**315504**
VII	XY-AB	III	144	176	6	152064
		IV	138	164	6	135792
		V	32	152	6	29184
		Total				**317040**
VIII	XY-CD	V	100	152	6	91200
		VI	116	145	6	100920
		VII	122	133	6	97356
		VIII	38	121	6	27588
		Total				**317064**
IX	XY-AB	VIII	90	121	6	65340
		VI	126	140	6	105840
		VII	120	128	6	92160
		VIII	114	116	6	79344
		Total				**342684**
X	XY-AB	IX	108	104	6	67392
		X	102	92	6	56304
	XY-CD	IX	134	109	6	87636
		X	140	97	6	81480
		Total				**292812**
Grand Total						**1585104**

The available mineable reserves have been computed as 31,95,024 m^3 of Rough Stone, 3,98,428 m^3 of Weathered Gravel & 2,07,998 m^3 of Gravel up to the depth of **54m** from the ground level.

The Environmental Management Plan and Mine Closure plan are discussed in Part – B 10 & 11 and all conditions have been incorporated in the Mining Plan as laid down by the authorities.

4) In view of the above, in exercise of the powers delegated under Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the Mining Plan submitted by Thiru.A.C.Thangam Director, M/s.Vishnusurya Projects and Infra Private Limited for quarrying Rough Stone and Gravel over an extent of 11.77.00 Hectares of Patta Land in S.F.Nos: 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50) of Puliyuran Village, Aruppukottai Taluk &

Virudhunagar District for a period of 10 (Ten) to obtain Environment Clearance from SEIAA, Chennai subject to the following conditions:

1. The Mining Plan is approved without prejudice to any other law applicable to the quarry permission from time to time where such Laws are made by the State Government or any other authority.
2. 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 Tamil Nadu Minor Mineral Concession Rules, 1959.
3. The Mining Plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
4. The 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) Amendment Act, 2015 or any other connected Laws including, Environment Protection Act, 1986, and the Rules made there under in Tamil Nadu Minor Mineral Concession Rules, 1959.

Encl: Two copies of Mining Plan.

Assistant Director,
Geology and Mining,
Virudhunagar.

Copy to:
The Member Secretary,
State Level Environmental Impact
Assessment Authority,
PanagalMaligai,
No. I Jeenis Road,
Saidapet, Chennai-15.

MINING PLAN AND PROGRESSIVE QUARRY CLOSURE PLAN FOR PULIYURAN ROUGH STONE AND GRAVEL QUARRY

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

Patta Land / Lease Period = Ten Years

IN

LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT	:	11.77.0 Ha
S.F.NOS.	:	121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D
VILLAGE	:	PULIYURAN
TALUK	:	ARUPPUKKOTTAI
DISTRICT	:	VIRUDHUNAGAR
STATE	:	TAMIL NADU

FOR

APPLICANT

M/s. Vishnusurya Projects and Infra Private Limited.,

Thiru. A.C. Thangam (Director),

No.76, North Mada Street,

2nd Floor, Temple Towers,

Mylapore, Chennai – 600 004.

PREPARED BY

Dr. M. Ifthikhar Ahmed, M.Sc., M.B.A., F.G.S., Ph.D.,

RQP/MAS/183/2004/A

Recognized Qualified Person

No.17, Advaitha Ashram Road,

Alagapuram, Salem District – 636 004.

Cell: +91 94422 78601 & 94433 56539

E-mail: infogeoexploration@gmail.com

M/s. Vishnusurya Projects and Infra Private Limited.,
Thiru. A.C. Thangam (Director),
No.76, North Mada Street,
2nd Floor, Temple Towers,
Mylapore, Chennai – 600 004.

CONSENT LETTER FROM THE APPICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Puliyuran Rough Stone and Gravel Quarry lease applied area over an extent of 11.77.0 Hectares of Patta land in S.F.Nos.121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State has been prepared by

Dr. M. Ifthikhar Ahmed, M.Sc., M.B.A., F.G.S., Ph.D.,
RQP/MAS/183/2004/A
Recognized Qualified Person

We request to the Assistant Director, Department of Geology and Mining, Virudhunagar District, Tamil Nadu State to make further correspondence regarding the modification of the Mining Plan with the said Recognized Qualified Person at his following address.

Dr. M. Ifthikhar Ahmed, M.Sc., M.B.A., F.G.S., Ph.D.,
No. 17, Advaitha Ashram Road,
Alagapuram, Salem District – 636 004.
Cell: +91 94422 78601 & 94433 56539

We hereby undertake that all the modifications, if any made in the Mining Plan by the Recognized Qualified Person may be deemed to have been made with our knowledge and consent and shall be acceptable to us and binding on us in all respects.

Signature of the Applicant
For M/s. Vishnusurya Projects and Infra Private Limited.,

A.C. Thangam
(Director)

Place: Chennai
Date: 08.04.2023

M/s. Vishnusurya Projects and Infra Private Limited.,
Thiru. A.C. Thangam (Director),
No.76, North Mada Street,
2nd Floor, Temple Towers,
Mylapore, Chennai – 600 004.

DECLARATION OF THE APPLICANT

The Mining Plan and Progressive Quarry Closure Plan in Respect of Puliyuran Rough Stone and Gravel Quarry lease applied area over an extent of 11.77.0 Hectares of Patta land in S.F.Nos.121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk, Virudhunagar 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
For M/s. Vishnusurya Projects and Infra Private Limited.,

A.C. Thangam
(Director)

Place: Chennai
Date: 08.04.2023

This Mining is approved based on guidelines/ instructions issued in the CGM, Letter No.3869/LC/2012 dated 19-11-2012 and incorporation of the particulars specified in the letter Roc.No. KV1/148/2023
Dated 11/05/2023 Assistant Director of G... and subject to fu... own under rule 41,4... Concession Rules 1958

Assistant Director of Geology & Mining
Virudhunagar

This Mining Plan is approved Subject to the conditions / Stipulation indicated in the Mining Plan Approval

Letter Roc. No. KV1/148/2023 Dated 11/05/2023

Dr. M. Ifthikhar Ahmed, M.Sc., M.B.A., F.G.S., Ph.D.,
No.17, Advaitha Ashram Road,
Alagapuram, Salem – 636 004.
Cell: +91 94422 78601 & 94433 56539

CERTIFICATE FROM THE RECOGNIZED 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 Puliyuran Rough Stone and Gravel Quarry lease applied area over an extent of 11.77.0 Hectares of Patta land in S.F.Nos.121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State has been prepared for

M/s. Vishnusurya Projects and Infra Private Limited.,
Thiru. A.C. Thangam (Director),
No.76, North Mada Street,
2nd Floor, Temple Towers,
Mylapore, Chennai – 600 004.

Whenever specific permissions / exemptions / relaxations and approvals are required, the Applicant will approach the concerned authorities of the Assistant Director, Department of Geology and Mining, Virudhunagar District, Tamil Nadu State for such permissions/ exemptions / relaxations and approvals.

It is also certified that information furnished in the above Mining plan are true and correct to the best of my knowledge.

Signature of the Recognized Qualified Person

Dr. M. Ifthikhar Ahmed, M.Sc., M.B.A., F.G.S., Ph.D.,
RQP/MAS/183/2004/A

Place: Salem
Date: 11.04.2023

Dr. M. Ifthikhar Ahmed, M.Sc., M.B.A., F.G.S., Ph.D.,
No. 17, Advaitha Ashram Road,
Alagapuram, Salem District – 636 004.
Cell: +91 94422 78601 & 94433 56539

CERTIFICATE FROM THE RECOGNIZED QUALIFIED PERSON

Certified that the Provisions of Mines Act, Rules and Regulations or Orders made there under have been observed in the preparation of Mining Plan and Progressive Quarry Closure Plan for Puliyuran Rough Stone and Gravel Quarry lease applied area over an extent of 11.77.0 Hectares of Patta land in S.F.Nos.121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State has been prepared for

M/s. Vishnusurya Projects and Infra Private Limited.,
Thiru. A.C. Thangam (Director),
No.76, North Mada Street,
2nd Floor, Temple Towers,
Mylapore, Chennai – 600 004.

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

It is also certified that information furnished in the Mining Plan are true and correct to the best of my knowledge.

Signature of the Recognized Qualified Person

Dr. M. Ifthikhar Ahmed, M.Sc., M.B.A., F.G.S., Ph.D.,
RQP/MAS/183/2004/A

Place: Salem
Date: 11.04.2023

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MINING PLAN ALONG WITH PROGRESSIVE QUARRY CLOSURE PLAN FOR PULIYURAN ROUGH STONE AND GRAVEL QUARRY OVER AN EXTENT OF 11.77.0 Ha IN PULIYURAN VILLAGE, ARUPPUKKOTTAI TALUK, VIRUDHUNAGAR DISTRICT, TAMIL NADU STATE.

(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 **M/s. Vishnusurya Projects and Infra Private Limited.**, Thiru. A.C. Thangam (Director), registered office at No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore, Chennai – 600 004.

The applicant applied for Rough Stone and Gravel quarry over an extent of 11.77.0 Hectares of Patta land in S.F.Nos.121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State under Rules 19 (1) and 20 of Tamil Nadu Minor Mineral Concession Rules, 1959.

The application was processed by the Assistant Director, Department of Geology and Mining, Virudhunagar District and passed a precise area communication letter vide **Rc.No.KV1/148/2023-Mines, Dated: 06.04.2023** to submit an approved Mining Plan and obtain Environmental Clearance from the SEIAA, Tamil Nadu State with the conditions to provide (Please refer Annexure No. I):

1. Quarrying operation should be leaving a safety distance of 7.5m from the adjacent Patta lands.
2. Explosives should be stored and detonated in the quarry by qualified authorized persons so as not to harm public / agricultural land. Quarries require the use of low-powered explosives.
3. A mining plan and environmental clearance certificate must be submitted before the grant of quarry lease.
4. Quarry workers should be registered with Labour Welfare Board and Insurance Scheme and maintain labour welfare.
5. Quarrying should not be employed Child labour.
6. Minerals should be covered with tarpaulins while transporting in vehicles so that pedestrians, public and other vehicles are not affected.

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 notified by MoEF as prescribed procedure under EIA notification 2006.

In the above circumstances the applicant through his consultant is hereby preparing the Mining Plan, Environmental Management Plan and Progressive Quarry Closure Plan for approval and subsequent submission of Form-I, Form-IM and Pre-feasibility report to obtain environmental clearance from the SEIAA, Tamil Nadu State, Rough Stone and Gravel 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 - Puliyuran

b. Panchayat Union - Aruppukkottai

c. The Geological Resources are **56,49,600m³** of Rough Stone, **4,70,800m³** of Weathered Gravel and **2,35,400m³** of Gravel in the entire area.

d. The Total Mineable Reserves are **31,95,024m³** of Rough Stone, **3,98,428m³** Weathered Gravel and **2,07,998m³** of Gravel formation in the entire area.

e. The proposed quantity of reserves/ (level of production) to be mined are **31,95,024m³** of Rough Stone (**16,09,920**m³ for first five years and **15,85,104m³** for remaining five years period) for ten years, **3,98,428m³** of Weathered Gravel and **2,07,998m³** of Gravel for three years in the entire area.

f. Total extent of the lease applied area is about 11.77.0 Ha.

g. Topography of the area = The area is exhibiting plain terrain

h. Proposed Depth of mining = 54m below ground level for 1st five years & ten years

i. Lease Period = Ten years

j. It is a fresh lease application.

k. Method of mining / level of mechanization.

Opencast mechanized method, the quarry operation Wagon Drill of 110mm Dia is proposed to drill for primary blasting also Jack hammer drilling used.

l. Type of machineries proposed in the quarrying operation is given below.

Excavator of 0.90m³ bucket capacity (with Rock breaker attachment)

Jack hammers 35mm dia.

Wagon Drill machine- 110 mm, Rock Breaker- 600kg hammer

Trucks - 35tons.

m. No trees will be uprooted due to this quarry operation.

n. The approach road from the main road to quarry is will be constructed and maintained in a good condition for the haulage of quarry materials and machineries.

o. There is No Export of this Rough Stone and Gravel.

p. Topo sketch covering 10km and 1km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archaeological importance and places of worships is marked and enclosed as Plate Nos. IA & IB.

q. The lease applied area is about 11.77.0 Ha bounded by eighteen corners; the corners are designated as 1-18 clock-wise from the Southwest corner and the Co – ordinates for all the corners are clearly marked in the Quarry Lease Plan and Surface Plan enclosed as Plate No. II.

r. The plans of proposed quarrying area showing the dimensions of the pit, their proposed depth and maximum area of proposed quarrying are enclosed as Plate Nos. III-A, III-A-I, III-B, III-B-I, IV & IV-A.

s. General conditions will not applicable for the proposed area. The area applied for 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.

t. There is no wastage anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.

u. Around 41 employees are deploying in the quarrying operation.

v. Total Cost of the project is about **Rs.4,97,08,000/-**.

w. Infrastructures around the quarry lease applied area:

TABLE–1

Particulars	Location	Approximate aerial distance from lease applied area.
Nearest Post Office	Puliyuran	2km – W
Nearest School	Tiruchuli	4km – NE
Nearest Dispensary	Tiruchuli	4km – NE
Nearest Town	Aruppukkottai	8km – SW
Nearest Police Station	Tiruchuli	4km – NE
Nearest Govt. Hospital	Tiruchuli	4km – NE
Nearest D.S.P. Office	Aruppukkottai	8km – SW
Nearest Railway Station	Tiruchuli	4km – NE
Nearest Airport	Madurai	35km – NW
Nearest Seaport	Thoothukudi	84km – S
District Head Quarters	Virudhunagar	25km – NW

2.0 GENERAL INFORMATION

a) Name of the Applicant : **M/s. Vishnusurya Projects and Infra Private Limited**
Thiru. A.C. Thangam (Director)

2.1 b) Address of the Applicant (With Phone No and Aadhaar No.)

Address	:	No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore, Chennai.
Pin Code	:	600 004,
Mobile No	:	94450 24403
Aadhaar No	:	9005 9822 9998 (Annexure No. IX)
E-mail	:	vishnusuryalogistics@gmail.com

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

The applicant is a Private Limited Company, Thiru. A.C. Thangam is a one of the Director and Authorized Person for signing the documents on behalf of the company. (Refer Annexure No. VIII).

2.2 a) Mineral which the Applicant intends to mine:

The Applicant intends to quarry Rough Stone and Gravel only.

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, Department of Geology and Mining, Virudhunagar District vide **Re.No.KV1/148/2023-Mines, Dated: 06.04.2023** to submit an approved mining plan and Environmental Clearance from the SEIAA, Tamil Nadu State.

c) Period of permission / lease to be granted:

Ten Years.

d) Name and address of the Recognized Qualified Person who preparing the Mining Plan:

Name	:	**Dr. M. Ifthikhar Ahmed, M.Sc., M.B.A., F.G.S., Ph.D.,** Recognized Qualified Person
Registration Number	:	RQP/MAS/183/2004/A
Address	:	No.17, Advaitha Ashram Road, Alagapuram, Salem – 636 004.
Telephone	:	0427- 2431989 (Office)
Cell No	:	+91 94422 78601 & 94433 56539
Email	:	infogeoexploration@gmail.com (Refer Annexure No. X).

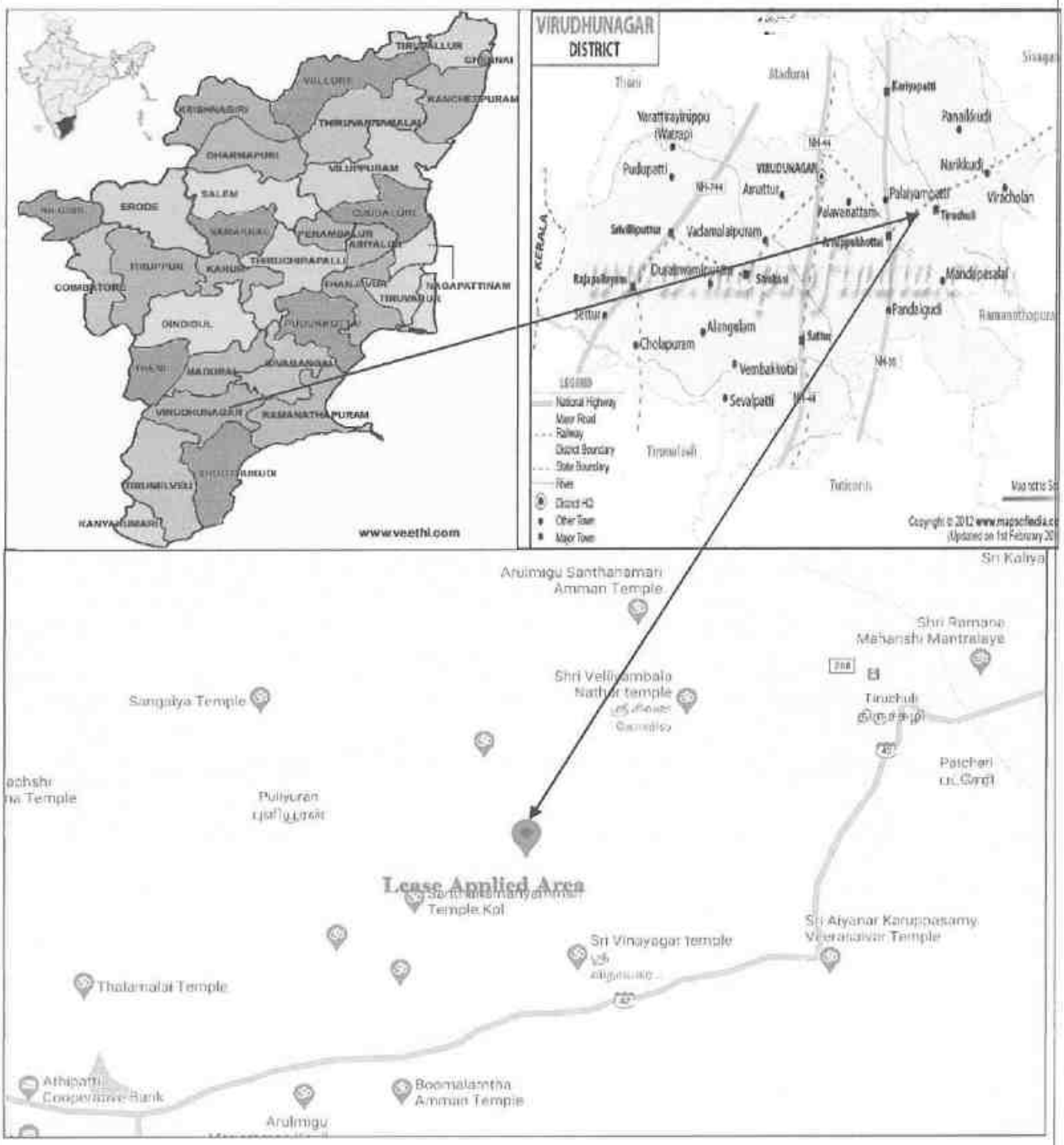
3.0 LOCATION

a) Details of the area with location map:

The lease applied area is about 25km Southeast side of Virudhunagar and 8km Northeast side of Aruppukkottai and 2km East side of Puliyuran Village.

Virudhunagar —18km→ Southeast → Aruppukkottai —6km→ Northeast → Puliyuran —2km→ East → Lease Applied area

Location Map of the Lease Applied area



TABLE–2

District	Taluk	Village	S.F.No.	Area (Ha)	Patta No.
Virudhunagar	Aruppukkottai	Puliyuran	121/1A	4.04.5	1833
			121/1B	3.99.5	
			128/1	1.73.0	
			128/2A	0.45.5	
			128/2B	0.45.0	1761
			128/2C	0.45.0	
			128/2D	0.64.5	
Total Extent				**11.77.0**	

b) Classification of the area (Ryotwari/ Poramboke / others):

It is a Patta land, classified as a Punjai (Barren land) which are not fit for vegetation/ Cultivation.

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

It is a Patta land, Registered in the name of **M/s. Vishnusurya Projects and Infra Private Limited**. Refer patta copy as Annexure No. IV.

d) Toposheet No. with latitude and longitude:

The lease applied area falls in the Topo sheet No: **58 - K/02** Latitude between: **09°31'20.13"N to 09° 31' 29.29"N** and Longitude between: **78°09'54.10"E to 78° 10' 14.45"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 East side of the area which is connects to the Village Road located at adjacent on the East 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 and Gravel.

The approach road from the quarry will be constructed, the same will be utilized for haulage and maintained during the entire lease period, tree sapling 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 Mettupalayam – Virudhunagar which is located about 780m on the North side of the area.

PART – A

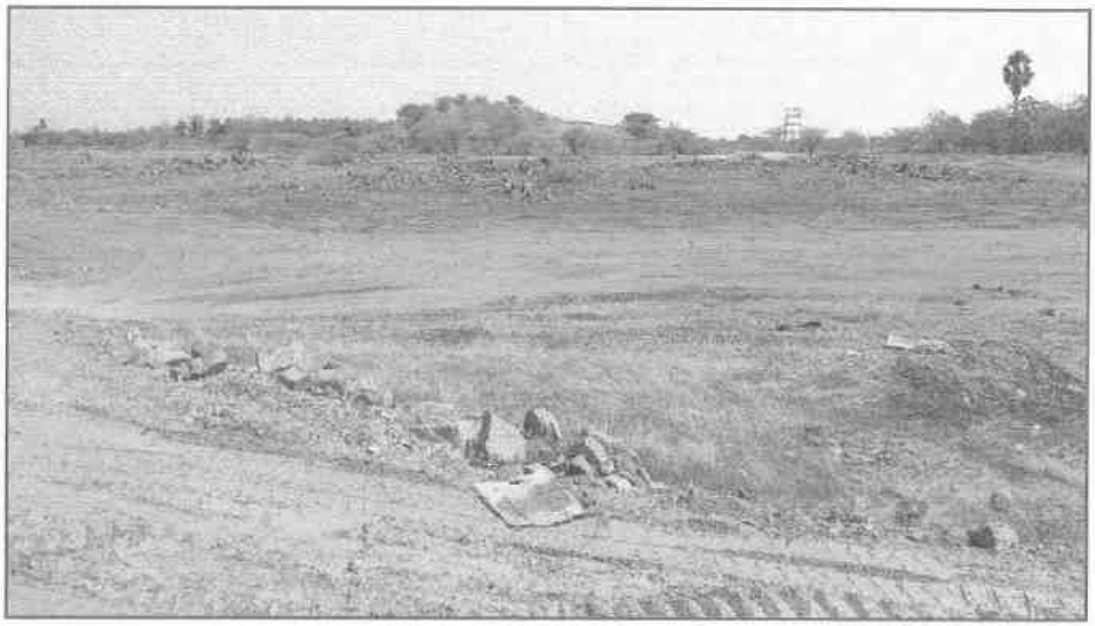
4.0 GEOLOGY AND MINERAL RESERVES

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

The lease applied area is exhibiting plain terrain. The area has gentle sloping towards East side and altitude of the area is 98m above from Mean Sea Level. The area is covered by 2m thickness of Gravel and 4m Weathered Gravel and followed by Massive Charnockite which is clearly inferred from the nearby existing quarry pits.

The Water level in the surrounding area is 65m in summer and at 60m in rainy seasons below general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 985mm.

Topographical View of 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 of the Charnockite body is N40°E – S40°W with dipping towards SE80°.

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

AGE		FORMATION
Recent	-	Quaternary formation (Gravel + Weathered Gravel)
---------Unconformity----------		
Archaean	-	Charnockite
		Peninsular Gneiss complex

4.2 Details of exploration already carried out if any:

State Geology and Mining Dept, 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 Virudhunagar District. Besides, the Recognized 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 four sections have been drawn, one section is along the strike direction as (X-Y) Length wise and other three cross sections are drawn perpendicular to strike as (A-B, C-D & E-F) Width wise to cover the maximum area considered for lease.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough Stone (Charnockite) deposit has been prepared in the scale of 1:1000 (please refer the Geological plan and sections Plate Nos. III-A, III-A-I, III-B & III-B-I). As the sale of Rough Stone are in terms of cubic metres (Volume) only and not in terms of tonnage.

Geological Resources (Plate Nos. III-A, III-A-I, III-B & III-B-I):

The Geological Resources of Rough Stone and Gravel are calculated up to a maximum depth of 54m [2m Gravel + 4m Weathered Gravel + 48m Rough Stone] below ground level. The total **Geological Resources are calculated by area method**. The total geological resources are given below:

Total Extent of the area	=	11.77.0 Ha
Area in square meter	=	11.77.0 X 10,000 = 1,17,700sq.m
Gravel	=	2m below ground level
	=	1,17,700sq.m X 2m Depth
	=	**2,35,400m^3** of Gravel
Weathered Gravel	=	4m below ground level
	=	1,17,700sq.m X 4m Depth
	=	**4,70,800m^3** of Weathered Gravel

Rough Stone = 48m below ground level

= 1,17,700sq.m X 48m Depth

= **56,49,600m³** of Rough Stone

The Geological Resources of Gravel : **2,35,400m³**

The Geological Resources of Weathered Gravel : **4,70,800m**

The Geological Resources of Rough Stone : **56,49,600m³**

Mineable Reserves:

The mineable reserves are calculated after leaving the safety distance & Bench loss.

TABLE–3

MINEABLE RESERVES							
Section	**Bench**	**Length (m)**	**Width (m)**	**Depth (m)**	**Mineable Reserves of Rough Stone (m^3)**	**Weathered Gravel (m^3)**	**Gravel (m^3)**
XY-AB	I	151	190	2	-	-	57380
	II	148	184	4	-	108928	-
	III	144	176	6	152064	-	-
	IV	138	164	6	135792	-	-
	V	132	152	6	120384	-	-
	VI	126	140	6	105840	-	-
	VII	120	128	6	92160	-	-
	VIII	114	116	6	79344	-	-
	IX	108	104	6	67392	-	-
	X	102	92	6	56304	-	-
	Total				**809280**	**108928**	**57380**
XY-CD	I	275	195	2	-	-	107250
	II	275	189	4	-	207900	-
	III	275	181	6	298650	-	-
	IV	275	169	6	278850	-	-
	V	275	157	6	259050	-	-
	VI	275	145	6	239250	-	-
	VII	275	133	6	219450	-	-
	VIII	275	121	6	199650	-	-
	IX	275	109	6	179850	-	-
	X	275	97	6	160050	-	-
	Total				**1834800**	**207900**	**107250**
XY-EF	I	139	156	2	-	-	43368
	II	136	150	4	-	81600	-
	III	132	142	6	112464	-	-
	IV	126	130	6	98280	-	-
	V	120	118	6	84960	-	-
	VI	114	106	6	72504	-	-
	VII	108	94	6	60912	-	-
	VIII	102	82	6	50184	-	-
	IX	96	70	6	40320	-	-
	X	90	58	6	31320	-	-
	Total				**550944**	**81600**	**43368**
Grand Total					**3195024**	**398428**	**207998**

The mineable reserves have been computed as **31,95,024m³** of Rough Stone at the rate of 100% recovery, **3,98,428m³** of Weathered Gravel and **2,07,998m³** of Gravel for a period of ten years upto a depth of 54m below ground level.

5.0 MINING

5.1. Method of mining (opencast / underground):

Open cast Mechanized Mining is being carried out with 6.0m vertical bench with a bench width is not less than the bench height. The slope of the bench should not more than 60° from the horizontal.

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, semi mechanized, manual):

The Rough Stone is proposed to quarry at 6.0m bench height & width with conventional Opencast Mechanized Method.

The quarry operation involves shallow jack hammer drilling and Wagon 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 Wagon, jackhammer drilling and slurry explosives 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 6.0m vertical bench the 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 Gravel and Weathered Gravel, the Gravel and Weathered Gravel will be directly loaded into Trucks for the filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the

Government. The excavated Rough Stone will be directly loaded into Trucks to the needy customers. The Composite year wise Development and production plan and sections indicating the pit lay out and green belt development are shown in Plate Nos. III-A, III-A-1, III-B & III-B-1.

Year wise Development and Production

TABLE–4

FIRST FIVE YEARWISE DEVELOPMENT AND PRODUCTION DETAILS

Year	Section	Bench	Length (m)	Width (m)	Depth (m)	Recoverable Reserves of Rough Stone (m^3)	Weathered Gravel (m^3)	Gravel (m^3)
I	XY-EF	I	139	156	2	-	-	43368
		II	136	150	4	-	81600	-
		III	132	142	6	112464	-	-
		IV	126	130	6	98280	-	-
		V	120	118	6	84960	-	-
		VI	40	106	6	25440	-	-
		Total				**321144**	**81600**	**43368**
II		VI	74	106	6	47064	-	-
	XY-CD	I	184	195	2	-	-	71760
		II	181	189	4	-	136836	-
		III	177	181	6	192222	-	-
		IV	81	169	6	82134	-	-
		Total				**321420**	**136836**	**71760**
III		I	91	195	2	-	-	35490
		II	94	189	4	-	71064	-
		IV	90	169	6	91260	-	-
		V	165	157	6	155430	-	-
		VI	86	145	6	74820	-	-
	XY-AB	I	151	190	2	-	-	57380
		II	148	184	4	-	108928	-
		Total				**321510**	**179992**	**92870**
IV	XY-CD	VI	73	145	6	63510	-	-
		VII	153	133	6	122094	-	-
		VIII	147	121	6	106722	-	-
		IX	51	109	6	33354	-	-
		Total				**325680**	-	-
V		IX	90	109	6	58860	-	-
		X	135	97	6	78570	-	-
	XY-EF	VII	108	94	6	60912	-	-
		VIII	102	82	6	50184	-	-
		IX	96	70	6	40320	-	-
		X	90	58	6	31320	-	-
		Total				**320166**	-	-
Grand Total						**1609920**	**398428**	**207998**

The Recoverable reserves have been computed as **16,09,920m³** of Rough Stone, **3,98,428m³** of Weathered Gravel and **2,07,998m³** of Gravel at 100% recovery upto depth of 54m below ground level (R.L.98.0m to R.L.44.0m) for first five years.

TABLE–5

SECOND FIVE YEARWISE DEVELOPMENT AND PRODUCTION DETAILS

Year	Section	Bench	Length (m)	Width (m)	Depth (m)	Recoverable Reserves of Rough Stone (m³)
VI	XY-CD	III	98	181	6	106428
		IV	104	169	6	105456
		V	110	157	6	103620
		Total				**315504**
VII	XY-AB	III	144	176	6	152064
		IV	138	164	6	135792
		V	32	152	6	29184
		Total				**317040**
VIII	XY-CD	V	100	152	6	91200
		VI	116	145	6	100920
		VII	122	133	6	97356
		VIII	38	121	6	27588
		Total				**317064**
IX	XY-AB	VIII	90	121	6	65340
		VI	126	140	6	105840
		VII	120	128	6	92160
		VIII	114	116	6	79344
		Total				**342684**
X	XY-AB	IX	108	104	6	67392
		X	102	92	6	56304
	XY-CD	IX	134	109	6	87636
		X	140	97	6	81480
		Total				**292812**
Grand Total						**1585104**

The Recoverable reserves have been computed as **15,85,104m³** of Rough Stone at 100% recovery upto depth of 48m below existing ground level (R.L.92.0m to R.L.44.0m) for the remaining five years.

The Recoverable reserves have been computed as **31,95,024m³** of Rough Stone at the rate of 100% recovery, **3,98,428m³** of Weathered Gravel and **2,07,998m³** of Gravel for ten years upto a depth of 54m (R.L.98.0m to R.L.44.0m) below ground level.

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 Truck load	=	12m³ (approx.)
Total No of Working days	=	300 Days per year
Total quantity to be removed in these ten years plan period	=	31,95,024m³
Hence total Truck loads per day	=	31,95,024m³/12m³
	=	2,66,252 Truck loads
	=	2,66,252/10 years
	=	26,625/300 days
Rough Stone	=	**88 - 89 Truck loads per day**
Total quantity to be removed in these first three years plan period	=	3,98,428m³
Hence total Truck loads per day	=	3,98,428m³/12m³
	=	33,202 Truck loads
	=	33,202/3 years
	=	11,067/300 days
Weathered Gravel	=	**36 - 37 Truck loads per day**
Total quantity to be removed in these first three years plan period	=	2,07,998m³
Hence total Truck loads per day	=	2,07,998m³/12m³
	=	17,333 Truck loads
	=	17,333/3 years
	=	5,778/300 days
Gravel	=	**19 – 20 Truck loads per day**

Working hours = 8.00 am to 5.00 pm (with 12.00-1.00 P.M. lunch break)

5.5. Machineries to be used:

a) For Mining:

The following machineries are proposed to meet out the proposed Rough Stone quantity, the Required Machineries are given below.

1. Excavator of 0.90cbm bucket capacity (with Rock breaker attachment).
2. Wagon drill.
3. Portable compressor attached with Jackhammer (4 jack hammer capacity).

Drill machine-110mm Drilling accessories (Drill rods, hose, hose clamps etc.,) Rock breaker-600kg hammer.

b) Loading equipment:

The Rough Stone will be loaded with the help of Excavator, Excavator attached with bucket will be utilized for loading.

c) Transportation (includes within the mine and mine to destination:

The Rough Stone will be transported from the quarry pit to needy customer sites/Crushing unit by the 35Tons capacity Trucks.

TABLE-6

I. DRILLING MACHINE:

S.No.	Type	Nos	Dia Hole mm	Size Capacity	Motive power:
1	Jack hammer	6	30-35	1.2m to 2.0m	Compressed air
2	Compressor	2	-	400 psi	Diesel Drive
3	Wagon Drill	1	110mm	60HP	TAM Rock

II. EXCAVATION & LOADING EQUIPMENT:

S. No.	Type	Nos	Capacity	Motive Power
1	Excavator with Bucket and Rock Breaker	3	300	Diesel Drive

III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

S. No.	Type	Nos	Capacity	Motive Power
1	Trucks	6	35 tons	Diesel Drive

5.6. Disposal of Overburden/Waste:

The overburden in the form of Gravel, the Gravel will be directly loaded into Trucks for the filling and levelling of low-lying areas. The excavated Rough Stone (100%) will be directly loaded into Trucks to the needy customers. There is no Waste anticipated during this plan period hence, 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

First Five Years Proposed Pit Dimension	**Section**	**Length in m (Max)**	**Width in m (Max)**	**Depth in m (Max)**
	XY-AB	151	190	6m below ground level
	XY-CD	275	195	54m below ground level
	XY-EF	139	156	54m below ground level
Ultimate Pit Dimension	**Section**	**Length in m (Max)**	**Width in m (Max)**	**Depth in m (Max)**
	XY-AB	151	190	54m below ground level
	XY-CD	275	195	54m below ground level
	XY-EF	139	156	54m below ground level

Greenbelt has proposed on the safety zone and Panchayat roads by planting Neem, Pongamia pinnata, Casuarina, etc., trees of native species. 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, III-B & IV.

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

6.0 BLASTING

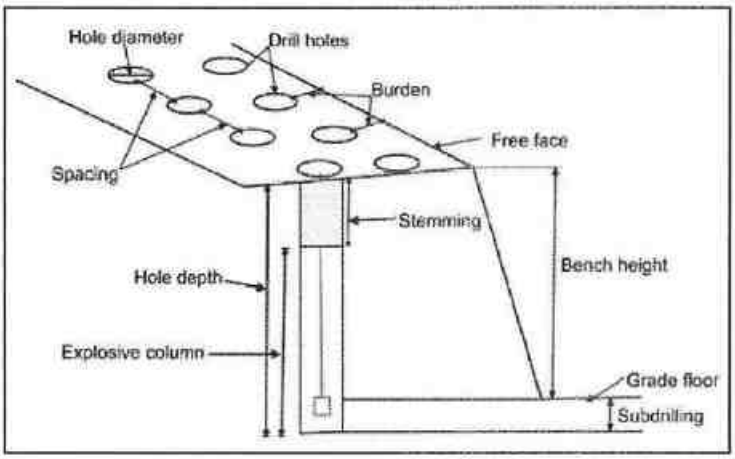
6.1 Blasting pattern:

Selection of drilling pattern for blasting varies with the type and size of the drill's used, depth of hole kind of rock, quantity, rapidity of the explosives and amount of steaming. The quarrying operation will be carried out by Opencast Mechanized Method in conjunction with conventional method of mining using Wagon Drill of 110mm Dia will be proposed for primary blasting followed by occasionally jack hammer drill of 35mm will be deployed for secondary fragmentation Drilling and Blasting.

Wagon Drilling and blasting parameters are as follows:

Depth of Each hole	:	6.5m
Diameter of hole	:	110 mm
Spacing between holes	:	2.5m
Burden for hole	:	2.0 m
Inclination of holes	:	80° from horizontal
Use of delay detonators	:	Millisecond delays.
Fuse	:	"Detonating" Cord
Hole pattern	:	Single row pattern

BLASTING PATTERN DRAWING



Staggered "V" Pattern of Blasting Design

Spacing	=	**2.5m**
Burden	=	**2.0m**
Depth of the hole	=	**6.5m**
No of holes proposed per day	=	**33 Holes**

6.2 Type of explosives to be used:

Small Dia. 110mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough Stone. No secondary blasting is proposed.

6.3 Measures proposed to minimize ground vibration due to blasting:

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

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

Delay detonators:

Delay blasting (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	= 33 Holes
Yield	= 2,805 Tons
Powder factor	= 6 Tons/Kg of explosives
Total explosive required	= 462 Kg-Slurry explosives
Charge/ hole	= 14 Kg
Blasting at day time only	= 12.00 – 12.30p.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 having the valid Blaster certificate. He will blast holes in the quarry site. After the completion of Blasting the explosive Agencies will take it out back the remaining quantity of Explosives. The magazine is available at the quarry site to temporarily store the 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 65m in summer season and 60m in Rainy season which is observed from the existing private boreholes. The lease applied area is fully covered by Massive Charnockite formation and it is revealed from the adjacent quarries. Hence the Ground Water problem will not arise. If water seepage may occur due to the fracture, the same will be used for Greenbelt.

TABLE–8

Type	Distance & Direction	Location
Bore Well	480m North side	09°31'43.82"N 78° 9'55.73"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 – Madurai to Thoothukudi (NH-38) – 6km – W
			Nearest State Highway – Srivilliputhur to Parthibanur Road (SH-42) – 2km – S
			Nearest Major District – Kariyapatti to Sayalkudi Road Road (MD-768) – 3km – NE
8.2	Water Bodies (River, Pond, Lake, Odai, Canal)	50m	Odai is situated on the Northwest side of the area, hence 50m safety distance has been provided. There is no other River, Pond, Lake, Canal located within 50m radius of the lease applied area.
8.3	Village Road	10m	The village Road is situated on the Northwest side of the area, hence 50m safety distance has been provided. No other village road is passing within 10m radius on the lease applied area.
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 are 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.

<table>
<tr><td>8.7</td><td>Housing area, EB line (HT & LT Line)</td><td>50m</td><td>There is no Housing area, EB line (HT & LT Line) within the radius of 50m from the lease applied area.</td></tr>
<tr><td>8.8</td><td>Adjacent Patta lands / Govt. Land</td><td>7.5m/10m</td><td><table><tr><th>Direction</th><th>Classification</th><th>Safety Distance</th></tr><tr><td>North</td><td>Patta land</td><td>7.5m</td></tr><tr><td>Northwest</td><td>Odai / Village Road</td><td>50m</td></tr><tr><td>East</td><td>Cart Track</td><td>10m</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></table>(Refer Plate No. II).</td></tr>
<tr><td>8.9</td><td>Boundaries of the permitted area</td><td>7.5m/10m</td><td>The boundaries of the permitted areas are as follows:
North - S.F.Nos.134, 127, 122 & 120
East - S.F.No.121/2,
South - Melakandamangalam Village
West - S.F.No.129
(Refer Plate No. II).</td></tr>
<tr><td>8.10</td><td>Reserve forest</td><td>60m</td><td>There is no reserved forest / forest / social forest / etc., within radius of 60m of the lease applied area.
(Refer Plate No. IA and IB).</td></tr>
<tr><td>8.11</td><td>Protected area / ECO sensitive area/ Wild Life Sanctuary</td><td>10km</td><td>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).</td></tr>
</table>

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
	Mine Mate	:	1
	Blaster	:	1
	Excavator Operator	:	3
	Drivers	:	6
	Wagon Drill Operator	:	2
	Jack-Hammer Operator	:	12
b.	Semi-skilled:		
	Security	:	2
c.	Unskilled:		
	Labour & Helper	:	4
	Co-operator and Cleaner	:	9
	Total	**:**	**41**

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 Puliyuran which is located about 2km on the West side of the lease applied area.

b) Sanitary Facilities:

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

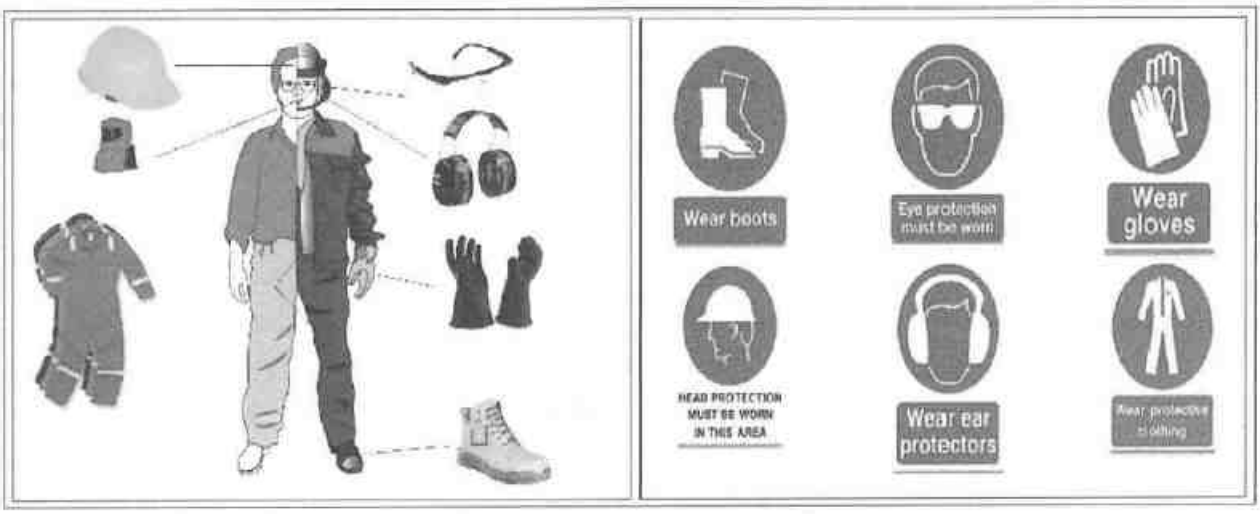
c) First aid facility:

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 or mine manager 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 Tiruchuli located at a distance of 4km on the Northeast 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 exhibiting plain terrain. The area is a dry barren land devoid of Agriculture and Habitations. The lease applied area has utilized only for quarry operation in earlier.

LAND USE TABLE–9

Description	Present area (Ha)
Quarrying Pit	Nil
Infrastructure	Nil
Roads	Nil
Green Belt	Nil
Un-utilized Area	11.77.0
Grand Total	**11.77.0**

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

S.No.	Name of the plant (Scientific)	Family Name	Common Name	Habit	Picture
1.	*Cocos nucifera*	*Arecaceae*	Coconut, Thennai	Tree	
2.	*Curcuma longa*	*Zingiberaceae*	Turmeric	Herb	
3.	*Sorghum bicolour*	*Poaceae*	Solam	Grass	
4.	*Borassus flabellifera*	*Arecaceae*	Palmyra Palm	Tree	
5.	*Calotropis gigantea*	*Asclepiadaceae*	Crown Flower, Erukku	Shrub	

List of Fauna			
S.No.	Scientific Name	Common Name	Picture
1.	*Egrettagarzetta*	Little egret	
2.	*Boigaspp*	Cat snake	
3.	*Dicrurusmacrocercus*	Black drongo	
4.	*Calotes versicolor*	Garden Lizard	
5.	*Funambuluspalmarum*	Indian palm squirrel	
6.	*Hieroglyphus sp*	Grasshopper	

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 20°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.	Pulikurichi	2km – NE	1200
2.	Chittalakundu	2km – SE	1300
3.	Konappanendal	1km – SW	700
3.	Puliyuran	2km – W	2700

Basic human welfare Amenities such as Health Centre, Schools, Communication Facilities, and Commercial Centres etc., are available at Aruppukkottai located at a distance of 8km on the Southwest 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.

110mm diameter and 6.5m depth will be drilled and conventional low power explosives such as Slurry Explosives with delay of Non Electrical Detonators will be used for Rough Stone production. Hence, ground vibration and noise pollution will be minimal and restricted within the quarry workings.

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 involve 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 and Gravel quarrying operation. The entire quarried out materials will be utilized (100%).

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 54m below ground level has been envisaged as workable depth for safe & economic mining during entire lease applied area. 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. There is no waste hence, no proposal for backfilling. The barbed wire fencing cost would be around **Rs.4,86,000/-**.

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

The safety zone along the boundary barrier has been identified to be utilized for Greenbelt development. Appropriate native species of Neem, Pongamia pinnata, Casuarina, etc., trees will be planted in a phased manner as described below.

TABLE–12

Years	No. of tress proposed to be planted	Survival %	Area to be covered sq.m	Name of the species	No. of trees expected to be grown
I	90	80	800	Neem, Pongamia Pinnata, Casuarina, etc.,	72
II	90	80	800		72
III	90	80	800		72
IV	90	80	800		72
V	90	80	800		72

TABLE–12-A

Years	No. of tress proposed to be planted	Survival %	Area to be covered sq.m	Name of the species	No. of trees expected to be grown
VI	90	80	800	Neem, Pongamia Pinnata, Casuarina, etc.,	72
VII	90	80	800		72
VIII	90	80	800		72
IX	90	80	800		72
X	90	80	800		72

Nearly 8,000 sq.m area is proposed to use under Greenbelt by planting 900 Numbers of trees during lease period with an anticipated survival rate of 80% (Please refer Plate No. III-A, III-B & IV). The estimated budget for plantation and maintenance of green belt development would be around **Rs.90,000/-** for the period of ten years.

The Greenbelt Development will be formed in around the quarried out top benches, approach road and nearby panchayat road. The cost would be around **Rs.50,000/-.**

10.12 Proposed financial estimate / budget for (EMP) environment management:

Budget Provision for the Mining Plan period:

TABLE–13

S. No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charges/ 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. Operational Cost / Project Cost / Investment:

i) Land cost	The Land value as per the Government Guideline land cost is calculated as follows, S.F.No / Extent / Cost/Ha / Total 121/1A / 4.04.5 / 247500 / 1001137.5 121/1B / 3.99.5 / 247500 / 988762.5 128/1 / 1.73.0 / 222500 / 384925 128/2A / 0.45.5 / 222500 / 101237.5 128/2B / 0.45.0 / 222500 / 100125 128/2C / 0.45.0 / 222500 / 100125 128/2D / 0.64.5 / 222500 / 143512.5 Total / 11.77.0 / Total / 2819825 i.e., Rs. 28,20,000/- (Source: https://tnreginet.gov.in/portal/)	Rs. 28,20,000/-
ii) Machinery to be used	The following Machineries are proposed to meet out the productions.	
	Excavator attached with rock breaker (3 Nos)	Rs.1,68,00,000/-
	Trucks (6 Nos)	Rs.1,80,00,000/-
	Tractor Mounted Compressor	Rs.15,00,000/-
	Jack Hammer and loose tools	Rs.3,00,000/-
	Wagon Drill	Rs.50,00,000/-
	Water Sprinkling Tanker	Rs.12,00,000/-
	Total Machineries cost	**Rs.4,28,00,000/-**
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.4,86,000/-

iv) Labourers shed	Labour sheds already will be constructed as semi-permanent structure. The cost is around	Rs.2,00,000/-
v) Sanitary facility	Adequate latrine and urinal accommodation has provided at conveniently accessible places the cost would be around	Rs.1,00,000/-
vi) Others items	First aid room & accessories	Rs.1,00,000/-
vii) Drinking water facility for the labourers	Packaged drinking water will be provided for all the Labours. Drinking water will be readily available at conveniently accessible points during the whole of the working shift the cost would be around	Rs.2,50,000/-
viii) Sanitary arrangement	The latrine and urinal will keep clean and sanitary condition. The maintenance cost would be around	Rs.80,000/-
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.2,50,000/-
x) Water sprinkling	Water will be sprinkled in the haul roads by water sprinklers the cost would be around	Rs.3,00,000/-
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.4,47,000/-
xii) Greenbelt etc.	Greenbelt development and maintenance will be carried out in the boundary barriers the cost would be around	Rs.90,000/-
	Greenbelt development and maintenance will be carried out in around the quarried out top benches, approach road and nearby panchayat road	Rs.50,000/-
	Total Project Cost	**Rs.4,79,73,000/-**

B. 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	**Rs.4,79,73,000/-**
B. EMP Cost	**Rs.7,60,000/-**
Total Project Cost (A+ B)	**Rs.4,87,33,000/-**
The applicant Indents to involve corporate environment responsibilities (CER) activity like Solar Panel System, Garden Maintenance, Water Purifier, Medicine Storage Rack, Cot & Bed and Fan facilities to the nearby Govt. Primary Health Centre and Solar Panel System, Garden Maintenance, Water Purifier, Fan, Bench & Table and Computers to the nearby Govt. School at 2.0% from the total project cost. The Cost would be around **Rs.9,75,000/-.**	**Rs.9,75,000/-**
Total Cost	**Rs.4,97,08,000/-**

The Total cost would be around four crores ninety-seven lakhs and eight thousand only.

11.0 PROGRESSIVE QUARRY CLOSURE PLAN

11.1 Introduction:

The Progressive Quarry Closure Plan for Puliyuran Rough Stone and Gravel Quarry lease applied area over an extent of 11.77.0 Hectares of Patta land in S.F.Nos.121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2Dof Puliyuran Village, Aruppukkottai Taluk, Virudhunagar District, Tamil Nadu State has been prepared for **M/s. Vishnusurya Projects and Infra Private Limited.**, Thiru. A.C. Thangam (Director), registered office at No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore, Chennai – 600 004.

11.2 Present Land use pattern:

LAND USE TABLE–14

Description	Present area (Ha)
Quarrying Pit	Nil
Infrastructure	Nil
Roads	Nil
Green Belt	Nil
Unutilized Area	11.77.0
Grand Total	**11.77.0**

11.3 Method of Mining:

Open cast Mechanized Mining is being carried out with 6.0m vertical bench with a bench width is not less than the bench height. The slope of the bench should not more than 60° from the horizontal.

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 35tons capacity Trucks to the needy crushers. 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.

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.

11.6 Statutory obligations:

The applicant ensures to comply all the conditions stipulated in the precise area communication letter before grant of quarry lease and during the course of quarry operations.

11.7 Progressive quarry closure plan preparation:

Name and address of the Recognized 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	:	**Dr. M. Ifthikhar Ahmed, M.Sc., M.B.A., F.G.S., Ph.D.,** Recognized Qualified Person
Registration Number	:	RQP/MAS/183/2004/A
Address	:	No.17, Advaitha Ashram Road, Alagapuram, Salem – 636 004.
Telephone	:	0427- 2431989 (Office)
Cell No	:	+91 94422 78601 & 94433 56539
Email	:	infogeoexploration@gmail.com

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 with next review of mining plan.

11.9 Closure Plan:

(i) Mined Out Land:

At the end of mining plan period, about 10.21.0 Ha of area will be mined out. Land use at various stages is given in the table below.

LAND USE TABLE–15

Description	Present area (Ha)	Area required during the first five years of plan period (Ha)	Area at the end of lease period (Ha)
Quarrying Pit	Nil	10.21.0	10.21.0
Infrastructure	Nil	0.01.0	0.01.0
Roads	Nil	0.02.0	0.02.0
Green Belt	Nil	0.40.0	0.80.0
Unutilized Area	11.77.0	1.13.0	0.73.0
Grand Total	**11.77.0**	**11.77.0**	**11.77.0**

The Greenbelt Development will be formed in around the quarried out top benches, approach road and nearby panchayat road of the lease applied area.

(ii) Water quality management:

Following control measures will be adopted for controlling water pollution:

- Construction of Garland drain with 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 and waste generated during the proposed plan period. The entire quarried out Rough Stone and Gravel is utilized (100%). Hence, waste management does not arise.

(v) Disposal of mining machinery:

All the machineries will be purchased by fresh condition, the same will be maintained as good condition for the entire lease period. After completion of quarry operation all the machineries will be utilized in another quarry lease or sold out to the 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 un-authorized persons as per Mine Act 1952, MMR 1961.

- Safety measures will be implemented as per Mine Act 1952, MMR 1961, and Mines Rules 1955.
- Provisions of MMR 1961 shall be strictly followed and all roads shall be wider than the height of the bench or equal to the height of the bench and have a gradient of not more than 1 in 16.
- The bench height will be 6.0m.
- Width of working bench will be kept about 6.0m for ease of operations and provide sufficient room for the movement of equipments.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipments shall be provided for use by the work persons.
- Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.

- Danger signs shall be displayed near the excavations and proper signal by siren alarm will be given to the public before blasting to prevent accident.
- Security guards will be posted.
- In the event of temporary closer, approaches will be fenced off and notice displayed.

(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 Greenbelt Development will be formed in around the quarried out top benches, approach road and nearby panchayat 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 CPCB and IBM Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

(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, cost is assessed as given below:

LAND USE TABLE–16

ACTIVITY		YEARS										RATE	COST (Rs./-)
		I	II	III	IV	V	VI	VII	VIII	IX	X		
Plantation under safety zone	Nos	90	90	90	90	90	90	90	90	90	90	@100 Rs Per sapling	90000
	Cost	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000		
Plantation in quarried out top benches, approach road & nearby panchayat road	Nos	50	50	50	50	50	50	50	50	50	50		50000
	Cost	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000		
Barbed Wire Fencing (In Mtrs) 1,620 Mtrs		4,86,000	-	-	-	-	-	-	-	-	-	@300 Rs Per Meter	4,86,000
Garland Drain (In Mtrs) 1490 Mtrs		4,47,000	-	-	-	-	-	-	-	-	-	@300 Rs Per Meter	4,47,000
TOTAL													**10,73,000**

12.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT

This Mining plan for Rough Stone (Charnockite) and Gravel is under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied within the quarrying operation, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified and modified after scrutiny comments as per the guidelines of the Concerned Department and Authorities.

Prepared by

Dr. M. Ifthikhar Ahmed, M.Sc., M.B.A., F.G.S., Ph.D.,
RQP/MAS/183/2004/A
Recognized Qualified Person

Place: Salem
Date: 11.04.2023

DONATE RED
SPREAD GREEN
SAVE BLUE

ASSISTANT DIRECTOR
GEOLOGY AND MINING
VIRUDHUNAGAR DISTRICT
VIRUDHUNAGAR

ANNEXURE I

புவியியல் மற்றும் சுரங்கத்துறை

ந.க.எண்: கேவி1/148/2023-கனிமம்

உதவி இயக்குநர் அலுவலகம்,
மாவட்ட ஆட்சியர் அலுவலக
வளாகம்,விருதுநகர்.

நாள்: 06 .04.2023.

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - விருதுநகர் மாவட்டம் - அருப்புக்கோட்டை வட்டம் - புலியூரான் கிராமம் - பட்டா புல எண்கள்.121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50) மொத்த பரப்பு 11.77.00 ஹெக்டேர்ஸ் - பத்து வருடங்களுக்கு உலைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கல் - உகந்த பரப்பு (Precise Area) தேர்வு செய்யப்பட்டது - சுரங்கத்திட்டம் மற்றும் மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்க கோருவது - தொடர்பாக.

பார்வை:

1. திரு.A.C.தங்கம் இயக்குநர், விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட் நிறுவனத்தின் மைலாபூர், சென்னை விண்ணப்பம் நாள்:03.02.2023.
2. இவ்வலுவலக கடிதம் எண் ந.க.கேவி1/148/2023, நாள்:07.02.2023 அருப்புக்கோட்டை, வருவாய் கோட்டாட்சியருக்கு முகவரியிட்டது.
3. அருப்புக்கோட்டை, வருவாய் கோட்டாட்சியர் கடிதம் எண்:அ2/771/2023, நாள்: 24.03.2023
4. உதவி இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் புலத்தணிக்கை அறிக்கை நாள்: 27.03.2023.
5. 1959 -ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 41 மற்றும் 42.
6. அரசாணை எண்.169 தொழில் (எம்.எம்.சி.1) துறை, நாள்: 04.08.2020.
7. அரசாணை எண்.208, தொழில் (எம்.எம்.சி.1) துறை, நாள்: 21.09.2020.
8. தொடர்புடைய ஆவணங்கள்.

*****

விருதுநகர் மாவட்டம், அருப்புக்கோட்டை வட்டம், புலியூரான் கிராமம், பட்டா புல எண்கள்.121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A

எனவே, துறை அலுவலர்களின் பரிந்துரையிலான ஏற்றும் நிபந்தனைகளுக்குட்பட்டும், விருதுநகர் மாவட்டம், அருப்புக்கோட்டை வட்டம், புலியூரான் கிராமத்திற்கும் சர்வே பட்டா புல எண்கள்.121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50) மொத்த பரப்பு 11.77.00 ஹெக்டேர் நிலம் 1959-ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண்: 19 (1) மற்றும் 20 -ன் படி பத்து வருடகாலத்திற்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க தகுதி வாய்ந்த நிலப்பரப்பாக (Precise Area) கருதப்படுகிறது.

தமிழ்நாடு சிறுகனிம சலுகை விதிகள்-1959 விதி எண்: 41 -ன்படி குவாரி பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்கத் திட்டத்தினை (Mining Plan) 90 தினங்களுக்குள் சமர்ப்பிக்குமாறும், விதி எண்: 42-ன்படி மாநில அளவிலான சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் (State Level Environmental Impact Assessment Authority) இசைவினைப் பெற்று சமர்ப்பிக்குமாறும் மனுதாரர் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட் நிறுவனத்தின் இயக்குநர் திரு.A.C.தங்கம் என்பவர் கேட்டுக்கொள்ளப்படுகிறார்.

உதவி இயக்குநர்,
புவியியல் மற்றும் சுரங்கத்துறை,
விருதுநகர்.

பெறுநர்
திரு.A.C.தங்கம்,
இயக்குநர்,
விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட்,
எண்: 76, வடக்கு மாடவீதி,
2-வது தளம், டெம்பில் டவர்ஸ்,
மைலாப்பூர்,
சென்னை.

நகல்
உறுப்பினர் செயலர்,
மாநில சுற்றுசூழல் தாக்க மதிப்பீட்டு ஆணையம் (SEIAA),
சென்னை.

ANNEXURE II

உதவி இயக்குநர் அலுவலகம்
விருதுநகர் மாவட்டம்
11 MAY 2023
புவியியல் மற்றும் சுரங்கத்துறை

District : Virudhunagar

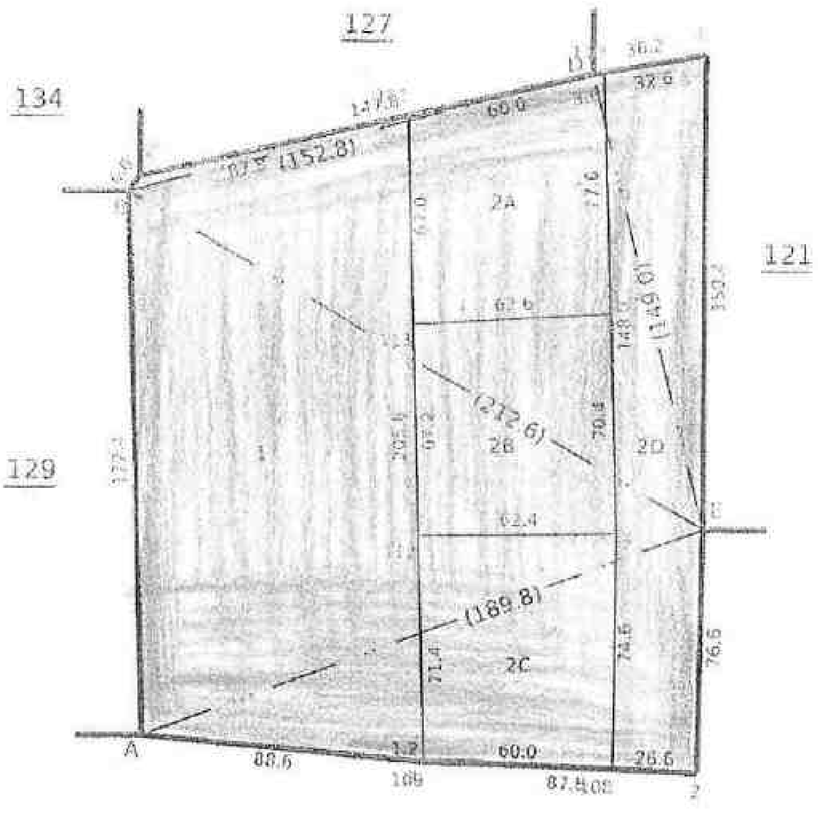
Taluk : ARUPPUKKOTTAI

Village : Puliyuran [17]

Survey No : 128

Area : Hect [illegible]

Scale : 1 : 2000



V NO 163 KAMALAKANDAMANGALAM

கல்குவாரி உரிமம் கோருகின்ற இடம்

LEASE APPLIED AREA

Village Administrative Officer
16-SEMPATTY
Aruppukottai Taluk

Date of Issue: 28-01-2023 21:36:11

240 fv.1

Survey and Settlement Department, Government of TamilNadu

District : Virudhunagar

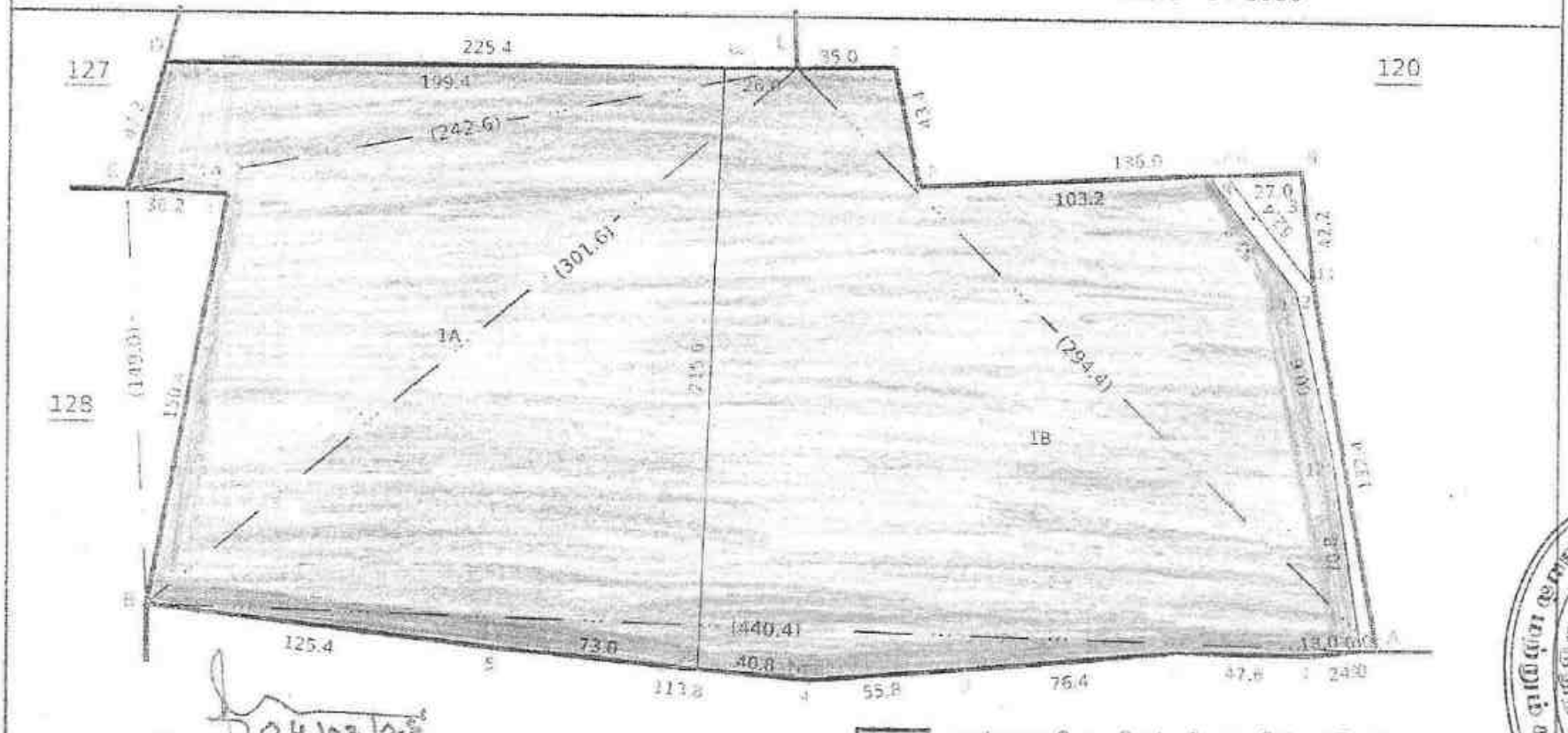
Taluk : ARUPPUKKOTTAI

Village : Puliyuran [17]

Survey No : 121

Area : Hect 08 Ares 17.00

Scale : 1 : 2000



கல்குவாரி உரிமம் கோருகின்ற இடம்

Village Administrative Officer
16-SEMPATTY
Aruppukottai Taluk

V.No.163.Melakandamangalam

Date of Issue: 28-01-2023 21:34:39

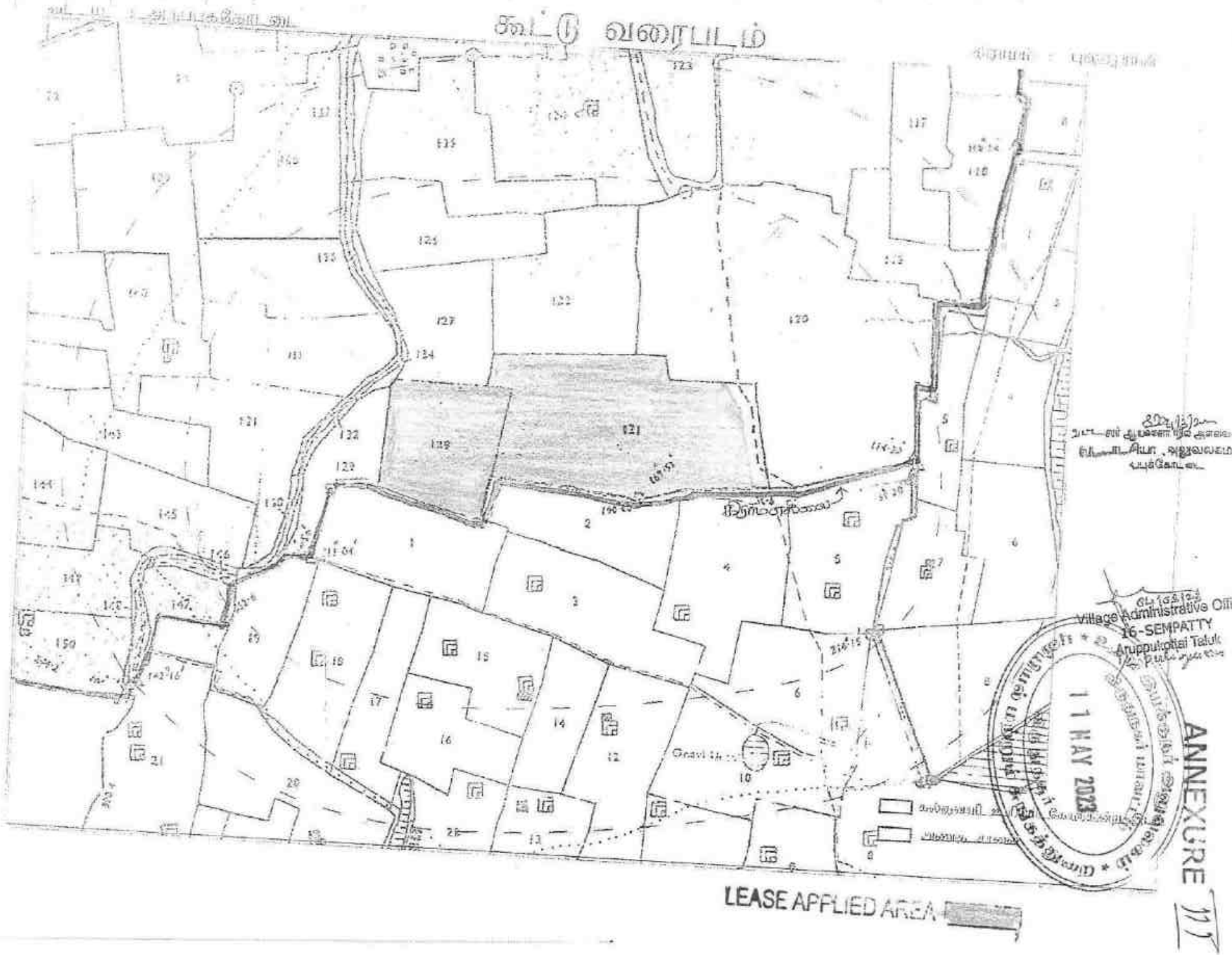
240 fv.1

Survey and Settlement Department, Government of TamilNadu

LEASE APPLIED AREA

11 MAY 2023

82 A


கூட்டு வரைபடம்
LEASE APPLIED AREA
ANNEXURE III
Village Administrative Offi
16-SEMPATTY
Aruppukottai Taluk
11 MAY 2023

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ANNEXURE IV

தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : விருதுநகர் **வட்டம் : அருப்புக்கோட்டை**

வருவாய் கிராமம் : புலியூரான் **பட்டா எண் : 1761**

உரிமையாளர்கள் பெயர்

1. ... ... விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட்

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	
128	1	1 - 73.00	3.47	--	--	--	--	2020/0103/26/094585-- -- 13-10-2020
128	2A	0 - 45.50	0.90	--	--	--	--	2019/0103/26/061820-- -- 24-06-2019
128	2B	0 - 45.00	0.90	--	--	--	--	2019/0103/26/061820-- -- 24-06-2019
128	2C	0 - 45.00	0.90	--	--	--	--	2019/0103/26/061820-- -- 24-06-2019
128	2D	0 - 64.50	1.30	--	--	--	--	2019/0103/26/061820-- -- 24-06-2019
		3 - 73.00	7.47					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் 26/06/017/01761/30775 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 02-03-2023 அன்று 12:56:53 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

தமிழக அரசு

வருவாய்த் துறை

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

மாவட்டம் : விருதுநகர் வட்டம் : அருப்புக்கோட்டை

வருவாய் கிராமம் : புலியூரான் பட்டா எண் : 1833

உரிமையாளர்கள் பெயர்

1. -... விஷ்ணு சூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட்

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	
121	1A	4 - 4.50	8.09	--	--	--	--	2020/0103/26/096500- -- -- 13-10-2020
121	1B	3 - 99.50	7.99	--	--	--	--	2020/0103/26/096500- -- -- 13-10-2020
		8 - 4.00	16.08					

குறிப்பு2 :

1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் **https://eservices.tn.gov.in** என்ற இணைய தளத்தில் 26/06/017/01833/30795 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 02-03-2023 அன்று 12:54:35 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின்2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

ANNEXURE V

[illegible]

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

1950

[illegible]

1961

128 1 [illegible] 7.99 3.57 [illegible]

[illegible] 1.30 [illegible]

Village Administrative Officer
15-SIRUPATTY
Aruppukottai Taluk

R.F. III-A-10-20,00,000 Cps.-GBP.-Mdu.-7,-2014.

ANNEXURE VI

உதவி இயக்குநர் அலுவலகம் விருதுநகர் மாவட்டம்
11 MAY 2023
விருதுநகர்
புவியியல் மற்றும் சுரங்கத்துறை

அ-பதிவேடு விவரங்கள்

மாவட்டம் : விருதுநகர்

வட்டம் : அருப்புக்கோட்டை

கிராமம் : புலியூரான்

1. புல எண்	121	9. மண் வகையும் ரகமும்	7 - 3
2. உட்பிரிவு எண்	1A	10. மண் தரம்	4
3. பழைய புல & உட்பிரிவு எண்	121-1	11. தீர்வை (ரூ - பைசா)	2.00
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	4 - 4.50
5. நத்தம் / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பைசா)	8.69
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1833
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகம்	-	16. பெயர்	1.விக்னேஷ் சூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட்

குறிப்பு 1:

[illegible] http://eservices.tn.gov.in [illegible]

[illegible]

அ-பதிவேடு விவரங்கள்

மாவட்டம் : விருதுநகர்

வட்டம் : அருப்புக்கோட்டை

கிராமம் : புலியூரான்

1. புல எண்	121	9. மண் வகையும் தரமும்	7 - 3
2. உட்பிரிவு எண்	1B	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	121-1	11. தீர்வை (ரூ - பைசா)	2.00
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	3 - 99.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பைசா)	7.99
6. நிலத்தின் வகை	புன்செய்	14. பட்டா எண்	1833
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இருபோகம்	-	16. பெயர்	1.விஸ்ணு ஸூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட்

குறிப்பு 1:

1.

[illegible] http://eservices.tn.gov.in [illegible]

விருதுநகர் மாவட்டம்
11 MAY 2023
விருதுநகர்

[illegible] [illegible]

அ-பதிவேடு விவரங்கள்

மாவட்டம் : விருதுநகர்

வட்டம் : அருப்புக்கோட்டை

கிராமம் : புலியூரான்

1. புல எண்	128	9. மண் வகையும் ரகமும்	7 - 3
2. உட்பிரிவு எண்	1	10. மண் தரம்	4
3. பழைய புல / உட்பிரிவு எண்	128-1	11. தீர்வை (ரூ - பைசா)	2.00
4. பகுதி	-	12. பரப்பு (ஹெக்டேர் - ஏர்ஸ்)	1 - 73.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பைசா)	3.47
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1761
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகம்	-	16. பெயர்	1.விஸ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட்

குறிப்பு 1:

1.

நிலங்களுடைய தகவல் / சான்றிதழ்கள் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை இவ்விவரங்களை http://eservices.tn.gov.in [illegible]

அ-பதிவேடு விவரங்கள்

மாவட்டம் : விருதுநகர்

வட்டம் : அருப்புக்கோட்டை

கிராமம் : புலிப்பராவி

1. புல எண்	128	9. மண் வகைமை/ தன்மை	7 - 3
2. உட்பிரிவு எண்	2A	10. மண் தரம்	4
3. கொள்முதல் பட்டியல் எண்	128-2	11. நிலவை (மு - வெ)	2.00
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 45.50
5. வரை / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த நிலவை (மு வெ)	0.90
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1761
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. நஞ்சை வகை	-	16. பெயர்	1.விஸ்வஜோதி பவர் ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட்

குறிப்பு 1:

மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மற்ற பதிவுகள் குறித்து மேலும் அறிந்து கொள்ள தாங்கள் http://eservices.tn.gov.in என்ற இணைய தளத்தில் என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளலாம்.

உதவி இயக்குநர் அலுவலகம்
விருதுநகர் மாவட்டம்
11 MAY 2023
விருதுநகர்
புவியியல் மற்றும் சுரங்கத்துறை

அ-பதிவேடு விவரங்கள்

மாவட்டம் : விருதுநகர்

வட்டம் : அருப்புக்கோட்டை

கிராமம் : புலியூரான்

1. புல எண்	128	9. மண் வயனமும் ரகமும்	7 - 3
2. உட்பிரிவு எண்	2B	10. மண் தரம்	4
3. பழைய புல/உட்பிரிவு எண்	128-2	11. தீர்வை (ரூ - பைசா)	2.00
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 45.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பைசா)	0.90
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1761
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகம்	-	16. பெயர்	1.விஸ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட்

குறிப்பு 1:

1.

மேற்கண்ட தகவல் / [illegible] http://eservices.tn.gov.in [illegible]

அ-பதிவேடு விவரங்கள்

மாவட்டம் : விருதுநகர்

வட்டம் : அருப்புக்கோட்டை

கிராமம் : புலியூரான்

1. புல எண்	128	9. மண் வயணமும் ரகமும்	2 - 3
2. உட்பிரிவு எண்	2C	10. மண் தரம்	4
3. பழைய புல உட்பிரிவு எண்	128-2	11. தீர்வை (ரூ - பைசா)	2.00
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்)	0 - 45.00
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பைசா)	0.90
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1761
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகம்	-	16. பெயர்	1.விஷ்ணுசூர்யா ஹோல்டிங்ஸ் அண்ட் இன்ஃப்ரா பிரைவேட் லிமிடெட்

குறிப்பு 1:

1.

மேற்கண்ட தகவல் / சான்றிதழ் ... http://eservices.tn.gov.in ...

11 MAY 2023

[illegible] [illegible]

அ-பதிவேடு விவரங்கள்

மாவட்டம் : விருதுநகர்

வட்டம் : அருப்புக்கோட்டை

கிராமம் : புலிப்புரான்

1. புல எண்	128	9. தரம் வகைப்பாடு தரம்	7 - 3
2. உட்பிரிவு எண்	2D	10. வகை தரம்	4
3. அனுபவ புல உட்பிரிவு எண்	128-2	11. தீர்வை (ரூ - பைசா)	2.00
4. பகுதி	P	12. பரப்பு (ஹெக்டேர் - ஏர்ஸ்)	0 - 64.50
5. அரசு / ரயத்துவாரி	ரயத்துவாரி	13. மொத்த தீர்வை (ரூ - பைசா)	1.30
6. நிலத்தின் வகை	புஞ்சை	14. பட்டா எண்	1761
7. பாசன ஆதாரம்	-	15. குறிப்பு	-
8. இரு போகம்	-	16. பெயர்	1.விஜ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ஃப்ரா பிரைவேட் லிமிடெட்

குறிப்பு 1:

[illegible] http://eservices.tn.gov.in [illegible]

ANNEXURE VII

11 MAY 2023

(Amended)

Government of India

Form GST REG-06

[See Rule 10(1)]

Registration Certificate

Registration Number :33AADCS0735L1ZF

1.	Legal Name	VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED			
2.	Trade Name, if any	VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED			
3.	Additional trade names, if any				
4.	Constitution of Business	Private Limited Company			
5.	Address of Principal Place of Business	2nd Floor, 76, Temple Towers, North Mada Street, Mylapore, Chennai, Tamil Nadu, 600004			
6.	Date of Liability	01/07/2017			
7.	Date of Validity	From	01/07/2017	To	Not Applicable
8.	Type of Registration	Regular			
9	Particulars of Approving Authority	Details furnished u/s 25 of the Goods and Services Tax Act, 2017			

Validity unknown

Digitally signed by GST GOODS AND SERVICES TAX NETWORK
Date: 2022.09.23 21:00:15 IST

Signature

Name	Palani Tamilarasi
Designation	Commercial Tax Officer
Jurisdictional Office	MANDAVELI
Date of Issue of Certificate	23/09/2022

Note: The registration certificate is required to be prominently displayed at all places of Business Office(s) in the State.

This is a system generated digitally signed Registration Certificate issued based on the approval of application granted on 23/09/2022 by the jurisdictional authority.

11 MAY 2023

Annexure B

GSTIN	33AADCS0733L1ZF
Legal Name	VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED
Trade Name, if any	VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED
Additional trade names, if any	

Details of Managing / Whole-time Directors and Key Managerial Persons

1		Name	ARUNACHALAM CHARIMA THANGAM
		Designation/Status	Director
		Resident of State	Tamil Nadu
2		Name	S DHILIPKUMAR
		Designation/Status	Director
		Resident of State	Tamil Nadu

For VISHNUSURYA PROJECTS AND INFRA (P) LTD.

DIRECTOR

ANNEXURE VII A

MEMORANDUM AND ARTICLES OF ASSOCAITION

OF

VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED

सत्यमेव जयते

GOVERNMENT OF INDIA
MINISTRY OF CORPORATE AFFAIRS

Office of the Registrar of Companies

Block No. 6, B' Wing, 2nd Floor Shastri Bhawan 26, Chennai, Tamil Nadu, India, 600034

Certificate of Incorporation pursuant to change of name

[Pursuant to rule 29 of the Companies (Incorporation) Rules, 2014]

Corporate Identification Number (CIN): U63090TN1996PTC035491

I hereby certify that the name of the company has been changed from VISHNUSURYA LOGISTICS PRIVATE LIMITED to VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED with effect from the date of this certificate and that the company is limited by shares.

Company was originally incorporated with the name SURYA DEVELOPERS AND PROMOTERS PRIVATE LIMITED.

Given under my hand at Chennai this Nineteenth day of September two thousand eighteen.

DS MINISTRY OF CORPORATE AFFAIRS 13

N.CHOLARAJAN

Registrar of Companies

RoC - Chennai

Mailing Address as per record available in Registrar of Companies office:

VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED

2nd FLOOR QBAS TEMPLE TOWER, NO 76/25 NORTH MADA STREET, MYLAPORE, CHENNAI, Chennai, Tamil Nadu, India, 600004

भारत सरकार-कॉर्पोरेट कार्य मंत्रालय
कम्पनी रजिस्ट्रार कार्यालय, तमिलनाडु, चैन्नई, अदमान और निकोबार द्वीप

नाम परिवर्तन के पश्चात नया निगमन प्रमाण-पत्र

कॉर्पोरेट पहचान संख्या : U63090TN1996PTC035491

मैसर्स SURYA DEVELOPERS AND PROMOTERS PRIVATE LIMITED

के मामले में, मैं एतद्द्वारा समाधान करता हूँ कि मैसर्स
SURYA DEVELOPERS AND PROMOTERS PRIVATE LIMITED

जो मूल रूप में दिनांक सत्रह मई उन्नीस सौ छियानवे को कम्पनी अधिनियम, 1956 (1956 का 1) के अंतर्गत मैसर्स
VISHNUSURYA LOGISTICS PRIVATE LIMITED

के रूप में निगमित की गई थी, ने कम्पनी अधिनियम, 1956 की धारा 21 की शर्तों के अनुसार विधिवत आवश्यक विनिश्चय पारित करके तथा लिखित रूप में यह सूचित करके और उसे भारत का अनुमोदन, कम्पनी अधिनियम, 1956 की धारा 21 के साथ पठित, भारत सरकार, कम्पनी कार्य विभाग, नई दिल्ली की अधिसूचना सं.सा.का.नि 507 (अ) दिनांक 24.6.1985 एस आर एन A92734839 दिनांक 01/09/2010 के द्वारा प्राप्त कर लिया है, उक्त कम्पनी का नाम आज परिवर्तित रूप में मैसर्स
VISHNUSURYA LOGISTICS PRIVATE LIMITED

हो गया है और यह प्रमाण-पत्र, कंपनी अधिनियम की धारा 23(1) के अनुसरण में जारी किया जाता है।

यह प्रमाण-पत्र, मेरे हस्ताक्षर द्वारा चैन्नई में आज दिनांक एक सितम्बर दो हजार दस को जारी किया जाता है।

GOVERNMENT OF INDIA - MINISTRY OF CORPORATE AFFAIRS
Registrar of Companies, Tamil Nadu, Chennai, Andaman and Nicobar Islands

Fresh Certificate of Incorporation Consequent upon Change of Name

Corporate Identity Number : U63090TN1996PTC035491

In the matter of M/s SURYA DEVELOPERS AND PROMOTERS PRIVATE LIMITED

I hereby certify that SURYA DEVELOPERS AND PROMOTERS PRIVATE LIMITED which was originally incorporated on Seventeenth day of May Nineteen Hundred Ninety Six under the Companies Act, 1956 (No. 1 of 1956) as VISHNUSURYA LOGISTICS PRIVATE LIMITED having duly passed the necessary resolution in terms of Section 21 of the Companies Act, 1956 and the approval of the Central Government signified in writing having been accorded thereto under Section 21 of the Companies Act, 1956 read with Government of India, Department of Company Affairs, New Delhi, Notification No. G.S.R 507 (E) dated 24/06/1985 vide SRN A92734839 dated 01/09/2010 the name of the said company is this day changed to VISHNUSURYA LOGISTICS PRIVATE LIMITED and this Certificate is issued pursuant to Section 23(1) of the said Act.

Given under my hand at Chennai this First day of September Two Thousand Ten.

(C RUPACHANDAR)

सहायक कम्पनी रजिस्ट्रार / Assistant Registrar of Companies
तमिलनाडु, चैन्नई, अंदमान और निकोबार द्वीप
Tamil Nadu, Chennai, Andaman and Nicobar Islands

कम्पनी रजिस्ट्रार के कार्यालय अभिलेख में उपलब्ध पत्राचार का पता :
Mailing Address as per record available in Registrar of Companies office

VISHNUSURYA LOGISTICS PRIVATE LIMITED
76 NORTH MADA STREET,MYLAPORE, MADRAS 600 004.
TAMILNADU - 600004.
Tamil Nadu, INDIA

FORM I R.

CERTIFICATE OF INCORPORATION

No. 18 - 35491 of 19 96

I hereby certify that SURYA DEVELOPERS AND PROMOTERS PRIVATE LIMITED **** ****

is this day incorporated under the Companies Act 1956 (No. 1 of 1956) and that the Company is Limited.

Given under my hand at MADRAS

this SEVENTEENTH day of MAY

TWENTYSEVENTH VAISAKHA

One thousand nine hundred and NINETY SIX

One thousand nine hundred and EIGHTEEN (SAKA)

SEAL OF THE REGISTRAR OF COMPANIES * TAMIL NADU *

(B.CHANDRA)

ASST. Registrar of Companies
TAMIL NADU

THE COMPANIES ACT, 1956

COMPANY LIMITED BY SHARES

MEMORANDUM OF ASSOCAITION

OF

VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED *

I. The Name of the Company shall be VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED**.

II. The Registered Office of the Company shall be situated in the State of Tamil Nadu.

III. The Objects for which the Company is established are:-

A. THE MAIN OBJECTS FOR WHICH THE COMPANY IS INCORPORATED ARE THE FOLLOWING:

1 . To undertake and carry on all or any of the trade with the Shippers, Ship Owners, ship surveyors, Managers, Ship Brokers, Shipping agents and Insurance Brokers, Marine Average adjusters, Arbitrators, Loading Brokers, Freight Contractors and clearing and forwarding agents, Stevedores, collection and delivery of any type of ships and vessels from any part of the world, salvage, towage, storage and other associated technical services as would be necessary and carries by land, air and water and carry on the said business as principals, Agents, Commission Agents or otherwise.

2. To Operate and plan movement of goods and vehicles and to enter into contract from carrying of mail, passengers, goods and cargo of any kind by any means, either by his own vehicles or chartered or through railways and other conveyances. To own, run, maintain open, bonded and general warehouses.

3. To Establish, maintain and operate shipping, air and surface transport and ancillary services, manage and trade either as independent undertakings or to purchase, to take on lease, charter, hire, construct or otherwise acquire ships, aircrafts and other vehicles and to work and manage the same.

4. To undertake technical management and crewing of all types of ships, tugs and barges.

5. ** To engage in the business of transportation, freight forwarding, warehousing, clearing and forwarding and allied services in respect of aggregates, cobbles, manufactured sand and other products and by products from mining activities. To engage in the business of mining and / or act as contractors, traders, explorer, operator for mining minerals, metals, stones of all kind and other underground materials. To engage in the Business of processing, polishing and any and any other process which may lead to manufacture and trading and export of minerals, metals and other stones in raw or processed form.

Note 1 Pursuant to a special resolution passed in the Extra ordinary general Meeting of the Shareholders of the company held on 25th August 2010 clauses 1 to 4 above were substituted for the earlier clauses 1 to 6.

Note 2Pursuant to a special resolution passed in the Extra Ordinary General Meeting of the Shareholders held on 25th August 2010 and the approval accorded by the Registrar of Companies, Tamil Nadu, Chennai-600 006 in SRN. A92734839 the company is changed from Surya Developers and Promoters Private Limited to Vishnusurya Logistics Private Limited.

Note 3Pursuant to a special Resolution passed in the Extra Ordinary General Meeting of the Shareholders held on 12th June 2015, Clause 5 was inserted.

Note 4The Name of the Company has been changed to VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED vide Special Resolution passed at the Extra- Ordinary General Meeting held on 23rd July, 2018.

6. *To carry on business as builders, consultants, engineers, merchants, and to buy, sell and deal in properties of all kinds. To develop, build, pull down, demolish, erect, enlarge, purchase, own, contract, take or given on lease or license or his purchase including sublease, sub-license, hire, sub-hire, purchase and realize rents, license fees. Charges for hire purchase and realize rents, license fees, changes for hire purchase, including subletting charges, sub-license gees, sub-hire charges and other charges, hold exchange, improve, alter, repair, replace, acquire, divide, consolidate, appropriate, decorate, furnish, sell, mortgage and otherwise dispose off deal and render consultation in building houses, flats, including multi-storeyed flats, Bungalows, offices, apartments, rooms, sell, hire out or otherwise dispose of all kinds of lands, building houses, bungalows, shops, farm houses or any estate or immovable property and to carry on all or any of the business of builders, contractors, decorators, merchants, dealers in stone sand, cement bricks, timbers, iron and steel, hardware's and other building requisites, and as land, property, materials and machinery agents.

7. *To engage in the business of mining and act as contractors for mining minerals, metals, stones of all kind and other underground materials. To engage in the business of processing, polishing and export of minerals, metals and other stones. To engage in the business of extraction, manufacture and trading of iron & steel, glassware and other related items.

8. *To build, construct, alter, main, enlarge, pull down, remover or replace and to work, manage and control any buildings, offices factories, mills, shops, machinery, engines, roadways, tramways, railways, branches or sidings bridges, watercourses, wharves, electric works and other works and conveniences which are calculated directly or indirectly to advance the interest of the Company and to join with any person in doing those things.

9. *To carry on the business of builders and contractors or to get the work carries out on lease on hire or any other mode from any other contractor.

10. *To layout, develop, construct, build, erect, demolish, re-elect, alter repair, remodel or to do any other work in connection with any building or building scheme, roads, highways, docks, sewerage, bridges, canals, wells, springs, dams, power plants, wharves ports, reservoirs, embankments, tramways, railway, irrigations, reclamations, improvements, sanitary, water, gas, electric light, brick, kilns or crushers or any other structural or architectural work of any kind whatsoever and for such purpose to prepare estimates, design plans, specifications or other models and do such other act that may be required thereof.

11. *To carry on all or any of the business of constructional engineers, architects, builders, contractor, decorators, electricians, wood workers and to acquire, develop, buy, sell, real estate, multi-storeyed or other buildings and group housing schemes.

12. *To carry on the business as Traders, processors, distributors, agents, brokers, factors, tenderers to Government Departments, stockists, Mixers, packers, preserves, freezers, extractors, refiners, importers, exporters, buyers, sellers, prepares, compounders, mixers, segregators, packers, repackers, removers, graders, improvers, resellers, barters, transporters, storers, forwarders, distributors, disposers, developers, handles, manipulators, consultants, collaborators, liaisons, middlemen, export house, job worker, house hold articles, gift articles, imitation jewellery, precious metals, electronic and electrical goods, furniture, stationery, cloth, readymade garments, dress garments, chappals and shoes and other leather and synthetic materials, pharmaceuticals, drugs and medicines, all kind of food products sold through restaurants, hotels, stalls, departmental stores, chain stores, retail stores, shops, retailing complex, shopping malls, shopping centres, cinema theatres, multiplex complexes, beauty parlours, massage centres, entertainment halls, rehabilitation centres and / or through franchise and/or through ecommerce, online and to arrange or give on rental basis or on hire lease of stalls, render services and supply goods for running departmental stores and / or retail stores, shopping malls and shopping complexes.

13. *To carry on the business as manufacturers, producers, processors, job workers, makers, contractors, contract manufacturers, tenderers to Government Departments, converters, fabricators, importers, exporters, traders, buyers, sellers, retailers, wholesalers, suppliers, indenters, packers, movers, preserves, stockists, refiners, agents, sub-agents, merchants, distributors, consignors, franchisees, jobbers, brokers, concessionaries or otherwise deal in all kinds of food products and beverages like jams, jellies, pickles, cider, chutney, marmalades, mayonnaise, mustard, desserts, coffee, tea, flavours, condiments, pancakes, doughnuts, vinegar's ketchup, sauces, juices, squashes, syrups, soups, powder (eatable), drinks, alcoholic and non-alcoholic, carbonated and non-carbonated, gelatines, essences ice-creams, dairy products, meat, sausages, potted meat and meat products, marine and sea food products, table delicacies, fast food, frozen foods and other eatables, bakery products and confectionary items such as breads, biscuits, sweets, roti, pizza, papad, cakes, pastries, cookies, wafers, condoles, lemon drops, chocolates, chewing gums, toffee, lozenges, tinned, canned, bottled products, milk cream, butter, butter scotch, sauce, ghee, cheese, condensed milk, milk powder, skimmed milk food, baby food, infant foods, milk products and milk preparation, soya milk products and preparations, soya bean based foods, protein foods, dietic products, health foods, cereal products, wheat cakes, poultry products, farm products, milk shakes, water, ice products, yoghurt, mouth freshener, carbon dioxide for beverages, meat, eggs, poultry, cereals, pulses, dhal, vegetables, vitamin canned and tinned and processed foods, beverages, cordials, food stuff and consumable provision of every description, flour, pastry, corn flakes, confectionary, sugar, jiggery, glucose, fruit crops, chewing gum, milk, milk products, dairy, cream, ice, ice cream, aerated or mineral water, waters, energy drinks, fruit juices, pickles pulses, jams, honey, confectionary, chocolates, pickles, tonics, vegetables and all kinds of foods including protein rich food, health food, instant food, ready to eat food, ready to cook food, organic foods and other materials required or used for the preparation of food and other food products for human and animal consumption.

14. * To carry on the business as manufacturers, producers, processors, job workers, makers, contractors, contract manufacturers, tenderers to Government Departments, convertors, fabricators, importers, exporters, traders, buyers, sellers, retailers, wholesalers, suppliers, indenters, packers, movers, preserves, stockists, refiners, agents, sub-agents, merchants, distributors, consignors, franchisees, jobbers, brokers, concessionaries or otherwise deal in all kinds of beverages and distilleries, breweries, spirits, liquors, commercial, industrial powder and absolute alcohols, rectified, methylated sweet spirits, aerated waters, maltsters, mineral water, soft and hard drinks, spirit and wine merchants and items made from agriculture based products, malt factors, corn merchants, wine and spirit merchants and importers, and distillers, and mineral water and other drinks, licensed victuallers, hotel keepers, beer-house keepers, restaurants keepers, lodging house keepers, ice manufacturers and merchants, tobacconists, farmers, dairymen, yeast dealers, grain sellers and drinkers, timber merchants, brick makers, finings manufacturers and isinglass merchants, manufacturers of and merchants and dealers in beer, ale, port, stout, wines, whiskies, intoxicating or not, produced from all kinds of ingredients, raw materials and or malt, malt products, hops, yeast, essences, flavours, concentrates and so on.

15. *To carry on and do business as land developers, township developers, Satellite Town promoters, developers of housing colonies, real estate dealers by developing and turning to account any land acquired by the Company or in which it is interested or may get interested and in particular by laying out, providing conveniences like roads, drainages, play grounds, recreation facilities, prayer halls, community halls, water and power facilities, cinema theatres, constructing residential, commercial accommodations and selling them on ownership basis, hire purchase basis or letting them out on lease or rental basis.

16.*To carry on the business of financing, for 'acquisition of house sites, dwelling units, for lower, middle and higher income groups and financing acquisition for commercial properties.

17.*To carry on the business as engineers, builders, contractors, consulting engineers, architects and designers, fabrication engineers, moulders, mechanical and electrical engineers in relation to the objects mentioned above.

18.* To carry on the business of construction work comprising of civil works, civil engineers, civil contractors and to undertake projects and contracts for Government and Government Departments or authorities and undertake either alone and jointly with any other company or person works of all distinction like construction, renovation, repairs, widening, paving, resurfacing of roads, upgrading, strengthening of roads, flyovers, highways, tunnels or bridges of all types of R.C.C. and post tensioned cement concrete works, reinforced cement concrete works, granting, rock-cutting, reclamations, cement gutting, waterproofing works, painting, decorating and to purchase, acquire, contract, erect, repair and maintaining of structures, flyovers, tunnels, dams, earth tunnels, towers, reservoirs, drains and culverts, trenches, embankments, irrigation works, reclamations, land improvement, sewerage and sanitary works.

B. *MATTERS WHICH ARE NECESSARY FOR FURTHERENCE OF THE OBJECTS SPECIFIED IN CLAUSE III (A) ARE

1. To enter into agreement or agreement for technical, financial, managerial or other collaboration or any forms of assistance including capital participation for acquiring any plant and machinery and / or to manufacture and / or fabricate and / or produce and/or assemble any plant and / or machinery and / or equipment under any such collaboration, royalties or other fees for know-how either in cash or by allotment of equity or other capital of the company credited as paid up or issue of debentures or debenture stock.

2. To purchase or by any other means acquire and protect, prolong and renew, whether in India or elsewhere, any patents, patent rights, trademarks, designs, inventions, licences, protections and concessions, systems, procedures, designs which may appear likely to be advantageous or useful to the company and to use and turn to account and manufacture under or grant licences or privileges, in respect of the same and to spend money in experimenting upon and testing and in improving or seeking to improve any patents, inventions, systems, procedures, designs or rights which the company may acquire or propose to acquire.

3. To employ, or engage technical advisers, experts, chartered accountants, lawyers, electronic engineers, computer engineers and other engineers, material technologists, technicians, metallurgists, chemists, artisans or craftsmen, to advise, supervise, devise, design and / or plan any project, process or scheme, system and erect, construct, commission, repair and / or maintain workshops, plants, machinery, tools and / or implements, convenient to be used in or about the trade or business of the Company and to remunerate any such person or persons for the services rendered or to be rendered by cash or other assets or by allotment of fully or partly paid shares.

4. To remunerate (by cash or otherwise or by other assets or by allotment of fully or partly paid shares or shares credited as fully and partly paid up or in any other manner) any persons, firms associations or companies for services rendered or to be rendered in rendering technical aid and advice, granting licenses or permissions for the use of patents, trade secrets, trademarks, processes, drawings, designs, systems and procedures and other devices and acting as trustees for debenture holders or debenture stock holders of the Company or in introducing any property or business to the Company or in or about the conduct of the business of the company.

Note 1 : *Amended by Passing Special Resolution in the Extra Ordinary General Meeting of the Company held on 23rd July, 2018

Note 2: Altered vide Scheme of Amalgamation between Satellite Town Development Private Limited [1st Transferor Company) and Suryavishnu Enterprises Private Limited [2nd Transferor Company/ and Vishnusurya Logistics Private Limited [Transferee Company] as approved by the Hon 'ble High Court of Madras vide order dated 25.09.2015.

attendance, messengers, light waiting rooms, reading rooms, meeting rooms, lavatories, laundry convenience, electric conveniences, stables and other advantages.

19. To acquire and take over any business or undertaking carried on upon, or in connection with any land or building which the Company may desire to acquire as aforesaid or become interested in, and to assume all or any of the assets and liabilities of such business or undertakings and to carry on the same or to dispose of, remove or put an end thereto, otherwise deal with the same as may seem expedient.

20. To establish, carry on and to promote any establishment and carrying on, upon any property in which the Company is interested, of any business which may be convenient, carried on, upon or in connection with such property, and the establishment of which may seem calculated to enhance the value of the Company's interest in such property, or to facilitate the disposal thereof.

21. To purchase, take on lease or in exchange or otherwise acquire any land and buildings, in the country of India or elsewhere and any estate or interest, in and any rights connected with any such lands and buildings.

22. To develop and turn to account any land acquired by the company or in which the company is interested, and in particular, by laying out and preparing the same for building purposes, constructing, altering, pulling down, decorating, maintaining, furnishing, fitting up and improving buildings and by planting, paving, draining, forming, cultivating, letting building on lease agreement, and by advancing money to and entering into contract and arrangements of all kinds with builders, tenants and others.

23. To acquire from any Government, Central, State Local or Foreign or public body, or persons or authority, or from any private individual any concessions, grants, decrees, rights, powers and privileges whatsoever which may seem to the company capable of being turned to account or which the company may think directly or indirectly conducive to any of its objects or capable of being carried on in connection with its business and to work, develop, carry out, exercise and turn to account the same.

24. exchange, sell, convey, assign or let on lease grant licence for whole or any part of the Company's undertaking and to accept as consideration in lieu thereof other land or cash or Government securities or securities guaranteed by Government or shares in Joint Stock companies or partly the one or partly the or such other property securities as may be determined by the company and to take back or re-acquire any property so disposed of by repurchasing, leasing the same or obtaining a licence for such price or prices and on such terms and conditions as may be agreed upon.

25. To apply for, promote and obtain any Act of Parliament, Charter privilege, concessions, licences, or authorisation of any Government, State or Municipality, provisional order of licence from any authority for enabling the company to carry any of its objects into effect or for extending any of the powers of the company or for effecting any modification of the constitution of the company or for any other purpose which may seem expedient, and to oppose any proceedings or applications which may seem calculated directly or indirectly to prejudice the interests of the company.

26. To amalgamate or collaborate with local or foreign companies with or without capital participation or enter into franchise arrangement with local or foreign company or enter into partnership or into any arrangement for sharing of profits, union of interest, co-operation, joint venture reciprocal concession or otherwise with any person or company in India or abroad carrying on or engaged in or about to carry on, engage in any business transaction, which the company is authorised to carry on and to lend money to or guarantee the contract or of otherwise assist any such person or company take or otherwise acquire shares and securities of any such company and to sell, hold, re-issue with or without guarantee or otherwise deal with the same,

27. To Subscribe for purchase or otherwise acquire and hold, sell, dispose and deal in shares, stocks, debentures, debenture stock, or securities of any company of any authority, state, municipal, local or

5. To apply for and take out, purchase, obtain by way of royalty otherwise acquire any concessions, industrial licenses, import licences, other licenses, privileges or inventions, devices, formulae, systems, procedures, processes and other rights, machinery, rolling stock, plant, utensils, accessories and stock-in-trade for the purpose of the business of the Company.

6. To establish a well-equipped research laboratory and carry on analytical experimental and other work or undertaking in relation to the work and objects of the Company.

7. To publish technical journals, books and magazines connected with the business of the Company.

8. To promote any other company for the purpose of acquiring all or any of the property and liabilities of this company.

9. To act as buying or selling agents or other types of agent's other than Managing agents and brokers of any company, body corporate, association, firm or persons and perform all and singular the several duties, services and offices which the said agents and brokers can do and perform and to enter into any agreement or agreements for any of the purposes aforesaid.

10. To draw, make, accept, endorse, discount, execute and issue negotiable bills of exchange, hundies, promissory notes, bills of lading, warrants, debentures and other negotiable or transferable instruments.

11. Without contravening the provisions of Banking Regulations Act 1949, to advance and lend money upon such security as may be thought proper or without taking any security therefore.

12. To subsidise, assist and guarantee any payment of money or by the performance of any contract, engagement or obligation by any person.

13. To invest and deal with moneys of the Company not immediately required in any manner.

14. To procure the incorporation, registration or other recognition of the Company in any Country, State or Place and to establish and regulate agencies for the purpose of the Company's business.

15. To subscribe or contribute or otherwise to assist or to guarantee money to charitable, Benevolent, religious, national, public or any other useful institutions, objects or Purposes or for any exhibition.

16. distribute in specie otherwise as may be resolved, any property or assets of the Company or any proceeds of sale or disposal of any property or assets of the Company including the shares, debentures, or other securities of any other company formed to take over the whole or any part of the assets or liabilities of the company but so that no distribution amounting to a reduction of capital be made except with the sanction (if any) for the time being required by law.

17. To give to any officers, servants or employees of the Company any share or interest in the profits of the Company's business or any branch thereof and whether subsidiary company or not, and for that purpose to enter into such arrangements as the company may think fit.

18. To manage lands, buildings and other property situate as aforesaid whether belonging to the company or not and to collect rents and income and to supply to tenants and occupiers and others, refreshments,

otherwise, provided that the investments are made out of surplus funds or for advancing the main objects of the company.

28. To guarantee the payment of money secured by or payable under or in respect of bonds, debentures, stock, contracts, mortgages, charges, obligation and securities of any authority, state, municipal, local or otherwise or of any person, whatsoever, whether incorporated or not incorporated.

29. To remunerate any person or company for services rendered or to be rendered in Placing or assisting to place or guaranteeing the placings of any of the shares in the company's capital or any debenture or other securities of the company or in about the information or promotion of the company or the conduct of its business. To promote and form and to be interested in and take hold and dispose of shares in other companies and to transfer to any such company any property of this company and to take or otherwise acquire, hold and dispose of shares, debentures and other securities in or of any such company and to subsidise or otherwise assist any such company.

30. sell, lease, mortgage otherwise dispose of transfer, business, property, assets or undertaking of the Company or any part thereof for such consideration as the company may think fit and in particular for shares, stocks, debentures or other securities of any other company whether or not having objects altogether or in part similar to those of the company.

31. To pay for any rights or property acquired by the company and to remunerate any person or company local or foreign whether by cash payment or by allotment of shares, or by allotment of shares, debentures or other securities of the company credited as paid up in full or by part or otherwise.

32. To pay out of the funds of the company all costs, charges and expenses which the company may lawfully pay with respect to the promotion, formation and registration of the company and / or the issue of its capital or which the company shall consider to be preliminary, including therein the cost of advertising, printing and stationery and commission for obtaining application for taking, placing or underwriting or procuring the underwriting of shares, debentures or other securities of the company, expenses attendant upon the formation of agencies, branches and local boards.

33. Upon any issue of shares, debentures or other securities of the company, to employ, brokers, commission agents and underwriter payment in and to provide for the remuneration of such persons for their services by each or by the issue of shares, debentures or other securities of the company or by the granting of option to take the same or in any other manner allowed by law.

34. To borrow or raise money, or to receive money on deposit or loan at interest or otherwise in such manner as the company may think fit and in particular by the issue of debentures perpetual or otherwise and convertible into shares of this or any other company and to secure the repayment of any such money borrowed, raised or received, or owing by mortgage, pledge, hypothecation, charge or lien upon all or any of the property, assets or revenue of the company (both present and future) including its uncalled capital and to give the lenders or creditors the powers of sale and other powers as may seem expedient and to purchase redeem or pay off any such securities and also by a similar mortgage, charge or lien to secure and guarantee the performance by the company or any other person, firm or company of any obligation undertaken by the company or any other person, firm or company as the case may be but not to carry on the business of banking as defined in the Banking Regulations Act, 1949.

35. To issue or guarantee the issue of or the payment of interest on the shares, debentures stock or other security or obligations of any company or association and to pay or provide for brokerage, commission and underwriting in respect of any such issue.

36. To act as agents or brokers and as trustees for any person or company and to undertake and perform sub-contracts and to do all or any of the above things in any part of the world and as principals, agents, Contractors, trustees or otherwise and by or through agents, sub-contractors or trustees or otherwise and either alone or jointly with others.

37. To carry on any business branch of a business which company is authorised to carry on by means of or through the Agency or any subsidiary company or companies, and to enter into any arrangement with any such subsidiary company for taking the profits and bearing the losses of any business or branch so carried on, or for financing any such subsidiary company or guaranteeing its liabilities or to make any other arrangements which may seem desirable with reference to any business or branch so carried on including power at any time either temporarily or permanently to close any such business or branch and to appoint Directors of any such subsidiary company.

38. To purchase, otherwise acquire and undertake liabilities of any person, firm or company carrying on or proposing to carry on any business which this company is authorised to carry on, or possessed of property or rights suitable for any of the purposes of the company and to purchase, acquire, sell and deal in property, shares, stocks, debenture stock of any such person, firm or company and to conduct, make or to carry into effect any arrangements in regard to the winding up of the business of any such person, firm or company.

39. To take or concur in taking all such steps and proceedings as may seem best calculated to uphold and support the credit of the company and to obtain and justify public confidence and to avert or minimise financial disturbances, which might affect the Company.

40. To provide for the welfare of the employees or ex-employees of the company and wives, widows and families of the dependents or connection of such persons by building or contributing for the building or contributing for the building of houses, dwelling, dwelling or chawls or by grants of money, pensions allowances, bonus or other payments or by creating and from time to time subscribing or contributing to provident fund and other associations, institutions, funds or trusts, and by providing or subscribing or contributing towards places of instructions, and recreation, hospitals and dispensaries medical and other attendants and other assistance as the company shall think fit.

41. To sell the undertaking of the company or any part thereof on such consideration as the company may think fit and in particular for shares, debentures or securities of any other company having objects, altogether or in part similar to those of the company and if thought fit to distribute the same among the shareholders of this company in any manner decided in a shareholders meeting.

42. To take over the business of any individual, partnership firm and anybody corporate, The business or objects of which altogether or any part similar to the main objects of The Company.

43. To open wholesale and retail outlets around the globe for the sale of Company's products and services.

44. To sell any patent rights privileges belonging to the Company or which may beacquired by it, or any interest in the same, and to grant licenses for the use and practice of the same or any of them and to let or allow to be used or otherwise deal with any inventions, patents or privileges in which the Company may be interested, and to do all such acts and things as may be deemed expedient for turning to account any inventions, patents and privileges in which the Company may be interested.

IV. The liability of the members of the company is limited.

*V" The Authorized Share Capital of the Company is Rs.11,00,00,000 (Rupees Eleven Crore only) divided into Rs. 10,10,00,000 (Rupees Ten Crore and Ten Lakh only) divided into 1,01,00,000 (Rupees One Crore and One Lakh only) equity shares of Rs. 10/- (Rupees Ten) each and Rs.90,00,000/- (Rupees Ninety Lakhs only) divided into 90,000 (Ninety Thousand) preference shares of Rs. 100 each with the power to increase

and reduce the capital and to divide and subdivide the shares into several classes and to attach thereto respectively such preferential, qualified or special rights, privileges or conditions, as may be determined by or in accordance with the Articles of Association of the company for the time being and to vary, modify or abrogate any such rights, privileges or conditions in such manner as may be permitted by the Companies Act, 2013 read with Rules made there under and as provided by the Articles of Association of the Company".

Note: Pursuant to an Ordinary Resolution passed in the Annual General Meeting held on30th August 2011 the Authorised Share Capital was increased to Rs. 50,000,000/- (Rupees Five Crores only) divided into 4,100,000 (Forty one lakhs only) Equity Shares of Rs.10/each and 90,000/- (Rupees Ninety Thousand only) Preference Shares of Rs. 100/- each from Rs.20,000,000/- (Rupees Two Crores only) divided into 11,00,000 (Eleven Lakhs only) Equity Shares of Rs. 10/- each and 90,000 (Ninety Thousand only) Preference Shares of Rs. 100/- each.

*Altered vide Scheme of Amalgamation between Satellite Town Development Private Limited (1st Transferor Company) and suryavishnu Enterprises Private Limited (2nd Transferor Company) and Vishnusurya Logistics Private Limited (Transferee Company) as approved by the Hon 'ble High Court of Madras vide order dated25.09.2015.

THE COMPANIES ACT, 1956

COMPANY LIMITED BY SHARES

ARTICLES OF ASSOCIATION
OF
***VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED

Table 'A' applicable with modification

1. The Regulations contained in Table 'A' in the First Schedule to the Companies Act, 1956 so far as the same may be applicable to a Private Company as defined in the Act shall apply to this Company in the same manner as if all such Regulations of Table 'A' are specifically contained in these Articles, subject to the modifications herein contained.

Private Company

2. The Company is a Private Company within the meaning of Section 3 (1) (iii) of the Companies Act, 1956 and accordingly: -

a) No invitation shall be issued to the public to subscribe for any Shares in or debentures of the Company.

b) The number of members of the Company not including persons who are in the employment of the Company and persons who having been formerly in the employment of the Company while in that employment and have continued to be members after the employment ceased shall be limited to fifty; provided that where two or more persons hold one or more shares in the Company jointly, they shall, for the purpose of this Article, be treated as a single member.

c) The right to transfer shares of the Company is restricted.

d) Any invitation or acceptance of Deposits from persons other than the Members and Directors or their relatives is prohibited, and

e) The Minimum Paid Up Share Capital of the company shall be not less than Rs. 1,00,000/-(One Lakh only) or such higher Paid Up Capital as may be prescribed.

Shares

3. Subject to the provisions of these Articles, the Shares shall be under the control of the Board who may allot or otherwise dispose of the same to such persons on such terms and conditions and at such time as the Board thinks fit subject to Articles 2 hereof.

Note: 1. Sub-clauses d and e added to Clause 2 pursuant to a Special Resolution passed in the Annual General Meeting held on

2. Pursuant to a Special Resolution passed in the Extraordinary General Meeting of the Shareholders held on 25 thAugust 2010 and the approval accorded by the Registrar of Companies, Tamil Nadu, Chennai-600 006 in SRN.A92734839 the name of the Company is changed from Surya Developers and Promoters Private Limited to Vishnusurya Logistics Private Limited.

3. *** The Name of the Company has been changed to VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED vide Special Resolution passed at the Extra- Ordinary General Meeting held on 23rd July, 2018.

Allotment of shares

4(A). *The Authorized Share Capital of the Company is Rs.11,00,00,000/- (Rupees Eleven Crore only) divided into Rs.10,10,00,000/- (Rupees Ten Crore and Ten Lakh only) divided into Rs.1,01,00,000/- (Rupees One Crore and One Lakh only) equity shares of Rs. 10/(Rupees Ten) each and Rs.90,00,000 (Rupees Ninety Lakh only) divided into 90,000 (Ninety Thousand) preference shares of Rs. 100 each.

4(B)**Power to issue preference Shares of Different Kinds:**
The Board Subject to the provision of the Act have power to issue various types preference shares including redeemable / convertible/partly convertible preference shares whether cumulative or non-cumulative in any manner permissible under the Act and the Directors may, subject to the provisions of the Act, exercise such power in any manner as they deem fit including deciding on terms of issue, conversion, dividend, voting rights and other rights and obligations as they deem fit without the further approval of the shareholders from time to time.

Transfer and Transmission of Shares

5. No share can be transferred in favour of any person without the previous approval of the Board which could be granted only at a 'Meeting of the Board specifically convened for that purpose with at least 7 days notice given to all the directors in India. The same Rule shall apply for transmission of shares also. Any Member proposing to transfer his/her shares shall first offer the same to existing members.

Notice of Annual General Meeting

6. The Annual General Meeting of the company may be convened by giving not less than 7 days' notice in writing. All other General Meetings may be convened by giving not less than 3 days' notice in writing.

Section 173 does not apply

7. The provisions of Section 173 of the Companies Act, 1956 shall not apply to this company.

Number of Directors

8. The Company shall have not less than two and not more than twelve Directors.

First Directors

9. The First Directors of the company shall be the following
   1. Sri. R.N. Jayaprakash
   2. Smt. BhavaniJayaprakash
   3. Sri. P. Selvam

Retirement of Directors

10. Subject to the provisions of the Companies Act, 1956, the first Directors of the company are entitled to hold office for life or till their resignations.

*Altered vide Scheme Q/ Amalganzation between Satellite Town Development Private Limited [1st Transferor Company/ and Suryavishnu Enterprises Private Limited [2nd Transferor Company/ and Vishnusurya Logistics Private Limited [Transferee Company/ as approved by the Hon 'hie High Court efMadras vide order dated 25.09.2015.

Share Qualification

11. No Share Qualification shall be necessary for any individual to be a Director of a Company.

Co-option of Directors

12. The Board shall have power to co-opt one or more persons to be Directors, but so that the total number shall not exceed twelve and such persons shall hold office up to the date of next annual general meeting, but shall be eligible for re-appointment by the Company at that meeting. The Company at that meeting may fix the terms of office and other terms and conditions in respect of such directors re-appointed.

Alternate Director

13. The Board shall have the power to appoint alternate Director in the manner specified in Section 313 of the Act.

Sitting Fees

14. Each Director shall be paid out of the funds of the Company as remuneration by way of sitting fees for every meeting of the Board or Committee thereof, attended by such Director, such sum of rupees as may be prescribed for the time being as maximum be payable by the Central Government being applicable to the company under the first proviso to the section 310 of the Companies Act 1956. The sitting fees so payable shall be in addition to travelling, hotel and other incidental expenses incurred.

Remuneration of Directors for services

15. The Directors may be allotted such function as may be decided by the Board from time to time on such remuneration as the Board may fix provided however that the remuneration payable to various directors shall be equal.

Borrowing Powers

16. Subject to the provisions of Section 292 of the Companies Act, 1956, the Directors shall be entitled and are hereby empowered at their discretion to borrow or raise money to any extent in such manner as they may deem fit and in particular by the issue of debentures or debenture stock perpetual or otherwise including debenture or debenture stock convertible into shares of this or any other Company and in security of any such money so borrowed, raised or received to mortgage, pledge, or charge the whole or any part of the properties, assets or revenues of the Company, present or future including it. uncalled capital.

MANAGING DIRECTOR

17. The Board of Directors may from time to time appoint one of their body as Managing Director of the Company to hold office for life or permanently or for such period on such terms and conditions as to their powers and duties as the Board may determine.

18. The Managing Director may exercise all such powers of the Company as are by the statutes or by these articles not required to be exercisable by the Directors at a meeting held for the purpose.

19. The remuneration of the Managing Director shall be decided by the Board of Directors from time to time. He shall also be entitled for all travelling and out of pocket expenses incurred by him in connection with the business of the Company.

20. The Managing Director shall not be liable for retirement by rotation so long as he holds Office as Managing Director.

Resolution by circulation

21. Save as otherwise expressly provided in the Act a resolution in writing, circulated in draft together with necessary papers signed by all the Directors in India or by the time being entitled to receive notice of the Meeting of the Board or the Committee, shall be as valid and effectual as if it had been passed at the Meeting of the Board or the Committee duly convened and held. In the event of the signature of any one or more of the Directors to any such resolution shall be deemed to be passed on the date of the signature of the Director signing last.

Director may Contract with Company

22. Subject to S. 297 no Director shall be disqualified from his/her office by contracting with the Company. But the nature of his/her interest must be disclosed by him [her at the Meeting of the Directors at which the contract is first taken into consideration of or his/her interest is not then existing or in any other case at the first Meeting of the Directors held after the acquisition of interest.

General Powers

23. The business of the Company shall be managed by the Director who may pay all expenses incurred in getting the Company registered and may exercise all such powers of the Company as setout by the Companies Act 1956, or any statutory modification thereof for the time being in force of these Articles required to be exercised by the Company in General Meetings subject nevertheless to the regulations in these Articles, to the provisions of the said Act and to such regulations, being not inconsistent with the aforesaid regulations or provisions as may be prescribed by the Company in General Meetings; but no regulation made by the Company in General Meetings; shall invalidate the prior act of the Directors which would have been valid if that regulation had not been made.

Inspection by Members

24. No member shall be entitled to inspect the Company's books without the written permission of the Directors or required to be furnished any information or any matter which is or may be in the nature of trade secret, secret process or trade mystery which is or may be related to the conduct of the business of the Company and which in the opinion of the Directors will not be expedient in the interests of the members of the Company to communicate to the public.

Common Seal

25. The Common Seal of the Company shall not be affixed to any instrument except by the authority of a resolution of the Board and except in the presence of atleast two directors or by one director and the secretary or such other person as the directors may appoint for the purpose. The fact of affixing the Common Seal will be conclusive proof of the execution of the document or instrument to which it is so affixed.

Sl. No.	Name, signature, address, occupation and description of subscribers	Signature, address, description and occupation of witness.
1.	Sd/- R.N. JAYAPRAKASH S/o R.N. Jayachandran 25, North Mada Street Mylapore Madras 600 004 Company Director	Sd/- R. SUNDARARAJAN S/o N. Rajagopalan 43/1, Kodambakkam High Road T. Nagar Madras 60-0 017 Chartered Accountant
2.	BHAVANI W/o R.N. Jayaprakash 25, North Mada Street Mylapore Madras 600 004 Company Director	

Date 09.05.1996
Madras

விஷ்ணுசூர்யா புராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட்

இயக்குனர்கள் பெயர்கள் மற்றும் முகவரி

வ. எ ண்.	பெயர்	முகவரி	ஆதார் எண்	பேன்கார்டு எண்
1.	ஏ.சி. தங்கம்	த/பெ. அருணாசலம் 2/27, அம்மன் கோவில் தெரு,மொரவல்லான், துாத்துக்குடி. தமிழ்நாடு - 628 801.	900598229998	ACHPT9970D
2.	திலீபகுமார் சே	த/பெ. சேதுராமன், 110 மதுரை பைபாஸ் ரோடு, மேற்கு மாம்பலம், சென்னை தமிழ்நாடு — 600 03.	604036062432	AHWPD4986B

For VISHNUSURYA PROJECTS AND INFRA (P) LTD.

DIRECTOR

ANNEXURE VIII

BOARD RESOLUTION

MINUTES OF THE MEETING OF BOARD OF DIRECTORS OF M/S. VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED, HELD ON 21.01.2023 AT 11AM AT THE REGISTERED OFFICE OF THE COMPANY AT No.76, NORTH MADA STREET, MYLAPORE, CHENNAI-600 004.

"RESOLVED THAT Mr. A.C.Thangam, S/o. Sri. P. Arunachalam, aged 48 years, one of the Directors of the Company, hereby authorized to do all such acts, deeds and things, sign all such papers, documents, correspondence and to do and perform all such as acts, deeds and things and deal with all such matters and take all such steps as may be necessary for the purpose of mining in the lands owned by the company in S.F. Nos. 121/1A,1B&128/1,2A,2B,2C,2D to the Total extent of 11-77.00 Hectares in Pulliyuran Village, Aruppukottai Taluk, Virudhunagar District.

For Vishnusurya Projects and Infra Private Limited

A.C. Thangam
Director
DIN: 5956029

S. Dhilipkumar
Director
DIN: 5807/2

ANNEXURE IX

11 MAY 2023

விருதுநகர்

இந்திய அரசாங்கம்
Government of India

A C Thangam

Male

9005 9822 9998

- சாதாரண மனிதனின் அதிகாரம்

Unique Identification Authority of India

Address: S/O: Arunachalam 2/27, AMMAN KOVIL STREET, VALAVALLAN, Valavallan, Valavallan, Thoothukkudi, Tamil Nadu

9005 9822 9998


11 MAY 2023


आयकर विभाग
INCOME TAX DEPARTMENT
A C THANGAM
ARUNACHALAM
28/05/1974
ACHPT9970D
भारत सरकार
GOVT. OF INDIA

ANNEXURE X

भारत सरकार / GOVERNMENT OF INDIA
खान मंत्रालय / MINISTRY OF MINES
भारतीय खान ब्यूरो / INDIAN BUREAU OF MINES

11 MAY 2023

M Ifthikhar

अर्हताप्राप्त व्यक्ति के रुप में मान्यता प्रमाण पत्र
(खनिज रियायत नियमावली, 1960 के नियम 22सी के तहत)

CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON
(Under Rule 22C of Mineral Concession Rules, 1960)

श्री एम. इफ्तिकार अहमथ, 129/8, 11वी कॉस, सिवया नगर, अलधापुरम–पी.आ., सेलम – 636 004, तमिल नाडू, जिनका फोटो और हस्ताक्षर ऊपर दिया हुआ है, तथा जिनहोंने अपनी अर्हता और अनुभव का संतोषजनक साक्ष्य दिया है, को खनन योजना तैयार करने हेतु खनिज रियायत नियमावली 1960 के नियम 22सी के तहत अर्हताप्राप्त व्यक्ति के रूप में मान्यता प्रदान की जाती है ।

Shri M. Ifthikhar Ahmed, 129/8, 11th Cross, Sivaya Nagar, Alagapuram (PO), Salem – 636 004, Tamilnadu whose **Photograph and signature** is affixed herein above, having given satisfactory evidence of his qualifications & experience hereby **RECOGNISED** under Rule 22C of the Mineral Concession Rule, 1960 as a Qualified Person to prepare Mining Plans.

उनकी पंजीयन संख्या है
His registration number is

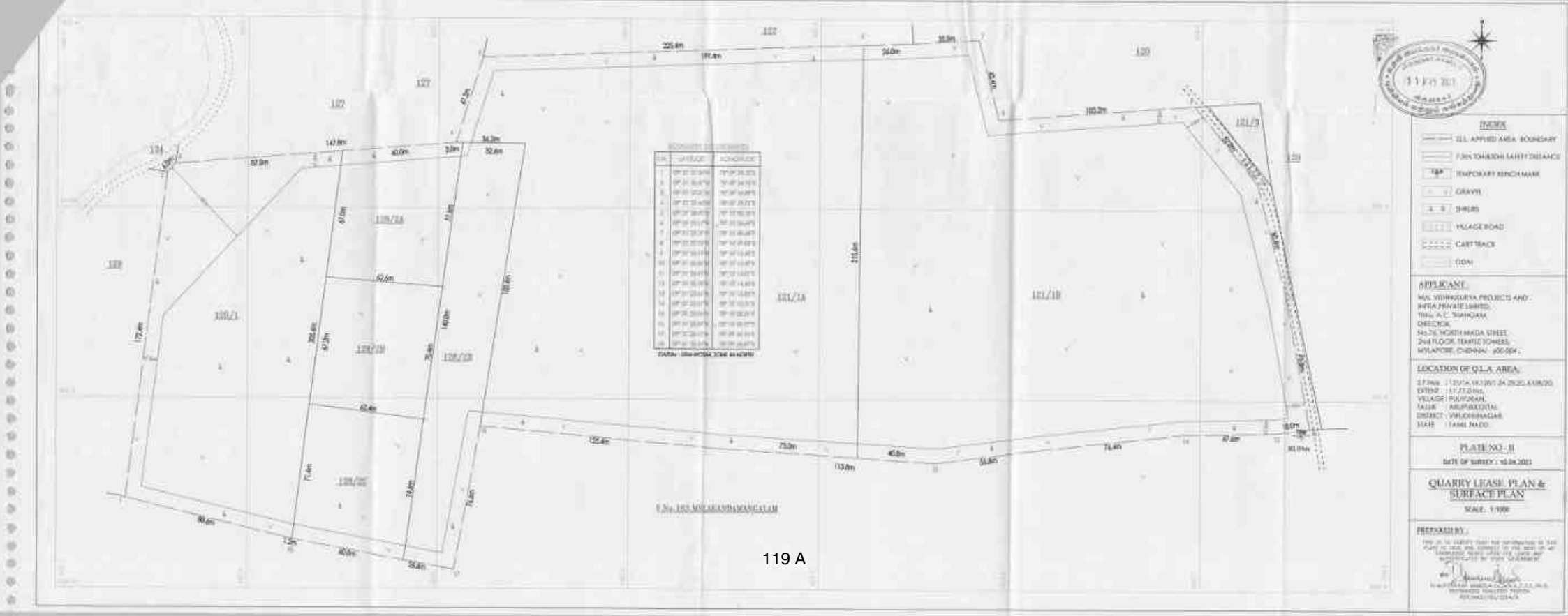
RQP /MAS/183/2004/A

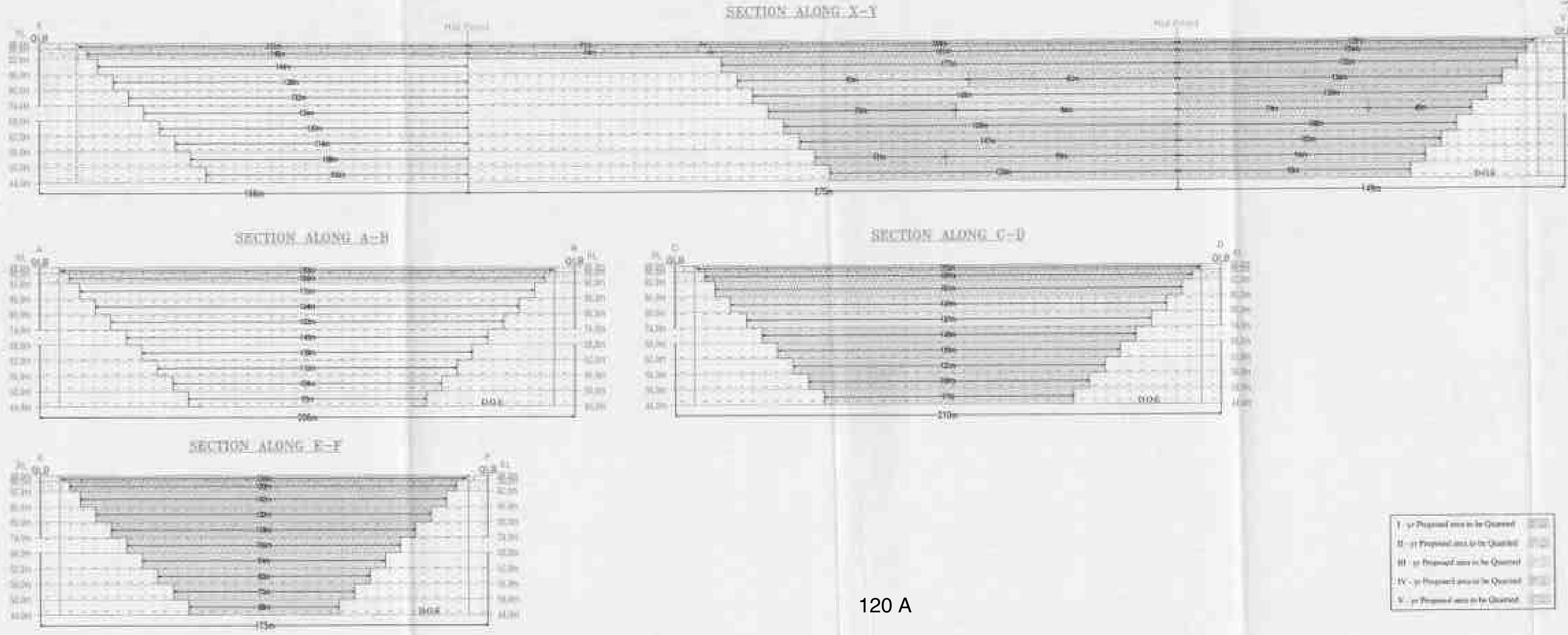
यह मान्यता 10 वर्षों की अवधि के लिए मान्यता है जो दिनांक 10.01.2024 को समाप्त होगी।
This recognition is valid for a period of 10 years ending on 10.01.2024

उनके द्वारा प्रस्तुत खनन योजना में गलत जानकारी / दस्तावेज पाए जाने की स्थिती में यह प्रमाण पत्र वापस लिया जाएगा / निरस्त किया जाएगा।
This certificate will be liable to be withdrawn / cancelled in the event of furnishing the wrong information / documents in the Mining Plan submitted by him.

स्थान / Place : Chennai
दिनांक / Date : 02.01.2014

क्षेत्रीय खान नियंत्रक / Regional Controller of Mines
भारतीय खान ब्यूरो / Indian Bureau of Mines
चेन्नई क्षेत्र / Chennai Region


INDEX
APPLICANT
LOCATION OF Q.L.A. AREA
PLATE NO - II
QUARRY LEASE PLAN & SURFACE PLAN
SCALE : 1:1000
PREPARED BY :
119 A



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Q.L. APPLIED AREA BOUNDARY

7.5m, 10m & 50m SAFETY DISTANCE

TOP SOIL / GRAVEL

WEATHERED / GRAVEL

ROUGHSTONE

D.O.E. DEPTH OF ESTIMATION

APPLICANT:

M/s. VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED
Thiru. A.C. THANGAM,
DIRECTOR,
No.76, NORTH MADA STREET,
2nd FLOOR, TEMPLE TOWERS,
MYLAPORE, CHENNAI - 600 004

LOCATION OF Q.L.A. AREA:

S.F.Nos : 121/1A,1B,128/1,2A,2B,2C & 128/2D,
EXTENT : 11.77.0 Ha,
VILLAGE : PULIYURAN,
TALUK : ARUPPUKKOTTAI,
DISTRICT : VIRUDHUNAGAR,
STATE : TAMIL NADU.

PLATE NO - III-A-I

DATE OF SURVEY : 10.04.2023

TOPOGRAPHY, GEOLOGICAL PLAN, FIRST FIVE YEARWISE DEVELOPMENT & PRODUCTION SECTIONS

SCALE : 1:1000

PREPARED BY:

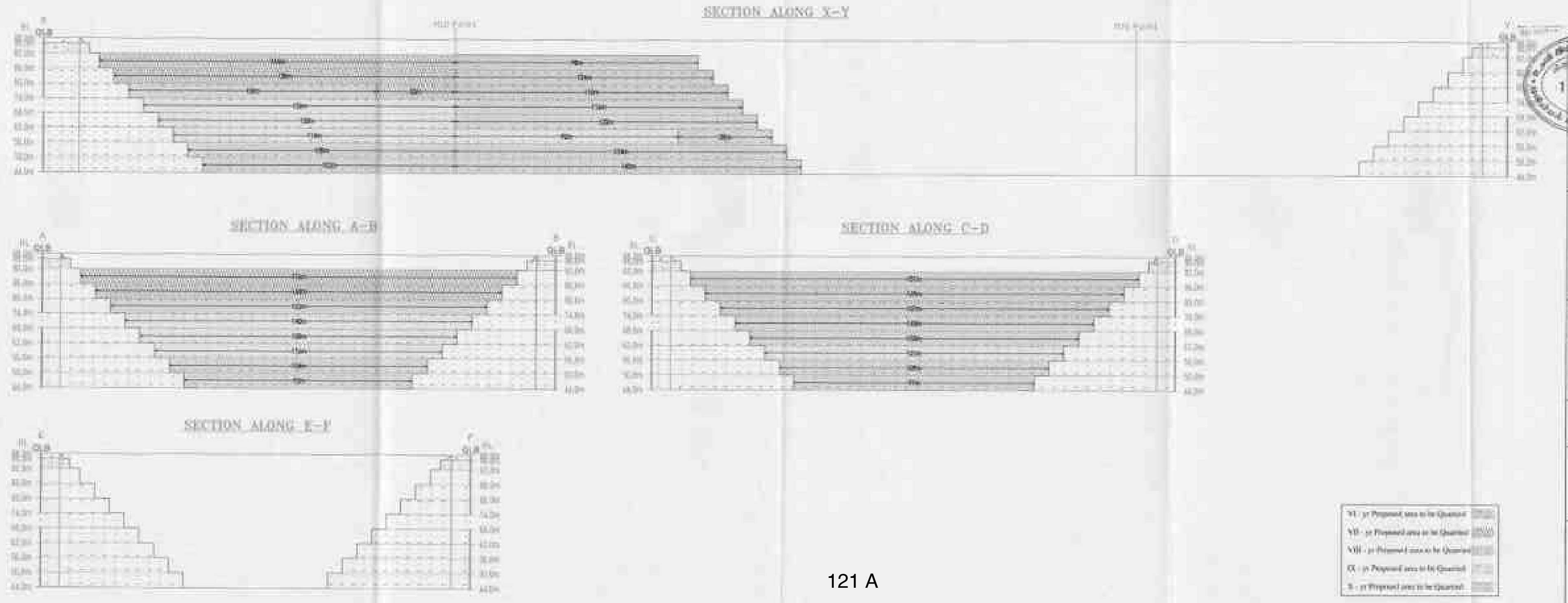
120 A

SECTION ALONG X–Y

SECTION ALONG A–B

SECTION ALONG C–D

SECTION ALONG E–F



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Q.L. APPLIED AREA BOUNDARY

7.5m/50m SAFETY DISTANCE

TOP SOIL / GRAVEL

WEATHERED / GRAVEL

ROUGHSTONE

APPLICANT:

M/s. VISHNUSURYA PROJECTS AND
INFRA PRIVATE LIMITED,
Thiru. A.C. THANGAM,
DIRECTOR,
No.76, NORTH MADA STREET,
2nd FLOOR, TEMPLE TOWERS,
MYLAPORE, CHENNAI - 600 004.

LOCATION OF Q.L.A. AREA:

S.F.Nos : 121/1A, 18,128/1,2A,38,2C & 128/2B
EXTENT : 11.77.0 Ha
VILLAGE : PULIYURAN
TALUK : ARUPPUKKOTTAI
DISTRICT : VIRUDHUNAGAR
STATE : TAMIL NADU

PLATE NO - III-B-I

DATE OF SURVEY : 10.04.2023

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

SCALE 1:1000

PREPARED BY:

SECTION ALONG X-Y

SECTION ALONG A-B

SECTION ALONG C-D

SECTION ALONG E-F

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- Q.L. APPLIED AREA BOUNDARY
- 7.5m, 10m&50m SAFETY DISTANCE
- TOP SOIL / GRAVEL
- WEATHERED / GRAVEL
- EXISTING LAND FORM
- SOIL LAYER
- OLD SURFACE LEVEL
- FINISHED SURFACE LEVEL
- RAIN WATER STORAGE

PLATE NO - IV-A

DATE OF SURVEY : 10.04.2023

PROGRESSIVE QUARRY CLOSURE SECTIONS

SCALE 1:1000

APPLICANT

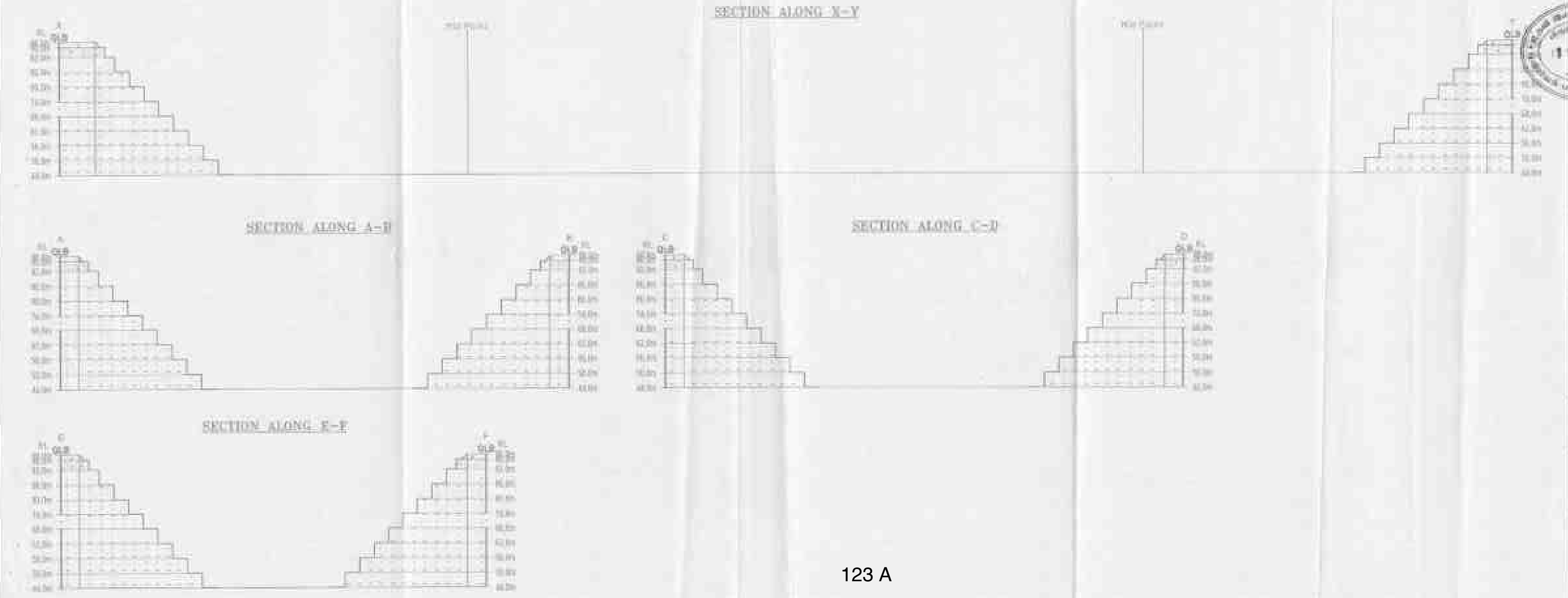
M/S. VISHNUSURYA PROJECTS AND
INFRA PRIVATE LIMITED
THRU A.C. THANGAM,
DIRECTOR
No.74, NORTH MADA STREET
2nd FLOOR, TEMPLE TOWERS,
MYLAPORE, CHENNAI - 600 004

LOCATION OF Q.L.A. AREA

S.F.Nos : 1211/1A, 1B, 1201/1, 2A, 2B, 2C & 1202/...
EXTENT : 11.77.0 Ha
VILLAGE : PULIYURAN
TALUK : ARUPPUKOTTAI
DISTRICT : VIRUDHUNAGAR
STATE : TAMIL NADU

PREPARED BY

122 A



11 MAY 2023

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Q.L. APPLIED AREA BOUNDARY

7.5m, 10m&50m SAFETY DISTANCE

TOP SOIL / GRAVEL

WEATHERED / GRAVEL

ROUGHSTONE

APPLICANT :

M/S. VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED
Thiru. A.C. THANGAM,
DIRECTOR,
No.74, NORTH MADA STREET,
3rd FLOOR, TEMPLE TOWERS,
MYLAPORE, CHENNAI - 600 004.

LOCATION OF Q.L.A. AREA

S.F.Nos : 121/1A, 18,128/7,29,28,2C & 128/2D,
EXTENT : 11.77.0 Hec.
VILLAGE : POLIYORAN
TALUK : ARUPPUKKOTTAI
DISTRICT : VIRUDHUNAGAR
STATE : TAMIL NADU

PLATE NO - V-A

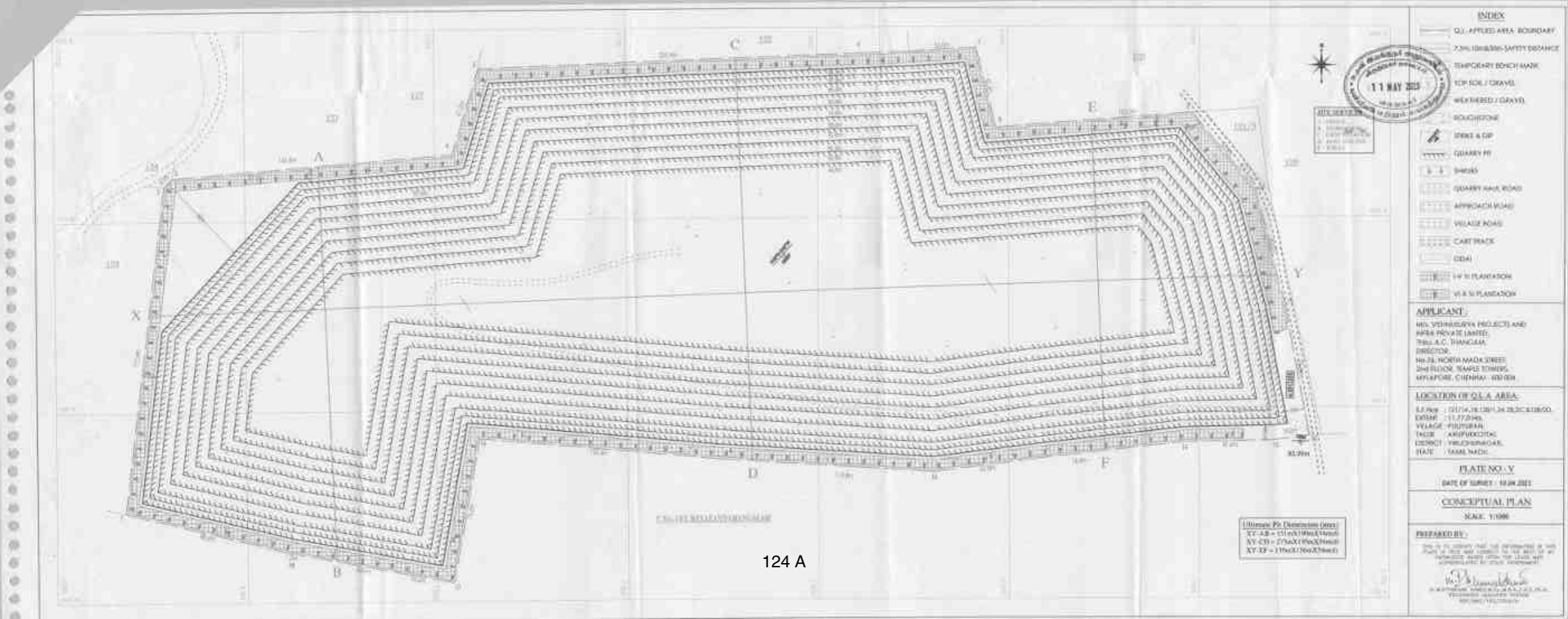
DATE OF SURVEY : 10.04.2023

CONCEPTUAL SECTIONS

SCALE 1:1000

PREPARED BY :

123 A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QUARRY HAUL ROAD
APPROACH ROAD
VILLAGE ROAD
CART TRACK
CREEK
11 MAY 2015
APPLICANT :
LOCATION OF Q.L.A. AREA :
PLATE NO : V
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SCALE : 1:1000
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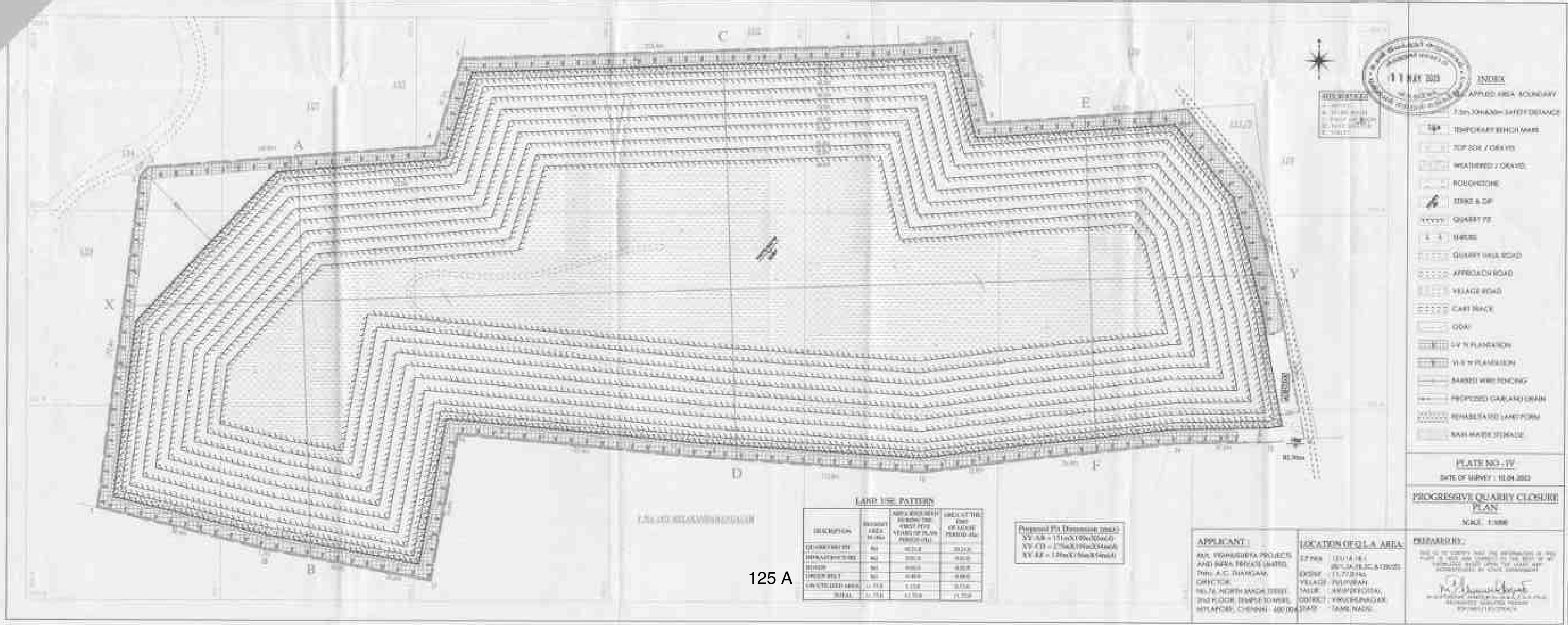
124 A



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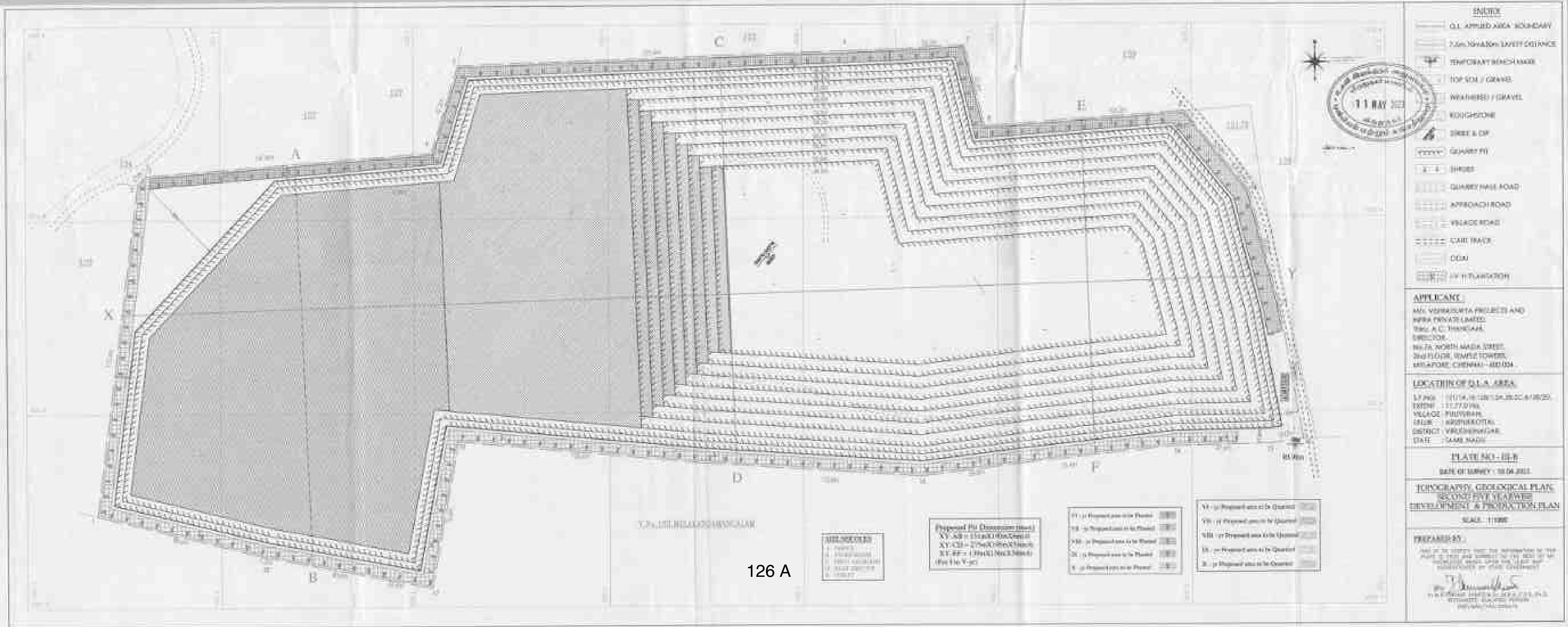
PREPARED BY:

125 A



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SCALE : 1:1000
PREPARED BY :
11 MAY 2023
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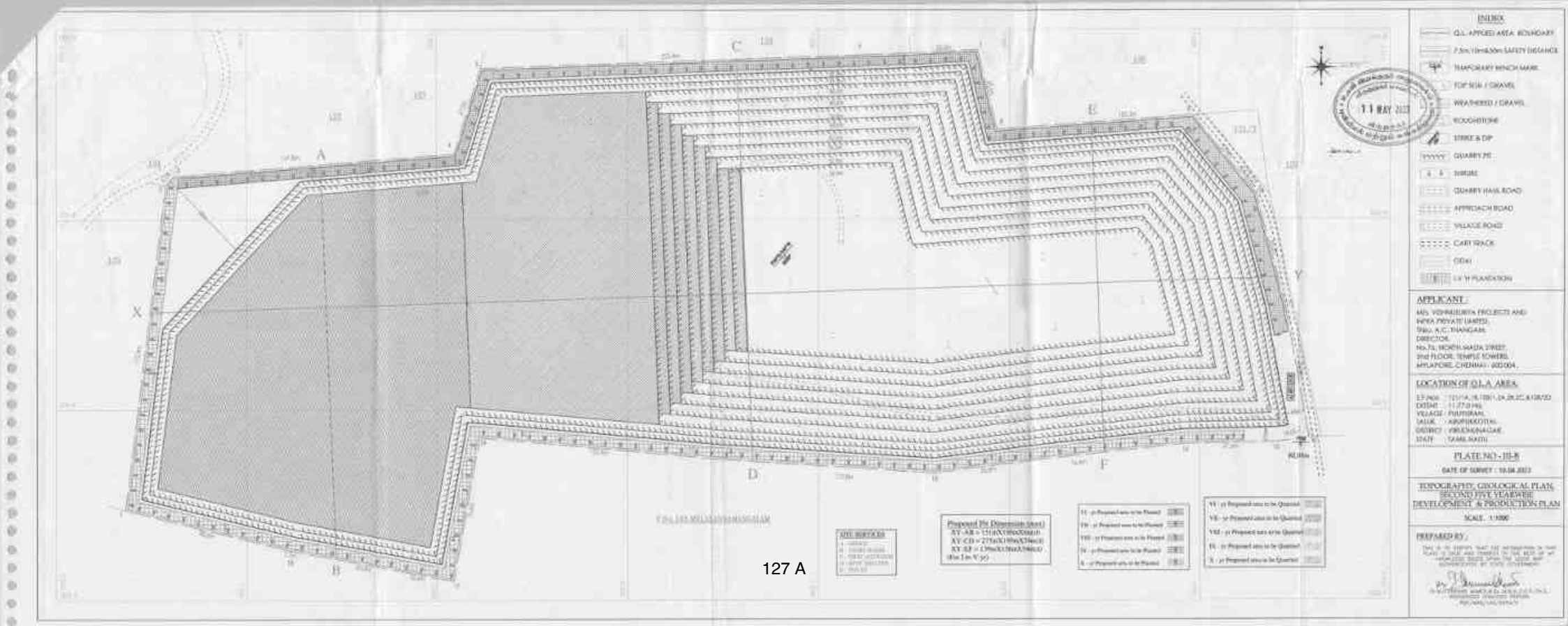
Proposed Pit Dimension (Bench)

126 A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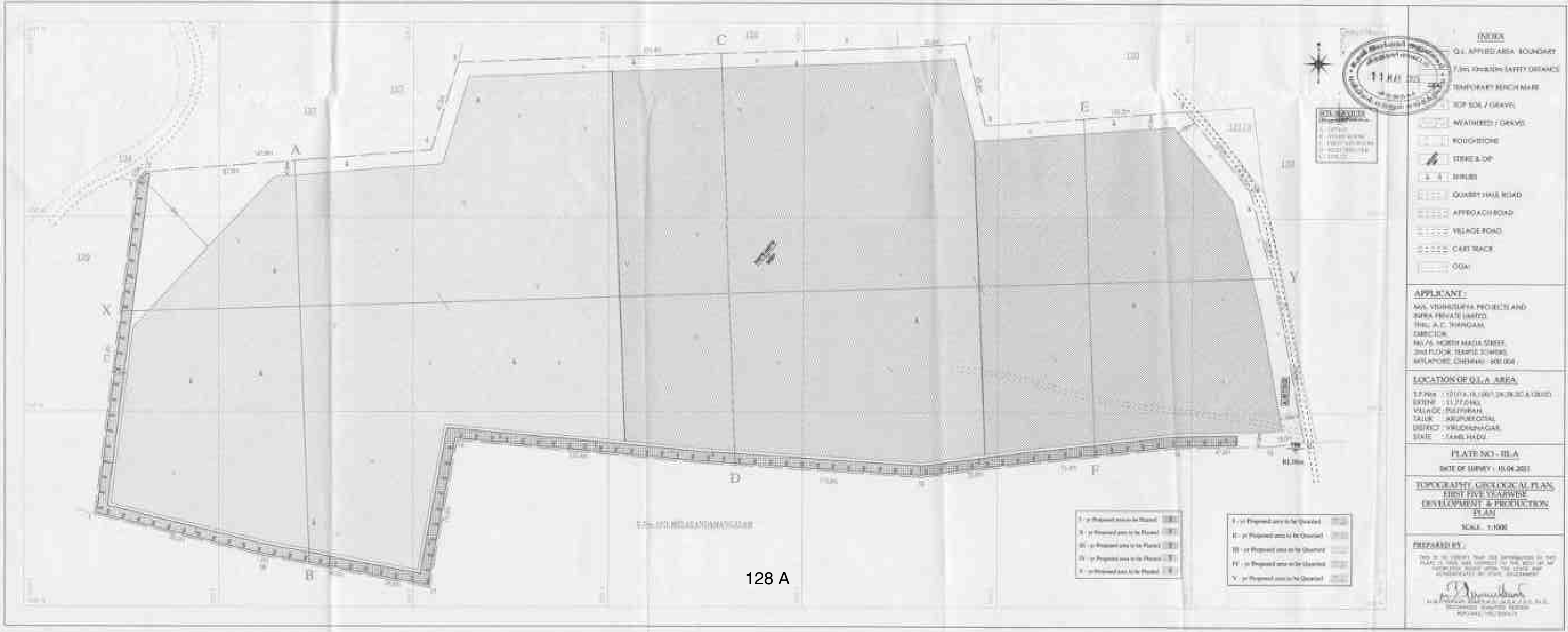
SCALE : 1:1000
PREPARED BY :
127 A



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ROUGHSTONE
STRIKE & DIP
SHRUBS
QUARRY HAUL ROAD
APPROACH ROAD
VILLAGE ROAD
CART TRACK
ODAI
APPLICANT :
M/S. VISHNUSURYA PROJECTS AND
INFRA PRIVATE LIMITED
THIRU. A.C. THANGAM,
DIRECTOR,
NO.76, NORTH MADA STREET,
2ND FLOOR, TEMPLE TOWERS,
MYLAPORE, CHENNAI - 600 004.
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EXTENT
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TALUK : ARUPPUKOTTAI
DISTRICT : VIRUDHUNAGAR
STATE : TAMIL NADU
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DATE OF SURVEY : 15.04.2021
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SCALE : 1:1000
PREPARED BY :
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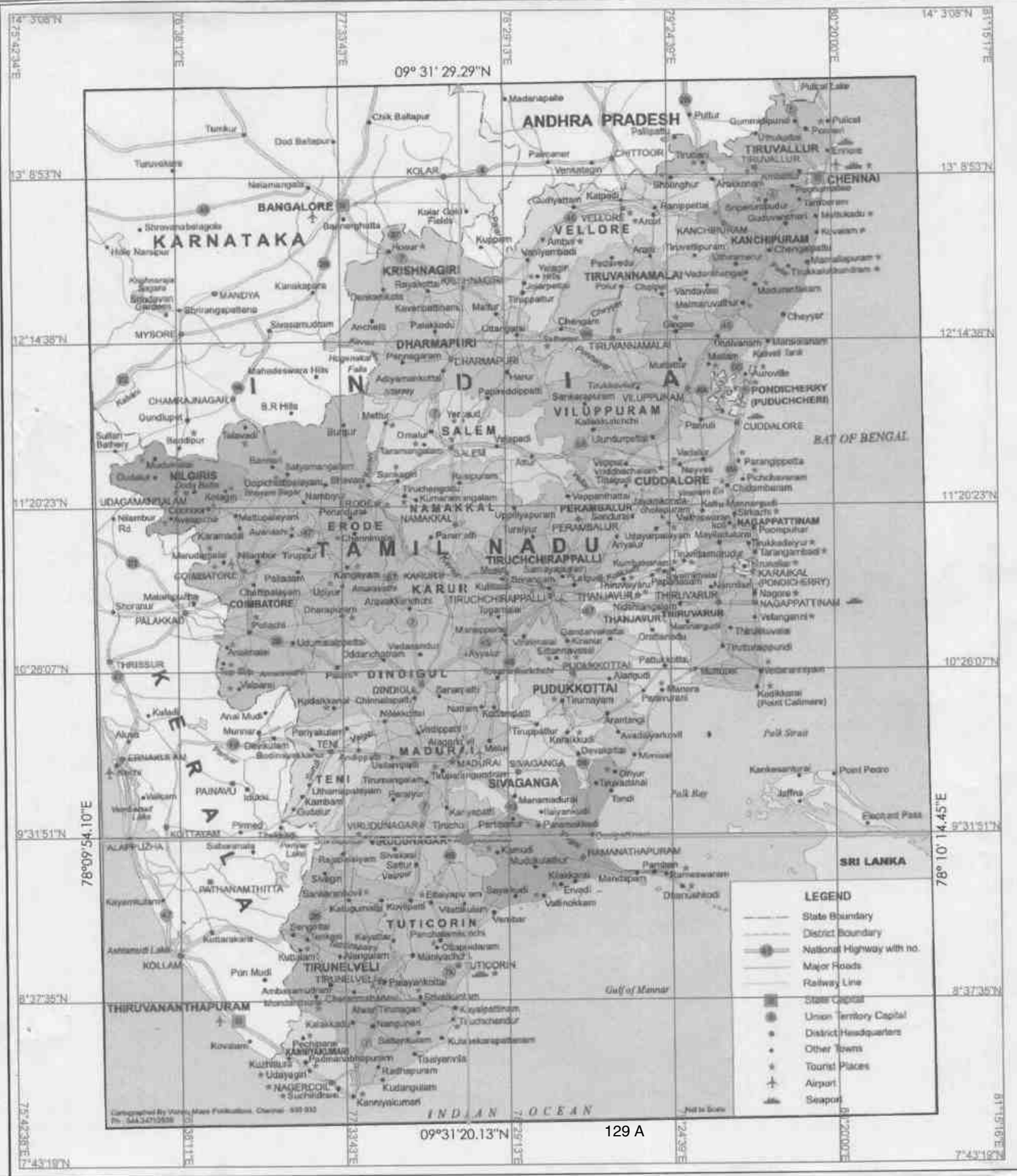

129 A

11 MAY 2023

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Q.L.APPLIED AREA :

TOPO SHEET NO. : 58 K/02

LATITUDE : 09°31'20.13"N to 09° 31' 29.29"N
LONGITUDE : 78°09'54.10"E to 78° 10' 14.45"E

APPLICANT :

M/s. VISHNUSURYA PROJECTS AND
INFRA PRIVATE LIMITED,
Thiru. A.C. THANGAM.
DIRECTOR,
No.76, NORTH MADA STREET,
2nd FLOOR, TEMPLE TOWERS,
MYLAPORE, CHENNAI - 600 004 .

LOCATION OF Q.L.A AREA:

S.F.Nos : 121/1A,1B,128/1,2A,2B,2C,&128/2D,
EXTENT : 11.77.0 Ha,
VILLAGE : PULIYURAN,
TALUK : ARUPUKKOTTAI,
DISTRICT : VIRUDHUNAGAR,
STATE : TAMIL NADU.

PLATE NO - I

DATE OF SURVEY : 10.04.2023

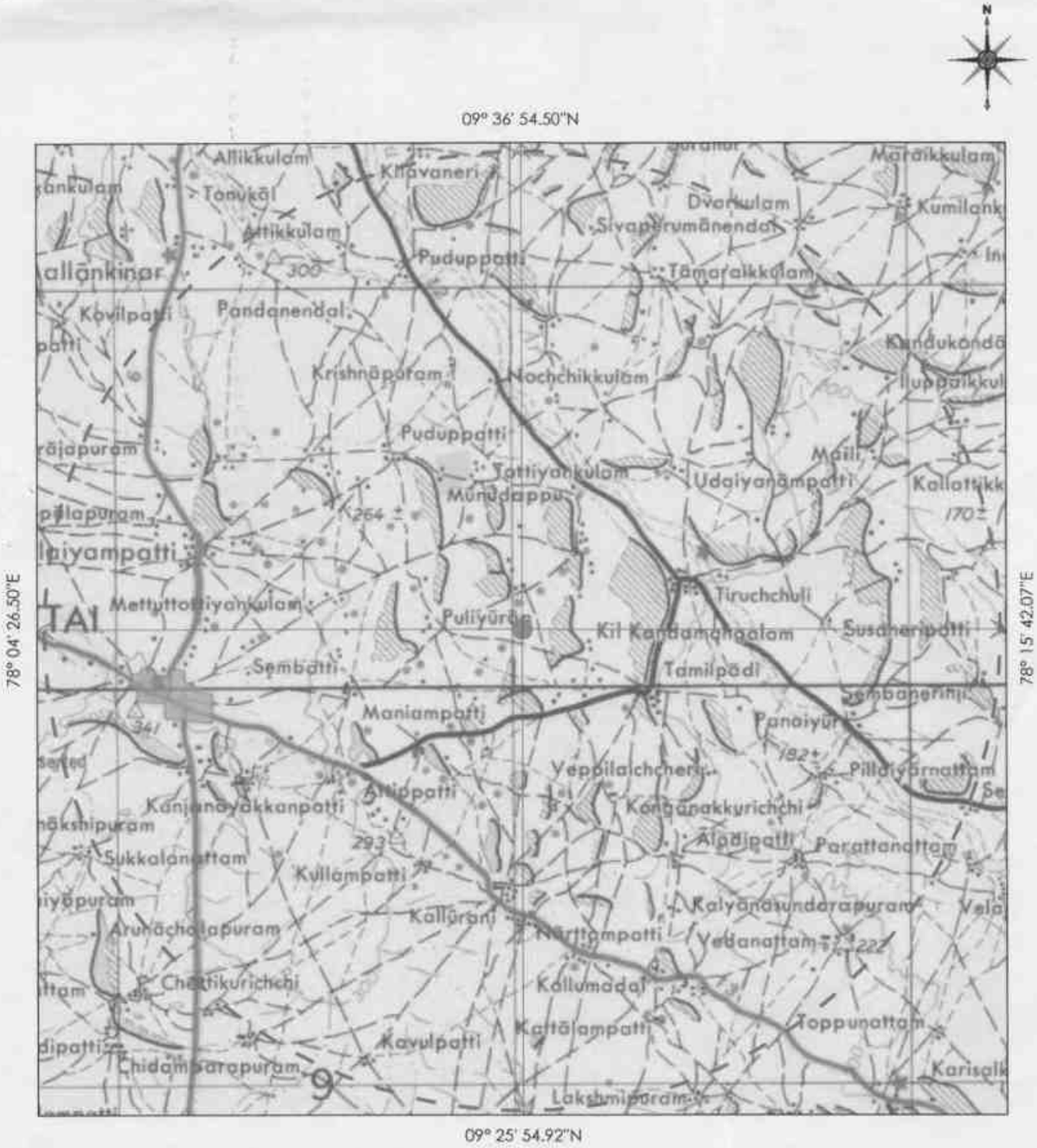
LOCATION PLAN

SCALE. 1:24,00,000

PREPARED BY :

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

Dr.M.IFTHIKHAR AHMED,M.Sc.,M.B.A.,F.G.S.,Ph.D,
RECOGNIZED QUALIFIED PERSON
RQP/MAS/183/2004/A



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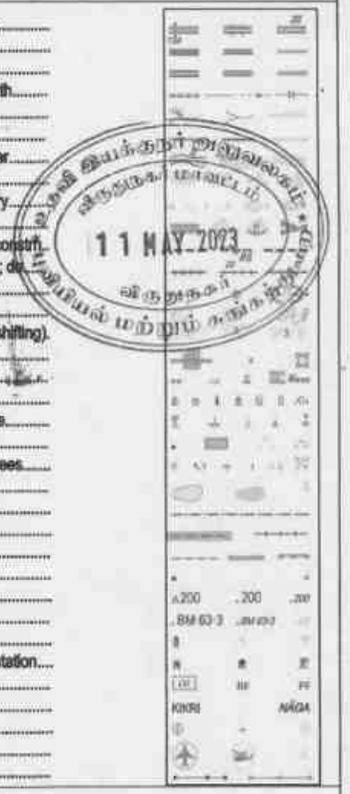
Express highway: with toll; with bridge; with distance stone.....
Roads metalled: according to importance.....
Roads, double carriageway; according to importance.....
Unmetalled road. Cart-track. Pack-track with pass. Foot-path.....
Streams: with track in bed; undefined. Canal.....
Dams: masonry or rock-filled;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



11 MAY 2023

TOPO SHEET NO. : 58 K/02

LATITUDE : 09°31'20.13"N to 09° 31' 29.29"N
LONGITUDE : 78°09'54.10"E to 78° 10' 14.45"E

10km RADIUS :

Q.L. APPLIED AREA : 130 A

APPLICANT :

M/s. VISHNUSURYA PROJECTS AND INFRA PRIVATE LIMITED,
Thiru. A.C. THANGAM, DIRECTOR,
No.76, NORTH MADA STREET,
2nd FLOOR, TEMPLE TOWERS,
MYLAPORE, CHENNAI - 600 004 .

LOCATION OF Q.L.A AREA:

S.F.Nos : 121/1A,1B,128/1,2A,2B,2C,&128/2D,
EXTENT : 11.77.0 Ha,
VILLAGE : PULIYURAN,
TALUK : ARUPUKKOTTAI,
DISTRICT : VIRUDHUNAGAR,
STATE : TAMIL NADU.

PLATE NO - I-A

DATE OF SURVEY : 10.04.2023

TOPO SKETCH OF QUARRY LEASE APPLIED AREA FOR 10Km RADIUS

SCALE. 1:1,00,000

PREPARED BY :

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

Dr.M.IFTHIKHAR AHMED,M.Sc.,M.B.A.,F.G.S.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/183/2004/A

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- Q.L APPLIED AREA
- 1 Km RADIUS
- 500m RADIUS
- SEASONAL AGRICULTURE LAND
- TREES
- HABITATION
- WIND DIRECTION
- PANCHAYAT ROAD
- CART TRACK
- QUARRY PIT & CRUSHER
- BARREN LAND
- TANK & ODAI

11 MAY 2023

APPLICANT :

M/s. VISHNUSURYA PROJECTS AND
INFRA PRIVATE LIMITED,
Thiru. A.C. THANGAM,
DIRECTOR,
No.76, NORTH MADA STREET,
2nd FLOOR, TEMPLE TOWERS,
MYLAPORE, CHENNAI - 600 004 .

LOCATION OF Q.L.A AREA:

S.F.Nos : 121/1A,1B,128/1.2A,2B,2C,&128/2D,
EXTENT : 11.77.0 Ha,
VILLAGE : PULIYURAN,
TALUK : ARUPUKKOTTAI,
DISTRICT : VIRUDHUNAGAR,
STATE : TAMIL NADU.

PLATE NO - I-B

DATE OF SURVEY : 10.04.2023

ENVIRONMENTAL & LAND USE PLAN

SCALE. 1:10,000

PREPARED BY :

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

Dr.M.IFTHIKHER AHMED,M.Sc.,M.B.A.,F.G.S.,Ph.D.
RECOGNIZED QUALIFIED PERSON
RQP/MAS/183/2004/A

TOPO SHEET NO. : 58 K/02
LATITUDE : 09°31'20.13"N to 09° 31' 29.29"N
LONGITUDE : 78°09'54.10"E to 78° 10' 14.45"E

LAND USE PATTERN

DESCRIPTION	PERCENTAGE	INDEX
QUARRY PIT & CRUSHER	(09%)	
TREES	(05%)	
ROADS	(04%)	
HABITATION	(03%)	
AGRICULTURE LAND	(21%)	
BARREN LAND	(41%)	
TANK& ODAI	(17%)	
TOTAL	100%	

HYDROGEOLOGICAL REPORT FOR

PULIYURAN ROUGH STONE AND GRAVEL QUARRY

1. INTRODUCTION

NAME OF THE APPLICANT WITH ADDRESS-

Name of the applicant	:	***M/s. Vishnusurya Projects and Infra Private Limited.***
		Thiru. A.C. Thangam (Director)
Address	:	No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore, Chennai.
Pin Code	:	600 004,
Mobile No	:	94450 24403
Aadhaar No	:	9005 9822 9998 (Annexure No. IX)
E-mail	:	vishnusuryalogistics@gmail.com

DETAILS OF THE AREA-

Land Classification	:	Patta Land
Survey Nos	:	121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C & 128/2D
Extent	:	11.77.0Ha
Village	:	Puliyuran
Taluk	:	Aruppukkottai
District	:	Virudhunagar

The Client requires detailed information on Ground Water Occurrences at Proposed Project 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.

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

Geographical information of the study area-

The investigated site falls in the Toposheet No: **58 - K/02** Latitude between **09°31'20.13''N to 09° 31' 29.29''N** and Longitude between **78°09'54.10''E to 78° 10' 14.45''E** on WGS datum-1984.

1. REGIONAL GEOLOGY OF VIRUDHUNAGAR DISTRICT-

The area under investigation is covered by a vast tract of black soil with residual hills and knolls. Since the area is covered by thick pediments, the geology of the area is studied in Available exposers and quarry section opened up for limestone dimension stone and blue metals for various purposes. The area exposes Khondalite Group of rocks and migmatite gneisses of Precambrian. The Khondalite Group of rocks comprises Charnockite, crystalline limestone/calc gneiss, garnetiferousquartzfeldspathic gneiss (leptynite), all these litho units probably represent a sequence of metamorphosed sedimentary units of arenaceous, calcareous and argillaceous composition with various intermixtures of different proportions. Granite and quartz veins form the younger intrusive.

Charnockite:

Generally, the Charnockite is grey to greenish colored, coarse to medium grained, greasy nature with or without garnet. Because of the limited outcrops, the quarry sections are studied to infer the various interrelationships between the lithounits. Charnockite is

interbanded nature with crystalline carbonate rocks are observed in most of the limestone quarry in Pandalgudi, Lakshmipuram, Gopalapuram villages, Weathering of the Charnockite on the surface gives a deceptive look of gneiss and in the quarry sections at depth the fresh charnockite is exposed, which are well exemplified in almost all the Charnockite quarry sections. The specks of pyrites within the charnockite are seen in the Duraisamypuram village.

Migmatite:

The Charnockite shows migmatisation is noticed in hill locating east of Kalasalingam University, where the rock exposes segregation of mafic and felsic layers with pegmatic folds showing conversion of Charnockite in to hornblende biotite gneiss, the occurrences of garnet parallel to the foliation.

Calc Gneiss:

Calc gneiss are characterized by alternating layer of carbonate rich and diopside rich layers are noticed in outcrop in association with garnetiferousquartzofeldspathic gneiss, is medium to coarse grained and is made up of calcite, diopside, biotite and garnet. The exposers are seen in quarry section in Nadikudi, Erichanatham, Kanjanpatti, Sundakottai, Aladipatti, Kadambankulam villages. Kanker is forming as a weathering product of calcgnessic, containing CaO content more than 30% is mined by RAMCO cements in Maravarperungudi village and in many local quarries for various purposes.

GarnetiferousQuartzofeldspathic Gneiss:

White coarse to medium grained garnetiferousquartzofeldspathic gneiss occurs as bands along the foliation in the charnockite, also as enclaves engulfed by charnockite. It consists of quartz, feldspar and garnet with subordinate biotite. The garnets at places are rounded simulating snowball garnets, as observed in Motamalai hill. Quartz and feldspar show stretching and alignment, imparting a crude gneissosity and garnets are unevenly distributed. The rock is exposed in association with calc gneiss and Charnockite as observed in quarries in Pandalgudi, Duraisamipuram, Thiruthangal villages.

Crystalline carbonate rock:

The rock is white, pale grey and pink in color, medium to coarse grained and consists essentially of calcite with mafic minerals (diopside) unevenly distributed within it. The crystalline limestone is associated with calc gneissic in Pandalgudi, K.Pudhur villages and it associated with Charnockite in Gopalapuram, Cholapuram villages. At places the limestone show compositional variation to dolomitisation due to presence of mineral sapphire as observed in Tamilnadu cements mining in Alangulam village. The presence of quartz vein

within the limestone degrades the quality of cement grade purposes. In Cholapuram area, the remobilation of carbonate rock is noticed within the Charnockite.

Pink Granite:

The pink granite occurs as veins intruding into the above all litho units. It is coarse grained, consists of quartz, pink feldspar, with biotite in lesser proportion. It is associated with Charnockite is observed in Kothankulam and Aladipatti villages.

Quartz Vein:

Quartz veins are cutting across into the litho units like charnockite, crystalline limestone, calc gneissic are observed in the field and the presence of garnet in the quartz vein are noticed in the village Kothankulam is associated with Charnockite. The quartz vein in limestone makes unsuitable for cement grade purposes.

Geomorphology

Virudhunagar district is bordered by Western Ghats (Ridge and valley complex) in the West. Vally fill area is observed in Watrap block. A major part of the district constitutes a plain terrain with a gentle slope toward East and Southeast, except for the hilly terrain in the west. The prominent geomorphic units identified in the district through interpretation of 1. Flood Plain, 2.Bazada 3.Pediment 4. Shallow & deep buried Pediments and 6. Structural Hills.

Soils

Soils in the area have been classified into i) Deep red Loam ii) Black soil iii) Red sandy soil. The majority of the study area is covered by Black soil. Ferruginous red soils are also seen at places. Black soils are deep to very deep and generally occur in the depressions adjacent to hilly areas, in the western and central part of district. Alluvial soils occur along the river courses. Red sandy soil is seen all around the Sattur, Kariyapatti, Aruppukotai and Thiruchuli blocks.

Drainage

The major part of Virudhunagar district falls in Vaippar - Gundar river basin. Vaippar, Arjuna River, Gundar and Deviar are the important rivers. The drainage pattern, in general, is dendritic. All the rivers are seasonal and carry substantial flows during monsoon period. Vaippar, is one of the important rivers of the district, flow and drain in the Vembakkam and Sattur blocks. The Arjuna River, flowing in the central part of the district, has its origin from the SatturWatrap Hills and is formed by Kovillar, periyar and Chittar rivers. The Gundar River originates at an altitude of 500m amsl near Kottaimalai of Saptur reserve forest in Varushanadu hills in Madurai district.

2. 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:

$$R = Rs * L/A \text{ (in Ohm)}$$

Where Rs is known as the specific resistivity (characteristic of the material and independent of its shape or size)

With Ohm's Law,

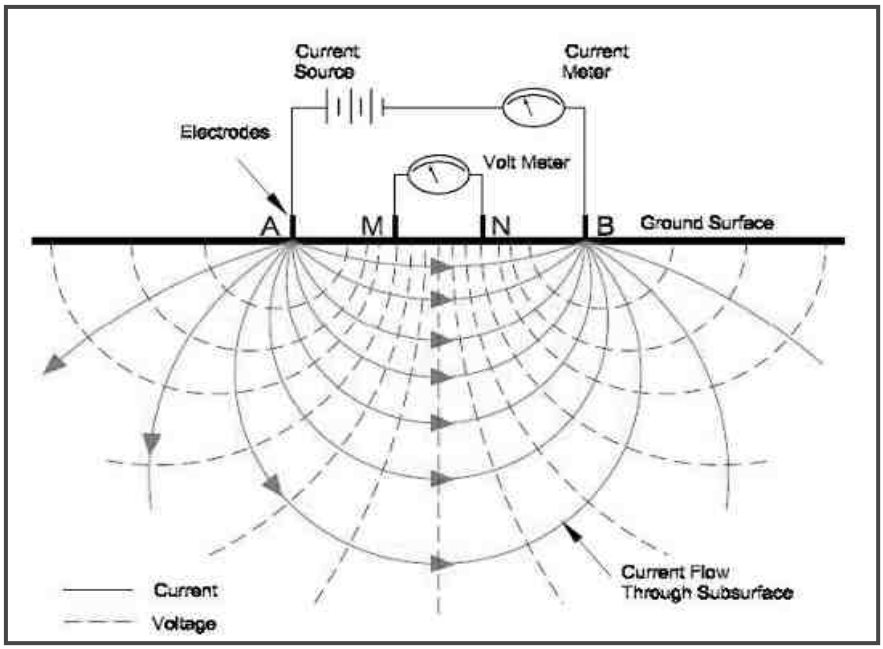
$$R = dV/I \text{ (Ohm)}$$

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:

$$Rs = (A/L) * (dV/I) \text{ (in Ohm m)}$$

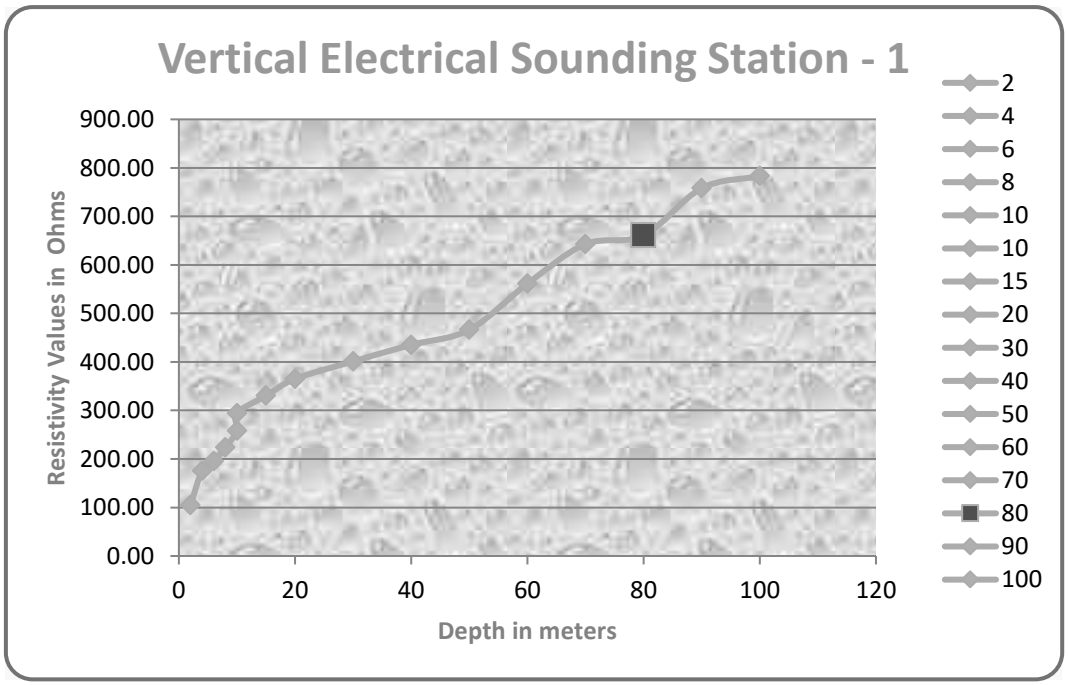
Vertical Electrical Sounding (VES)

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.



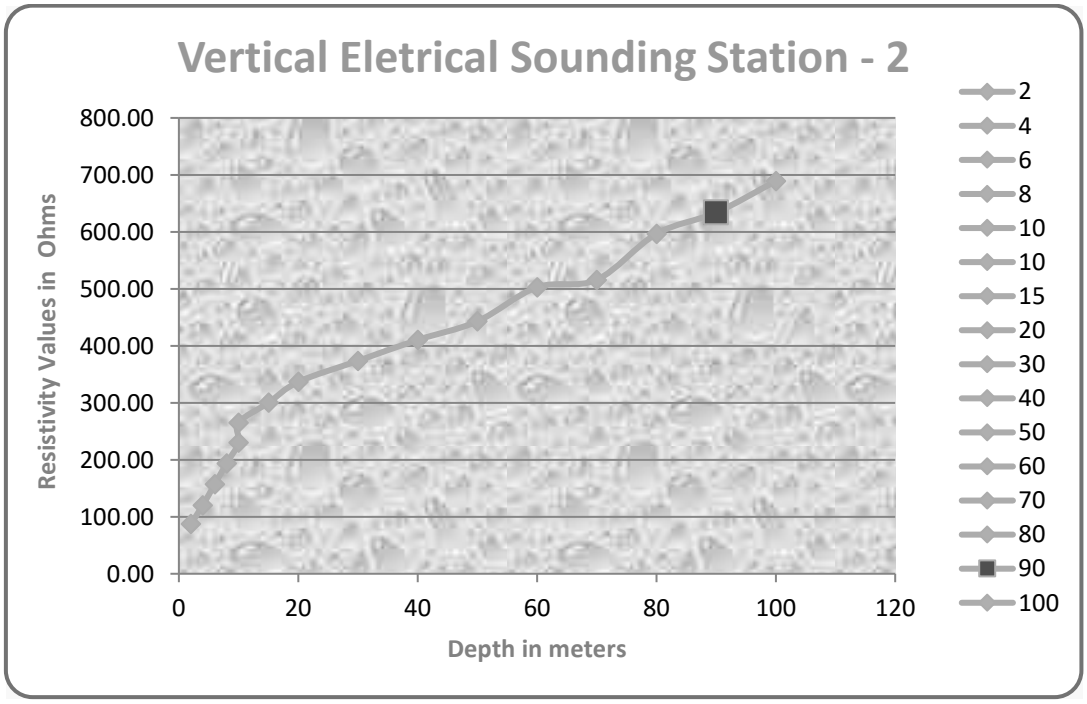
Vertical electrical sounding data's and Diagrams

Vertical Electrical Sounding Station-1					
GPS Coordinates 09°31'21.30"N 78°09'54.10"E					
S.No	**Ab/2(m)**	**Mn/2(m)**	**Geometrical Factor (G)**	**Resistance Value in Ohms**	**Apparent Resistance in Ohms**
1	2	1	4.71	22.255	104.84
2	4	1	23.55	7.450	175.68
3	6	1	54.95	3.553	195.18
4	8	1	98.91	2.257	223.54
5	10	1	155.45	1.660	258.05
6	10	5	23.55	12.500	294.38
7	15	5	62.80	5.260	330.33
8	20	5	117.75	3.100	365.03
9	30	5	274.75	1.460	401.14
10	40	5	494.55	0.880	435.20
11	50	5	777.15	0.615	466.29
12	60	5	1122.55	0.500	561.28
13	70	5	1530.75	0.420	642.92
14	80	5	2001.75	0.330	660.58
15	90	5	2535.55	0.299	758.13
16	100	5	3132.15	0.250	783.04



- Vertical electrical Sounding Graph indicates purple mark point is fracture zone.

Vertical Electrical Sounding Station - 2					
GPS Coordinates - 09°31'28.19"N 78°10'12.40"E					
S.No	**Ab/2(m)**	**Mn/2(m)**	**Geometrical Factor (G)**	**Resistance Value in Ohms**	**Apparent Resistance in Ohms**
1	2	1	4.71	18.550	87.42
2	4	1	23.55	5.100	120.11
3	6	1	54.95	2.850	157.16
4	8	1	98.91	1.970	193.86
5	10	1	155.45	1.470	230.07
6	10	5	23.55	11.250	265.17
7	15	5	62.80	4.780	300.18
8	20	5	117.75	2.860	336.77
9	30	5	274.75	1.360	373.66
10	40	5	494.55	0.830	410.48
11	50	5	777.15	0.570	442.98
12	60	5	1122.55	0.447	502.90
13	70	5	1530.75	0.338	515.86
14	80	5	2001.75	0.298	596.52
15	90	5	2535.55	0.250	633.89
16	100	5	3132.15	0.220	689.07



Vertical electrical Sounding Graph indicates purple mark point is fracture zone.

3. Conclusion –

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 80m to 85m where minor fractures are observed and shallow aquifers are expected above 65m-60m BGL. The ultimate pit limit as per the approved mining plan depth is 54m below ground level for first five years which will have no impact on the Ground Water.

Dr. P. Thangaraju, M.Sc., Ph.D.,
Govt. Approved Hydro Geologist
M/s. Geo Exploration and Mining Solutions,
Regd. Office: No. 17, Advaitha Ashram Road,
Alagapuram, Salem – 636 004, Tamil Nadu
Mobile: +91 - 94433 56539
E-Mail: infogeoexploration@gmail.com

அனுப்புநர்:

திரு.வே. கல்யாணகுமார்,
வருவாய் கோட்டாட்சியர்,
அருப்புக்கோட்டை.

பெறுநர்:

மாவட்ட ஆட்சித் தலைவர்,
விருதுநகர்.

அ2/771/2023 நாள் 24 .03.2023.

அய்யா,

பொருள்: கனிமங்களும் குவாரிகளும் - அருப்புக்கோட்டை வட்டம் - பாளையம்பட்டி குறுவட்டம் - புலியூரான் கிராமம் - புல எண்கள். 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் பரப்பு நிலத்தில் 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக் கோரியுள்ளது — கருத்துரு அனுப்பக் கோருதல் அறிக்கை அனுப்புதல் - தொடர்பாக.

பார்வை:

1. திரு. A.C தங்கம் இயக்குநர், மெ/எஸ் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட இன்ப்ரா பிரைவேட் லிமிடெட் சென்னை என்பவரது மனு நாள்: 03.02.23.
2. விருதுநகர் உதவி இயக்குநர் புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் கடித எண் ந.க. கேவி1/148/2023 நாள் 07.02.2023.
3. அருப்புக்கோட்டை வருவாய் வட்டாட்சியர் அவர்களின் கடித எண் ந.கஅ2/771/2023 நாள் 15.03.2023.

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விருதுநகர் மாவட்டம், அருப்புக்கோட்டை வட்டம், பாளையம்பட்டி குறுவட்டம், புலியூரான் கிராமம் புல எண்கள். 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் நிலத்தில் 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக்கோரி பார்வை 1-ல் கண்ட கடிதத்தில் திரு. A.C தங்கம் இயக்குநர், மெ/எஸ் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட இன்ப்ரா பிரைவேட் லிமிடெட் சென்னை என்பவர் விண்ணப்பம் செய்ததன் பேரில், புலத்தணிக்கை செய்து விரிவான அறிக்கை அனுப்புமாறு பார்வை 2-ல் காணும் கடிதத்தில் கோரியுள்ளதன்படி, பார்வை 3-ல் அருப்புக்கோட்டை வருவாய் வட்டாட்சியரிடமிருந்து பரிந்துரை அறிக்கை வரப்பெற்றதன்பேரில் 22.03.2023 அன்று மேற்படி புலங்களை அருப்புக்கோட்டை வருவாய் வட்டாட்சியர், மண்டல துணை வட்டாட்சியர் மற்றும் குறுவட்ட வருவாய் ஆய்வாளர் ஆகியோருடன் இணைந்து கூட்டாகப் புலத்தணிக்கை செய்து எனதறிக்கையினை பின்வருமாறு சமர்ப்பிக்கிறேன்.

மேற்படி நிறுவனம் உடைகல் மற்றும் கிராவல் குவாரி பணி செய்வதற்கு விண்ணப்பித்துள்ள புலியூரன் கிராமம் புல எண்கள் 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் நிலங்கள் முழுவதும் தரிசாக உள்ளது. 300 மீட்டர் சுற்றளவில் எவ்விதமான குடியிருப்பு பகுதிகள் ஏதும் இல்லை.

நில விபரம்:

பட்டா எண்	புல எண்	விஸ்தீரணம் (ஹெக்டேர்)	வகை
1833	121/ 1A	4-04.50 ஹெக்டேர்	புன்செய்
1833	121/ 1B	3-99.50 ஹெக்டேர்	புன்செய்
1761	128/ 1	1-73.00 ஹெக்டேர்	புன்செய்
1761	128/ 2A	0-45.50 ஹெக்டேர்	புன்செய்
1761	128/ 2B	0-45.00 ஹெக்டேர்	புன்செய்
1761	128/ 2C	0-45.00 ஹெக்டேர்	புன்செய்
1761	128/ 2D	0-64.50 ஹெக்டேர்	புன்செய்
		11.77.00 ஹெக்டேர்	

ஆக மொத்தம் 11.77.00 ஹெக்டேர் புன்செய் நிலம் ஆகும்.

நான்குமால் விபரம்:

புல எண்	கிழக்கு	மேற்கு	வடக்கு	தெற்கு
121/ 1A	புல எண் 121/1B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,மற்றும் புல எண் 127 ஞான சுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண் 122/5 கே என் ஆர் கன்ஸ்ட்ரக்சன்ஸ்	மேலகண்டமங்கலம் கிராம எல்கை
121/1B	புல எண் 121/2 தென்வடல் வண்டிப்பாதை	புல எண் 121/1A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்கள் 120/ B , 122/5 கேஎன்ஆர் கன்ஸ்ட்ரக்சன்ஸ்	மேலகண்டமங்கலம் கிராம எல்கை
128/1	புல எண் 128/2A, 2B, 2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 134 கிராம சாலை மற்றும் புல எண் 129/1 ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண் 127/2 B ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	மேலகண்டமங்கலம் கிராம எல்கை
128/ 2A	புல எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.127/2B ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண்.128/2 B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,
128/2B	புல எண். 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.128/2A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.128/2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,

	கு	மேற்கு	வடக்கு	தெற்கு
	சர்வே எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	சர்வே எண் 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/2B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	மேலகண்டமங்கலம் கிராம எல்கை
128, 3	121/1A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்., மற்றும் மேலகண்டமங்கலம் கிராம எல்கை	புல எண்கள். 128, 128/2 A, 2B, 2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 121/1 A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	மேலகண்டமங்கலம் கிராம எல்கை

பாதை வசதி:

மேலும் 500 மீட்டர் சுற்றளவில் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் நிறுவனத்தின் அரசு உரிமம் பெற்ற இரண்டு குவாரிகள் செயல்பட்டு வருகின்றன. மற்றொரு நிறுவனமான கே எஸ் ஆர் கன்ஸ்ட்ரக்ஷன்ஸ் குவாரி உரிமம் டிசம்பர் 2018 ல் முடிவடைந்த காரணத்தினால் செயல்படாத நிலையில் உள்ளது என்பது புலத்தணிக்கை மற்றும் விசாரணையில் தெரிய வருகின்றது. குவாரி பணி செய்ய விண்ணப்பித்த புல எண்களுக்கு அணுகுசாலை வசதி உள்ளது.

50 மீட்டர் சுற்றளவில் மாநில மற்றும் தேசிய நெடுஞ்சாலைகள், இரயில் இருப்புப் பாதைகள், எவ்வித மதத்தினர் கோவில்கள் மற்றும் புராதன சின்னங்கள், உயர் மின் அழுத்த மின் கம்பிகள், நீர் நிலைகள், வேறு நிரந்தர அமைப்புகள் எதுவும் இல்லை.

A1 விளம்பரம்:

17.02.2023 ல் விளம்பரம் செய்யப்பட்டு புலியூரால் கிராம பொதுமக்களிடமிருந்து இதுவரை எவ்விதமான ஆட்சேபணை மனுக்கள் ஏதும் வரப்பெறவில்லை.

ஆக்கிரமிப்பு விவரம் :

மேற்படி புல எண்களில் உடைகல் மற்றும் கிராவல் குவாரி 10 ஆண்டுகளுக்கு அமைவதால் அருகில் உள்ள புன்செய் நிலங்களுக்கு எவ்விதமான பாதிப்பும் இல்லை என்பது புலத்தணிக்கையில் தெரியவருகின்றது.

மேலே கண்ட புல எண்களில் உடைகல், சரள் மண் மற்றும் கிராவல் குவாரி அமைவதால் அருகில் உள்ள ஓடை, புறம்போக்கு நிலங்கள் மற்றும் பட்டா நிலங்களுக்கு எவ்விதமான பாதிப்பும் ஏற்பட வாய்ப்புகள் இல்லை.

மனுதாரர் உடைகல், மற்றும் கிராவல் குவாரி அமைய கோரப்படும் புன்செய் புல எண்கள் அனைத்தும் புலியூரான் ஊராட்சி எல்லைக்கு உட்பட்டதாகும்.

பரிந்துரை:

எனவே, மேற்படி நிறுவனத்திற்கு மனுதாரர் கோரப்படும் புலியூராள் கிராம புல்செம் புல எண்களில் 10 ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் குவாரி பணி செய்வதற்கு திரு. A.C தங்கம் இயக்குநர், மெ/எஸ் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட இன்ப்ரா பிரைவேட் லிமிடெட் சென்னை என்பவருக்கு உரிமம் வழங்கப் பரிந்துரை செய்கிறேன் என்பதைப் பணிவுடன் தெரிவித்துக் கொன்கிறேன்.

இத்துடன் கிராம நிர்வாக அலுவலரின் அறிக்கை, வருவாய் ஆய்வாளரின் அறிக்கை, மண்டலத்துணை வட்டாட்சியர்-1 அறிக்கை, பொது மக்களிடமிருந்து பெறப்பட்ட அ1 விளம்பர அறிக்கை, புலப்பட நகல், கிராம ஆவணங்கள் வட்டாட்சியரின் புலத்தணிக்கை குறிப்பு ஆகியவற்றை இணைத்து அனுப்பியுள்ளேன் என்பதைப் பணிவுடன் தெரிவித்துக் கொள்கிறேன்.

இணைப்பு:
மேற்கூறியவாறு.

ஓம். வே. கல்யாணகுமார்,
வருவாய் கோட்டாட்சியர்
அருப்புக்கோட்டை.

/உத்தரவுப்படி/

நேர்முக உதவியாளர்

புலத்தணிக்கை அலுவலர்	:	வருவாய் கோட்டாட்சியர், அருப்புக்கோட்டை.
கிராமம்	:	புலியூரான்
புல எண்கள்	:	121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50),
விஸ்தீரணம்	:	11.77.00 ஹெக்டேர்ஸ்
புலத்தணிக்கை நாள்	:	22.03.2023
கோரிக்கை	:	10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக் கோரியுள்ளது
நோக்கம்	:	உடைகல் மற்றும் கிராவல் குவாரி உரிமம்

விருதுநகர் மாவட்டம், அருப்புக்கோட்டை வட்டம், பாளையம்பட்டி குறுவட்டம், புலியூரான் கிராமம் புல எண்கள். 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் நிலத்தில் 10 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக் கோரியது தொடர்பாக 22.03.2023 அன்று மேற்படி புலங்களை அருப்புக்கோட்டை வருவாய் வட்டாட்சியர், மண்டல துணை வட்டாட்சியர் மற்றும் குறுவட்ட வருவாய் ஆய்வாளர் ஆகியோருடன் இணைந்து கூட்டாகப் புலத்தணிக்கை செய்து எனதறிக்கையினை பின்வருமாறு சமர்ப்பிக்கிறேன்.

மேற்படி நிறுவனம் உடைகல் மற்றும் கிராவல் குவாரி பணி செய்வதற்கு விண்ணப்பித்துள்ள புலியூரன் கிராமம் புல எண்கள் 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் நிலங்கள் முழுவதும் தரிசாக உள்ளது. 300 மீட்டர் சுற்றளவில் எவ்விதமான குடியிருப்பு பகுதிகள் ஏதும் இல்லை.

நில விபரம்:

பட்டா எண்	புல எண்	விஸ்தீரணம் (ஹெகடேர்)	வகை
1833	121/ 1A	4-04.50 ஹெக்டேர்	புன்செய்
1833	121/ 1B	3-99.50 ஹெக்டேர்	புன்செய்
1761	128/ 1	1-73.00 ஹெக்டேர்	புன்செய்
1761	128/ 2A	0-45.50 ஹெக்டேர்	புன்செய்
1761	128/ 2B	0-45.00 ஹெக்டேர்	புன்செய்
1761	128/ 2C	0-45.00 ஹெக்டேர்	புன்செய்
1761	128/ 2D	0-64.50 ஹெக்டேர்	புன்செய்
		11.77.00 ஹெக்டேர்	

ஆக மொத்தம் 11.77.00 ஹெக்டேர் புன்செய் நிலம் ஆகும்.

நான்குமாஸ் விபரம்:

புல எண்	கிழக்கு	மேற்கு	வடக்கு	தெற்கு
121/ 1A	புல எண் 121/1B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,மற்றும் புல எண் 127 ஞான சுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண் 122/5 கே என் ஆர் கன்ஸ்ட்ரக்சன்ஸ்	மேலகண்டமங்கலம் கிராம எல்லை
121/1B	புல எண் 121/2 தென்வடல் வண்டிப்பாதை	புல எண் 121/1A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்கள் 120/ B , 122/5 கேஎன் ஆர் கன்ஸ்ட்ரக்சன்ஸ்	மேலகண்டமங்கலம் கிராம எல்லை
128/1	புல எண் 128/2A, 2B, 2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 134 கிராம சாலை மற்றும் புல எண் 129/1 ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண் 127/2 B ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	மேலகண்டமங்கலம் கிராம எல்லை
128/ 2A	புல எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.127/2B ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண்.128/2 B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,
128/2B	புல எண். 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.128/2A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.128/2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,
128/ 2C	சர்வே எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	சர்வே எண் 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/2B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	மேலகண்டமங்கலம் கிராம எல்லை
128/2D	121/1A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்., மற்றும் மேலகண்டமங்கலம் கிராம எல்லை	புல எண்கள். 128, 128/2 A, 2B, 2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 121/1 A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	மேலகண்டமங்கலம் கிராம எல்லை

பாதை வசதி:

மேலும் 500 மீட்டர் சுற்றளவில் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா ஹோவேட் லிமிடெட் நிறுவனத்தின் அரசு உரிமம் பெற்ற இரண்டு குவாரிகள் செயல்பட்டு வருகின்றன. மற்றொரு நிறுவனமான கே எஸ் ஆர் கன்ஸ்ட்ரக்ஷன்ஸ் குவாரி உரிமம் டிசம்பர் 2018 ல் முடிவடைந்த காரணத்தினால் செயல்படாத நிலையில் உள்ளது என்பது புலத்தணிக்கை மற்றும் விசாரணையில் தெரிய வருகின்றது. குவாரி பணி செய்ய விண்ணப்பித்த புல எண்களுக்கு அணுகுசாலை வசதி உள்ளது.

50 மீட்டர் சுற்றளவில் மாநில மற்றும் தேசிய நெடுஞ்சாலைகள், இரயில் இருப்புப் பாதைகள், எவ்வித மதத்தினர் கோவில்கள் மற்றும் புராதன சின்னங்கள், உயர் மின் அழுத்த மின் கம்பிகள், நீர் நிலைகள், வேறு நிரந்தர அமைப்புகள் எதுவும் இல்லை.

A1 விளம்பரம்:

17.02.2023 ல் விளம்பரம் செய்யப்பட்டு புலியூரான் கிராம பொதுமக்களிடமிருந்து இதுவரை எவ்விதமான ஆட்சேபணை மனுக்கள் ஏதும் வரப்பெறவில்லை.

ஆக்கிரமிப்பு விவரம் :

மேற்படி புல எண்களில் உடைகல் மற்றும் கிராவல் குவாரி 10 ஆண்டுகளுக்கு அமைவதால் அருகில் உள்ள புன்செய் நிலங்களுக்கு எவ்விதமான பாதிப்பும் இல்லை என்பது புலத்தணிக்கையில் தெரியவருகின்றது.

மேலே கண்ட புல எண்களில் உடைகல், சரள் மண் மற்றும் கிராவல் குவாரி அமைவதால் அருகில் உள்ள ஓடை, புறம்போக்கு நிலங்கள் மற்றும் பட்டா நிலங்களுக்கு எவ்விதமான பாதிப்பும் ஏற்பட வாய்ப்புகள் இல்லை.

மனுதாரர் உடைகல், மற்றும் கிராவல் குவாரி அமைய கோரப்படும் புன்செய் புல எண்கள் அனைத்தும் புலியூரான் ஊராட்சி எல்லைக்கு உட்பட்டதாகும்.

பரிந்துரை:

எனவே, மேற்படி நிறுவனத்திற்கு மனுதாரர் கோரப்படும் புலியூரான் கிராம புன்செய் புல எண்களில் 10 ஆண்டுகளுக்கு உடைகல் மற்றும் கிராவல் குவாரி பணி செய்வதற்கு திரு. A.C தங்கம் இயக்குநர், மெ/எஸ் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட் சென்னை என்பவருக்கு உரிமம் வழங்கப் பரிந்துரை செய்கிறேன்.

23.12.23

வருவாய் கோட்டாட்சியர்
அருப்புக்கோட்டை.

அனுப்புநர்
திரு தே. அறிவழகன்,பி..ஏ.,
வருவாய் வட்டாட்சியர்,
அருப்புக்கோட்டை.

பெறுநர்
வருவாய் கோட்டாட்சியர்,
அருப்புக்கோட்டை.

ந.க.அ2/771/2023 நாள் 15.03.2023.

அய்யா,

பொருள்: கனிமங்களும் குவாரிகளும் - அருப்புக்கோட்டை வட்டம் - பாளையம்பட்டி குறுவட்டம் - புலியூரான் கிராமம் - புல எண்கள். 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் பரப்பு நிலத்தில் 10 வருடங்களுக்கு உடை கால் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக் கோரியுள்ளது — கருத்துரு அனுப்பக் கோருதல் அறிக்கை அனுப்புதல் - தொடர்பாக.

பார்வை:

1. திரு. A.C தங்கம் இயக்குநர், மெ/எஸ் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட இன்ப்ரா பிரைவேட் லிமிடெட் சென்னை என்பவரது மனு நாள்: 03.02.23.
2. விருதுநகர் உதவி இயக்குநர் புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் கடித எண் ந.க. கேவி1/148/2023 நாள் 07.02.2023.
3. அருப்புக்கோட்டை வருவாய் கோட்டாட்சியர் அவர்களின் குறிப்பாணை ந.க.அ2/797/2023 நாள் 10.02.2023.
4. மண்டலத்துணை வட்டாட்சியர் -1 அறிக்கை நாள் 06.03.2023.
5. பாளையம்பட்டி வருவாய் ஆய்வாளரின் அறிக்கை நாள் 06.03.2023
6. பாளையம்பட்டி குறுவட்ட நில அளவரின் அறிக்கை நாள் 06.03.2023.

பார்வை 3-ல் கண்ட கடிதத்தில் திரு. A.C தங்கம் இயக்குநர், மெ/எஸ் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட இன்ப்ரா பிரைவேட் லிமிடெட் சென்னை என்பவர் அருப்புக்கோட்டை வட்டம், பாளையம்பட்டி குறுவட்டம், புலியூரான் கிராமம் புல எண்கள். 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் நிலத்தில் 10 வருடங்களுக்கு உடை கால் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக்கோரியுள்ளார் எனவும் மேற்படி மனு தொடர்பாக புலத்தணிக்கை செய்து அறிக்கை செய்யுமாறு கேட்டுக்கொள்ளப்பட்டுள்ளது.

மேற்படி விண்ணப்பம் தொடர்பாக மண்டலத்துணைவட்டாட்சியர் -1, புலியூரான் கிராம நிர்வாக அலுவலர், பாளையம்பட்டிவருவாய் ஆய்வாளர், சம்பந்தப்பட்ட கிராம நிர்வாக உதவியாளர், பாளையம்பட்டி குறுவட்ட நில அளவர் ஆகியோருடன் 15.03.2023 அன்று கிராமக்கணக்குகளுடன் கூட்டுப்புலத்தணிக்கை செய்து கீழ்கண்டவாறு எனதறிக்கையினை சமர்ப்பிக்கிறேன்.

மேற்படி நிறுவனம் உடைகல் மற்றும் கிராவல் குவாரி பணி செய்வதற்கு விண்ணப்பித்துள்ள புலியூரான் கிராமம் புல எண்கள் 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் நிலங்கள் முழுவதும் தரிசாக உள்ளது. 300 மீட்டர் சுற்றளவில் எவ்விதமான குடியிருப்பு பகுதிகள் ஏதும் இல்லை.

புல எண்கள் விபரம்

பட்டா எண்	புல எண்	விஸ்தீரணம் (ஹெகடேர்)	வகை
1833	121/1A	4-04.50 ஹெக்டேர்	புன்செய்
1833	121/1B	3-99.50 "	"
1761	128/1	1-73.00 "	"
1761	128/2A	0-45.50 "	"
1761	128/2B	0-45.00 "	"
1761	128/2C	0-45.00 "	"
1761	128/2D	0-64.50 "	"
		11-77.00 "	

ஆக மொத்தம் 11-77.00 ஹெக்டேர் புன்செய் நிலம் ஆகும்.

மேற்படி நிலங்களுக்கு நான்குமால் விபரம்

எண்	கிழக்கு	மேற்கு	வடக்கு	தெற்கு
1/1A	புல எண் 121/1B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,மற்றும் புல எண் 127 ஞான சுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண் 122/5 கே என் ஆர் கன்ஸ்ட்ரக்சன்ஸ்	மேலகண்டமங்கலம் கிராம எல்கை
1/1B	புல எண் 121/2 தென்வடல் வண்டிப்பாதை	புல எண் 121/1A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்கள் 120/B , 122/5 கேஎன்ஆர் கன்ஸ்ட்ரக்சன்ஸ்	மேலகண்டமங்கலம் கிராம எல்கை

எண்	கிழக்கு	மேற்கு	வடக்கு	தெற்கு
1	புல எண் 128/2A, 2B, 2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 134 கிராம சாலை மற்றும் புல எண் 129/1 ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண் 127/2 B ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	மேலகண்டமங்கலம் கிராம எல்லை
128/ 2A	புல எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 127/2B ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண். 128/2 B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,
128/2B	புல எண். 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/2A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,
128/ 2C	சர்வே எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	சர்வே எண் 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/2B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	மேலகண்டமங்கலம் கிராம எல்லை
128/2D	121/1A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்., மற்றும் மேலகண்டமங்கலம் கிராம எல்லை	புல எண்கள். 128, 128/2 A, 2B, 2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 121/1 A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	மேலகண்டமங்கலம் கிராம எல்லை

மேலும் 500 மீட்டர் சுற்றளவில் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் நிறுவனத்தின் அரசு உரிமம் பெற்ற இரண்டு குவாரிகள் செயல்பட்டு வருகின்றன. மற்றொரு நிறுவனமான கே எஸ் ஆர் கன்ஸ்ட்ரக்ஸன்ஸ் குவாரி உரிமம் டிசம்பர் 2018 ல் முடிவடைந்த காரணத்தினால் செயல்படாத நிலையில் உள்ளது என்பது புல தணிக்கை மற்றும் விசாரணையில் தெரிய வருகின்றது. குவாரி பணி செய்ய விண்ணப்பித்த புல எண்களுக்கு அணுகுசாலை வசதி உள்ளது.

50 மீட்டர் சுற்றளவில் மாநில மற்றும் தேசிய நெடுஞ்சாலைகள், இரயில் இருப்புப் பாதைகள், எவ்வித மதத்தினர் கோவில்கள் மற்றும் புராதன சின்னங்கள், உயர் மின் அழுத்த மின் கம்பிகள், நீர் நிலைகள், வேறு நிரந்தர அமைப்புகள் எதுவும் இல்லை.

A1 விளம்பரம் விவரம் :

17.02.2023 ல் விளம்பரம் செய்யப்பட்டு புலியூரான் கிராம பொதுமக்களிடமிருந்து இதுவரை எவ்விதமான ஆட்சேபனை மனுக்கள் ஏதும் வரப் பெறவில்லை.

ஆக்கிரமிப்பு விவரம் :

மேற்படி புல எண்களில் உடைகல், மற்றும் கிராவல் குவாரி 10 ஆண்டுகளுக்கு அமைவதால் அருகில் உள்ள புன்செய் நிலங்களுக்கு எவ்விதமான பாதிப்பும் இல்லை என்பது புலத் தணிக்கையில் தெரிய வருகின்றது.

மேலே கண்ட புல எண்களில் உடைகல், சரள் மண் மற்றும் கிராவல் குவாரி அமைவதால் அருகில் உள்ள ஓடை, புறம்போக்கு நிலங்கள் மற்றும் பட்டா நிலங்களுக்கு எவ்விதமான பாதிப்பு ஏற்பட வாய்ப்புகள் இல்லை.

மனுதாரர் உடைகல், மற்றும் கிராவல் குவாரி அமைய கோரப்படும் புன்செய் புல எண்கள் அனைத்தும் புலியூரான் ஊராட்சி எல்லைக்கு உட்பட்டதாகும்.

எனவே, மேற்படி நிறுவனத்திற்கு மனுதாரர் கோரப்படும் புலியூரான் கிராம புன்செய் புல எண்களில் 10 ஆண்டுகளுக்கு உடைகல், மற்றும் கிராவல் குவாரி பணி செய்வதற்கு பரிந்துரை செய்து இத்துடன் கிராம நிர்வாக அலுவலரின் அறிக்கை, வருவாய் ஆய்வாளரின் அறிக்கை, மண்டலத்துணை வட்டாட்சியார்-1 அறிக்கை, பொது மக்களிடமிருந்து பெறப்பட்ட அ1" விளம்பர அறிக்கை, புலப்பட நகல் கிராம ஆவணங்கள் வட்டாட்சியரின் புலத்தணிக்கை குறிப்பு ஆகியவற்றை இணைத்து அனுப்பியுள்ளேன் என்பதைப்பணிவுடன் தெரிவித்துக்கொள்கிறேனை என்பதை பணிவுடன் தெரிவித்துக் கொள்கின்றேன்.

இணைப்பு:

1.வட்டாட்சியரின் புலத்தணிக்கை

2.கிராம நிர்வாக அலுவலரின் அறிக்கை

3. வருவாய் ஆய்வாளரின் அறிக்கை

4. மண்டலத்துணை வட்டாட்சியார்-1

5. பொது மக்களிடமிருந்து பெறப்பட்ட "அ1" விளம்பர அறிக்கை,

6.புலப்பட நகல் கிராம ஆவணங்கள்

(ஒம்)/-தே. அறிவழகன்
வருவாய் வட்டாட்சியர்
அருப்புக்கோட்டை.

/உத்தரவுப்படி/

வட்டாட்சியருக்காக

15.5.23

புலத்தணிக்கை குறிப்பு

புலத்தணிக்கை அலுவலர்	:	வருவாய் வட்டாட்சியர், அருப்புக்கோட்டை.
கிராமம்	:	புலியூரான்
புல எண்கள்	:	121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50),
விஸ்தீரணம்	:	11.77.00 ஹெக்டோ
புலத்தணிக்கை நாள்	:	15.03.2023
கோரிக்கை	:	10 வருடங்களுக்கு உடை கால் கிராவல் குவாரி உரிமம் வழங்கக் கோரியுள்ளது
நோக்கம்	:	கிராவல் குவாரி

பொருள்: கனிமங்களும் குவாரிகளும் - அருப்புக்கோட்டை வட்டம் - பாளையம்பட்டி குறுவட்டம் - புலியூரான் கிராமம் - புல எண்கள். 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் பரப்பு நிலத்தில் 10 வருடங்களுக்கு உடை கால் கிராவல் குவாரி உரிமம் வழங்கக் கோரியுள்ளது — கருத்துரு அனுப்பக் கோருதல் - தொடர்பாக.

பார்வை:

1. திரு. A.C தங்கம் இயக்குநர், மெ/எஸ் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்ட இன்ப்ரா பிரைவேட் லிமிடெட் சென்னை என்பவரது மனு நாள்: 03.02.23.
2. விருதுநகர் உதவி இயக்குநர் புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் கடித எண் ந.க. கேவி1/148/2023 நாள் 07.02.2023.
3. அருப்புக்கோட்டை வருவாய் கோட்டாட்சியர் அவர்களின் குறிப்பாணை ந.கஅ2/797/2023 நாள் 10.02.2023.
4. மண்டலத்துணை வட்டாட்சியர் -1 அறிக்கை நாள் 06.03.2023
5. பாளையம்பட்டி வருவாய் ஆய்வாளரின் அறிக்கை நாள் 06.03.2023
6. பாளையம்பட்டி குறுவட்ட நில அளவரின் அறிக்கை நாள் 06.03.2023.

பார்வை 3-ல் கண்ட கடிதத்தில் திரு. A.C தங்கம் இயக்குநர், மெ/எஸ் விஸ்ணுசூர்பா ப்ராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட் சென்னை என்பவர் அருப்புக்கோட்டை வட்டம், பாளையம்பட்டி குறுவட்டம், புலியூரான் கிராமம் புல எண்கள். 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் நிலத்தில் 10 வருடங்களுக்கு உலை கால் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக்கோரியுள்ளார் எனவும் மேற்படி மனு தொடர்பாக புலத்தணிக்கை செய்து அறிக்கை செய்யுமாறு கேட்டுக்கொள்ளப்பட்டுள்ளது.

மேற்படி விண்ணப்பம் தொடர்பாக மண்டலத்துணைவட்டாட்சியர் -1, புலியூரான் கிராம நிர்வாக அலுவலர், பாளையம்பட்டி வருவாய் ஆய்வாளர், பாளையம்பட்டி கிராம நிர்வாக உதவியாளர், குறுவட்ட நில அளவர் ஆகியோருடன் 15.03.2023 அன்று கூட்டுப்புலத்தணிக்கை செய்து கீழ்கண்டவாறு எனதறிக்கையினை சமர்ப்பிக்கிறேன்.

மேற்படி நிறுவனம் உடைகல் மற்றும் கிராவல் குவாரி பணி செய்வதற்கு விண்ணப்பித்துள்ள புலியூரன் கிராமம் புல எண்கள் 121/1A (4.04.50), 121/1B (3.99.50), 128/1 (1.73.00), 128/2A (0.45.50), 128/2B (0.45.00), 128/2C (0.45.00), 128/2D (0.64.50), மொத்தம் 11.77.00 ஹெக்டேர் நிலங்கள் முழுவதும் தரிசாக உள்ளது. 300 மீட்டர் சுற்றளவில் எவ்விதமான குடியிருப்பு பகுதிகள் ஏதும் இல்லை.

புல எண்கள் விபரம்

பட்டா எண்	புல எண்	விஸ்தீரணம் (ஹெகடேர்)	வகை
1833	121/1A	4-04.50 ஹெக்டேர்	புன்செய்
1833	121/1B	3-99.50 "	"
1761	128/1	1-73.00 "	"
1761	128/2A	0-45.50 "	"
1761	128/2B	0-45.00 "	"
1761	128/2C	0-45.00 "	"
1761	128/2D	0-64.50 "	"
		11-77.00 "	

ஆக மொத்தம் 11-77.00 ஹெக்டேர் புன்செய் நிலம் ஆகும்.

மற்படி நிலங்களுக்கு நான்குமால் விபரம்

எண்	கிழக்கு	மேற்கு	வடக்கு	தெற்கு
1/ 1A	புல எண் 121/1B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,மற்றும் புல எண் 127 ஞான சுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண் 122/5 கே என் ஆர் கன்ஸ்ட்ரக்சன்ஸ்	மேலகண்டமங்கலம் கிராம எல்லை
121/1B	புல எண் 121/2 தென்வடல் வண்டிப்பாதை	புல எண் 121/1A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்கள் 120/ B , 122/5 கேஎன்ஆர் கன்ஸ்ட்ரக்சன்ஸ்	மேலகண்டமங்கலம் கிராம எல்லை
128/1	புல எண் 128/2A, 2B, 2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 134 கிராம சாலை மற்றும் புல எண் 129/1 ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண் 127/2 B ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	மேலகண்டமங்கலம் கிராம எல்லை
128/ 2A	புல எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.127/2B ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண்.128/2 B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,
128/2B	புல எண். 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.128/2A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.128/2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,
128/ 2C	சர்வே எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	சர்வே எண் 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/2B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	மேலகண்டமங்கலம் கிராம எல்லை
128/2D	121/1A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்., மற்றும் மேலகண்டமங்கலம் கிராம எல்லை	புல எண்கள். 128, 128/2 A, 2B, 2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 121/1 A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	மேலகண்டமங்கலம் கிராம எல்லை

மேலும் 500 மீட்டர் சுற்றளவில் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் நிறுவனத்தின் அரசு உரிமம் பெற்ற இரண்டு குவாரிகள் செயல்பட்டு வருகின்றன. மற்றொரு நிறுவனமான கே என் ஆர் கன்ஸ்ட்ரக்சன்ஸ் குவாரி உரிமம் டிசம்பர் 2018 ல் முடிவடைந்த காரணத்தினால் செயல்படாத நிலையில் உள்ளது என்பது புல தணிக்கை மற்றும் விசாரணையில் தெரிய வருகின்றது.

குவாரி பணி செய்ய விண்ணப்பித்த புல எண்களுக்கு அணுகுசாலை வசதி உள்ளது.

50 மீட்டர் சுற்றளவில் மாதிரி மற்றும் தேசிய நெடுஞ்சாலைகள், இரயில் இருப்புப் பாதைகள், எல்லித மதத்தினர் கோவில்கள் மற்றும் புராதன கிள்ளங்கள், உயர் மின் அழுத்த மின் கம்பிகள், தீர் நிலைகள், வேறு நிரந்தர அமைப்புகள் எதுவும் இல்லை.

A1 விளம்பரம் விவரம் :

17.02.2023 ல் விளம்பரம் செய்யப்பட்டு புலியூராள் கிராம பொதுமக்களிடமிருந்து இதுவரை எல்லிதமான ஆட்சேபணை மனுக்கள் ஏதும் வரப் பெறவில்லை.

ஆக்கிரமிப்பு விவரம் :

மேற்படி புல எண்களில் உடைகல், மற்றும் கிராவல் குவாரி 10 ஆண்டுகளுக்கு அமைவதால் அருகில் உள்ள புன்செய் நிலங்களுக்கு எல்லிதமான பாதிப்பும் இல்லை என்பது புலத் தணிக்கையில் தெரிய வருகின்றது.

மேலே கண்ட புல எண்களில் உடைகல், மற்றும் கிராவல் குவாரி அமைவதால் அருகில் உள்ள ஓடை, புறம்போக்கு நிலங்கள் மற்றும் பட்டா நிலங்களுக்கு எல்லிதமான பாதிப்பு ஏற்பட வாய்ப்புகள் இல்லை.

மனுதாரர் உடைகல், மற்றும் கிராவல் குவாரி அமைய கோரப்படும் புன்செய் புல எண்கள் அனைத்தும் புலியூராள் ஊராட்சி எல்லைக்கு உட்பட்டதாகும்.

எனவே, மேற்படி நிறுவனத்திற்கு மனுதாரர் கோரப்படும் புலியூராள் கிராம புன்செய் புல எண்களில் 10 ஆண்டுகளுக்கு உடைகல், மற்றும் கிராவல் குவாரி பணி செய்வதற்கு பரிந்துரை செய்கின்றேன்.

வருவாய் கோட்டாட்சியர்

அருப்புக்கோட்டை

கல் குவாரி உரிமம் வழங்குவது தொடர்பான "அ1" விளம்பர அறிவிப்பு

விருதுநகர் மாவட்டம், அருப்புக்கோட்டை வட்டம், திருவாளர் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் என்பவர் புலியூரான் கிராமத்தில், கீழ்கண்ட புல எண்களில் 10 வருடங்களுக்கு உடைகல், சரள் மண், ஜல்லி மற்றும் கிராவல் எடுத்துக் கொள்ள கல் குவாரி உரிமம் கோரி, விருதுநகர் மாவட்ட துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறையில் விண்ணப்பம் செய்துள்ளார் என இதன் மூலம் அறிவிப்பு விளம்பரப்படுத்தப் படுகிறது.

புல எண்	பரப்பு ஹேக்டேர்	பட்டா எண்	உரிமையாளர் பெயர்
121/ 1A	4-04.50	1833	விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இனஃப்ரா (பி) லிட்.,
121/ 1B	3-99.50	1833	
128/ 1	1-73.00	1761	
128/ 2A	0-45.50	1761	
128/ 2B	0-45.00	1761	
128/ 2C	0-45.00	1761	
128/ 2D	0-64.50	1761	
மொத்தம்	11-77.00		

மேற்படி புலங்களில் மனுதாரர் திருவாளர் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் என்பவர் கல் குவாரி செய்வதற்கு ஆட்சேபிப்பவர்கள், இந்த அறிவிப்பு செய்யப்படும் நாளிலிருந்து 15 தினங்களுக்குள் புலியூரான் கிராம நிர்வாக அலுவலரிடம் தங்கள் ஆட்சேபணையை எழுத்துப்பூர்வமாக தெரிவிக்கலாம் என விளம்பரம் செய்யப்படுகிறது.

நாள் : 17.02.2023

Village Administrative Officer
கிராம நிர்வாக அலுவலர்
Aruppukottai Taluk

கல் குவாரி உரிமம் வழங்குவது தொடர்பாக ஆட்சேபணை இல்லை என்பதற்கான பொது மக்களின் வாக்குமூலம்.

திருவாளர் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் நிறுவனத்திற்கு கல் குவாரி உரிமம் வழங்குவது தொடர்பாக 17.02.2023 அன்று விளம்பரப் படுத்தப்பட்ட அ1 அறிவிப்பு அன்றைய தேதியில் கிராம நிர்வாக அலுவலகத்தில் ஒட்டப்பட்டிருந்ததை கண்டோம்.

மேற்படி "அ1" அறிவிப்பில் உள்ள அட்டவணையில் கண்ட புல எண்களில் பத்து வருடங்களுக்கு உடைகல், சரள் மண், ஜல்லி மற்றும் கிராவல் எடுத்துக் கொள்ள கல்குவாரி உரிமம் கோரி மனுதாரர் திருவாளர் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் நிறுவனத்தார் விருதுநகர் மாவட்ட துணை இயக்குநர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களிடம் விண்ணப்பம் செய்துள்ளார் என்பதை மேற்படி "அ1" அறிவிப்பு மூலம் அறிந்து கொண்டோம்.

மேற்படி "அ1" அறிவிப்பில் உள்ள அட்டவணையில் கண்ட புல எண்களில் மனுதாரர் திருவாளர் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் நிறுவனத்தார் 10 வருடங்களுக்கு சாதாரண கற்கள், ஜல்லி மற்றும் கிராவல் எடுத்துக் கொள்ள கல்குவாரி உரிமம் வழங்குவதற்கு எந்தவிதமான ஆட்சேபணையும் இல்லை என்பதை இதன் மூலம் தெரியப்படுத்திக் கொள்கிறோம்.

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அருப்புக்கோட்டை வருவாய் வட்டாட்சியாளர் அவர்களுக்கு,

பணிந்து அனுப்பப்படுகின்றது.

அருப்புக்கோட்டை வட்டம், பாலையம்பட்டி குறுவட்டம் புலியூரான் கிராமம் புல எண்கள் 121/1ஏ, 121/1பி, 128/1, 128/2ஏ, 128/2பி, 128/2சி மற்றும் புல எண் 128/2டி ஆகிய புல எண்களின் மொத்த பரப்பு 11.77.00 ஹெக்டேர் புன்செய் நிலத்தில் 10 ஆண்டுகளுக்கு உடைகல், சரள் மண் மற்றும் கிராவல் குவாரி உரிமம் திருவாளர் விஷ்ணுகுர்பா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் மனு மீது விசாரணையும், புல தணிக்கையும் செய்தும் கீழ்கண்டவாறு எனது அறிக்கையை தங்களின் மேலான கவனத்திற்கு பணிவுடன் சமர்ப்பிக்கின்றேன்.

மேற்படி நிறுவனம் உடைகல், சரள் மண் மற்றும் கிராவல் குவாரி பணி செய்வதற்கு விண்ணப்பித்துள்ள புல எண்கள் புலியூரான் வருவாய் கணக்கின்படி நேரில் சென்று புல தணிக்கை செய்ததில் 300 மீட்டர் சுற்றளவில் எவ்விதமான குடியிருப்பு பகுதிகள் ஏதும் இல்லை.

புல எண்கள் விபரம்

பட்டா எண்	புல எண்	விஸ்தீரணம் (ஹெகடேர்)	வகை
1833	121/ 1A	4-04.50 ஹெக்டேர்	புன்செய்
1833	121/ 1B	3-99.50 "	"
1761	128/ 1	1-73.00 "	"
1761	128/ 2A	0-45.50 "	"
1761	128/ 2B	0-45.00 "	"
1761	128/ 2C	0-45.00 "	"
1761	128/ 2D	0-64.50 "	"
		11-77.00 "	

ஆக மொத்தம் 11-77.00 ஹெக்டேர் புன்செய் நிலம் ஆகும்.

மேற்படி நிலங்களுக்கு நான்கு எல்லைகள் விபரம்

புல எண்	கிழக்கு	மேற்கு	வடக்கு	தெற்கு
121/1A	புல எண் 121/1B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்., மற்றும் புல எண் 127 ஞான சுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண் 122/5 கே என் ஆர் கன்ஸ்ட்ரக்சன்ஸ்	மேலகண்டமங்கலம் கிராம எல்லை
121/1B	புல எண் 121/2 [illegible]	புல எண் 121/1A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்கள் 120/ B , 122/5 கேஎன் ஆர் கன்ஸ்ட்ரக்சன்ஸ்	மேலகண்டமங்கலம் கிராம எல்லை
128/1	புல எண் 128/2A, 2B, 2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 134 கிராம சாலை மற்றும் புல எண் 129/1 ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண் 127/2 B ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	மேலகண்டமங்கலம் கிராம எல்லை
128/ 2A	புல எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண் 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.127/2B ஞானசுப்பிரமணியன் மற்றும் 3 நபர்கள்	புல எண்.128/2 B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,
128/2B	புல எண். 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.128/2A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண்.128/2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,
128/ 2C	சர்வே எண் 128/2D விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	சர்வே எண் 128/1 விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 128/2B விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	மேலகண்டமங்கலம் கிராம எல்லை
128/2D	121/1A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்., மற்றும் மேலகண்டமங்கலம் கிராம எல்லை	புல எண்கள். 128, 128/2 A, 2B, 2C விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	புல எண். 121/1 A விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா(பி) லிட்.,	மேலகண்டமங்கலம் கிராம எல்லை

மேலும் 500 மீட்டர் சுற்றளவில் விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ஃப்ரா பிரைவேட் லிமிடெட் நிறுவனத்தின் அரசு உரிமம் பெற்ற இரண்டு குவாரிகள் செயல்பட்டு வருகின்றன. மற்றொரு நிறுவனமான கே எஸ் ஆர் கன்ஸ்ட்ரக்ஷன்ஸ் குவாரி உரிமம் டிசம்பர் 2018 ல் முடிவடைந்த காரணத்தினால் செயல்படாத நிலையில் உள்ளது என்பது புல தணிக்கை மற்றும் விசாரணையில் தெரிய வருகின்றது.

குவாரி பணி செய்ய விலக்கப்பித்த புல எண்களுக்கு அணுகுசாலை வசதி உள்ளது.

50 மீட்டர் சுற்றளவில் மாநில மற்றும் தேசிய நெடுஞ்சாலைகள், இரயில் இருப்புப் பாதைகள், எவ்வித மதத்தினர் கோவில்கள் மற்றும் புராதன சின்னங்கள், உயர் மின் அழுத்த மின் கம்பிகள், நீர் நிலைகள், வேறு நிரந்தர அமைப்புகள் எதுவும் இல்லை.

A1 விளம்பரம் விவரம் :

17.02.2023 ல் விளம்பரம் செய்யப்பட்டு புலியூரான் கிராம பொதுமக்களிடமிருந்து இதுவரை எவ்விதமான ஆட்சேபனை மனுக்கள் ஏதும் வரப் பெறவில்லை.

ஆக்கிரமிப்பு விவரம் :

மேற்படி புல எண்களில் உடைகல், சரள் மண் மற்றும் கிராவல் குவாரி 10 ஆண்டுகளுக்கு அமைவதால் அருகில் உள்ள புன்செய் நிலங்களுக்கு எவ்விதமான பாதிப்பும் இல்லை என்பது புலத் தணிக்கையில் தெரிய வருகின்றது.

மேலே கண்ட புல எண்களில் உடைகல், சரள் மண் மற்றும் கிராவல் குவாரி அமைவதால் அருகில் உள்ள ஓடை, புறம்போக்கு நிலங்கள் மற்றும் பட்டா நிலங்களுக்கு எவ்விதமான பாதிப்பு ஏற்பட வாய்ப்புகள் இல்லை.

மனுதாரர் உடைகல், சரள் மண் மற்றும் கிராவல் குவாரி அமைய கோரப்படும் புன்செய் புல எண்கள் அனைத்தும் புலியூரான் ஊராட்சி எல்லைக்கு உட்பட்டதாகும்.

எனவே, மேற்படி நிறுவனத்திற்கு மனுதாரர் கோரப்படும் புலியூரான் கிராம புன்செய் புல எண்களில் 10 ஆண்டுகளுக்கு உடைகல், சரள் மண் மற்றும் கிராவல் குவாரி பணி செய்வதற்கு பரிந்துரை செய்கின்றேன் என்பதை பணிவுடன் தெரிவித்துக் கொள்கின்றேன்.

மண்டல துணை வட்டாட்சியர்-I

भारतीय गैर न्यायिक

एक सौ रुपये Rs. 100

रु. 100 ONE HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMILNADU DB 008241

M/s விஷ்ணுசூர்யா ப்ராஜக்ட்ஸ் அண்டு இன்ப்ரா பிரை லிட்.,

M. சந்திரசேகரன்
முத்திரைத்தாள் விற்பனையாளர்
அருப்புக்கோட்டை
உரிமம் எண்: 10856, A1-86

EXPLOSIVE AGREEMENT

26.5.2023

This Agreement made on the day of licence to be granted to Mr **A C Thangam, Director, M/s. Vishnusurya Projects and Infra Private Limited,** No.76 Temple towers 2nd floor, North mada street, Mylapore, Chennai 600 004 (herein after called the owner of the quarry) and **Mr P Chelladurai, M/s. Ramya Explosives** having office at ½ Iluppiyur road, Aladipatti, Aruppukottai Taluk, Virudhunagar District (herein after called as Dealer of Explosives) Licence No. E/SC/TN/22/411(E24818).

For Vishnusurya Projects And Infra Private Limited.,

A.C.THAGAM
Director

P. Chelladurai

RAMYA EXPLOSIVES
Licence No: E/SC/TN/22/411 (E 24818)
1/2, Iluppaiyur Road
ALADIPATTI - 626 129
Aruppukottai Taluk, Virudhunagar Dist

NOTARY
D. RAJESWARI, B.A., B.L.,
NOTARY
G.O.M.S. No. 476 / 2022
VIRUDHUNAGAR DISTRICT
TAMILNADU

15/12

D. RAJESWARI, B.A., B.L.
ADVOCATE & NOTARY
48 Kariam Vellaiyan Chettiar St
Virudhunagar-626 001

Whereas the owner of the quarry having licence to be granted for survey No. 121/1A, 121/1B, 128/1, 128/2A, 128/2B, 128/2C, 128/2D to on total extent of 11.77.00 Hectares the survey number are within Puliyuran Village, Aruppukottai (Taluk) Virudhunagar (District).

And whereas the Dealer of Explosives agreed to carry out the blasting operation in skillful and scientific method by shot firer till the valid date.

Whereas the Owner of the quarry has decided to entrust the work of conducting blasting operation in his quarry work to the Dealer of Explosives on contract basis as per mutually agreed terms and conditions.

Whereas the Dealer of Explosives is responsible for blasting operations and also making his own agreement for the explosives and exploding machines/equipments required for the work. The entire blasting in the above quarry and the possessment of blasting equipments will be handled by the Dealer of Explosives having valid licence and short firer permits under the explosives Rules, 2008 issued by the Department of Explosives and hereby undertake the responsibility for the work entrusted.

Whereas payments will be made periodically by the Owner of quarry for the quantity of Explosives used and hours and time of the exploding equipments put into use. Calculations will be made and element will be arrived at on the completion of blasting operations.

For Vishnusurya Projects And
Infra Private Limited.,

A.C.THAGAM
Director

RAMYA EXPLOSIVES
Licence No: E/SC/TN/22/411 (F 248)
1/2, Tiruppaliyur Road
ALAGIPATTI - 626 129
Aruppukottai Taluk, Virudhunagar Dist

NOTARY
D. RAJESWARI, B.A., B.L.,
NOTARY
G.O.M.S. No. 476 / 2022
VIRUDHUNAGAR DISTRICT
TAMILNADU

29/05/23

D. RAJESWARI, B.A.B.L.,
ADVOCATE & NOTARY
4849, Kariam Vellaiyan Chettiar St
ARUPPUKOTTAI-626 101
Virudhunagar District
Cell: 99940 58228

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 Bhavan
26 हड्डोउस रोड, नुगम्बक्कम चेन्नै , 26 Haddous Road, Nungambakkam Chennai 600006
फोन (Phone) - 28281023 | फैक्स (Fax) - 28284848
ई-मेल Email: jtccechennai@explosives.gov.in

संख्या (No.) E/SC/TN/22/411(E24818) 25 MAR 2019 दिनांक / Dated: 22.03.2019

सेवा में | To,

M/s. Ramya Explosives,
Pl No 1 2 Illuppaiyur Road, Aladipatti Post, Town Village - Aladipatti
District-VIRUDHUNAGAR, State-Tamil Nadu, Pincode - 626129

विषय Survey No(s):227/2, ग्राम Aladipatti,Aruppukottai taluk, जिला VIRUDHUNAGAR, 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/22/411(E24818) के नवीनीकरण संदर्भ में।

Subject Possession for Use of of Explosives from magazine situated at Survey No(s): 227/2, Aladipatti,Aruppukottai taluk, Dist. VIRUDHUNAGAR, Tamil Nadu Licence No. E/SC/TN/22/411(E24818) granted in Form LE-3 of Explosives Rules, 2008 - Renewal regarding

महोदय Sir,

आपका उपर्युक्त विषय पर पत्र संख्या Nil दिनांक 21/03/2019 का सदर्भ ग्रहण करें। विस्फोटक नियम, 2008 के अंतर्गत प्ररूप LE-3 में जारी अनुज्ञप्ति दिनांक 31/3/2024 तक नवीनीकृत कर इस पत्र के साथ भेजी जा रही है।
Reference your letter No. Nil dated 21/03/2019, the subject licence duly renewed upto 31/3/2024 and issued in Form LE-3 of Explosives Rules, 2008 is forwarded herewith.

अनुज्ञप्ति के आगामी नवीकरण हेतु कृपया निम्नलिखित दस्तावेज दिनांक 31/03/2024 से पहले उप मुख्य विस्फोटक नियंत्रक सिवाकासी को भेजे जाएं
For further renewal of licence, please submit the following documents so as to reach The Dy. Chief Controller of Explosives, Sivakasi on or before 31/3/2024

- 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 बैंक ड्राफ्ट। बैंक ड्राफ्ट किसी भी राष्ट्रीयकृत बैंक के नाम आहरित, संयुक्त मुख्य विस्फोटक नियंत्रक, चेन्नई के पक्ष में चेन्नई में देय हो।
  Licence fees for one to five years in the form of demand draft drawn on any Nationalized Bank in favour of Jt. Chief Controller of Explosives, Chennai payable at Chennai
- अनुमोदित प्लान के साथ मूल अनुज्ञप्ति।
  Original licence with approved plan
- कृपया इस संदर्भ 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 (आतिशबाजी 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 उप मुख्य विस्फोटक नियंत्रक सिवाकासी के कार्यालय में आगामी तिमाही के 10 तारीख से पहले पहुंच जानी चाहिए (आतिशबाजी गोदाम के लिए लागू नहीं)। Please submit quarterly returns of explosives in RE-7 at the end of every quarter so as to reach The Dy. Chief Controller of Explosives, Sivakasi by 10th of the succeeding quarter.(Not applicable for fireworks store house)
- सभी ब्लास्टिंग आपरेशन एक सक्षम 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 आपरेशन 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

~~आपके खाते में रुपए 1800/- की राशि शेष है जो इस संदर्भ को उद्धृत करते हुए भविष्य के संव्यवहार में समायोजित की जा सकती है।~~
~~An amount of Rs. 1800/- balance is in your credit, which may be utilized for future transaction by quoting this reference.~~

भवदीय | Your's faithfully

(डी.सी.पांडेय | D.C.PANDEY)
विस्फोटक नियंत्रक : Controller of Explosives
कृते संयुक्त मुख्य विस्फोटक नियंत्रक | For Joint Chief Controller of Explosives
दक्षिणांचल, चेन्नै : South Circle, Chennai

प्रतिलिपि प्रेषित : Copy Forwarded to:

1 जिला मजिस्ट्रेट (District Magistrate), VIRUDHUNAGAR (Tamil Nadu)- सूचना के लिए (for information.)

कृते संयुक्त मुख्य विस्फोटक नियंत्रक | For Joint Chief Controller of Explosives
दक्षिणांचल, चेन्नै : South Circle, Chennai

अनुज्ञप्ति प्ररूप सं. ई-3 | LICENCE FORM LE-3

[illegible] 4 of Schedule IV of Explosives Rules, 2008

[illegible] for use explosives of class [illegible]

अनुज्ञप्ति सं. (Licence No.) : E/SC/TN/22/41(E24818)

[illegible]

M/s. Ramya Explosives (अधिभोगी : Occupier : P.Chelladurai), D.No 1-7 [illegible] Road, Aladipatti Post, Town/Village [illegible] District VIRUDHUNAGAR, State Tamil Nadu, Pincode - 626 [illegible]

को अनुज्ञप्ति अनुदत्त की जाती है।

अनुज्ञप्तिधारी की प्रास्थिति : Status of licensee : Partnership Firm

अनुज्ञप्ति निम्नलिखित प्रयोजनों के लिए विधिमान्य है। Licence is valid only for the following purpose: possess for use of Nitrate Mixture, Safety Fuse, Detonating Fuse, Electric and/or Ordinary Detonators. [illegible] के लिए

अनुज्ञप्ति विस्फोटकों के निम्नलिखित किस्मों, प्रकार और मात्रा के लिए विधिमान्य है। Licence is valid for the following kinds and quantity of explosives — [illegible]

क्र. Sl. No.	नाम और विवरण Name and Description	वर्ग और प्रभाग Class & Division	उप-प्रभाग Sub-division	मात्रा [illegible] Quantity at any one time
1	Nitrate Mixture	2.0	0	1500 Kg
2	Safety Fuse	6.1	0	10000 Mtrs
3	Detonating Fuse	6.2	0	10000 Mtrs
4	Electric and/or Ordinary Detonators	6.3	0	44000 Nos

(ख) किसी एक कलैंडर मास में क्रय किए जाने वाले विस्फोटकों की मात्रा [अनुच्छेद 3(क) और (ग) के अधीन अनुज्ञप्ति के लिए]
(b) Quantity of explosives to be purchased in a calendar month[applicable for licence under article 3(a) and (c)] 20 times the above.

निम्नलिखित रेखाचित्र (रेखाचित्रों) से अनुज्ञप्त परिसर की पुष्टि होती है। The licensed premises shall conform to the following drawing(s): रेखाचित्र सं. (Drawing No.) : E/SC/TN/22/41(E24818) दिनांक (Dated) 04/08/2005

अनुज्ञप्ति परिसर निम्नलिखित पते पर स्थित है। The licensed premises are situated at following address:
Survey Number 227/3, ग्राम (Town/Village) : Aladipatti, Aruppukottai taluk

जिला (District)	VIRUDHUNAGAR	राज्य (State)	Tamil Nadu	पुलिस थाना (Police Station) : [illegible]
दूरभाष (Phone)		ई-मेल (E-Mail)		पिनकोड (Pincode)
				फैक्स (Fax)

अनुज्ञप्ति परिसर में निम्नलिखित सुविधाएं अंतर्विष्ट हैं। Licensed premises consist of following facilities: A MAIN MAGAZINE,DETONATOR ANNEXE AND A LOBBY

अनुज्ञप्ति समय-समय पर यथासंशोधित विस्फोटक अधिनियम, 1884 और उसके अधीन विरचित विस्फोटक नियम, 2008 के उपबंधों, शर्तों और अतिरिक्त शर्तों और निम्नलिखित उपाबंधों 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, 2008 framed there under and the conditions, additional conditions and the following Annexures:

1. उपर्युक्त क्रम सं 5 में यथा कथित रेखाचित्र (स्थान, संनिर्माण संबंधी और अन्य विवरण दर्शित करते हुए)
Drawings (showing site, constructional and other details) as stated in serial No. 5 above
2. अनुज्ञप्ति प्राधिकारी द्वारा हस्ताक्षरित इस अनुज्ञप्ति की शर्तें और अतिरिक्त शर्तें।
Conditions and Additional Conditions of this licence signed by the licensing authority
3. दूरी प्ररूप DE-2 : Distance Form DE-2

यह अनुज्ञप्ति तारीख 31 मार्च 2007 तक विधिमान्य रहेगी। This licence shall remain valid till 31st day of March 2007.

यह अनुज्ञप्ति अधिनियम या उसके अधीन विरचित नियमों या अनुसूची V के भाग 4 के प्रति निर्दिष्ट सेट-VII के अधीन तथा उपवर्णित इस अनुज्ञप्ति की शर्तों का अतिक्रमण करने या यदि अनुज्ञप्त परिसर योजना या उससे संलग्न उपबंध में दर्शित विवरण के अनुरूप नहीं पाए जाने पर निलंबित या प्रतिसंहृत की जा सकती है जहां यह 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 - 04/08/2005

Sd
संयुक्त मुख्य विस्फोटक नियंत्रक | Joint Chief Controller of Explosives,
South Circle, Chennai

Amendments :

- Amendment of Quantity of Explosives Monthly Purchase Limit dated 20/04/2011
- Amendment of Quantity of Explosives Monthly Purchase Limit dated 21/01/2013
- Change in Authorized Signatory/Occupier/Partners/Directors dated 30/09/2014
- Change in Authorized Signatory/Occupier/Partners/Directors dated 28/04/2016
- Change in Authorized Signatory/Occupier/Partners/Directors dated 15/02/2017

नवीकरण के पृष्ठांकन के लिए स्थान
Space for Endorsement of Renewal

नवीकरण की तारीख Date of Renewal	समाप्ति की तारीख Date of Expiry	अनुज्ञापन प्राधिकारी के हस्ताक्षर और स्टाम्प Signature of licensing authority and stamp
22/03/2019	31/03/2024	Jt. Chief Controller of Explosives, South Circle, Chennai

Dr. JAYANTHI. M, 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.6946/1(a)/EC.No: 4045/2019 dated: 18.10.2019

To

M/s. Vishnusurya Logistics Private Limited
No. 76, Temple Towers
II nd Floor, North Mada Street
Mylapore
Chennai - 600 004.

Sir/Madam,

Sub: SEIAA-TN – Proposed Rough Stone, Earth and Gravel quarry over an extent of 4.98.0Ha in S.F.Nos. 114/3(P) & 119/1 at Puliyuran Village, Aruppukottai Taluk, Virudhunagar District, Tamil Nadu by M/s. Vishnusurya Logistics Private Limited- issue of Environmental Clearance – Reg.

Ref: 1. Your Application for Environmental Clearance dated: 19.07.2019
2. Minutes of the 135th SEAC meeting held on 06.09.2019
3. Minutes of the 356th SEIAA meeting held on 18.10.2019

- - - - -

Details of Minor Mineral Activity:-

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

1	**Name of Project Proponent and address**	M/s. Vishnusurya Logistics Private Limited No. 76, Temple Towers II nd Floor, North Mada Street

STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
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		Mylapore Chennai - 600 004.
2	**Location of the Proposed Activity**	
	Survey Number	114/3(P) & 119/1
	Latitude and Longitude	09° 31' 36.7"N to 09° 31' 44.7"N 78° 10' 11.1"E to78° 10' 19.3"E
	Village	Puliyuran
	Taluk	Aruppukottai
	District	Virudhunagar
3	**Proposed Activity**	
	i. Minor mineral	Rough Stone, Earth and Gravel Quarry
	ii. Mining Lease Area	4.98.0 Ha
	iii. Approved quantity	7,41,180cu.m of Rough stone and 54,912 cu.m of Gravel and 9,152 cu.m Earth
	iv. Depth of Mining	55m below the ground level
	v. Type of mining	opencast semi mechanized method
	vi. Category(B1/B2)	B2
	vii. Precise area communication	R C. No.KV1/722/2018 Kannimam Dated: 04.12.2018
	Mining plan approval by Director of Geology and Mining, Chennai	Assistant Director Rc.No.KV1/722/2018, Dated: 14.12.2018
	viii. Mining lease period	5 Years
4	**Whether Project area attracts any General conditions specified in the EIA notification, 2006 as amended:-**	Not attracted. Affidavit furnished.
5	**Man Power requirement per day:**	21 Employees
6	**Utilities**	
	i. Source of Water :	Water Vendors & Existing Bore whole
	ii. Quantity of Water Requirement in KLD:	
	a. Domestic & Drinking purpose **b.** Green Belt & Dust Suppression	2.6 KLD Water Vendors 3.8 KLD

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		Existing Bore whole
	iii. Power Requirement: a. Domestic Purpose b. Industrial Purpose	 TNEB 5,92,944 ltrs of HSD
7	**Cost** i. Project Cost ii. EMP Cost	 Rs. 12.07 Cores Rs. 2.25 lakhs
8	**Date of Appraisal by SEAC:-** **Agenda No:**	06.09.2019 135
9	**Date of Review/Discussion by SEIAA and the Remarks:-** The proposal was placed before the SEIAA in its 356th Meeting held on 18.10.2019 and the Authority after careful consideration, decided to grant environmental clearance to the said project Mining of Rough Stone, Earth and Gravel subject to terms and conditions stipulated under the provisions of Environment Impact Assessment Notification, 2006 as amended.	
10	**Validity:** **This Environmental Clearance is granted to Mining of Rough Stone, Earth and Gravel for the production in 7,41,180cu.m of Rough stone and 54,912 cu.m of Gravel and 9,152 cu.m Earth of for the period of 5 Years from the date of execution of the Mining Lease period.**	

The Proponent has furnished affidavit in Hundered Rupees stamp paper attested by the Notary stating that

I, M/s. Vishnusurya Logistics Private Limited, No.76, Temple Towers, II[nd] Floor North Mada Street, Mylapore, Chennai – 600 004, solemnly declare and sincerely affirm that:

I have apply for getting Environment Clearance to SEIAA, Tamil Nadu for quarry lease for quarrying of Rough stone, Jelly and Gravel Quarry over an extent 4.98.0hain S.F.No's.114/3 (P) & 119/1, Puliyuran Village, Aruppukottai Taluk, Virudhunagar District.

1. I swear to state and confirm that within 10km area of the quarry site, I have applied for environment clearance, none of the following is situated.
   a. Protected areas notified under the wild life (Protection) Act, 1972,
   b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and Control of Pollution) Act 1974,
   c. Eco-Sensitive areas as notified,

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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 Lakh)	CER Cost 2.0% of project cost (Rs in Lakh)
Developing the Library / Sports / Drinking water facilities in Puliyuran School	1210.00	24.2
Total Cost Allocation	**1210.00**	**24.2**

3. I solemnly declare & affirm that following quarries within 500m radius from the periphery of the quarry site.

S. No.	Name of the Applicant / Lessee	Village	S.F.No.	Extent	Status
a. Existing Quarries					
Nil					
b. Abandoned /Expired Quarries					
1.	KNR Constructions Ltd	Puliyuran	120/3, 120/4A1	4.90.0	
c. Present Proposed Quarries					
1.	M/s. Vishnusurya Logistics Private Limited	Puliyuran	114/3 (P) & 119/1	4.98.0	Applied
Total				**4.98.0**	

4. There will not be hindrance or disturbance to the people living no enroute / nearby our quarry site while transporting the mineral our material and due to quarrying activities.
5. There is no approved habitationwithin 300m radius from the periphery of my quarry.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.
7. The required insurance will be taken in the name of the laborers working in my quarry site.
8. Approach road belongs to local panchayat only and no other private Patta roads encountered.
9. I will not engage any child labor in our quarry site and I aware that engaging child labor is punishable under the law.
10. All types of safety / protective equipment will be provided to all the laborers working in my quarry.
11. No permanent structures, temples etc., are located within 500m radius from the periphery of my quarry.

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I ensure to do all the social and Environment commitment as mentioned in the Mining plan to the best of my knowledge.

Further, the Project Proponent has submitted a copy of the letter from the Assistant Director, Dept of Geology and mining, Virudhunagar District in his letter RC. No. KV1/722/2018 dated 14.12.2018 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.	Quarry Detail	Village	S.F.No.	Extent
I.	Existing Quarry	**NIL**		
II.	Abandoned Quarry			
	KNR Constructions Ltd	Puliyuran	120/3, 120/4A1	4.90.0
III.	Proposed quarry	**NIL**		

Conditions to be Complied before commencing mining operations:-

1. The project proponent shall advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing the public that
   I. The project has been accorded Environmental Clearance.
   II. Copies of clearance letters are available with the Tamil Nadu Pollution Control Board.
   III. Environmental Clearance may also be seen on the website of the SEIAA.
   IV. The advertisement should be made within 7 days from the date of receipt of the clearance letter and a copy of the same shall be forwarded to the SEIAA.
2. Mining activity should be reviewed by the District Collector after three years and decide for further extension.
3. The applicant has to obtain land use classification as industrial use before issue/renewal of mining lease.
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.

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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, 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 50 mts. From any civil structure shall be kept from the periphery of any excavation area.
15. Depth of quarrying shall be 2m above the ground water table /approved depth of mining whichever is lesser to be considered as a safe guard against Environmental Contamination and over exploitation of resources.
16. 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.
17. 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.
18. Drilling and blasting shall be done only either by licensed explosive agent or by the proponent after obtaining required approvals from Competent Authorities.

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19. The explosives shall be stored at site as per the conditions stipulated in the permits issued by the licensing Authority.
20. Blasting shall be carried out after announcing to the public adequate through public address system to avoid any accident.
21. 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.
22. 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.
23. 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
24. The following measures are to be implemented to reduce Noise Pollution
    i. Proper and regular maintenance of vehicles and other equipment
    ii. Limiting time exposure of workers to excessive noise.
    iii. The workers employed shall be provided with protection equipment and earmuffs etc.
    iv. Speed of trucks entering or leaving the mine is to be limited to moderate speed of 25 kmph to prevent undue noise from empty trucks.
25. 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.
26. 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.
27. Permission from the competent authority should be obtained for drawl of ground water, if any, required for this project.
28. Topsoil, if any, shall be stacked properly with proper slope with adequate measures and should be used for plantation purpose.

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29. The following measures are to be adopted to control erosion of dumps:-
    i. Retention/ toe walls shall be provided at the foot of the dumps.
    ii. Worked out slopes are to be stabilized by planting appropriate shrub/ grass species on the slopes.
30. Waste oils, used oils generated from the EM machines, mining operations, if any, shall be disposed as per the Hazardous Wastes (Management, Handling, and trans boundary movement) Rules, 2008 and its amendments thereof to the recyclers authorized by TNPCB.
31. 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.
32. Rain water harvesting to collect and utilize the entire water falling in land area should be provided.
33. 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.
34. 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.
35. No tree-felling shall be done in the leased area, except only with the permission from competent Authority.
36. 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,

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slurry water generated/disposed and method of disposal, involving a reputed academic Institution.

37. 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.
38. It shall be ensured that there is no habitation is located within 300 meter radius from the periphery of the quarry site and also ensure that no hindrance will be caused to the people of the habitation located within 500m radius from the periphery of the quarry site.
39. Free Silica test should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF & CC, GOI.
40. Air sampling at intersection point should be conducted and reported to TNPCB, Department of Geology and Mining and Regional Director, MoEF & CC, GOI.
41. Bunds to be provided at the boundary of the project site.
42. The project proponent shall undertake plantation/afforestation work by planting the native species on all side of the lease area at the rate of 400/Ha. Suitable tall tree saplings should be planted on the bunds and other suitable areas in and around the work place.
43. At least 10 Neem trees should be planted around the boundary of the quarry site.
44. Floor of excavated pit to be levelled and sides to be sloped with gentle slope (Except for granite quarries) in the mine closure phase.
45. The Project Proponent shall ensure a minimum of 2.5% of the annual turnover will be utilized for the CSR Activity
46. The Project Proponent shall provide solar lighting system to the nearby villages.
47. Rainwater shall be pumped out Via Settling Tank only
48. Earthen bunds and barbed wire fencing around the pits with green belt all along the boundary shall be developed and maintained.
49. Safety equipments to be provided to all the employees.
50. Safety distance of 50m has to be provided in case of railway, reservoir, canal/odai
51. 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.
52. 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.

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53. 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.
54. 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.
55. 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.
56. Heavy earth machinery equipments if utilized, after getting approval from the competent authority.
57. 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.
58. The Project Proponent is also directed to strictly adhere to the Sustainable Sand Mining Management Guidelines, 2016, wherever applicable.
59. 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 1m height.
60. Ground water quality monitoring should be conducted every six months and the report should be submitted to TNPCB.
61. Proper barrier for reducing the Noise level 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.
62. The operation of the quarry should no way impact the agriculture activity & water bodies near the project site.
63. Transportation of the quarried materials shall not cause any hindrance to the Village people/Existing Village road.
64. The Project Proponent shall comply with the mining and other relevant rules and regulations where ever applicable.
65. The quarrying activity shall be stopped if the entire quantity indicated in the Mining plan is quarried even before the expiry of the quarry lease period and the same shall be monitored by the District Authorities.

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66. 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).
67. The entire mining operation should be as per the guidelines for sustainable sand mining issued in 2016 by the MoEF & CC, GOI, New Delhi.
68. To ensure safety measures along the boundary of the quarry site, security guards are to be engaged during the entire period of mining operation.
69. The mine closure plan submitted by the project proponent shall be strictly followed after the laps of the mine as reported.
70. All the condition imposed by the District collector, Virudhunagar District vide R C. No.KV1/722/2018 Kannimam Dated: 04.12.2018 should be strictly followed.
71. CER activities should be carried out development library/ sports/ drinking water facilities in puliyuran school for an amount of Rs. 24.2 Lakhs (2 % of the project cost) as committed by the proponent as per Office Memorandum of MoEF & CC dated 01.05.2018. The above activity shall be carried out before obtaining CTO from TNPCB.
72. 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) 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)
73. 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.
74. 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.

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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. 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.

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12. Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. The workers shall be provided with personnel protective measures such as masks, gloves, boots etc.
13. Workers/labourers shall be provided with facilities for drinking water and sanitation facility for Female and Male separately.
14. The project proponent shall ensure that child labour is not employed in the project as per the sworn affidavit furnished.
15. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Chennai.
16. The Environmental Clearance does not absolve the applicant/proponent of his obligation/requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
17. This Environmental Clearance does not imply that the other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would be considering the project on merits and be taking decisions independently of the Environmental Clearance
18. The SEIAA, Tamil Nadu may alter/modify the above conditions or stipulate any further conditions in the interest of environment protection.
19. The SEIAA, Tamil Nadu may cancel the environmental clearance granted to this project under the provisions of EIA Notification, 2006, at any stage of the validity of this environmental clearance, if it is found or if it comes to the knowledge of this SEIAA,TN that the project proponent has deliberately concealed and/or submitted false or misleading information or inadequate data for obtaining the environmental clearance.
20. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
21. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability

19 OCT 2019

MEMBER SECRETARY
SEIAA-TN

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.

MEMBER SECRETARY
SEIAA-TN

Copy to:

1. The Secretary, Ministry of Mines, Government of India, ShastriBhawan, 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, PariveshBhawan, 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, Virudhunagar District
8. The Commissioner of Geology and Mines,Guindy,Chennai-32
9. EI Division, Ministry of Environment & Forests, ParyavaranBhawan, New Delhi.
10. Spare.

18 OCT 2019

ANNEXURE 1

புவியியல் மற்றும் சுரங்கத்துறை

ந.க. எண்: கேவி1/411/2020-கனிமம், மாவட்ட ஆட்சியர் அலுவலகம்
விருதுநகர்.
நாள் : 18.09.2020

துணை இயக்குநர் அலுவலகம் விருதுநகர் மாவட்டம் 17 DEC 2020 விருதுநகர் புவியியல் மற்றும் சுரங்கத்துறை

குறிப்பாணை

பொருள்: கனிமங்களும் குவாரிகளும் - விருதுநகர் மாவட்டம், அருப்புக்கோட்டை வட்டம், மேலக்கண்டமங்கலம் கிராமம் பட்டா எண்.1217-ல் புலஎண்.2/4B (0.47.5), பட்டா எண்.1147-ல் புலஎண்கள்.2/4C (0.33.5), 2/5 (0.77.5), பட்டா எண்.1169-ல் புலஎண்கள்.3/2A (0.59.0), 3/2B1 (0.39.25), 3/2B2 (0.19.75), பட்டா எண்.1162-ல் புலஎண்கள்.3/3A (0.20.0), 3/3B (0.13.5), 4/5 (0.46.0) மற்றும் பட்டா எண்.1223-ல் புலஎண்.3/4B (0.93.0) மொத்த பரப்பு 4.49.0 ஹெக்டேர் பரப்பு நிலத்தில் 5 வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி உரிமம் வழங்கக்கோரியுள்ளது - சுரங்கத்திட்டம் மற்றும் மாநில அளவிலான சுற்றுச்சூழல் பாதுகாப்பு தாக்க மதிப்பீட்டு ஆணையத்தின் இசைவினைப் பெற்று சமர்ப்பிக்க கோருவது - தொடர்பாக.

பார்வை:
1. விஷ்ணுசூர்யா புராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட், டெம்பில் டவர்ஸ் 2-வது தளம், புதிய எண்.76, வடக்கு மாடவீதி, மைலாப்பூர், சென்னை என்பவரது மனு நாள் : 03.08.2020.
2. இவ்வலுவலக கடிதம் எண்.ந.க.கேவி1/411/2020 நாள்:03.08.2020
3. அருப்புக்கோட்டை வருவாய் கோட்டாட்சியர் கடிதஎண்.ந.க.அ2/4055/2020 நாள் : 02.09.2020
4. உதவி புவியியலாளர், புவியியல் மற்றும் சுரங்கத்துறை அவர்களின் புலத்தணிக்கை அறிக்கை நாள்: 11.09.2020.
5. தொடர்புடைய ஆவணங்கள்.

விருதுநகர் மாவட்டம், அருப்புக்கோட்டை வட்டம், மேலக்கண்டமங்கலம் கிராமம் பட்டா எண்.1217-ல் புலஎண்.2/4B (0.47.5), பட்டா எண்.1147-ல் புலஎண்கள்.2/4C (0.33.5), 2/5 (0.77.5), பட்டா எண்.1169-ல் புலஎண்கள்.3/2A (0.59.0), 3/2B1 (0.39.25), 3/2B2 (0.19.75), பட்டா எண்.1162-ல் புலஎண்கள்.3/3A (0.20.0), 3/3B (0.13.5), 4/5 (0.46.0) மற்றும் பட்டா எண்.1223-ல் புலஎண்.3/4B (0.93.0) மொத்த பரப்பு 4.49.0 ஹெக்டேர் பரப்பு நிலத்தில், சென்னை, மைலாப்பூர்,

76, வடக்கு மாடவீதி, டெம்பில் டவர்ஸ் 2-வது தளம் என்ற முகவரியைச் சேர்ந்த விஷ்ணுசூர்யா புராஜக்ட்ஸ் அண்ட் இன்ப்ரா பிரைவேட் லிமிடெட் என்ற நிறுவனம் ஐந்து வருடங்களுக்கு உடைகல் மற்றும் கிராவல் குவாரி பணி செய்ய உரிமம் வழங்கக் கோரி பார்வை 1-ல் காணும் மனுவில் விண்ணப்பம் வரப்பெற்றுள்ளது.

அருப்புக்கோட்டை வருவாய் கோட்டாட்சியர் மற்றும் உதவி புவியியலாளர் (கனிமம்) ஆகியோர் கீழ்காணும் நிபந்தனைகளுக்குட்பட்டு பரிந்துரை செய்துள்ளனர்.

1) அருகிலுள்ள பட்டா நிலங்களுக்கு 7.5 மீ பாதுகாப்பு விடவேண்டும்.
2) புலஎண்.3/4B-ன் தென்புறம் உள்ள அரசு புறம்போக்கு வண்டிப்பாதைக்கு 10மீ பாதுகாப்பு இடைவெளி விடவேண்டும்.
3) அருகிலுள்ள குவாரிகளுக்கு போதுமான பாதுகாப்பு இடைவெளி விட வேண்டும்.
4) குவாரி கழிவுகளை குத்தகை உரிமம் வழங்கப்படும் பகுதிக்கு உள்ளேயே இருப்பு வைக்க வேண்டும்.
5) வெடிமருந்தினை விதிகளின்படி பாதிப்பு ஏற்படா வண்ணம் பயன்படுத்த வேண்டும்.
6) சுரங்கத்திட்டம் மற்றும் சுற்றுச்சூழல் தடையில்லாச் சான்று குத்தகை உரிமம் வழங்குவதற்கு முன் சமர்ப்பிக்க வேண்டும்.

மேற்கூறிய அலுவலர்களின் பரிந்துரையினை ஏற்றும் நிபந்தனைகளுக்குட்பட்டும், விருதுநகர் மாவட்டம், அருப்புக்கோட்டை வட்டம், மேலக்கண்டமங்கலம் கிராமம் பட்டா எண்.1217-ல் புலஎண்.2/4B (0.47.5), பட்டா எண்.1147-ல் புலஎண்கள்.2/4C (0.33.5), 2/5 (0.77.5), பட்டா எண்.1169-ல் புலஎண்கள்.3/2A (0.59.0), 3/2B1 (0.39.25), 3/2B2 (0.19.75), பட்டா எண்.1162-ல் புலஎண்கள்.3/3A (0.20.0), 3/3B (0.13.5), 4/5 (0.46.0) மற்றும் பட்டா எண்.1223-ல் புலஎண்.3/4B (0.93.0) மொத்த பரப்பு 4.49.0 ஹெக்டேர் பரப்பு நிலத்திற்கு அனுமதி வழங்கலாம். 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் விதி எண்: 19 மற்றும் 20-ன்படி ஐந்து வருட காலத்திற்கு உடைகல் மற்றும் கிராவல் குவாரி பணி செய்ய தகுதி வாய்ந்த நிலப்பரப்பாக கருதப்படுகிறது.

மேலும் தமிழ்நாடு சிறுகனிம சலுகை விதிகள்-1959 விதி எண்:41ன்படி குவாரி பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்கத் திட்டத்தினை (Mining Plan) 90 தினங்களுக்குள் சமர்ப்பிக்குமாறும், விதி எண்: 42-ன்படி மாநில அளவிலான சுற்றுச்சூழல் பாதுகாப்பு தாக்க மதிப்பீட்டு ஆணையத்தின் (State

அளவிலான சுற்றுச்சூழல் பாதுகாப்பு தாக்க மதிப்பீட்டு ஆணையத்தின் (State Level Environmental Impact Assessment Authority) இசைவினைப் பெற்று சமர்ப்பிக்குமாறும் மனுதாரர் கேட்டுக் கொள்ளப்படுகிறார்.

துணை இயக்குநர் அலுவலகம்
விருதுநகர்
17 DEC 2020
புவியியியல் & சுரங்கத்துறை

18/9/12

துணை இயக்குநர்
புவியியல் மற்றும் சுரங்கத்துறை
விருதுநகர்

பெறுநர்

விஷ்ணுசூர்யா புராஜக்ட்ஸ் அன்ட்
இன்ப்ரா பிரைவேட் லிமிடெட்,
டெம்பில் டவர்ஸ் 2-வது தளம்,
புதிய எண்.76, வடக்கு மாடவீதி,
மைலாப்பூர், சென்னை.

18/9/2020

GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in
TC - 6060

TEST REPORT

ULR-TC606023000008325F

Report Number: GLCS/TR/8686/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,* *Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2Liters
Sample Name	Surface Water -1	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Sample Code	GLCS /8686	**Sample Receipt Date**	07.12.2023
Location Name	SW-1 –Periya kanmoi	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	22.12.2023
Location Co-ordinates	**9°29'51.30"N** **78°5'48.59"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	<5
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART11	-	8.03
4	Electrical Conductivity	IS 3025 PART14	µS/cm	1228
5	Turbidity	IS 3025 PART10	NTU	3
6	Total Dissolved Solids	IS 3025 PART16	mg/l	724
7	Total Alkalinity as $CaCO_3$	IS 3025 PART 23	mg/l	176.8
8	Total Hardness as $CaCO_3$	IS 3025 PART 21	mg/l	248
9	Calcium as Ca	IS 3025 PART40	mg/l	68.9

For Global Lab and Consultancy Services

Laboratory

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008325F

Report Number: GLCS/TR/8686/2023-24(1) **Report Date:** 25.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
10	Magnesium as Mg	IS 3025 PART 46	mg/l	18.4
11	Chloride as Cl^-	IS 3025 PART 32	mg/l	267
12	Sulphate as SO_4^-	IS 3025 PART24	mg/l	43.9
13	Iron as Fe	IS 3025 PART 53	mg/l	0.31
14	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
15	Free Residual Chlorine as Cl_2	IS 3025 PART 26	mg/l	BDL(DL:1.0)
16	Fluoride as F	GLCS/SOP/W/015	mg/l	0.29
17	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)
18	Nitrate as NO_3	IS 3025 PART 34	mg/l	BDL(DL :2.0)
19	Dissolved Oxygen	IS 3025 PART 38	mg/l	4.8
20	Bio-Chemical Oxygen Demand @ 27°C for 3 days	IS 3025 PART 44	mg/l	16.8
21	Chemical Oxygen Demand	IS 3025 PART 58	mg/l	48.1
22	Ammonia as NH_3	IS 3025 PART 34	mg/l	BDL(DL:1.0)

Note: **BDL** – Below Detection Limit, **DL** – Detection Limit.

For Global Lab and Consultancy Services

Laboratory

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
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TC - 6060

TEST REPORT

ULR-TC606023000008325F

Report Number: GLCS/TR/8686/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Good
Customer Ref No	4050	**Sample Quantity**	250 ml
Sample Name	Surface Water -1	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/M/SOP-05
Sample Code	GLCS /8686	**Date of Analysis**	07.12.2023
Location Name	SW-1 –Periya kanmoi	**Date of Completion**	14.12.2023
Sample Receipt Date	07.12.2023	**Location Co-ordinates**	**9°29'51.30"N 78°5'48.59"E**

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 1622	MPN/100ml	26
2	*Escherichia coli*	IS 1622	MPN/100ml	<2

Note: MPN- Most Probable Number..

Global Lab and Consultancy Services Laboratory Salem-636005

For Global Lab and Consultancy Services

Authorised Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

*****End of Report*****

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S.F.No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

TEST REPORT

Report Number: GLCS/TR/8686/2023-24(2) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,* *Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2Liters
Sample Name	Surface Water -1	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Sample Code	GLCS /8686	**Sample Receipt Date**	07.12.2023
Location Name	SW-1 –Periya Kanmoi	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	22.12.2023
Location Co-ordinates	**9°29'51.30"N** **78°5'48.59"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Suspended Solids	IS 3025 PART 17	mg/l	10
2	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)
3	Anionic Detergents	IS 13428 ANNEX K	mg/l	BDL(DL:0.05)
4	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
5	Sulphide	GLCS/SOP/W/66	mg/l	5.6
6	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
7	Mercury (Hg)	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
8	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
9	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
10	Aluminium as Al	GLCS/SOP/W/62	mg/l	0.037
11	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
12	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
13	Chromium as Cr 6^{+}	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Barium as Ba	GLCS/SOP/W/62	mg/l	0.132
15	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
16	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)

Note : BDL – Below Detection Limit, **DL** – Detection Limit.

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

*****End of Report*****

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Alagapuram Pudur,
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Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008326F

Report Number: GLCS/TR/8687/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2Liters
Sample Name	Surface Water -2	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Sample Code	GLCS /8687	**Sample Receipt Date**	07.12.2023
Location Name	SW-2 – Lake Near Tiruchuli	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°32'4.68"N 78°11'51.73"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	6
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART11	-	7.89
4	Electrical Conductivity	IS 3025 PART14	µS/cm	1317
5	Turbidity	IS 3025 PART10	NTU	4
6	Total Dissolved Solids	IS 3025 PART16	mg/l	777
7	Total Alkalinity as $CaCO_3$	IS 3025 PART 23	mg/l	196.9
8	Total Hardness as $CaCO_3$	IS 3025 PART 21	mg/l	264
9	Calcium as Ca	IS 3025 PART40	mg/l	64.1

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008326F

Report Number: GLCS/TR/8687/2023-24(1) **Report Date:** 25.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
10	Magnesium as Mg	IS 3025 PART 46	mg/l	25.2
11	Chloride as Cl^-	IS 3025 PART 32	mg/l	294
12	Sulphate as SO_4^-	IS 3025 PART24	mg/l	50.3
13	Iron as Fe	IS 3025 PART 53	mg/l	0.30
14	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
15	Free Residual Chlorine as Cl_2	IS 3025 PART 26	mg/l	BDL(DL:1.0)
16	Fluoride as F	GLCS/SOP/W/015	mg/l	0.34
17	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)
18	Nitrate as NO_3	IS 3025 PART 34	mg/l	BDL(DL :2.0)
19	Dissolved Oxygen	IS 3025 PART 38	mg/l	3.9
20	Bio-Chemical Oxygen Demand @ 27°C for 3 days	IS 3025 PART 44	mg/l	15.0
21	Chemical Oxygen Demand	IS 3025 PART 58	mg/l	44.1
22	Ammonia as NH_3	IS 3025 PART 34	mg/l	BDL(DL:1.0)

Note: BDL – Below Detection Limit, **DL** – Detection Limit.

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in
TC - 6060

TEST REPORT

ULR-TC606023000008326F

Report Number: GLCS/TR/8687/2023-24(1) **Report Date:** 25.12.2023

Issued To:	***Site Address:***
M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore, ***Chennai – 600 004.***	*Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Good
Customer Ref No	4050	**Sample Quantity**	250 ml
Sample Name	Surface Water -2	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/M/SOP-05
Sample Code	GLCS /8687	**Date of Analysis**	07.12.2023
Location Name	SW-2 – Lake Near Tiruchuli	**Date of Completion**	14.12.2023
Sample Receipt Date	07.12.2023	**Location Co-ordinates**	**9°32'4.68"N 78°11'51.73"E**

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 1622	MPN/100ml	22
2	*Escherichia coli*	IS 1622	MPN/100ml	<2

Note: MPN- Most Probable Number.

For Global Lab and Consultancy Services

Global Lab and Consultancy Services Laboratory Salem 636005

Authorised Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

*****End of Report*****

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Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

TEST REPORT

Report Number: GLCS/TR/8687/2023-24(2) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,* *Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2Liters
Sample Name	Surface Water -2	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Sample Code	GLCS /8687	**Sample Receipt Date**	07.12.2023
Location Name	SW-2 – Lake Near Tiruchuli	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°32'4.68"N** **78°11'51.73"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Suspended Solids	IS 3025 PART 17	mg/l	12
2	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)
3	Anionic Detergents	IS 13428 ANNEX K	mg/l	BDL(DL:0.05)
4	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
5	Sulphide	GLCS/SOP/W/66	mg/l	4.8
6	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
7	Mercury (Hg)	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
8	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
9	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
10	Aluminium as Al	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
11	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
12	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
13	Chromium as Cr 6+	ITC/CHN/FD/STP/020	mg/l	BDL(DL:0.01)
14	Barium as Ba	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
15	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
16	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)

Note : **BDL** – Below Detection Limit, **DL** – Detection Limit.

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

*****End of Report*****

GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in
TC - 6060

TEST REPORT

ULR-TC606023000008327F

Report Number: GLCS/TR/8688/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2Liters
Sample Name	Well Water -1	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Sample Code	GLCS /8688	**Sample Receipt Date**	07.12.2023
Location Name	Near Project Area	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°31'10.24"N 78°10'21.56"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	<5
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART11	-	7.55
4	Electrical Conductivity	IS 3025 PART14	µS/cm	1032
5	Turbidity	IS 3025 PART10	NTU	<1
6	Total Dissolved Solids	IS 3025 PART16	mg/l	608
7	Total Alkalinity as $CaCO_3$	IS 3025 PART 23	mg/l	160.8
8	Total Hardness as $CaCO_3$	IS 3025 PART 21	mg/l	232
9	Calcium as Ca	IS 3025 PART40	mg/l	62.5

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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Alagapuram Pudur,
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Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008327F

Report Number: GLCS/TR/8688/2023-24(1) **Report Date:** 25.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
10	Magnesium as Mg	IS 3025 PART 46	mg/l	18.4
11	Chloride as Cl^-	IS 3025 PART 32	mg/l	187.8
12	Sulphate as SO_4^-	IS 3025 PART24	mg/l	45.4
13	Iron as Fe	IS 3025 PART 53	mg/l	0.29
14	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
15	Free Residual Chlorine as Cl_2	IS 3025 PART 26	mg/l	BDL(DL:1.0)
16	Fluoride as F	GLCS/SOP/W/015	mg/l	0.28
17	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)
18	Nitrate as NO_3	IS 3025 PART 34	mg/l	BDL(DL :2.0)
19	Total Suspended Solids	IS 3025 PART 17	mg/l	<2

Note: **BDL** – Below Detection Limit, **DL** – Detection Limit.

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
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TEST REPORT

ULR-TC606023000008327F

Report Number: GLCS/TR/8688/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Good
Customer Ref No	4050	**Sample Quantity**	250 ml
Sample Name	Well Water -1	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/M/SOP-05
Sample Code	GLCS /8688	**Date of Analysis**	07.12.2023
Location Name	Near Project Area	**Date of Completion**	08.12.2023
Sample Receipt Date	07.12.2023	**Location Co-ordinates**	**9°31'10.24"N 78°10'21.56"E**

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 15185	Per 100ml	Absent
2	*Escherichia coli*	IS 15185	Per 100ml	Absent

For Global Lab and Consultancy Services

Global Lab and Consultancy Services Laboratory Salem-636005

Authorised Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

*****End of Report*****

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Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

TEST REPORT

Report Number: GLCS/TR/8688/2023-24(2) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2Liters
Sample Name	Well Water -1	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Sample Code	GLCS /8688	**Sample Receipt Date**	07.12.2023
Location Name	Near Project Area	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates		**9°31'10.24"N 78°10'21.56"E**	

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)
2	Anionic Detergents	IS 13428 ANNEX K	mg/l	BDL(DL:0.05)
3	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
4	Sulphide	GLCS/SOP/W/66	mg/l	BDL(DL:1)
5	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
6	Mercury (Hg)	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
7	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
8	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
9	Aluminium as Al	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
10	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
11	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
12	Chromium as Cr 6+	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
13	Barium as Ba	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
15	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.02)
16	Ammonia as NH_3	IS 3025 PART 34	mg/l	BDL(DL:1.0)

Note : **BDL** – Below Detection Limit, **DL** – Detection Limit.

For Global Lab and Consultancy Services

Authorised Signatory

L. SUDHAPRIYA
Technical Manager

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GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; Web: www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008328F

Report Number: GLCS/TR/8689/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2Liters
Sample Name	Well Water -2	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Sample Code	GLCS /8689	**Sample Receipt Date**	07.12.2023
Location Name	Erampatti	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°33'22.35"N** **78°8'7.39"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	<5
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART11	-	7.34
4	Electrical Conductivity	IS 3025 PART14	µS/cm	1010
5	Turbidity	IS 3025 PART10	NTU	<1
6	Total Dissolved Solids	IS 3025 PART16	mg/l	595
7	Total Alkalinity as $CaCO_3$	IS 3025 PART 23	mg/l	152.7
8	Total Hardness as $CaCO_3$	IS 3025 PART 21	mg/l	216
9	Calcium as Ca	IS 3025 PART40	mg/l	67.3

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008328F

Report Number: GLCS/TR/8689/2023-24(1) **Report Date:** 25.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
10	Magnesium as Mg	IS 3025 PART 46	mg/l	11.6
11	Chloride as Cl^-	IS 3025 PART 32	mg/l	137.6
12	Sulphate as SO_4^-	IS 3025 PART24	mg/l	45.99
13	Iron as Fe	IS 3025 PART 53	mg/l	0.29
14	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
15	Free Residual Chlorine as Cl_2	IS 3025 PART 26	mg/l	BDL(DL:1.0)
16	Fluoride as F	GLCS/SOP/W/015	mg/l	0.26
17	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)
18	Nitrate as NO_3	IS 3025 PART 34	mg/l	BDL(DL :2.0)
19	Total Suspended Solids	IS 3025 PART 17	mg/l	<2

Note: BDL – Below Detection Limit, **DL** – Detection Limit.

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in
TC - 6060

TEST REPORT

ULR-TC606023000008328F

Report Number: GLCS/TR/8689/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,* *Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Good
Customer Ref No	4050	**Sample Quantity**	250 ml
Sample Name	Well Water -2	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/M/SOP-05
Sample Code	GLCS /8689	**Date of Analysis**	07.12.2023
Location Name	Erampatti	**Date of Completion**	08.12.2023
Sample Receipt Date	07.12.2023	**Location Co-ordinates**	**9°33'22.35"N 78°8'7.39"E**

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 15185	Per 100ml	Absent
2	*Escherichia coli*	IS 15185	Per 100ml	Absent

Global Lab and Consultancy Services Laboratory Salem-636005

For Global Lab and Consultancy Services

Authorised Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

*****End of Report*****

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Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

TEST REPORT

Report Number: GLCS/TR/8689/2023-24(2) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2Liters
Sample Name	Well Water -2	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Sample Code	GLCS /8689	**Sample Receipt Date**	07.12.2023
Location Name	Erampatti	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°33'22.35"N 78°8'7.39"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Phenolic Compounds	IS 3025 PART 43	mg/l	BDL(DL:0.1)
2	Anionic Detergents	IS 13428 ANNEX K	mg/l	BDL(DL:0.05)
3	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
4	Sulphide	GLCS/SOP/W/66	mg/l	BDL(DL:1)
5	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
6	Mercury (Hg)	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
7	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
8	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
9	Aluminium as Al	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
10	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
11	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
12	Chromium as Cr^{6+}	ITC/CHN/FD/STP/020	mg/l	BDL(DL:0.01)
13	Barium as Ba	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
15	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
16	Ammonia as NH_3	IS 3025 PART 34	mg/l	BDL(DL:1.0)

Note : **BDL** – Below Detection Limit, **DL** – Detection Limit.

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in
TC - 6060

TEST REPORT

ULR-TC606023000008329F

Report Number: GLCS/TR/8690/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Good
TRF No.	4050	**Sample Quantity**	2liters
Sample Name	Borewell Water -1	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Location	Near Project Area		
Sample Code	GLCS /8690	**Date of Analysis**	07.12.2023
Sample Receipt Date	07.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°31'26.70"N 78°9'45.25"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	< 5
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART 11	-	7.21
4	Electrical Conductivity	IS 3025 PART 14	µS/cm	876
5	Turbidity	IS 3025 PART 10	NTU	<1
6	Total Dissolved Solids	IS 3025 PART 16	mg/l	516
7	Total Suspended Solids	IS 3025 PART 17	mg/l	<2

Note: BDL- Below Detection Limit, **DL-** Detection Limit.

For Global Lab and Consultancy Services

Laboratory

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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Salem – 636 016. Tamil Nadu. India.
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E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008329F

Report Number: GLCS/TR/8690/2023-24(1) **Report Date:** 25.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
8	Total Alkalinity	IS 3025 PART 23	mg/l	128.6
9	Total Hardness as $CaCO_3$	IS 3025 PART 21	mg/l	196
10	Calcium as Ca	IS 3025 PART 40	mg/l	52.9
11	Magnesium as Mg	IS 3025 PART 46	mg/l	15.5
12	Chloride as Cl^-	IS 3025 PART 32	mg/l	149
13	Sulphate as SO_4^-	IS 3025 PART 24	mg/l	41.95
14	Iron as Fe	IS 3025 PART 53	mg/l	0.20
15	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
16	Free Residual Chlorine as Cl_2	IS 3025 PART 26	mg/l	BDL(DL:1.0)
17	Fluoride as F	GLCS/SOP/W/015	mg/l	0.24
18	Nitrate as NO_3	IS 3025 PART 34	mg/l	BDL(DL :2.0)
19	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)

Note: BDL- Below Detection Limit, **DL-** Detection Limit

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in
TC - 6060

TEST REPORT

ULR-TC606023000008329F

Report Number: GLCS/TR/8690/2023-24(1) **Report Date:** 25.12.2023

Issued To:	***Site Address:***
M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore, ***Chennai – 600 004.***	*Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Good
TRF No.	4050	**Sample Quantity**	250 ml
Sample Name	Borewell Water -1	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/M/SOP-05
Sample Code	GLCS /8690	**Date of Analysis**	07.12.2023
Location	Near Project Area	**Date of Completion**	08.12.2023
Sample Receipt Date	07.12.2023	**Location Co-ordinates**	**9°31'26.70"N 78°9'45.25"E**

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 15185	Per 100ml	Absent
2	*Escherichia coli*	IS 15185	Per 100ml	Absent

Global Lab and Consultancy Services Laboratory Salem-636005

For Global Lab and Consultancy Services

Authorised Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

*****End of Report*****

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Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
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TEST REPORT

Report Number: GLCS/TR/8690/2023-24(2) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Good
TRF No.	4050	**Sample Quantity**	2liters
Sample Name	Borewell Water -1	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Location	Near Project Area		
Sample Code	GLCS /8690	**Date of Analysis**	07.12.2023
Sample Receipt Date	07.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°31'26.70"N** **78°9'45.25"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
2	Ammonia (NH_3)	IS 3025 PART 34	mg/l	BDL(DL:1.0)
3	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
4	Aluminium as Al	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
5	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
6	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
7	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
8	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)

Note : **BDL** – Below Detection Limit, **DL** – Detection Limit; **BLQ**- Below Limit of Quantification, **LOQ** – Limit of Quantification .

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Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

TEST REPORT

Report Number: GLCS/TR/8690/2023-24(2) **Report Date:** 25.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
9	Barium as Ba	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
10	Anionic Detergents	IS 13428 ANNEX K	mg/l	BDL(DL:0.05)
11	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
12	Phenolic Compounds	IS 3025 PART 43	mg/l	BDQ(DL:0.1)
13	Chromium as Cr 6^{+}	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Sulphide	GLCS/SOP/W/66	mg/l	BDL(DL:1.0)
15	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
16	Mercury as Hg	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)

Note : **BDL** – Below Detection Limit, **DL** – Detection Limit; **BLQ**- Below Limit of Quantification, **LOQ** – Limit of Quantification .

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E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008330F

Report Number: GLCS/TR/8691/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Good
TRF No.	4050	**Sample Quantity**	2liters
Sample Name	Borewell Water - 2	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Location	Kallurani		
Sample Code	GLCS /8691	**Date of Analysis**	07.12.2023
Sample Receipt Date	07.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°28'16.96"N** **78°9'53.29"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Color	IS 3025 PART 4	Hazen	< 5
2	Odor	IS 3025 PART 5	-	Agreeable
3	pH	IS 3025 PART 11	-	7.41
4	Electrical Conductivity	IS 3025 PART 14	µS/cm	930
5	Turbidity	IS 3025 PART 10	NTU	<1
6	Total Dissolved Solids	IS 3025 PART 16	mg/l	548
7	Total Suspended Solids	IS 3025 PART 17	mg/l	<2

Note: BDL- Below Detection Limit, **DL-** Detection Limit.

For Global Lab and Consultancy Services

Laboratory

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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S.F No.92/3A2, Geetha Nagar,
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Phone Nos. : +91 427 2970 989 / 70944 53636
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TEST REPORT

ULR-TC606023000008330F

Report Number: GLCS/TR/8691/2023-24(1) **Report Date:** 25.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
8	Total Alkalinity	IS 3025 PART 23	mg/l	144
9	Total Hardness as $CaCO_3$	IS 3025 PART 21	mg/l	188
10	Calcium as Ca	IS 3025 PART 40	mg/l	46.4
11	Magnesium as Mg	IS 3025 PART 46	mg/l	17.5
12	Chloride as Cl^-	IS 3025 PART 32	mg/l	165
13	Sulphate as SO_4^-	IS 3025 PART 24	mg/l	40.7
14	Iron as Fe	IS 3025 PART 53	mg/l	0.23
15	Boron as B	IS 3025 PART 57	mg/l	BDL(DL:0.1)
16	Free Residual Chlorine as Cl_2	IS 3025 PART 26	mg/l	BDL(DL:1.0)
17	Fluoride as F	GLCS/SOP/W/015	mg/l	0.21
18	Nitrate as NO_3	IS 3025 PART 34	mg/l	BDL(DL :2.0)
19	Manganese as Mn	IS 3025 PART 59	mg/l	BDL(DL:0.1)

Note: BDL- Below Detection Limit, **DL-** Detection Limit

For Global Lab and Consultancy Services

Laboratory

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
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TC - 6060

TEST REPORT

ULR-TC606023000008330F

Report Number: GLCS/TR/8691/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Good
TRF No.	4050	**Sample Quantity**	250 ml
Sample Name	Borewell Water - 2	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/M/SOP-05
Sample Code	GLCS /8691	**Date of Analysis**	07.12.2023
Sample Receipt Date	07.12.2023	**Date of Completion**	08.12.2023
Location	Kallurani	**Location Co-ordinates**	**9°28'16.96"N 78°9'53.29"E**

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Total Coliforms	IS 15185	Per 100ml	Absent
2	*Escherichia coli*	IS 15185	Per 100ml	Absent

Global Lab and Consultancy Services * Laboratory * Salem-636005

For Global Lab and Consultancy Services

Authorised Signatory
L. DINESHKUMAR
Technical Manager-Microbiology

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TEST REPORT

Report Number: GLCS/TR/8691/2023-24(2) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,* *Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Good
TRF No.	4050	**Sample Quantity**	2liters
Sample Name	Borewell Water - 2	**Sampled by**	Laboratory
Sample Description	Liquid	**Sampling Method**	GLCS/SOP/W/028
Location	Kallurani		
Sample Code	GLCS /8691	**Date of Analysis**	07.12.2023
Sample Receipt Date	07.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°28'16.96"N** **78°9'53.29"E**		

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Arsenic as As	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
2	Ammonia (NH_3)	IS 3025 PART 34	mg/l	BDL(DL:1.0)
3	Zinc as Zn	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
4	Aluminium as Al	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
5	Cadmium as Cd	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
6	Molybdenum as Mo	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
7	Selenium	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)
8	Lead as Pb	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)

Note : BDL – Below Detection Limit, **DL** – Detection Limit; **BLQ**- Below Limit of Quantification, **LOQ** – Limit of Quantification .

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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TEST REPORT

Report Number: GLCS/TR/8691/2023-24(2) **Report Date:** 25.12.2023

Sl. No.	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
9	Barium as Ba	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
10	Anionic Detergents	IS 13428 ANNEX K	mg/l	BDL(DL:0.05)
11	Cyanide	IS 3025 PART 27	mg/l	BDL(DL:0.02)
12	Phenolic Compounds	IS 3025 PART 43	mg/l	BDQ(DL:0.1)
13	Chromium as Cr^{6+}	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
14	Sulphide	GLCS/SOP/W/66	mg/l	BDL(DL:1.0)
15	Copper as Cu	GLCS/SOP/W/62	mg/l	BDL(DL:0.01)
16	Mercury as Hg	GLCS/SOP/W/62	mg/l	BDL(DL:0.002)

Note : **BDL** – Below Detection Limit, **DL** – Detection Limit; **BLQ**- Below Limit of Quantification, **LOQ** – Limit of Quantification .

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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E-Mail: lab@glcs.in; Web: www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008331F

Report Number: GLCS/TR/8692/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil -1	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8692	**Sample Receipt Date**	07.12.2023
Location Name	Core Zone	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**09°31'22.67"N** **78°10'5.63"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	1.89
2	pH	IS 2720 PART 26	-	5.49
3	Specific Electrical Conductivity	IS 14767	µS/cm	280
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	13.9
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.39
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	5.6

For Global Lab and Consultancy Services

Global Lab and Consultancy Services Laboratory Salem-636016

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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TEST REPORT

ULR-TC606023000008331F

Report Number: GLCS/TR/8692/2023-24(1) **Report Date:** 25.12.2023

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	2.2
8	Sulphate as SO_4	GLCS/SOP/S/009	mg/100g	8.5
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	19.6
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.02
11	Sand	GLCS/SOP/S/015	%	34.45
12	Slit	GLCS/SOP/S/015	%	42.15
13	Clay	GLCS/SOP/S/015	%	23.40
14	Water Holding Capacity	GLCS/SOP/S/016	%	38
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	137.9
16	Chloride	GLCS/SOP/S/004	meq/l	9.3

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E-Mail: lab@glcs.in
Web: www.glcs.in

TEST REPORT

Report Number: GLCS/TR/8692/2023-24(2) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil -1	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8692	**Sample Receipt Date**	07.12.2023
Location Name	Core Zone	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**09°31'22.67"N** **78°10'5.63"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permiability	By Permeameter	%	41.6
2	Manganese as Mn	USEPA Method	mg/kg	17.8
3	Zinc as Zn	USEPA Method	mg/kg	37.4
4	Cadmium as Cd	USEPA Method	mg/kg	18.5
5	Chromium as Cr 6+	USEPA Method	mg/kg	33.11
6	Copper as Cu	USEPA Method	mg/kg	12.8
7	Lead as Pb	USEPA Method	mg/kg	0.7
8	Iron as Fe	USEPA Method	mg/kg	40.6
9	Organic Carbon	GLCS/SOP/S/003	%	1.1
10	Boron as B	USEPA Method	mg/kg	3.2

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E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008332F

Report Number: GLCS/TR/8693/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil - 2	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8693	**Sample Receipt Date**	07.12.2023
Location Name	Thenpalai	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°31'49.84"N** **78°9'55.39"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	2.06
2	pH	IS 2720 PART 26	-	6.02
3	Specific Electrical Conductivity	IS 14767	µS/cm	301
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	15.3
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.47
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	6.2

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TEST REPORT

ULR-TC606023000008332F

Report Number: GLCS/TR/8693/2023-24(1) **Report Date:** 25.12.2023

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	3.0
8	Sulphate as SO_4	GLCS/SOP/S/009	mg/100g	6.6
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	20.6
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.19
11	Sand	GLCS/SOP/S/015	%	37.21
12	Slit	GLCS/SOP/S/015	%	39.84
13	Clay	GLCS/SOP/S/015	%	22.95
14	Water Holding Capacity	GLCS/SOP/S/016	%	41
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	163
16	Chloride	GLCS/SOP/S/004	meq/l	9.7

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E-Mail: lab@glcs.in
Web: www.glcs.in

TEST REPORT

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Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil - 2	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8693	**Sample Receipt Date**	07.12.2023
Location Name	Thenpalai	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°31'49.84"N 78°9'55.39"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permiability	By Permeameter	%	43
2	Manganese as Mn	USEPA Method	mg/kg	19.0
3	Zinc as Zn	USEPA Method	mg/kg	25.8
4	Cadmium as Cd	USEPA Method	mg/kg	12.2
5	Chromium as Cr 6^{+}	USEPA Method	mg/kg	21.9
6	Copper as Cu	USEPA Method	mg/kg	11.9
7	Lead as Pb	USEPA Method	mg/kg	BDL(DL:0.5)
8	Iron as Fe	USEPA Method	mg/kg	10.2
9	Organic Carbon	GLCS/SOP/S/003	%	1.2
10	Boron as B	USEPA Method	mg/kg	3.2

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Alagapuram Pudur,
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Phone Nos. : +91 427 2970 989 / 70944 53636
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TC - 6060

TEST REPORT

ULR-TC606023000008333F

Report Number: GLCS/TR/8694/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil - 3	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8694	**Sample Receipt Date**	07.12.2023
Location Name	Thiruchuli	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°31'54.31"N** **78°12'11.75"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	2.4
2	pH	IS 2720 PART 26	-	4.09
3	Specific Electrical Conductivity	IS 14767	µS/cm	320
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	16.2
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.44
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	6.8

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E-Mail: lab@glcs.in; **Web:** www.glcs.in

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TEST REPORT

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Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	2.6
8	Sulphate as SO_4	GLCS/SOP/S/009	mg/100g	9.8
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	20.4
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.21
11	Sand	GLCS/SOP/S/015	%	36.30
12	Slit	GLCS/SOP/S/015	%	40.21
13	Clay	GLCS/SOP/S/015	%	23.49
14	Water Holding Capacity	GLCS/SOP/S/016	%	42
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	175.6
16	Chloride	GLCS/SOP/S/004	meq/l	10.1

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Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

TEST REPORT

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Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil - 3	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8694	**Sample Receipt Date**	07.12.2023
Location Name	Thiruchuli	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°31'54.31"N 78°12'11.75"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permiability	By Permeameter	%	44
2	Manganese as Mn	USEPA Method	mg/kg	1.0
3	Zinc as Zn	USEPA Method	mg/kg	39.9
4	Cadmium as Cd	USEPA Method	mg/kg	21.5
5	Chromium as Cr 6^{+}	USEPA Method	mg/kg	23.5
6	Copper as Cu	USEPA Method	mg/kg	11.5
7	Lead as Pb	USEPA Method	mg/kg	4.0
8	Iron as Fe	USEPA Method	mg/kg	44.9
9	Organic Carbon	GLCS/SOP/S/003	%	1.4
10	Boron as B	USEPA Method	mg/kg	10.0

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Technical Manager

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BRANCH OFFICES: **CHENNAI** (Mobile : 70944 53636) & **COIMBATORE** (Mobile : 70944 54646)

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E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008334F

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Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil - 4	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8695	**Sample Receipt Date**	07.12.2023
Location Name	Sempatti	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°30'50.96"N** **78°7'50.81"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	2.75
2	pH	IS 2720 PART 26	-	4.37
3	Specific Electrical Conductivity	IS 14767	µS/cm	331
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	15.9
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.56
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	7.4

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Salem – 636 016. Tamil Nadu. India.
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TEST REPORT

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Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	2.4
8	Sulphate as SO_4	GLCS/SOP/S/009	mg/100g	12.0
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	19.8
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.05
11	Sand	GLCS/SOP/S/015	%	31.76
12	Slit	GLCS/SOP/S/015	%	45.94
13	Clay	GLCS/SOP/S/015	%	22.60
14	Water Holding Capacity	GLCS/SOP/S/016	%	43
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	188.1
16	Chloride	GLCS/SOP/S/004	meq/l	10.4

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Technical Manager

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Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil - 4	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8695	**Sample Receipt Date**	07.12.2023
Location Name	Sempatti	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°30'50.96"N** **78°7'50.81"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permiability	By Permeameter	%	45
2	Manganese as Mn	USEPA Method	mg/kg	13.6
3	Zinc as Zn	USEPA Method	mg/kg	34.1
4	Cadmium as Cd	USEPA Method	mg/kg	34.1
5	Chromium as Cr 6^{+}	USEPA Method	mg/kg	29.7
6	Copper as Cu	USEPA Method	mg/kg	17.5
7	Lead as Pb	USEPA Method	mg/kg	0.5
8	Iron as Fe	USEPA Method	mg/kg	40.9
9	Organic Carbon	GLCS/SOP/S/003	%	1.6
10	Boron as B	USEPA Method	mg/kg	6.8

Note : **BDL** – Below Detection Limit, **DL** – Detection Limit.

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Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008335F

Report Number: GLCS/TR/8696/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil - 5	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8696	**Sample Receipt Date**	07.12.2023
Location Name	Kallurani	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°28'20.86"N** **78°9'50.38"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	2.06
2	pH	IS 2720 PART 26	-	5.06
3	Specific Electrical Conductivity	IS 14767	µS/cm	312
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	14.8
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.37
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	7.8

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Global Lab and Consultancy Services Laboratory Salem-636016

Authorised Signatory
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Technical Manager

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E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008335F

Report Number: GLCS/TR/8696/2023-24(1) **Report Date:** 25.12.2023

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	2.6
8	Sulphate as SO_4	GLCS/SOP/S/009	mg/100g	11.8
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	20.8
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.09
11	Sand	GLCS/SOP/S/015	%	36.73
12	Slit	GLCS/SOP/S/015	%	40.20
13	Clay	GLCS/SOP/S/015	%	23.08
14	Water Holding Capacity	GLCS/SOP/S/016	%	40
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	163
16	Chloride	GLCS/SOP/S/004	meq/l	9.8

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E-Mail: lab@glcs.in
Web: www.glcs.in

TEST REPORT

Report Number: GLCS/TR/8696/2023-24(2) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil - 5	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8696	**Sample Receipt Date**	07.12.2023
Location Name	Kallurani	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°28'20.86"N** **78°9'50.38"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permiability	By Permeameter	%	42
2	Manganese as Mn	USEPA Method	mg/kg	25.2
3	Zinc as Zn	USEPA Method	mg/kg	43.2
4	Cadmium as Cd	USEPA Method	mg/kg	19.8
5	Chromium as Cr 6^{+}	USEPA Method	mg/kg	27.4
6	Copper as Cu	USEPA Method	mg/kg	19.3
7	Lead as Pb	USEPA Method	mg/kg	0.9
8	Iron as Fe	USEPA Method	mg/kg	46.8
9	Organic Carbon	GLCS/SOP/S/003	%	1.2
10	Boron as B	USEPA Method	mg/kg	4.0

Note : BDL – Below Detection Limit, **DL** – Detection Limit.

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Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008336F

Report Number: GLCS/TR/8697/2023-24(1) **Report Date:** 25.12.2023

Issued To: *M/s. Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director), No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address:*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil - 6	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8697	**Sample Receipt Date**	07.12.2023
Location Name	Chokkampatti	**Date of Analysis**	07.12.2023
Sampling Date	05.12.2023	**Date of Completion**	23.12.2023
Location Co-ordinates	**9°34'52.16"N** **78°10'17.08"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Organic Matter	GLCS/SOP/S/003	%	2.2
2	pH	IS 2720 PART 26	-	5.41
3	Specific Electrical Conductivity	IS 14767	µS/cm	343
4	Available Phosphorous	GLCS/SOP/S/005	mg/kg	14.9
5	Available Potassium	GLCS/SOP/S/026	meq/l	1.58
6	Exchangeable Calcium (as Ca)	GLCS/SOP/S/020	meq/100g	7.6

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Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; **Web:** www.glcs.in

TC - 6060

TEST REPORT

ULR-TC606023000008336F

Report Number: GLCS/TR/8697/2023-24(1) **Report Date:** 25.12.2023

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
7	Exchangeable Magnesium (as Mg)	GLCS/SOP/S/021	meq/100g	2.8
8	Sulphate as SO_4	GLCS/SOP/S/009	mg/100g	11.3
9	Cation Exchange Capacity	GLCS/SOP/S/024	meq/100g	20.0
10	Bulk Density	GLCS/SOP/S/017	g/cc	1.19
11	Sand	GLCS/SOP/S/015	%	39.59
12	Slit	GLCS/SOP/S/015	%	37.32
13	Clay	GLCS/SOP/S/015	%	23.09
14	Water Holding Capacity	GLCS/SOP/S/016	%	44
15	Available Nitrogen as N	GLCS/SOP/S/029	Kg/ha	200
16	Chloride	GLCS/SOP/S/004	meq/l	10.5

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E-Mail: lab@glcs.in
Web: www.glcs.in

TEST REPORT

Report Number: GLCS/TR/8697/2023-24(2) **Report Date:** 25.12.2023

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Attention	-	**Sample Receipt Condition**	Ambient – Good
Customer Ref No	4050	**Sample Quantity**	2 kg
Sample Name	Soil - 6	**Sampled by**	Laboratory
Sample Description	Powder	**Sampling Method**	GLCS/SOP/S/014
Sample Code	GLCS / 8697	**Sample Receipt Date**	09.12.2023
Location Name	Chokkampatti	**Date of Analysis**	09.12.2023
Sampling Date	05.12.2023	**Date of Completion**	19.12.2023
Location Co-ordinates	**9°34'52.16"N** **78°10'17.08"E**		

Sl. No	TEST PARAMETERS	TEST METHOD	UNIT	RESULTS
1	Permiability	By Permeameter	%	46
2	Manganese as Mn	USEPA Method	mg/kg	27.0
3	Zinc as Zn	USEPA Method	mg/kg	38.6
4	Cadmium as Cd	USEPA Method	mg/kg	20.7
5	Chromium as Cr 6^{+}	USEPA Method	mg/kg	23.1
6	Copper as Cu	USEPA Method	mg/kg	17.3
7	Lead as Pb	USEPA Method	mg/kg	1.4
8	Iron as Fe	USEPA Method	mg/kg	20.7
9	Organic Carbon	GLCS/SOP/S/003	%	1.3
10	Boron as B	USEPA Method	mg/kg	1.0

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Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; Web: www.glcs.in

TC - 6060

TEST REPORT
ULR-TC606023000006186F

Report Number: GLCS/TR/5714/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address :*** *Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5714
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	02.10.2023-03.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023
Location Name	**AN1 –Project Area**	**Location Coordinates :**	9° 31' 22. 78" N 78° 10' 1.70"E

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	06:40	40.9	51.1	**48.49**
2	07:40	41.5	51.9	**49.27**
3	08:40	39.6	52.6	**49.80**
4	09:40	40.2	54.1	**51.26**
5	10:40	41.7	52.7	**50.02**
6	11:40	42.2	55.5	**52.69**
7	12:40	43.6	53.6	**51.00**
8	13:40	46.1	52.9	**50.71**
9	14:40	45.1	53.7	**51.25**
10	15:40	43.8	51.4	**49.09**
11	16:40	40.6	50.8	**48.19**
12	17:40	41.1	51.4	**48.78**
13	18:40	40.1	52.5	**49.73**
14	19:40	39.6	50.6	**47.92**

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ULR-TC606023000006186F

Report Number: GLCS/TR/5714/2023-24 **Report Date:** 26.10.2023

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Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5714
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	02.10.2023-03.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
15	20.40	38.2	49.8	**47.08**
16	21.40	34.5	45.5	**42.82**
17	22.40	32.3	40.3	**37.93**
18	23.40	31.2	40.1	**37.62**
19	0.40	32.1	38.9	**36.71**
20	1.40	31.9	39.1	**36.85**
21	2.40	31.4	37.5	**35.44**
22	3.40	32.8	36.9	**35.32**
23	4.40	33.9	38.9	**37.08**
24	5.40	39.5	48.2	**45.74**
		Day Mean dB(A)		**49.44**
		Night Mean dB(A)		**37.47**

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E-Mail: lab@glcs.in; Web: www.glcs.in

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ULR-TC606023000006187F

Report Number: GLCS/TR/5715/2023-24 **Report Date:** 26.10.2023

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Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5715
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	02.10.2023-03.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023
Location Name	**AN2 – Thenpalai**	**Location Coordinates :** 9°31' 48. 23" N 78°9' 54.90"E	

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	06:15	39.2	47.1	**44.74**
2	07:15	40.2	48.6	**46.18**
3	08:15	41.7	49.2	**46.90**
4	09:15	42.1	49.5	**47.22**
5	10:15	43.5	51.1	**48.79**
6	11:15	42.2	51.7	**49.15**
7	12:15	43.1	50.6	**48.30**
8	13:15	42.8	51.7	**49.22**
9	14:15	43.1	53.3	**50.69**
10	15:15	43.9	51.7	**49.36**
11	16:15	43.8	50.7	**48.50**
12	17:15	41.7	49.5	**47.16**
13	18:15	38.5	48.1	**45.54**
14	19:15	39.8	47.3	**45.00**

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Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; Web: www.glcs.in

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TEST REPORT
ULR-TC606023000006187F

Report Number: GLCS/TR/5715/2023-24 **Report Date:** 26.10.2023

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Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5715
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	02.10.2023-03.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
15	20.15	40.1	46.3	**44.22**
16	21.15	37.1	45.9	**43.43**
17	22.15	35.8	43.7	**41.34**
18	23.15	33.9	39.6	**37.62**
19	0.15	32.3	38.5	**36.42**
20	1.15	32.8	38.9	**36.84**
21	2.15	31.5	37.4	**35.38**
22	3.15	32.6	34.5	**33.65**
23	4.15	33.8	39.6	**37.60**
24	5.15	33.1	39.1	**37.06**
		Day Mean dB(A)		**47.15**
		Night Mean dB(A)		**37.71**

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E-Mail: lab@glcs.in; Web: www.glcs.in

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TEST REPORT
ULR-TC606023000006188F

Report Number: GLCS/TR/5716/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address :*** *Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5716
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	02.10.2023 - 03.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023
Location Name	**AN3 – Tiruchuli**	**Location Coordinates :** 9° 31' 53. 91" N 78° 12' 12.65"E	

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	06:40	35.1	49.8	**46.93**
2	07:40	35.5	49.9	**47.04**
3	08:40	38.9	50.1	**47.41**
4	09:40	40.1	53.3	**50.49**
5	10:40	39.9	52.9	**50.10**
6	11:40	40.8	55.4	**52.54**
7	12:40	41.1	53.9	**51.11**
8	13:40	42.3	51.6	**49.07**
9	14:40	42.9	50.9	**48.53**
10	15:40	41.7	51.2	**48.65**
11	16:40	41.5	50.7	**48.18**
12	17:40	40.3	49.5	**46.98**
13	18:40	40.1	48.7	**46.25**
14	19:40	39.9	47.6	**45.27**

For Global Lab and Consultancy Services

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Technical Manager

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Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; Web: www.glcs.in

TC - 6060

TEST REPORT
ULR-TC606023000006188F

Report Number: GLCS/TR/5716/2023-24 **Report Date:** 26.10.2023

Issued To :		***Site Address :***	
M/s. Vishnusurya Projects and Infra Private Limited, *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		*Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5716
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	02.10.2023-03.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
15	20.40	38.2	41.2	**39.95**
16	21.40	32.5	35.5	**34.25**
17	22.40	30.5	36.6	**34.54**
18	23.40	31.4	37.2	**35.20**
19	0.40	30.5	36.2	**34.22**
20	1.40	31.6	37.1	**35.17**
21	2.40	31.9	35.5	**34.06**
22	3.40	30.7	35.6	**33.81**
23	4.40	30.8	36.1	**34.21**
24	5.40	34.9	47.2	**44.44**
		Day Mean dB(A)		**46.90**
		Night Mean dB(A)		**34.43**

For Global Lab and Consultancy Service

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L. SUDHAPRIYA
Technical Manager

BRANCH OFFICES: CHENNAI (Mobile : 70944 53636) & **COIMBATORE** (Mobile : 70944 54646)

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E-Mail: lab@glcs.in; Web: www.glcs.in

TC - 6060

TEST REPORT
ULR-TC606023000006189F

Report Number: GLCS/TR/5717/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address :*** *Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5717
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	02.10.2023 - 03.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023
Location Name	**AN4 – Sempatti**	**Location Coordinates :** 9° 30' 46.12" N 78° 7' 54.25"E	

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	06:00	40.2	49.8	**47.24**
2	07:00	41.9	50.2	**47.79**
3	08:00	42.1	53.6	**50.89**
4	09:00	43.5	54.1	**51.45**
5	10:00	44.3	55.5	**52.81**
6	11:00	43.6	56.9	**54.09**
7	12:00	44.1	53.5	**50.96**
8	13:00	45.2	54.8	**52.24**
9	14:00	43.9	54.1	**51.49**
10	15:00	44.1	55.2	**52.51**
11	16:00	43.6	52.9	**50.37**
12	17:00	42.2	51.6	**49.06**
13	18:00	40.9	50.1	**57.58**
14	19:00	40.2	49.5	**46.97**

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E-Mail: lab@glcs.in; Web: www.glcs.in

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TEST REPORT
ULR-TC606023000006189F

Report Number: GLCS/TR/5717/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address :*** *Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5717
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	02.10.2023-03.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
15	20.00	38.2	48.5	**45.88**
16	21.00	36.6	40.1	**38.69**
17	22.00	33.5	38.8	**36.91**
18	23.00	34.1	39.1	**37.28**
19	0.00	32.3	36.6	**34.96**
20	1.00	33.8	37.1	**35.76**
21	2.00	31.5	36.5	**34.68**
22	3.00	32.5	36.1	**34.66**
23	4.00	33.3	35.6	**34.50**
24	5.00	31.7	34.8	**33.52**
		Day Mean dB(A)		**48.64**
		Night Mean dB(A)		**35.30**

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Technical Manager

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Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; Web: www.glcs.in

TC - 6060

TEST REPORT
ULR-TC606023000006190F

Report Number: GLCS/TR/5718/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address :*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,* *Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5718
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	03.10.2023 - 04.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023
Location Name	**AN5 – Kallurani**	**Location Coordinates :**	9°28' 20. 28" N 78°9' 49.85"E

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	06:00	39.9	45.9	**43.86**
2	07:00	40.2	48.9	**46.44**
3	08:00	40.6	49.1	**46.66**
4	09:00	41.5	51.5	**48.90**
5	10:00	42.9	50.6	**48.27**
6	11:00	43.5	52.1	**49.65**
7	12:00	45.5	52.7	**50.45**
8	13:00	43.7	53.6	**51.01**
9	14:00	42.5	54.1	**51.38**
10	15:00	43.8	51.9	**49.52**
11	16:00	41.9	50.2	**47.79**
12	17:00	40.7	49.1	**46.68**
13	18:00	39.6	48.6	**46.10**
14	19:00	38.5	49.2	**46.54**

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L. SUDHAPRIYA
Technical Manager

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Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; Web: www.glcs.in

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TEST REPORT
ULR-TC606023000006190F

Report Number: GLCS/TR/5718/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address :*** *Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5718
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	03.10.2023 - 04.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
15	20.00	40.1	49.8	**47.23**
16	21.00	33.6	41.5	**39.14**
17	22.00	34.1	42.1	**39.73**
18	23.00	33.5	37.9	**36.23**
19	0.00	32.2	36.1	**34.57**
20	1.00	30.9	36.4	**34.47**
21	2.00	30.5	35.3	**33.53**
22	3.00	31.4	36.1	**34.36**
23	4.00	32.5	35.8	**34.46**
24	5.00	31.3	36.1	**34.33**
		Day Mean dB(A)		**47.48**
		Night Mean dB(A)		**35.21**

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L. SUDHAPRIYA
Technical Manager

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Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; Web: www.glcs.in

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TEST REPORT
ULR-TC606023000006191F

Report Number: GLCS/TR/5719/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***	***Site Address :*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,* *Aruppukkottai Taluk,* ***Virudhunagar District.***

Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5719
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	03.10.2023 - 04.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023
Location Name	**AN6 – Erampatti**	**Location Coordinates :**	9° 33' 21. 35" N 78° 8' 6.97"E

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	06:30	38.9	48.5	**45.94**
2	07:30	39.1	49.1	**46.50**
3	08:30	40.5	50.9	**48.27**
4	09:30	40.9	51.3	**48.67**
5	10:30	41.7	53.1	**50.39**
6	11:30	42.6	54.9	**52.14**
7	12:30	39.8	55.9	**53.00**
8	13:30	42.3	56.3	**53.46**
9	14:30	43.6	55.1	**52.39**
10	15:30	42.1	53.8	**51.07**
11	16:30	44.3	54.4	**51.79**
12	17:30	43.7	52.9	**50.38**
13	18:30	39.5	51.2	**48.47**
14	19:30	40.2	49.5	**46.97**

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E-Mail: lab@glcs.in; Web: www.glcs.in

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TEST REPORT
ULR-TC606023000006191F

Report Number: GLCS/TR/5719/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address :*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,* *Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5719
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	03.10.2023 - 04.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
15	20.30	38.9	48.9	**46.30**
16	21.30	37.4	45.5	**43.12**
17	22.30	34.6	41.5	**39.30**
18	23.30	33.5	37.4	**35.87**
19	0.30	32.1	35.6	**34.19**
20	1.30	33.8	34.2	**34.00**
21	2.30	32.9	35.2	**34.20**
22	3.30	31.7	36.1	**34.43**
23	4.30	30.3	34.5	**32.89**
24	5.30	32.5	35.9	**34.52**
		Day Mean dB(A)		**49.30**
		Night Mean dB(A)		**35.84**

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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E-Mail: lab@glcs.in; Web: www.glcs.in

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TEST REPORT
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Report Number: GLCS/TR/5720/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address :*** *Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5720
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	03.10.2023 - 04.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023
Location Name	**AN7 – Tamil Padi**	**Location Coordinates :**	9° 30' 33. 94" N 78° 11' 50.58"E

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	06:00	40.9	49.2	**46.79**
2	07:00	41.4	50.9	**48.35**
3	08:00	43.2	52.3	**49.79**
4	09:00	43.9	52.8	**50.32**
5	10:00	43.4	53.1	**50.53**
6	11:00	44.8	54.3	**51.75**
7	12:00	45.3	54.7	**52.16**
8	13:00	43.8	53.6	**51.02**
9	14:00	45.1	53.9	**51.43**
10	15:00	42.5	51.1	**48.65**
11	16:00	41.4	50.3	**47.82**
12	17:00	40.7	49.9	**47.38**
13	18:00	38.3	48.4	**45.79**
14	19:00	39.8	47.2	**44.92**

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Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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E-Mail: lab@glcs.in; Web: www.glcs.in

TC - 6060

TEST REPORT
ULR-TC606023000006192F

Report Number: GLCS/TR/5720/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address :*** *Lease Area – 11.77.0 Ha. S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5720
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	03.10.2023 - 04.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
15	20.00	38.1	46.6	**44.16**
16	21.00	37.7	45.2	**42.90**
17	22.00	35.3	41.5	**39.42**
18	23.00	34.8	38.9	**37.32**
19	0.00	33.1	37.1	**35.55**
20	1.00	32.2	36.9	**35.16**
21	2.00	31.5	35.9	**34.23**
22	3.00	33.7	37.1	**35.72**
23	4.00	34.2	39.7	**37.77**
24	5.00	33.6	38.5	**36.71**
		Day Mean dB(A)		**47.83**
		Night Mean dB(A)		**37.20**

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Technical Manager

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S.F No.92/3A2, Geetha Nagar,
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Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; Web: www.glcs.in

TC - 6060

TEST REPORT
ULR-TC606023000006193F

Report Number: GLCS/TR/5721/2023-24 **Report Date:** 26.10.2023

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Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5721
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	03.10.2023 - 04.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023
Location Name	**AN8 – Chokkampatti**	**Location Coordinates :** 9° 34' 52. 14" N 78° 10' 17.51"E	

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
1	06:30	40.2	48.4	**46.00**
2	07:30	41.9	50.2	**47.79**
3	08:30	43.6	52.6	**50.10**
4	09:30	42.2	51.1	**48.62**
5	10:30	43.1	54.7	**51.98**
6	11:30	44.6	55.2	**52.55**
7	12:30	44.1	55.3	**52.61**
8	13:30	45.7	56.9	**54.21**
9	14:30	45.2	55.2	**52.60**
10	15:30	43.9	54.9	**52.22**
11	16:30	42.3	52.9	**50.25**
12	17:30	42.9	53.8	**51.13**
13	18:30	41.1	52.2	**49.51**
14	19:30	40.8	48.5	**46.17**

For Global Lab and Consultancy Services

Authorised Signatory
L. SUDHAPRIYA
Technical Manager

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GLOBAL LAB AND CONSULTANCY SERVICES
S.F No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem – 636 016. Tamil Nadu. India.
Phone Nos. : +91 427 2970 989 / 70944 53636
E-Mail: lab@glcs.in; Web: www.glcs.in

TC - 6060

TEST REPORT
ULR-TC606023000006193F

Report Number: GLCS/TR/5721/2023-24 **Report Date:** 26.10.2023

Issued To : ***M/s. Vishnusurya Projects and Infra Private Limited,*** *Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore,* ***Chennai – 600 004.***		***Site Address :*** *Lease Area – 11.77.0 Ha.* *S.F.No : 121/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,* *Aruppukkottai Taluk,* ***Virudhunagar District.***	
Attention	-	**Sampling Condition**	Good - Active
TRF No	3423	**Sampled by**	Laboratory
Sample Name	Noise Level Monitoring	**Sampling Method**	GLCS/SOP/N/014
Sample Description	Sound Pressure Level	**Sample Code**	GLCS/5721
Sampling Time	Every 60 minutes	**Sample Receipt Date**	05.10.2023
Sampling Date	03.10.2023 - 04.10.2023	**Date of Analysis**	05.10.2023
		Date of Completion	16.10.2023

S. No	Time(Hrs)	Min dB(A)	Max dB(A)	Leq dB(A)
15	20.30	39.4	45.1	**43.12**
16	21.30	36.1	44.1	**41.73**
17	22.30	34.5	40.1	**38.15**
18	23.30	34.9	39.8	**38.01**
19	0.30	33.1	38.5	**36.59**
20	1.30	33.1	40.1	**37.88**
21	2.30	30.8	36.6	**34.60**
22	3.30	32.4	36.1	**34.63**
23	4.30	31.8	35.5	**34.03**
24	5.30	32.2	36.7	**35.01**
		Day Mean dB(A)		**48.75**
		Night Mean dB(A)		**36.74**

For Global Lab and Consultancy Services

Authorised Signatory

L. SUDHAPRIYA
Technical Manager

*****End of Report*****

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S.F.No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ1 – Core Zone**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5698,5705,6206,6213,6540,6547,6813,6820,7139,7146,7406,7413, 7693,7700, 7940,7947 8341,8348,8672,8679,9043,9050,9370,9378,9713,9720**		
Location Coordinates	**9° 31' 27.85"N** **78° 10' 5. 82"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	7.00am - 7.00am	42.8	21.6	4.9	19.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	7.05am - 7.05am	40.2	20.0	BDL(DL:4)	19.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	7.00am - 7.00am	43.0	22.9	6.5	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	7.05am - 7.05am	41.3	27.2	6.5	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	7.00am - 7.00am	43.1	22.1	5.9	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	7.10am - 7.10am	41.1	20.8	BDL(DL:4)	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	7.10am - 7.10am	42.5	22.1	5.4	19.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	7.15am - 7.15am	39.6	19.6	6.7	23.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	7.10am - 7.10am	40.9	20.4	4.1	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	7.20am - 7.20am	40.2	19.6	5.1	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	7.00am - 7.00am	43.4	22.9	5.4	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	7.05am - 7.05am	42.3	19.2	5.1	23.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	7.00am - 7.00am	41.8	20.0	6.2	22.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	7.10am - 7.10am	40.2	19.5	6.2	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	7.10am - 7.10am	39.7	19.6	5.1	21.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	7.15am - 7.15am	38.3	18.3	4.9	19.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	7.00am – 7.00am	44.3	22.9	6.6	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	7.10am - 7.10am	43.1	22.5	6.3	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	7.00am - 7.00am	42.9	21.2	5.5	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	7.10am - 7.10am	41.1	20.4	4.7	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	7.00am - 7.00am	42.1	21.7	4.1	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	7.05am - 7.05am	41.4	19.6	7.4	24.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	7.00am - 7.00am	42.9	22.1	7.4	22.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	7.10am - 7.10am	41.1	21.2	6.0	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	7.10am - 7.10am	42.8	22.1	6.6	20.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	7.15am - 7.15am	41.4	21.2	4.7	22.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Laboratory

Verified by

L. SUDHAPRIYA
Technical Manager

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S.F.No.92/3A2, Geetha Nagar,
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Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor, Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ1 – Core Zone**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5698,5705,6206,6213,6540,6547,6813,6820,7139,7146,7406,7413, 7693,7700, 7940,7947 8341,8348,8672,8679,9043,9050,9370,9378,9713,9720**		
Location Coordinates	**9° 31' 27.85"N** **78° 10' 5. 82"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	Ni (ng/m^3)	As (ng/m^3)	BENZENE (µg/m^3)	BaP (ng/m^3)	Pb (µg/m^3)	
02.10.2023	7.00am - 7.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
03.10.2023	7.05am - 7.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
09.10.2023	7.00am - 7.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
10.10.2023	7.05am - 7.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
16.10.2023	7.00am - 7.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
17.10.2023	7.10am - 7.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
23.10.2023	7.10am - 7.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
24.10.2023	7.15am - 7.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
30.10.2023	7.10am - 7.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
31.10.2023	7.20am - 7.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
06.11.2023	7.00am - 7.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
07.11.2023	7.05am - 7.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
13.11.2023	7.00am - 7.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
14.11.2023	7.10am - 7.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
20.11.2023	7.10am - 7.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
21.11.2023	7.15am - 7.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
27.11.2023	7.00am – 7.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
28.11.2023	7.10am - 7.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
04.12.2023	7.00am - 7.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
05.12.2023	7.10am - 7.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
11.12.2023	7.00am - 7.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
12.12.2023	7.05am - 7.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
18.12.2023	7.00am - 7.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
19.12.2023	7.10am - 7.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
25.12.2023	7.10am - 7.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
26.12.2023	7.15am - 7.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0	

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

**********End of Report**********

L. SUDHAPRIYA
Technical Manager

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Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
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SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ2 - Thenpalai**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5699,5706,6207,6214,6541,6548,6814,6821,7140,7147,7407,7414, 7694,7701,7941,7948, 8342,8349,8673,8680,9044,9051,9371,9378,9714, 9721**		
Location Coordinates	**9° 31' 48.48"N** **78° 9' 54. 97"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	7.15am - 7.15am	43.7	22.5	5.4	19.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	7.20am - 7.20am	41.2	19.6	5.4	17.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	7.20am - 7.20am	43.5	23.3	7.3	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	7.30am - 7.30am	40.6	20.8	5.5	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	7.20am - 7.20am	43.4	22.5	4.6	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	7.25am - 7.25am	42.4	20.8	BDL(DL:4)	20.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	7.30am - 7.30am	41.9	21.2	5.5	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	7.35am - 7.35am	39.4	21.6	6.2	21.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	7.30am - 7.30am	41.3	19.6	5.4	19.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	7.40am - 7.40am	40.2	19.6	6.7	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	7.15am - 7.15am	40.5	20.0	BDL(DL:4)	22.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	7.20am - 7.20am	39.2	17.5	6.2	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	7.20am - 7.20am	40.2	20.4	BDL(DL:4)	23.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	7.25am - 7.25am	39.7	17.9	4.9	21.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	7.30am - 7.30am	38.2	18.7	6.2	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	7.35am - 7.35am	37.4	17.5	5.6	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	7.20am - 7.20am	42.7	21.2	BDL(DL:4)	22.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	7.25am - 7.25am	40.8	20.4	4.9	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	7.25am - 7.25am	40.3	19.6	7.4	21.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	7.35am - 7.35am	39.3	19.2	4.4	19.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	7.15am - 7.15am	41.7	21.2	4.2	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	7.20am - 7.20am	40.6	18.7	6.1	20.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	7.20am - 7.20am	41.3	21.2	BDL(DL:4)	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	7.25am - 7.25am	40.2	20.4	7.1	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	7.30am - 7.30am	41.1	21.2	6.9	21.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	7.35am - 7.35am	40.6	20.8	5.8	22.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

Laboratory

L. SUDHAPRIYA
Technical Manager

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Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ2 Thenpalai**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5699,5706,6207,6214,6541,6548,6814,6821,7140,7147,7407,7414, 7694,7701,7941,7948, 8342,8349,8673,8680,9044,9051,9371,9378,9714, 9721**		
Location Coordinates	**9° 31' 48.48"N** **78° 9' 54. 97"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	Ni (ng/m^3)	As (ng/m^3)	BENZENE (µg/m^3)	BaP (ng/m^3)	Pb (µg/m^3)	
02.10.2023	7.15am - 7.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
03.10.2023	7.20am - 7.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
09.10.2023	7.20am - 7.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
10.10.2023	7.30am - 7.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
16.10.2023	7.20am - 7.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
17.10.2023	7.25am - 7.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
23.10.2023	7.30am - 7.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
24.10.2023	7.35am - 7.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
30.10.2023	7.30am - 7.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
31.10.2023	7.40am - 7.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
06.11.2023	7.15am - 7.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
07.11.2023	7.20am - 7.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
13.11.2023	7.20am - 7.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
14.11.2023	7.25am - 7.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
20.11.2023	7.30am - 7.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
21.11.2023	7.35am - 7.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
27.11.2023	7.20am - 7.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
28.11.2023	7.25am - 7.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
04.12.2023	7.25am - 7.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
05.12.2023	7.35am - 7.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
11.12.2023	7.15am - 7.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
12.12.2023	7.20am - 7.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
18.12.2023	7.20am - 7.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
19.12.2023	7.25am - 7.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
25.12.2023	7.30am - 7.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
26.12.2023	7.35am - 7.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0	

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

L. SUDHAPRIYA
Technical Manager

**********End of Report**********

GLOBAL LAB AND CONSULTANCY SERVICES

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S.F.No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ3 - Tiruchuli**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5700,5707,6208,6215,6542,6549,6822,7141,7148,7408,7415,7695,7702,7942,7949, 8343,8350,8674,8681,9045, 9052,9372,9379,9715,9722**		
Location Coordinates	**9° 31' 53.81"N** **78° 12' 11. 49"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	7.35am - 7.35am	42.9	21.2	4.4	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	7.40am - 7.40am	40.3	20.4	4.9	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	7.40am - 7.40am	42.5	22.5	4.4	19.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	7.50am - 7.50am	41.2	21.6	6.3	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	7.40am - 7.40am	42.4	22.1	4.6	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	7.55am - 7.55am	41.5	21.2	BDL(DL:4)	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	7.45am - 7.45am	40.3	20.4	BDL(DL:4)	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	7.55am - 7.55am	39.7	19.6	5.7	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	7.50am - 7.50am	42.4	20.8	6.4	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	8.00am - 8.00am	41.8	20.8	5.4	21.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	7.35am - 7.35am	41.7	21.2	6.9	22.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	7.40am - 7.40am	40.4	18.7	7.4	22.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	7.40am - 7.40am	41.0	19.6	4.3	22.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	7.50am - 7.50am	40.6	19.1	6.9	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	7.45am - 7.45am	39.1	19.5	7.4	27.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	7.55am - 7.55am	36.4	16.7	4.6	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	7.40am - 7.40am	43.1	23.3	4.4	22.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	7.50am - 7.50am	41.4	19.1	6.6	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	7.45am - 7.45am	41.6	20.4	6.3	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	7.55am - 7.55am	40.6	18.7	BDL(DL:4)	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	7.35am - 7.35am	40.3	19.2	7.1	22.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	7.40am - 7.40am	41.1	20.4	5.2	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	7.40am - 7.40am	40.5	20.4	5.5	21.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	7.50am - 7.50am	39.7	19.1	6.6	21.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	7.45am - 7.45am	40.3	20.4	7.1	20.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	7.55am - 7.55am	39.7	19.1	4.9	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

L. SUDHAPRIYA
Technical Manager

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S.F.No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ3 - Tiruchuli**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5700,5707,6208,6215,6542,6549,6822,7141,7148,7408,7415,7695,7702,7942,7949, 8343,8350,8674,8681,9045, 9052,9372,9379,9715,9722**		
Location Coordinates	**9° 31' 53.81"N** **78° 12' 11. 49"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	Ni (ng/m^3)	As (ng/m^3)	BENZENE (µg/m^3)	BaP (ng/m^3)	Pb (µg/m^3)	
02.10.2023	7.35am - 7.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
03.10.2023	7.40am - 7.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
09.10.2023	7.40am - 7.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
10.10.2023	7.50am - 7.50am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
16.10.2023	7.40am - 7.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
17.10.2023	7.55am - 7.55am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
23.10.2023	7.45am - 7.45am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
24.10.2023	7.55am - 7.55am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
30.10.2023	7.50am - 7.50am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
31.10.2023	8.00am - 8.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
06.11.2023	7.35am - 7.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
07.11.2023	7.40am - 7.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
13.11.2023	7.40am - 7.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
14.11.2023	7.50am - 7.50am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
20.11.2023	7.45am - 7.45am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
21.11.2023	7.55am - 7.55am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
27.11.2023	7.40am - 7.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
28.11.2023	7.50am - 7.50am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
04.12.2023	7.45am - 7.45am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
05.12.2023	7.55am - 7.55am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
11.12.2023	7.35am - 7.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
12.12.2023	7.40am - 7.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
18.12.2023	7.40am - 7.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
19.12.2023	7.50am - 7.50am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
25.12.2023	7.45am - 7.45am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
26.12.2023	7.55am - 7.55am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0	

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

L. SUDHAPRIYA
Technical Manager

**********End of Report**********

GLOBAL LAB AND CONSULTANCY SERVICES

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S.F.No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village, Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ4 - Sempatti**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5701, 5708, 6209,6216,6543,6550,6816,6823, 7142,7149,7409,7416,7696,7703,7943,7950,8344,8351,8675,8682,9046,9053,9373,9380,9716,9723**		
Location Coordinates	**9° 30' 46.58"N** **78° 7' 54. 06"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	8.05am - 8.05am	43.6	22.1	5.2	18.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	8.10am - 8.10am	41.0	21.7	BDL(DL:4)	17.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	8.10am - 8.10am	43.8	23.7	5.7	21.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	8.20am - 8.20am	41.6	21.2	4.9	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	8.10am - 8.10am	43.2	22.5	5.3	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	8.20am - 8.20am	42.2	21.6	BDL(DL:4)	18.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	8.05am - 8.05am	41.6	28.0	6.2	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	8.15am - 8.15am	40.2	20.0	6.5	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	8.10am - 8.10am	41.6	21.2	5.7	22.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	8.20am - 8.20am	40.1	19.2	BDL(DL:4)	21.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	8.05am - 8.05am	40.2	20.4	4.9	23.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	8.10am - 8.10am	39.4	17.5	7.5	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	8.10am - 8.10am	40.3	19.5	4.6	19.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	8.20am - 8.20am	39.7	18.3	6.9	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	8.05am – 8.05am	38.6	18.3	6.7	22.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	8.15am - 8.15am	35.2	18.3	5.6	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	8.10am - 8.10am	42.3	21.2	5.8	21.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	8.20am - 8.20am	41.6	20.4	4.9	21.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	8.05am - 8.05am	40.4	19.5	4.1	21.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	8.15am - 8.15am	39.5	17.9	5.5	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	8.05am - 8.05am	42.3	20.4	4.4	19.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	8.10am - 8.10am	42.9	21.2	6.1	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	8.10am - 8.10am	39.2	19.2	5.8	22.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	8.20am - 8.20am	38.7	18.3	6.8	21.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	8.05am - 8.05am	39.9	19.6	7.4	22.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	8.15am - 8.15am	38.7	18.3	7.1	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Laboratory

Verified by
L. SIDDHAPRIYA
Technical Manager

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S.F.No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ4 - Sempatti**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5701, 5708, 6209,6216,6543,6550,6816,6823, 7142,7149,7409,7416,7696,7703,7943,7950,8344,8351,8675,8682,9046,9053,9373,9380,9716,9723**		
Location Coordinates	**9° 30' 46.58"N** **78° 7' 54. 06"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	Ni (ng/m^3)	As (ng/m^3)	BENZENE (µg/m^3)	BaP (ng/m^3)	Pb (µg/m^3)	
02.10.2023	8.05am - 8.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
03.10.2023	8.10am - 8.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
09.10.2023	8.10am - 8.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
10.10.2023	8.20am - 8.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
16.10.2023	8.10am - 8.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
17.10.2023	8.20am - 8.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
23.10.2023	8.05am - 8.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
24.10.2023	8.15am - 8.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
30.10.2023	8.10am - 8.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
31.10.2023	8.20am - 8.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
06.11.2023	8.05am - 8.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
07.11.2023	8.10am - 8.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
13.11.2023	8.10am - 8.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
14.11.2023	8.20am - 8.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
20.11.2023	8.05am – 8.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
21.11.2023	8.15am - 8.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
27.11.2023	8.10am - 8.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
28.11.2023	8.20am - 8.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
04.12.2023	8.05am - 8.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
05.12.2023	8.15am - 8.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
11.12.2023	8.05am - 8.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
12.12.2023	8.10am - 8.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
18.12.2023	8.10am - 8.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
19.12.2023	8.20am - 8.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
25.12.2023	8.05am - 8.05am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
26.12.2023	8.15am - 8.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0	

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

**********End of Report**********

Verified by
L. SUDHAPRIYA
Technical Manager

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S.F.No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ5 - Kallurani**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5702,5709,6210,6217,6544,6551,6817,6824,7143,7150,7410,7417,7697,7704,7944,7951, 8345,8352,8676,8683,9047,9054,9374,9381,9717,9724**		
Location Coordinates	**9° 28' 19.77"N** **78° 9' 49. 62"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	8.30am - 8.30am	43.8	19.6	6.8	18.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	8.35am - 8.35am	41.4	20.0	5.0	21.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	8.40am - 8.40am	43.5	20.0	5.7	21.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	8.50am - 8.50am	43.6	20.4	BDL(DL:4)	21.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	8.40am - 8.40am	42.8	20.0	4.9	21.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	8.50am - 8.50am	41.9	21.7	4.9	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	8.30am - 8.30am	41.6	22.5	5.2	20.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	8.40am - 8.40am	41.3	19.5	6.0	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	8.30am - 8.30am	40.5	19.2	4.4	20.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	8.40am - 8.40am	39.9	18.3	4.4	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	8.30am - 8.30am	42.6	22.1	5.4	21.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	8.35am - 8.35am	41.5	20.0	4.6	20.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	8.40am - 8.40am	39.2	18.3	BDL(DL:4)	18.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	8.50am - 8.50am	38.7	17.5	4.6	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	8.30am - 8.30am	41.9	21.2	4.9	20.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	8.40am - 8.40am	40.4	20.0	5.9	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	8.40am - 8.40am	40.3	19.1	5.5	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	8.50am - 8.50am	39.7	19.6	BDL(DL:4)	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	8.30am - 8.30am	39.6	18.3	7.1	20.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	8.40am - 8.40am	37.3	17.5	BDL(DL:4)	18.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	8.30am -8.30am	41.6	20.0	4.7	19.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	8.35am - 8.35am	40.6	20.4	5.5	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	8.40am – 8.40am	38.4	18.3	6.3	21.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	8.50am - 8.50am	37.9	17.1	6.0	23.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	8.30am - 8.30am	38.6	18.3	6.1	22.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	8.40am - 8.40am	37.9	17.1	5.2	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

Laboratory

L. SUDHAPRIYA
Technical Manager

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S.F.No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
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SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ5 - Kallurani**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5702,5709,6210,6217,6544,6551,6817,6824,7143,7150,7410,7417,7697,7704,7944,7951, 8345,8352,8676,8683,9047,9054,9374,9381,9717,9724**		
Location Coordinates	**9° 28' 19.77"N** **78° 9' 49. 62"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	Ni (ng/m^3)	As (ng/m^3)	BENZENE (µg/m^3)	BaP (ng/m^3)	Pb (µg/m^3)	
02.10.2023	8.30am - 8.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
03.10.2023	8.35am - 8.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
09.10.2023	8.40am - 8.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
10.10.2023	8.50am - 8.50am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
16.10.2023	8.40am - 8.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
17.10.2023	8.50am - 8.50am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
23.10.2023	8.30am - 8.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
24.10.2023	8.40am - 8.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
30.10.2023	8.30am - 8.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
31.10.2023	8.40am - 8.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
06.11.2023	8.30am - 8.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
07.11.2023	8.35am - 8.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
13.11.2023	8.40am - 8.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
14.11.2023	8.50am - 8.50am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
20.11.2023	8.30am - 8.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
21.11.2023	8.40am - 8.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
27.11.2023	8.40am - 8.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
28.11.2023	8.50am - 8.50am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
04.12.2023	8.30am - 8.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
05.12.2023	8.40am - 8.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
11.12.2023	8.30am -8.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
12.12.2023	8.35am - 8.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
18.12.2023	8.40am – 8.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
19.12.2023	8.50am - 8.50am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
25.12.2023	8.30am - 8.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
26.12.2023	8.40am - 8.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0	

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

L. SUDHAPRIYA
Technical Manager

**********End of Report**********

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S.F.No.92/3A2, Geetha Nagar,
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SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ6 - Erampatti**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5703,5710,6211,6218,6545,6552,6818,6825,7144,7151,7411,7418, 7698,7705,7945,7952, 8346,8353,8677, 8684,9048,9055,9375,9382,9718,9725**		
Location Coordinates	**9° 33' 21.11"N** **78° 8' 6. 17"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	8.55am - 8.55am	42.7	19.2	6.3	17.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	9.00am - 9.00am	43.1	19.6	6.8	18.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	9.00am - 9.00am	42.5	20.4	5.7	21.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	9.15am - 9.15am	42.9	20.4	BDL(DL:4)	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	9.00am - 9.00am	43.6	20.4	4.6	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	9.15am - 9.15am	43.6	23.3	6.1	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	9.00am - 9.00am	42.3	20.0	6.5	21.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	9.10am - 9.10am	41.2	18.3	5.9	20.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	9.00am - 9.00am	41.6	20.0	4.2	22.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	9.10am - 9.10am	40.1	21.2	4.6	19.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	8.55am - 8.55am	41.1	20.0	7.2	22.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	9.00am - 9.00am	38.6	17.1	BDL(DL:4)	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	9.00am - 9.00am	38.6	17.5	4.1	18.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	9.15am - 9.15am	37.4	16.7	BDL(DL:4)	22.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	9.00am - 9.00am	40.2	20.4	5.4	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	9.10am - 9.10am	37.2	17.5	4.3	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	9.00am - 9.00am	39.4	18.3	7.4	21.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	9.15am - 9.15am	38.3	16.7	BDL(DL:4)	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	9.00am - 9.00am	38.2	17.1	6.1	20.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	9.10am - 9.10am	36.3	16.7	6.6	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	8.55am - 8.55am	40.4	19.6	5.2	20.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	9.00am - 9.00am	39.7	19.6	6.3	21.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	9.00am - 9.00am	37.6	17.5	6.6	21.3	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	9.15am – 9.15am	36.4	16.2	4.1	21.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	9.00am - 9.00am	37.4	17.8	6.9	20.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	9.10am - 9.10am	36.9	16.2	6.3	21.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

L. SUDHAPRIYA
Technical Manager

GLOBAL LAB AND CONSULTANCY SERVICES
GLCS
Committed to Precision
LABORATORY | CONSULTANCY | SUSTAINABILITY
S.F.No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ6 - Erampatti**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5703,5710,6211,6218,6545,6552,6818,6825,7144,7151,7411,7418, 7698,7705,7945,7952, 8346,8353,8677, 8684,9048,9055,9375,9382,9718,9725**		
Location Coordinates	**9° 33' 21.11"N** **78° 8' 6. 17"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	Ni (ng/m^3)	As (ng/m^3)	BENZENE (µg/m^3)	BaP (ng/m^3)	Pb (µg/m^3)	
02.10.2023	8.55am - 8.55am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
03.10.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
09.10.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
10.10.2023	9.15am - 9.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
16.10.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
17.10.2023	9.15am - 9.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
23.10.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
24.10.2023	9.10am - 9.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
30.10.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
31.10.2023	9.10am - 9.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
06.11.2023	8.55am - 8.55am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
07.11.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
13.11.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
14.11.2023	9.15am - 9.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
20.11.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
21.11.2023	9.10am - 9.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
27.11.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
28.11.2023	9.15am - 9.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
04.12.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
05.12.2023	9.10am - 9.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
11.12.2023	8.55am - 8.55am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
12.12.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
18.12.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
19.12.2023	9.15am – 9.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
25.12.2023	9.00am - 9.00am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
26.12.2023	9.10am - 9.10am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0	

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

**********End of Report**********

L. SUDHAPRIYA
Technical Manager

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Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
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SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ7 – Tamilpadi**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5704,5711,6212,6219,6546,6553,6819,6826,7145,7152,7412,7419, 7699, 7706,7946, 8347,8354,8678,8685,9049, 9056,9376,9383,9719,9726**		
Location Coordinates	**9° 30' 33.62"N** **78° 11' 50. 53"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	NH3 (µg/m3)	CO (mg/ m3)
02.10.2023	9.15am - 9.15am	41.9	21.6	BDL(DL:4)	17.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
03.10.2023	9.20am - 9.20am	42.5	19.6	4.4	18.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
09.10.2023	9.25am - 9.25am	41.3	20.4	4.1	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
10.10.2023	9.35am - 9.35am	41.9	22.1	5.7	20.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
16.10.2023	9.30am - 9.30am	42.3	22.9	5.7	21.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
17.10.2023	9.40am - 9.40am	42.3	20.4	6.5	19.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
23.10.2023	9.25am - 9.25am	40.9	21.2	6.2	22.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
24.10.2023	9.30am - 9.30am	40.7	19.2	4.9	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
30.10.2023	9.25am - 9.25am	39.8	18.7	5.2	22.0	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
31.10.2023	9.30am - 9.30am	38.6	17.9	4.9	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
06.11.2023	9.15am - 9.15am	38.7	18.7	5.6	21.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
07.11.2023	9.20am - 9.20am	39.9	16.7	5.9	18.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
13.11.2023	9.25am - 9.25am	37.9	16.6	6.9	19.5	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
14.11.2023	9.35am - 9.35am	38.1	17.0	BDL(DL:4)	22.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
20.11.2023	9.25am - 9.25am	39.8	19.6	7.2	21.2	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
21.11.2023	9.30am - 9.30am	36.4	16.7	6.2	21.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
27.11.2023	9.25am - 9.25am	38.5	21.7	7.1	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
28.11.2023	9.35am - 9.35am	37.6	15.8	6.0	20.7	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
04.12.2023	9.25am - 9.25am	37.5	16.7	5.2	19.6	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
05.12.2023	9.30am - 9.30am	38.0	17.5	5.8	20.9	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
11.12.2023	9.15am - 9.15am	41.3	19.1	5.8	20.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
12.12.2023	9.20am - 9.20am	40.0	19.1	6.3	21.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
18.12.2023	9.25am – 9.25am	36.9	16.2	7.4	22.4	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
19.12.2023	9.35am – 9.35am	35.3	15.4	6.5	23.1	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
25.12.2023	9.25am - 9.25am	36.5	16.7	6.1	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
26.12.2023	9.30am - 9.30am	35.3	14.2	5.5	20.8	BDL(DL:5.0)	BDL(DL:5.0)	BDL(DL:1.15)
NAAQ* Standard		<100	<60	<80	<80	<100	<400	<4

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

L. SUDHAPRIYA
Technical Manager

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S.F.No.92/3A2, Geetha Nagar,
Alagapuram Pudur,
Salem - 636 016. Tamil Nadu.
Phone: 0427 - 2970989 / +91 70944 53636
E-Mail: lab@glcs.in
Web: www.glcs.in

SUMMARY REPORT

Issued To	Vishnusurya Projects and Infra Private Limited, Thiru.A.C. Thangam (Director),No.76, North Mada Street, 2nd Floor,Temple Towers, Mylapore, **Chennai – 600 004.**		
Site Location	Lease Area – 11.77.0 Ha. S.F.No : 21/1A,121/1B,128/1,128/2A,128/2B, 128/2C & 128/2D of Puliyuran Village,Aruppukkottai Taluk, **Virudhunagar District.**		
Sampling Method	GLCS/SOP/AAQ/015	**Sample Drawn by**	Laboratory
Sample Name	Air Quality Monitoring	**Sampling Location**	**AAQ7 – Tamilpadi**
Sample Description	Ambient Air Quality Monitoring	**Sample Condition**	Good
Sample Code	**GLCS/5704,5711,6212,6219,6546,6553,6819,6826,7145,7152,7412,7419, 7699, 7706,7946, 8347,8354,8678,8685,9049, 9056,9376,9383,9719,9726**		
Location Coordinates	**9° 30' 33.62"N** **78° 11' 50. 53"E**		
Report Date	**08.01.2024**		

Date	Period. hrs	Ni (ng/m^3)	As (ng/m^3)	BENZENE (µg/m^3)	BaP (ng/m^3)	Pb (µg/m^3)	
02.10.2023	9.15am - 9.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
03.10.2023	9.20am - 9.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
09.10.2023	9.25am - 9.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
10.10.2023	9.35am - 9.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
16.10.2023	9.30am - 9.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
17.10.2023	9.40am - 9.40am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
23.10.2023	9.25am - 9.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
24.10.2023	9.30am - 9.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
30.10.2023	9.25am - 9.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
31.10.2023	9.30am - 9.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
06.11.2023	9.15am - 9.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
07.11.2023	9.20am - 9.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
13.11.2023	9.25am - 9.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
14.11.2023	9.35am - 9.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
20.11.2023	9.25am - 9.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
21.11.2023	9.30am - 9.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
27.11.2023	9.25am - 9.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
28.11.2023	9.35am - 9.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
04.12.2023	9.25am - 9.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
05.12.2023	9.30am - 9.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
11.12.2023	9.15am - 9.15am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
12.12.2023	9.20am - 9.20am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
18.12.2023	9.25am – 9.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
19.12.2023	9.35am – 9.35am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
25.12.2023	9.25am - 9.25am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
26.12.2023	9.30am - 9.30am	BDL (DL:.1)	BDL (DL:1)	BDL (DL:1.0)	BDL (DL:0.5)	BDL (DL:0.01)	
NAAQ* Standard		<20	<6.0	<5.0	<1.0	<1.0	

Note: BDL: Below Detection Limit; DL: Detection Limit
Remarks: The values observed for the pollutants given above are within the CPCB standards.

Verified by

**********End of Report**********

L. SUDHAPRIYA
Technical Manager

QUALITY COUNCIL® OF INDIA
Creating an Ecosystem for Quality

National Accreditation Board for Education and Training

Certificate of Accreditation

Geo Exploration & Mining Solutions, Salem

No. 17, Advaitha 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

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to the QCI-NABET website.