

DRAFT EIA & EMP FOR
PROPOSED ROUGH STONE AND GRAVEL QUARRY
CATEGORY - B1 – CLUSTER (CLUSTER AREA – 23.44.80 Ha)

(Submitted for Public Hearing as per the provisions of EIA Notification
2006 & its amendments thereof)

ToR Identification No. TO24B0108TN5694496N, Dated: 11.01.2025

PROPOSED QUARRY LEASE DETAILS	
SURVEY NO	291/2A2, 292/1C2 and 293/3B
VILLAGE	IRUKKANDURAI PART-II
TALUK	RADHAPURAM
DISTRICT	TIRUNELVELI
EXTENT	4.87.80 Ha
PROPOSED PRODUCTION QUANTITY FOR FIVE YEARS	ROUGH STONE : 5,57,310m³ GRAVEL : 47,816m³ PEAK PRODUCTION : 1,11,990m³
LAND	PATTA LAND

(Sector No. 1(a) Sector No.1 as per NABET)

Category of the Project: B1 Cluster Mining, Total Cluster Area – 23.44.80 Ha
Baseline Monitoring Period – October 2024 to December 2024

APPLICANT

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ENVIRONMENTAL CONSULTANT	LABORATORY
M/s. GLOBAL MINING SOLUTIONS <i>(NABET Accredited & ISO 9001 Certified Consultant)</i> Plot No. 6, S.F.No. 13/2, A2, VS City, RC Chettypatty, Kottamettupatty, Omalur, Salem, Tamil Nadu – 636 455. NABET Accreditation No: NABET/EIA/2326/IA 0110 Valid up to: 04.01.2026 Contact: 97502 23535 & 94446 54520 Email: infoglobalmining@gmail.com, globalminingsolutionssalem@gmail.com	M/s. SHRIENT ANALYTICAL & RESEARCH LABS PRIVATE LIMITED <i>(NABL Accredited Testing Laboratory)</i> Valid up to: 29.09.2025 #416/15, Dhargas Road, Perungalathur, West Tambaram, Chennai, Tamil Nadu, India.

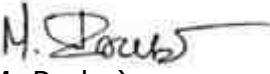
AMENDMENT PAGE

SL	Page No.	Section / Clause / Para / Line (as Applicable)	Date of Amendment	Amendment Made	Reasons of amendment	Signature of Person Authorizing Amendment
1						
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ACKNOWLEDGEMENT

M/s. Global Mining Solutions, Salem is very much thankful to Thiru.A.Arunmthukumar, Lessee for the confidence and trust placed on the organization for carrying out Environmental Impact Assessment (EIA) study for the proposed Rough Stone and Gravel quarry over a lease extent of 4.87.80 Ha, & Cluster extent of 23.44.80 Ha., located at Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State and formulating the Environmental Management Plan (EMP). We also gratefully acknowledge the cooperation and assistance provided by concerned government authorities for collection of secondary information for the preparation of Draft EIA/EMP report. Our sincere thanks to the local people of Irukkandurai PartII Village and the nearby villages for their whole hearted cooperation and constant involvement during the entire field study without which the study would not have been possible.

For: M/s. Global Mining Solutions


(M. Prabu)

Managing Director

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

UNDERTAKING

In line with MoEF OM No. J – 11013/41/2006-IA.II (I) dated 5th October 2011, we hereby give our undertaking for owning the content and information in the EIA/EMP report submitted for EC of the proposed Rough Stone and Gravel quarry over a lease extent of 4.87.80 Ha, & Cluster extent of 23.44.80 Ha, located at Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State

For: M/s. Global Mining Solutions



Name: Manikandan

EIA Coordinator – Mining

UNDERTAKING

In Line with OM no. J-11013/41/2006-IA.II (1) dated 4th Aug 2009 and its Amendments, we hereby confirm that all Terms of Reference issued by Ministry of Environment, Forest and Climate Change vide ToR Identification No. TO24B0108TN5694496N, dated 11.01.2025 of Draft EIA/EMP report for the proposed Rough Stone and Gravel Quarry over a lease extent of 4.87.80Ha, & Cluster extent of 23.44.80 Ha., located at Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State for the production of 5,57,310 m³ of Rough Stone and 47,816 m³ of Gravel formation from the proposed lease area and the details has been complied in the Draft EIA/EMP report is factually correct.

The EIA/EMP report has been prepared by M/s. Global Mining Solutions (GMS), Salem. GMS is a NABET accredited consultant for preparation of EIA/EMP report of Mining of Minerals (Opencast only) vide certificate No. NABET/EIA/2326/IA 0110, valid till 04.01.2026.

For: M/s. Global Mining Solutions


Name: Manikandan

EIA Coordinator – Mining



National Accreditation Board for Education and Training

Certificate of Accreditation

Global Mining Solutions

Plot No - 6 SF No 13/2 A2, VS City, RC Chettypatty, Kottamettupatty, Omalur,
Salem, Tamil Nadu-636455

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of **EIA Consultant Organization, Version 3: for preparing EIA/EMP reports in the following Sectors-**

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including opencast/ underground mining	1	1 (a) (i)	A
3	Thermal power plants	4	1 (d)	B
5	Metallurgical industries (ferrous)	8	3 (a)	A
6	Cement Plants	9	3 (b)	A
26	Building and construction projects	38	8 (a)	B
27	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated May 20, 2025, 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/ACQ/25/3638 dated May 30, 2025. The accreditation needs to be renewed before the expiry date Eca Chem Sales and Services, Surat following due process of assessment.

Valid up to
January 4, 2026

Issue Date
May 30, 2025



Certificate No.
NABET/EIA/23-26/SA 0241

Varinder Kanwar
Prof (Dr) Varinder S Kanwar
CEO - NABET

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.



Declaration by Experts

Declaration by Experts contributing to the proposed Rough Stone and Gravel Quarry over a lease extent of 4.87.80 Ha & Cluster extent of 23.44.80Ha. Located at Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State.

I, hereby, certify that I was a part of the EIA team that developed the above EIA.

EIA Coordinator Name: M. Manikandan


Signature & Date

Period of involvement: October 2024 to December 2024.

Contact information:

M/s Global Mining Solutions

Plot No.6, SF No. 13/2, A2, VS City, RC Chettypatty,

Kottamettupatty, Omalur,

Salem, Tamil Nadu – 636 455

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and Date
1	AP	Dhanalakshmi Ramanathan	Assessment of existing air quality, Impact of the project on ambient air and suggested mitigation measures for air pollution. Period: October 2024 to December 2024..	R. Dhanalakshmi
2	WP	Abirami Kaliaperumal	Assessment of existing water quality, impact of the project on surface and ground water quality, suggested mitigation measures for minimizing the impact. Period: October 2024 to December 2024.	K. Abirami
3	SHW	Ramadoss N	Assessment of waste generated from the project, suggested waste management practices. Period: October 2024 to December 2024.	N. Ramadoss
4	SE	Saraswathy K	Baseline SE studies. Data compilation and assessment. Impact of the project on SE status of the area. Formulation of CER plan. Period: October 2024 to December 2024.	K. Saraswathy
5	EB	Saravanan S	Baseline data collection of related to ecology of the area. Period: October 2024 to December 2024.	S. Saravanan
6	HG	Ravinthiran N	Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area. Period: October 2024 to December 2024.	N. Ravinthiran
7	AQ	Srilatha Thiruveedhula	Air quality modeling utilizing the area source model. Predication of the ground level concentration of the dust. Suggesting suitable mitigation measures. Period: October 2024 to December 2024.	T. Srilatha

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

8	NV	Dhanalakshmi Ramanathan	Ambient noise study of the area. Incremental noise generation due to quarry operation and impact of the noise due to the project. Period: October 2024 to December 2024.	R. Dhanak
9	LU	Srilatha Thiruveedhula	Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment. Period: October 2024 to December 2024.	T. Srilatha
10	RH	S.V. Prashant	Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker. Period: October 2024 to December 2024.	S. Prashant
11	SC	Shisu Pal Singh	Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil. Period: October 2024 to December 2024.	Shisu Pal Singh
12	GEO	Valliappan Meyyappan	Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area. Period: October 2024 to December 2024.	V. Meyyappan

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COMPLIANCE TO

TERMS OF REFERENCE

S.No	ToR Points	Reply	Pg. No
1.SEIAA SPECIFIC CONDITION			
1.1	After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 5,57,310m ³ of rough stone and 47,816m ³ of gravel upto the depth of 47m BGL and the annual peak production of 1,11,990m ³ of rough stone and 25,576m ³ of gravel for the period of 5 years as per approved mining plan 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, standard conditions stipulated by MoEF&CC & the following conditions:	Complied in this report.	
1.	The PP shall carry out the studies assessing the impact of mining on drainage pattern and agricultural activities and submit the study report and the mitigation measures along with the EIA Report.	Detailed study on drainage pattern and agricultural activities re done in chapter 3 along with suitable mitigation measures.	
2.	It was noted from the KML, agricultural activity is carried out around the proposed site. Hence the PP is requested to furnish the No Objection Certificate (NOC) from the competent Authority of Agricultural Department and submit along with the EIA Report.	Agreed to comply and incorporate in final EIA report.	
3.	Since tank is located at a distance of 400m from the project site, the PP should carry out the scientific studies to assess the hydrogeological condition in order to understand the groundwater/Drainage Pattern and impacts of the quarrying operation on the ground water level present in the core zone, by a reputed institution and submit along with the EIA Report	Agreed to comply and incorporate in final EIA report.	
2.SEAC CONDITIONS - SITE SPECIFIC			
2.1 TERMS OF REFERENCE			

1	A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: Copy of the agreement forming CMC	There are five quarries within a 500-metre radius. The proponent will take the initiative to form a cluster management committee once environmental clearance is obtained for this quarry as well as the other proposed quarry.	
	The Organization chart of the Committee with defining the role of the members	Noted	
	The 'Standard Operating Procedures' (SoP) executing the planned activities.	Complied. Please refer Fig. 10.1	
		Environment policy details given chapter- 10.	
2	The PP shall erect the DGPS reference pillars painted with blue & white colour indicating the safety barrier of 7.5 m to be left under the Rule 13 (1) of MCDR, 1988 within the lease boundary and protective bunds and submit the photographic/videographic evidence along with the EIA report.	Noted	
3	The study on the impacts of the mining on the windmills located nearby shall be carried out and the mitigation measures should be submitted along with the EIA report.	Noted	
4	The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations.	Complied. The Details are given in chapter-3 and also as Annexure.4.	
5	The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation	The details to be incorporated at the time of final EIA Submission.	

	tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.		
6	The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report.	Complied. The biodiversity report of the study area to be incorporated at the time of final EIA submission.	
7	The PP shall prepare the EMP for the entire life of mine and furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	Detailed mine closure plan is given in Chapter 7.	
8	Since the structures such as windmills, etc are situated within a radial distance of 500 m, the PP shall design the controlled blast parameters for reducing the blast-induced ground/air- vibrations and eliminating the fly rock from the blasting operations and a copy of such scientific study report shall be submitted during the EIA appraisal without any deviation	Scientific study will be done at final EIA report submission. This being an opencast mine, subsidence is not applicable. The impact due to ground vibrations due to blasting is given in para 4.4.5.5, Chapter-4.	
9	The PP shall provide the strategies & action plan for maintaining curve shaped bench design as proposed in the approved Mining Plan in a realistic manner keeping the safety in mind, during the EIA appraisal	Noted.	
10.	The PP shall furnish the action plan based on the traffic study while allowing the transport vehicles passing through the village or any congested areas for ensuring the safety.	Traffic study is done in chapter-7.where the transport vehicles passing through the village or any congested areas are studied with safety measures.	
11	The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures.	Comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures. Is done in chapter-7.	
12	The PP shall prepare a conceptual working plan accommodating the inclusion of haul road accessibility keeping the benches intact, by ensuring the slope stability of the	Noted and it will be incorporated at final EIA report submission stage.	

	working benches to be constructed and existing quarry wall.		
3	SEAC Standard Conditions		
3.1	Terms of Reference		
1	In the case of existing/operation 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 lining lease area (viii) Condition of Safety zone/benches Revised/Modified Mining Plan showing the benches of not exceeding 6m height and ultimate depth of not exceeding 50m.	Not applicable. This is a fresh quarry.	
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.	Complied.	
3	The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the	Enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m given chapter-3.	

	building, number of residents, their profession and income, etc.		
4	The PP shall submit a detailed hydrogeological report indicating the impact of proposed quarrying operations on the water bodies like lake, water tanks, etc are located within 1 km of the proposed quarry.	The study is under progress. It will be incorporated in the final EIA & EMP.	
5	The Project Proponent shall carry out Bio-diversity study through reputed institution and the same shall be included in the EIA report.	Complied. The biodiversity report of the study area to be incorporated at the time of final EIA submission.	
6	The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries. Tiger reserve etc. upto a radius of 25 km from the proposed site.	-	
7	In case of proposed lease in an existing (or old) quarry where the benches are not formed(or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic institutions-CSIR Central Institute of Mining & Fuel Research/Dhanbad, NIRM/ Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Suratkal and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC.	-	
8	However, in case of the fresh/virgin quarries, the project 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.	It will be complied at the timing of EC appraisal.	

9	The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent.	Proponent undertaking agreement enclosed	
10	The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site	Agreed. Will be complied.	
11	The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences.	The details to be incorporated at the time of final EIA Submission.	
12	If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines	Not applicable. This is a fresh quarry project.	
13	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 a fresh quarry project.	
14	Quantity of minerals mined out. • Highest production achieved in any one year. • Detail of approved depth of mining. • Actual depth of the mining achieved earlier. • Name of the person already mined in that leases area. • If EC and CTO already obtained, the copy of the same shall be submitted. Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.	Not applicable. This is a fresh quarry project.	

15	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Project coordinates superimposed in satellite imagery and given as Figure No – 2.1 in Chapter – 2. The geology and geomorphology map are provided in Figure No.3.23, 3.24 Chapter 3. The Soil map is provided under Figure No. 3.25, Chapter-3. The 10km Radius Index plan showing buffer zone is given in Figure No.3.1 & Figure 3.2 in Chapter – 3.	
16	The PP shall carry out Drone video survey covering the cluster, green belt, fencing etc.,	This is a new quarry project. Drone survey cluster, greenbelt, fencing details provided at the time of final EIA Submission.	
17	The proponent shall furnish photographs of adequate fencing, greenbelt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan	There are no trees within ML area. Fencing and plantations are under process. Greenbelt / Plantation will be carried out in the safety zone to enhance the vegetative growth and aesthetic in the safety zone area. In the post mining stage, an area of 2.46.30 Ha will be under greenbelt and plantation.	
18	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding, environment and the remedial measures for the same.	The geological reserves are estimated to be rough stone 2188620 m ³ and Gravel 97272 m ³ . The mineable reserves of 5,57,3L0 m3 of Rough Stone, 47,876 m3 of gravel formation	
19	The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR" 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	Complied. Please refer Fig. 10.1	

20	The Project Proponent shall conduct the Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD/TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitoring data, it may clearly be shown whether working all intersect ground water. Necessary data and documentation in this regard may be provided.	The hydrogeological study from a reputed institute is in progress; however, the final EIA submission report will be incorporated into Chapter 3.	
21	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.	The baseline data for all environments is collected for the summer season (oct to dec 2024).	
22	The Proponent shall carry out the cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of 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.	Detailed cumulative impact study has been carried and the same is incorporated in the Chapter 4. Accordingly, a detailed Environment Management Plan is prepared considering air, water, noise and soil environment and the details are given in Chapter 7.	
23	Rain water harvesting management with recharging details along with water balance (both monsoon & non-monsoon) be submitted.	Rain water harvesting Plan is given in chapter 4.	
24	Land use of the study area delineating forest area, agricultural land, grazing land. Wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational,	Satellite imagery has been used to study the lease area and the details of land use is given in Chapter 3.	

	operational and post operational phases and submitted. Impact, if any, of change of land use should be given.		
25	Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area distance from mine lease, its land use, R&R issues, if any, should be provided.	Not applicable. There is no generation of the OB & waste.	
26	Proximity to Areas declared as 'Critically Polluted'(or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered.	No proximity to Critically polluted areas.	
27	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.	The impact of the mining operations due to this quarry on water environment is studied and mitigation measures are proposed. Rain water harvesting plan is given Chapter 4.	
28	Impact on local transport infrastructure due to the Project should be indicated	Since the production is very less, only few trucks of 5/10T will be used for transport. The effect of transport on local transport will be negligible.	
29	A tree survey shall be carried out (Nos. name of species, age, diameter, etc) both within the mining lease applied area & 300m buffer zone and its management during mining activity	There are no tall trees within 300m buffer zone of the project area.	
30	A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific	Detailed mine closure plan is given in Chapter 7.	
31	As 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	Accepted. It will be done.	

	involving them in the study, where ever possible		
32	The purpose of green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix – I in consultation with the DFO, State Agriculture University 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.	Green belt is proposed in an area of 2.46.30 ha. Green belt development plan provided.	
33	Taller/one year old saplings raised in appropriate size of bags; preferably eco-friendly bags should be planted as per the advice of local forest authorities/botanist/horticulturist with regard to site-specific choices. The proponent shall earmark the green belt area with GPS coordinates all along the boundary of the project site with at least 3 m wide and in between blocks in an organized manner	Accepted. The photographs showing green belt will be provided once it is completed.	
34	A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period.	A disaster management plan is prepared and the details are given in Chapter 7.	
35	A risk assessment and Management plan shall be prepared and included in the EIA/EMP report for the complete life of the proposed quarry or till the end of the lease period	Risk assessment and its management is given in Chapter 7.	
36	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific	Occupational Health Impacts of the project and preventive measures are detailed under Chapter 4.	

	occupational health mitigation measures with required facilities proposed in the mining area may be detailed.		
37	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No major impact on public health will be there since the villages are located more than 1km from the lease area. Details of CER and CSR are discussed under Chapter No. 8	
38	The Socio-economic studies should be carried out within a 5km 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.	Socio economic study is conducted both by visits and secondary data collection. Details are given in Chapter 3	
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of law against the Project should be given.	No litigation is pending	
40	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Benefits of the project is given in Chapter 8	
41	If any quarrying operations were carried out in the proposed quarrying site for which now 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.	Not applicable. This is a fresh quarry project.	
42	The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine.	-	
43	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the condition mentioned above	Agreed	

	may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986		
1.STANDARD TERMS OF REFERENCE FOR (MINING OF MINERALS)			
1.1	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	The PP has already operated this proposed Mine Lease area vide lease deed No. 6594 dated: 8.12.2022 and the copy of the same is enclosed as Annexure-3.	
1.2	A copy of the document in support of the fact that the proponent is the rightful lessee of the mine should be given.	This proposed project area is classified as Patta land registered in the name M/s. SAV Blue Metals Pvt Ltd, vide patta No.2522. The copy of the Patta, Adangal and A-Register are enclosed as Annexure -6.	
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. All documents including approved mine plan, EIA and Public Hearing are compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and is in the name of the lessee.	
1.4	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).	Project area is superimposed on Satellite imagery, Project area boundary coordinates superimposed on Toposheet & Surface Features around the project area covering 10km radius, Geology map of the project area covering 10km radius , Geomorphology Map of the Study Area covering 10 km radius are detailed out with figures in chapter 3.	
1.5	Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological	The following map in 1:50,000 Scale: Geology map of the project area covering 10km	

	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.	radius – Figure No. 3.17. Geomorphology Map of the Study Area covering 10 km radius – Figure No. 3.18.	
1.6	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.	(a) Precise Area Communication: The Project Proponent has obtained Precise Area Communication from the Assistant Director, Department of Geology and Mining, Tirunelveli, vide Rc.No.M2/547/2023, Dated: 17.11.2023. The letter copy enclosed as Annexure – 1. (b) Mining Plan Approval: The project proponent has prepared mining plan under rule L9(I),41 &42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Assistant Director, Dept. of Geology & Mining, Tirunelveli vide Letter No. Rc. No. M2/547/2023 dated 24.11.2023. The approval letter along with approved plan is enclosed as Annexure – 2.	
1.7	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	The proponent will frame a well-planned environmental policy. Its details are provided under Section 10.1, Chapter-10. Monitoring Mechanism is detailed under Section .10.3.	

	of Directors of the company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.		
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.	Various risks likely to arise due to mining activities are detailed under section 7.2, Chapter-7. This being an opencast mine, subsidence is not applicable. The impact due to ground vibrations due to blasting is given in para 4.4.5.5, Chapter-4.	
1.9	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.	
1.10	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.	The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.7.6.2 Of Chapter-3. The land use pattern at present and at the end of the quarrying period has been provided in Table 2.4, Chapter-2. The Conceptual plan of mine lease area is shown in Figure No- 2.9.	
1.11	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.	There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved.	
1.12	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	There is no Forest Land involved in the proposed project area. The proposed project area is a patta land. Approved Mining Plan is enclosed in Annexure – 2.	

	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.		
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.	
1.14	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.	
1.15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	There is no Reserved Forest / wildlife sanctuary etc within a radius of 1 km.	
1.16	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.	The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries, etc.	
1.17	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	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.	

	Committee of National Board of Wildlife and copy furnished.		
1.18	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 fauna found in the study area. the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made. The details are furnished in section 3.7.7.	
1.19	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.	Not Applicable	
1.20	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).	Not Applicable	

1.21	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.	The mining activities will be carried out within the mine lease area only. The entire mine lease area of 4.87.80 Ha is a patta land. There is no population within the ML area. Hence, the question of R& R does not arise.	
1.22	one season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Baseline Data were collected for One Season (Post Monsoon Season) October – December 2024 as per CPCB Notification and MoEF & CC Guidelines and Detailed in Chapter -. 3.	

1.23	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.	Air Quality Modelling for prediction of incremental GLC's of pollutant was carried out using AERMOD view and Detailed in Section 4.3.5.3. Air Quality Modelling For Cluster are detailed in section 7.4.2.1 of Chapter 7.	
1.24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	The total water requirement for the project is 12 KLD. The required water will be procured from outside agencies initially and later rainwater harvested in the mine pit shall be used other than drinking purpose. Water Balance diagram is presented in Figure No – 4.1.	
1.25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Not Applicable Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis.	
1.26	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.	Rain water will be diverted into working area by constructing drains to store and use for dust suppression and greenbelt development. Details are presented in section 4.3.4. The total water requirement for the project will be 12 KLD comprising Drinking and domestic 1.5 KLD, Dust suppression 2.5 KLD, Greenbelt 8 KLD. The water will be sourced initially from outside agencies.	

		Later the rainwater collected in the mine pit sump will be used for this purpose. The water balance diagram for the same is shown in Figure No 4.1.							
1.27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact Studies and Mitigation Measures of Water Environment including Surface Water and Ground Water are discussed in Section 4.3.							
1.28	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-ali4 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 quarrying activity will not intersect ground water table as quarrying is proposed upto a depth of 47 m bgl and water table is found at a depth of 65 m BGL.							
1.29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	Not applicable							
1.30	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.	<table><tr><td>Site Elevation above MSL</td><td>90m from MSL</td></tr><tr><td>Ultimate Depth</td><td>47m BGL</td></tr><tr><td>Ground water</td><td>65m BGL.</td></tr></table>	Site Elevation above MSL	90m from MSL	Ultimate Depth	47m BGL	Ground water	65m BGL.	
Site Elevation above MSL	90m from MSL								
Ultimate Depth	47m BGL								
Ground water	65m BGL.								
1.31	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	Greenbelt Development Plan & Recommended Species proposed for Greenbelt Development are detailed in Section 4.6.3.							

	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.	2.46.30 hectares of land are allotted for greenbelt development.	
1.32	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.	This is a small quarry and the production is very less. 4 Nos. of 5T/10T tippers will be used for transport. The trips will be minimum. Hence no major impact on transport is expected	
1.33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Temporary Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in Section 2.11.5 of Chapter 2.	
1.34	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.	At the conceptual stage the quarried-out land will be fenced and lower benches will be allowed to collect rain water to act as a temporary reservoir and Greenbelt development will be carried out on the top bench, unutilized areas and haul roads. Mine closure plan is detailed in Section 2.10 of Chapter 2.	

1.35	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 of occupational health and safety aspects are given under the Section 4.8 & Section 10.4.	
1.36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No Public Health Implications anticipated due to this project. Details of CER and CSR are discussed under Chapter No. 8,	
1.37	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.	This project provides employment to 30 people directly. Local people will be hired for unskilled labour. Through CSR, nearby schools, hospitals will be benefitted. For CSR, INR 10 Lakh is allocated. Based on the demand of the people during public hearing, further funds will be allocated, if necessary.	
1.38	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.	Environmental Management plan details are given in Chapter 10.	
1.39	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.	Noted	

1.40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	There is no litigation pending against the project.	
1.41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost is Rs. 396.83/- lakhs CER Cost is Rs.10/- lakhs EMP Cost Capital Cost is Rs. 34.77/- Lakhs Recurring Cost is Rs. 165.93/- for five years.	
1.42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Disaster management plan is provided under section 7.3 of Chapter-7.	
1.43	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Detailed in Chapter 8.	

1.44	Besides the above, the below mentioned general points are also to be followed: - a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) 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. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF 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. g) 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. h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified	Yes, Enclosed and everything is complied. All the documents are properly referenced with index and continuous page numbering. Baseline monitoring results are detailed in Chapter 3. Original Baseline monitoring reports will be made available during appraisal of the project. Surface Plan and Geological Plan – Figure No. 2.3 & 2.4.	

	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. i) 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.		

SEIAA STANDARD CONDITIONS:

Cluster Management Committee

1	Cluster management committee shall be framed which must include all the proponents in the cluster as members including the existing as well as proposed quarry	There are five quarries within a 500-metre radius. The proponent will take the initiative to form a cluster management committee once environmental clearance is obtained for this quarry as well as the other 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.,	Agreed. Will be complied.	-
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.	Agreed. The list of members of the committee formed will be submitted to AD/mines after obtaining Environmental Clearance.	-
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.	Agreed. Details of the Operation plan for cluster mining operations will be submitted once we get environmental clearance for all quarries proposed in the cluster area.	-
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.	Risk management plan for the individual quarry is given in this report. As far as cluster working condition is concerned, once the committee is formed, risk management as a cluster including inundation of clusters and the evacuation plan will be elaborated and the same will be submitted to the EIA.	-
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.	Environmental policy for the cluster will be framed by the cluster management committee and the policy will be in accordance with EPA Act, 1986 and its amendments, guidelines by MoEF&CC/SEIAA and other regulatory bodies. This policy will be displayed in the quarry.	-

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.	Agreed. It will be complied as mentioned in the Point No.4	-
8	The committee shall deliberate on the health of the workers/staff involved in the mining as well as the health of the public in the vicinity	Agreed. It will be complied as mentioned in the Point No.4.	-
Agriculture &Agro-Biodiversity			
9	Impact on surrounding agricultural fields around the proposed mining Area.	Agreed. It is described in the point no. 12 (e) of this ToR Compliance Annexure-1	-
10	Impact on soil flora & vegetation around the project site.	Complied. The details are given in Chapter 3.	
11	Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP.	Complied. The details are given in Chapter 3.	
12	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.	Complied. The details are given in Chapter 3.	
13	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	The detailed action plan has been described in the EMP (Chapter 10) for the sustainable management for the project area and its surroundings.	
14	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	Complied. The details are given in Chapter 4.	
Forests			
15	The project proponent shall detailed study on impact of mining on Reserve Forests free ranging wildlife.	The fauna commonly found in the core and buffer zone is given in Chapter 3.	
16	The Environmental Impact Assessment should study impact on forest, vegetation, endemic,	Complied. The details are given in Chapter 3.	

	vulnerable and endangered indigenous flora and fauna.		
17	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.	Not Applicable. This is a dry barren land.	
18	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	There is no protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	
Water Environment			
19	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby water bodies 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.	The hydrogeological study from a reputed institute is in progress; however, the final EIA submission report will be incorporated into Chapter 3.	
20	Erosion Control measures.	There is no waste generation (OB) in this quarry has been envisaged. However, there may be erosion due to rainy season and that is limited within quarry area. The control measures are explained in Chapter 8.	
21	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.	Complied. The details are incorporated in Chapter 3.	
22	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	Not applicable.	

23	The project proponent shall study and furnish the details on potential fragmentation impact on natural environment, by the activities.	Fragmentation impact on environment may be due to drilling and blasting. The anticipated impacts and mitigation measures are discussed in Chapter 4.	
24	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	An ecological and biodiversity study has been conducted and the same is incorporated in the Chapter 4 of the Draft EIA/EMP report. However, there is no any features mentioned in this condition within the M.L area. However, the impacts anticipated with respect to the environment of the project area is very negligible and it will be minimized within the project area. The details are described in Chapter 10.	
25	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	Agreed.	
26	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	Complied. The details are described in Chapter 3.	
27	The EIA shall include the impact of mining activity on the following: a) Hydrothermal/Geothermal effect due to destruction in the Environment. b) Bio-geochemical processes and its foot prints including environmental stress. c) Sediment geochemistry in the surface streams		
Energy			
28	The measures taken to control Noise, Air, Water, Dust Control and	Complied. The details are described in Chapter 4.	

	steps adopted to efficiently utilize the Energy shall be furnished.		
Climate Change			
29	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Complied. The details are described in Chapter 4.	
30	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.	Complied. The details are described in Chapter 4.	
31	Impact of mining on pollution leading to GHGs emissions and the impact of the same on the local livelihood.		
Mine Closure Plan			
32	Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.	Complied. Mine Closure Plan has been incorporated in the approved Mining Plan and the same is incorporated in the Chapter 7.	
EMP			
33	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.	Complied. The details are described in Chapter 10.	
34	The Environmental Impact Assessment should hold detailed study on EMP with budget for green belt development and mine closure plan including disaster management plan.	Complied. The details are described in Chapter 10.	
Risk Assessment			

35	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Complied. The details are described in Chapter 7.	
Disaster Management Plan			
36	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/unfavorable 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.	Complied. The details are described in Chapter 7.	
Others			
37	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological sites, Structures, railway lines, roads, water bodies such as streams, odai, vaari, canal, channel, river, lake pond, tank etc.	-	-
38	As per the MoEF& CC office memorandum F.NO.22-65/2017-1A.11I 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. It will be complied in the Final EIA/EMP report.	-
39	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.	Nil	-

STANDARD CONDITIONS			
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	The PP has already operated this proposed Mine Lease area vide lease deed No. 6594 dated: 8.12.2022 and the copy of the same is enclosed as Annexure-3.	-
2	A copy of the document in support of the fact that the proponent is the rightful lessee of the mine should be given.	This proposed project area is classified as Patta land registered in the name M/s. SAV Blue Metals Pvt Ltd, vide patta No.2522. The copy of the Patta, Adangal and A-Register are enclosed as Annexure -6.	-
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. All documents including approved mine plan, EIA and Public Hearing are compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and is 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).	Project area is superimposed on Satellite imagery ,Project area boundary coordinates superimposed on Toposheet & Surface Features around the project area covering 10km radius ,Geology map of the project area covering 10km radius , Geomorphology Map of the Study Area covering 10 km radius are detailed out with figures in chapter 3.	
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,	The following map in 1:50,000 Scale: Geology map of the project area covering 10km radius – Figure No. 3.17. Geomorphology Map of the Study Area covering 10 km radius – Figure No. 3.18.	

	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.	(a) Precise Area Communication: The Project Proponent has obtained Precise Area Communication from the Assistant Director, Department of Geology and Mining, Tirunelveli, vide Rc.No.M2/547/2023, Dated: 17.11.2023. The letter copy enclosed as Annexure – 1. (b) Mining Plan Approval: The project proponent has prepared mining plan under rule L9(l),41 &42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Assistant Director, Dept. of Geology & Mining, Tirunelveli vide Letter No. Rc. No. M2/547/2023 dated 24.11.2023. The approval letter along with approved plan is enclosed as Annexure – 2.	-
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	The proponent will frame a well-planned environmental policy. Its details are provided under Section 10.1, Chapter-10. Monitoring Mechanism is detailed under Section .10.3.	

	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.	Various risks likely to arise due to mining activities are detailed under section 7.2, Chapter-7. This being an opencast mine, subsidence is not applicable. The impact due to ground vibrations due to blasting is given in para 4.4.5.5, Chapter-4.	
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.	The land use of the study area was studied to demarcate various LULC categories and its details are provided under section 3.7.6.2 Of Chapter-3. The land use pattern at present and at the end of the quarrying period has been provided in Table 2.4, Chapter-2. The Conceptual plan of mine lease area is shown in Figure No- 2.9.	
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.	There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. Hence, there is no external overburden dump involved.	
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	There is no Forest Land involved in the proposed project area. The proposed project area is a patta land. Approved Mining Plan is enclosed in Annexure – 3.	

	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.	Not Applicable. The proposed project area does not involve any Forest Land.	
14	Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act,2006 should be indicated.	Not Applicable. The project doesn't attract Recognition of Forest Rights Act, 2006.	
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	There is no Reserved forest / wildlife sanctuary etc within a radius of 1 km.	
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.	The mining lease area and the 10 km buffer zone from the periphery of the core zone is devoid of declared ecologically sensitive features like national parks, biospheres, sanctuaries, etc.	
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	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.	

	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 fauna found in the study area. the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	A detailed study of flora and fauna composition in the core and buffer zone of the project has been made. The details are furnished in section 3.7.7.	
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.	Not Applicable	
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	Not Applicable	

	concerned Coastal Zone Management Authority).		
21	R&R Plan/compensation details for the project Affected people (PAP) should be furnished. While preparing the R&R Plan, the relevant State/ National Rehabilitation & Resettlement policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the state Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.	The mining activities will be carried out within the mine lease area only. The entire mine lease area of 4.87.80 Ha is a patta land. There is no population within the ML area. Hence, the question of R& R does not arise.	
22	one season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	Baseline Data were collected for One Season (Post Monsoon Season) October – December 2024 as per CPCB Notification and MoEF & CC Guidelines and Detailed in Chapter -. 3.	

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.	Air Quality Modelling for prediction of incremental GLC's of pollutant was carried out using AERMOD view and Detailed in Section 4.3.5.3. Air Quality Modelling For Cluster are detailed in section 7.4.2.1 of Chapter 7.	
24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	The total water requirement for the project is 12 KLD. The required water will be procured from outside agencies initially and later rainwater harvested in the mine pit shall be used other than drinking purpose. Water Balance diagram is presented in Figure No – 4.1.	
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Not Applicable Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits and purchased from local water vendors through water tankers on daily requirement basis.	
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.	Rain water will be diverted into working area by constructing drains to store and use for dust suppression and greenbelt development. Details are presented in section 4.3.4. The total water requirement for the project will be 12 KLD comprising Drinking and domestic 1.5 KLD, Dust suppression 2.5 KLD, Greenbelt 8 KLD. The water will be sourced initially from	

		outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The water balance diagram for the same is shown in Figure No 4.1.							
27	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.	Impact Studies and Mitigation Measures of Water Environment including Surface Water and Ground Water are discussed in Section 4.3.							
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 quarrying activity will not intersect ground water table as quarrying is proposed upto a depth of 47 m bgl and water table is found at a depth of 65 m BGL.							
29	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	Not applicable							
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.	<table><tr><td>Site Elevation above MSL</td><td>90 m from MSL</td></tr><tr><td>Ultimate Depth</td><td>47 m bgl</td></tr><tr><td>Ground water</td><td>65 m BGL.</td></tr></table>	Site Elevation above MSL	90 m from MSL	Ultimate Depth	47 m bgl	Ground water	65 m BGL.	
Site Elevation above MSL	90 m from MSL								
Ultimate Depth	47 m bgl								
Ground water	65 m BGL.								
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and	Greenbelt Development Plan & Recommended Species proposed for Greenbelt Development are detailed in Section 4.6.3.							

	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.	2.46.30 hectares of land are allotted for greenbelt development.	
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.	This is a small quarry and the production is very less. 4 Nos. of 5T/10T tippers will be used for transport. The trips will be minimum. Hence no major impact on transport is expected	
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	Temporary Infrastructure & other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in Section 2.11.5 of Chapter 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.	At the conceptual stage the quarried-out land will be fenced and lower benches will be allowed to collect rain water to act as a temporary reservoir and Greenbelt development will be carried out on the top	

		bench, unutilized areas and haul roads. Mine closure plan is detailed in Section 2.10 of Chapter 2.	
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 of occupational health and safety aspects are given under the Section 4.8 & Section 10.4.	
36	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	No Public Health Implications anticipated due to this project. Details of CER and CSR are discussed under Chapter No. 8,	
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.	This project provides employment to 30 people directly. Local people will be hired for unskilled labour. Through CSR, nearby schools, hospitals will be benefitted. For CSR, INR 10 Lakh is allocated. Based on the demand of the people during public hearing, further funds will be allocated, if necessary.	
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.	Environmental Management plan details are given in Chapter 10.	
39	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	Noted	

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.	There is no litigation pending against the project.	
41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Project Cost is Rs. 396.83/- lakhs CER Cost is Rs.10/- lakhs EMP Cost Capital Cost is Rs. 34.77/- Lakhs Recurring Cost is Rs. 165.93/- for five years.	
42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Disaster management plan is provided under section 7.3 of 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.	Detailed 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	Yes, Enclosed	
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.	Yes, Complied	
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 results are detailed in Chapter 3. Original Baseline monitoring reports will be made available during appraisal of the project.	
E	Where the documents provided are in a language other than English, an English translation should be provided.	Yes, complied	
F	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Yes, complied	

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- I 1013/41/2006-IA.11 0) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.	Noted & agreed	
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-I 101 I161812010-1A.II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the Environment Clearance 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.	Yes, Complied	
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 and Geological Plan – Figure No. 2.3 & 2.4.	
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))	Agreed	-
2	Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.	Agreed	-

3	Measures for mitigating the impact on the environment and mode of discharge or disposal.	Agreed	-
4	Capital cost of the project, estimated time of completion.	Agreed	-
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.	Agreed	-
6	A detailed study of the lithology of the mining lease area shall be furnished.	Agreed	-
7	Details of village map, "A" register and FMB sketch shall be furnished.	Agreed	-
8	Detailed mining closure plan for the proposed project approved by the Geology of Mining department shall be submitted along with EIA report.	Agreed	-
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.	Agreed	-
10	EIA report should strictly follow the Environmental Impact Assessment Guidance Manual for Mining of Minerals published February 2010.	Agreed	-
11	Detail plan on rehabilitation and reclamation carried out for the stabilization and restoration of the mined areas.	Agreed	-
12	The EIA study report shall include the surrounding mining activity, if any.	Agreed	-
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.	Agreed	-
14	A study on the geological resources available shall be carried out and reported.	Agreed	-

15	A specific study on agriculture & livelihood shall be carried out and reported	Agreed	-
16	Impact of soil erosion, soil physical chemical and biological property changes may be assumed.	Agreed	-
17	Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, within 10km other industries, forest, eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)	Agreed	-
18	Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population	Agreed	-
19	Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.	Agreed	-
20	Likely impact of the project on air, water, land, flora-fauna and nearby population	Agreed	-
21	Emergency preparedness plan in case of natural or in plant emergencies	Agreed	-
22	Issues raised during public hearing (if applicable) and response given	Agreed	-
23	CER plan with proposed expenditure.	Agreed	-
24	Occupational Health Measures	Agreed	-
25	Post project monitoring plan	Agreed	-
26	The project proponent shall carry out detailed hydro geological study through intuitions/NABET Accredited agencies.	Agreed	-
27	. A detailed report on the green belt development already undertaken is to be furnished and also submit the proposal for green belt activities.	Agreed	-

28	The proponent shall propose the suitable control measure to control the fugitive emissions during the operations of the mines.	Agreed	-
29	A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals.	Agreed	-
30	Reserve funds should be earmarked for proper closure plan.	Agreed	-
31	A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No.84 Environment and forests (EC.2) Department dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan.	Agreed	-

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.	Agreed	-
b.	All documents may be properly referenced with index, page numbers and continuous page numbering.	Agreed	-
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.	Agreed	-
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.	Agreed	-
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	Agreed	-

	certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J - 11013/77/2004- IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website http://www.moef.nic.in/ may be referred.		
•	After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.	Agreed	-
•	The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance	Agreed	-
•	The TORs with public hearing prescribed shall be <u>valid for a period of three years</u> 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.	Agreed	-

CHAPTER 1

INTRODUCTION

1.1 PURPOSE OF THE REPORT

Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.

Thiru. A.Arunmuthukumar, Lessee has obtained Precise Area communication letter from the District collector Department of Geology and Mining, Tirunelveli to quarry out 5,57,310m³ of Rough Stone and 47,816m³ of Gravel. Over an extent of 4.87.80Ha, located at the Survey No. 291/2A2, 292/1C2 and 293/3B of Irukkandurai Part II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. Hence, this proposed quarry falls under the cluster situation due to the following proposed, existing and abandoned quarries located within 500m radius. The details are given below.

Table 1.1 Cluster Mines Details				
S.No	Name of the Quarry Owner	S.F. Nos & Village	Lease Period	Area
a. Abandoned Quarry				
Nil				
b. Existing Quarry				
1.	K.Bagavathiyappan, S/o. Kumaresan, 8/42,Radhapuram Road, Kavalkinaru, Perungudi Village, Radhapuram Taluk.	Irukkandurai part-II(V) & SF.Nos.297/2	Period of 5 years	3.65.50
2.	Tvl.S.A.V Manilal Blue Metal, Prop.M.Sudeshlal, No.10-166, Vadakku Bazar Street, Vadakkankulam, Perungudi Village, Radhauram Taluk.	Irukkandurai part-II(V) & SF.Nos.292/1A(P) & 295/2B(P)	07.11.2020	1.24.00

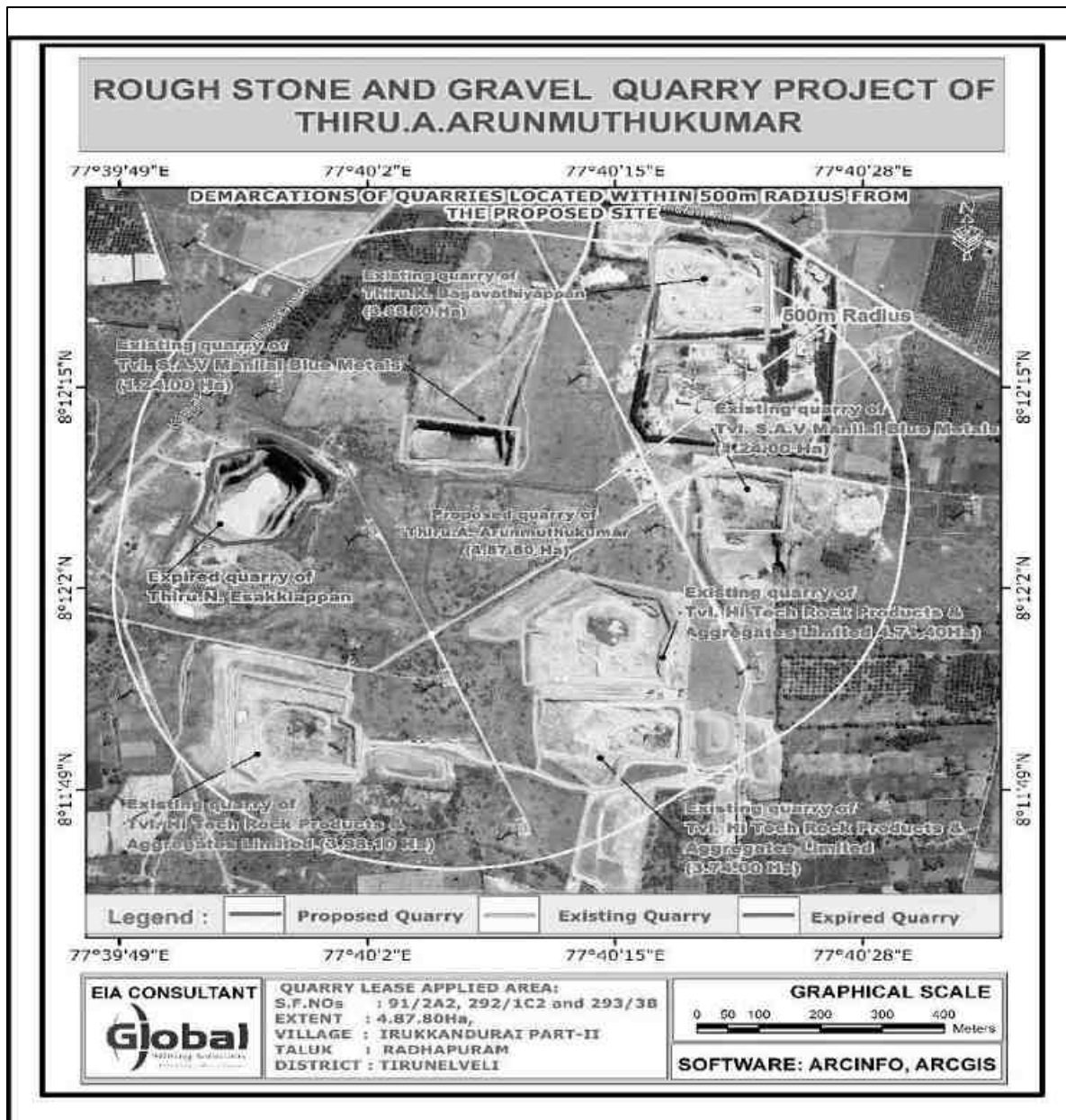
Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

3.	TVL.S.A.V.Blue metals Pivate Limited, Prop.A.Ajeshlal, 12-725-B7, Kavalkinaru Road, Vadakkankulam, Radhapuram Taluk, Tirunelveli District.	Irukkandurai part-II(V) & SF.Nos.155/2(P)	to	4.87.80
4.	Tvl. Hi Tech Rock Products & Aggregates Limited	Irukkandurai part-II & SF.Nos.282/3B(P),283/3(P), 278/2(P),277/1B(P), 284/1A1(P) and 284/2(P)	06.11.2025	3.98.10
5.	Tvl. Hi Tech Rock Products & Aggregates Limited	Irukkandurai part-II& SF.Nos.289/1A(P),289/2(P) and 161/1A(P)	Period of 5 years	4.71.40
6.	Tvl. Hi Tech Rock Products & Aggregates Limited	Irukkandurai part-II& SF.Nos.290/1B(P), 290/2(P), 160/1A(P), 289/1A(P) and 289/2(P)	26.02.2021	3.74.00
Area of total Existing Quarry		12.20.5 Ha		
c. Proposed Quarry				
1.	Thiru.A.Arunmuthukumar, S/o.Arasappan, No.133/1, Yathavar street, Pattarapuram, Eraippuvarari, Nnguneri Taluk, Tirunelveli District.	Irukkandurai part-II(V) & SF.Nos.291/2A2, 292/1C2 & 293/3B	-	4.87.80
Area of Proposed Quarry		23.44.80 Ha		

As per EIA notification, 2006 and its subsequent amendments the proposed Thiru. A.Arunmuthukumar Rough Stone & Gravel Quarry, cluster is falls under Schedule 1(a) Mining of Minerals. It is further classified under Category B1 due to the overall extent of cluster area is 23.44.80Ha which is >5 Ha. Satellite image of Quarries in Cluster is shown in Fig 1.1.

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

Figure.1.1 Satellite Image showing cluster quarries



The ToR for preparation of EIA/EMP was approved vide ToR Identification No. TO24B0108TN5694496N, dated 11.01.2025. This report has been prepared in line with the approved TOR for production of maximum excavation 5,57,310 m³ of Rough Stone and 47,816 m³ of Gravel for a period of five years.

1.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

The proposed project is for mining of Rough Stone and gravel (under cluster) from the S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. As per EIA notification, 2006 and its subsequent amendments the project comes under Schedule 1 (a) under Category B1 (Lease area >5 to 250 Ha). The proposed project details are given below.

(a) Proposed project details

Sl. No.	Description	Status/Remarks
1.	Sector	Non-coal mining
2.	Category of the project	B1
3.	Proposed mineral	Rough Stone and Gravel quarry
4.	Type of Lease	Fresh Quarry
5.	Extent of the lease	4.87.80 Ha
6.	Proposed depth of mining	47m below ground level.
7.	Method of mining	Opencast –Semi Mechanized
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years
10.	Proposed production quantity for five years	Rough Stone: 5,57,310 m ³ Gravel: 47,816m ³

(b) Profile of the project proponent

The proposed lessee Thiru. A.Arunmuthukumar, is an individual with sound experience in the identification of quarry, operation and marketing in the field of Rough Stone and gravel quarry. The proposed land is a Patta land registered in the name of the M/s. SAV Blue Metals Pvt Ltd, vide patta no.2522, The copy of the Patta, Adangal and A-Register are enclosed as Annexure - 6.

(c) Project proponent details

Name of the proponent : Thiru.A.Arunmuthukumar,

Status of the Proponent : Individual

Address : S/o. Arasappan,
No.133/1, Yathavar Street,
Pttarpuram, Eraippuvari, Nanguneri
Taluk,
Tirunelveli District. Pincode-638001

1.3 BRIEF DESCRIPTION OF NATURE, SIZE, LOCATION OF THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY, REGION:

The proposed quarrying operation Opencast – Semi-Mechanized method with 5m bench height, 5m bench width and overall bench slope is less than 80°. The quarry operation involves shallow jackhammer drilling, slurry blasting, excavation, loading and transportation.

1.3.1 SIZE AND LOCATION OF THE PROJECT

(a) Size of the project

Table1.2 Proposed project details		
Sl. No.	Feature	Description
1	Type of land	Patta land
2	Extent of lease area	4.87.80 Ha
3	Type of lease	New Project
4	Geological Resource	Rough Stone – 21,88,620 m ³ Gravel – 97,272 m ³
5	Mineable Resource	Rough Stone – 5,57,310 m ³ Gravel – 47,816 m ³
6	Proposed production quantity for five years	Rough Stone – 5,57,310 m ³ Gravel – 47,816 m ³
6	Proposed depth of mining	47 m below ground level.

Location of the project

The proposed project site is located Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State and its 08°12'00.14"N to 08°12'08.96"N & 77°40'05.01"E to 77°40'14.02"E with Survey of India Topo Sheet No. 58H/12.

1.3.2 IMPORTANCE OF THE PROJECT TO THE COUNTRY AND REGION

There is an increasing demand for rough stone in India and other countries. Since the construction industry is rapidly growing now, there is an increasing demand for rough stone. Thus, this project will contribute not only to the demand of Rough Stone, but also provide employment opportunities to the nearby villages.

1.4 SCOPE OF THE STUDY -DETAILS OF REGULATORY SCOPING CARRIED OUT (AS PER TERMS OF REFERENCE):

Any mining project may cause environmental impacts near the project site during its operation. The type and intensity of impacts on various components of the environment may vary depending on the nature of the project, as well as its geographical location. The net impacts of the project can be quantified through Environment Impact Assessment (EIA) studies on Physical, Biological and Socio-economic environment. The EIA studies give a basis for preparing an Environmental Management Plan (EMP) to conserve the environment of the area.

For the purpose of preparing EIA/EMP the SEIAA, Tamil Nadu has issued a Terms of Reference ToR Identification No. TO24B0108TN5694496N, dated 11.01.2025 in accordance with the provisions of EIA Notification 2006 and its subsequent amendments. This EIA study includes both Core and Buffer zone i.e., the lease area and 10km radius of the project area respectively. This EIA report prepared based on the data generated from the summer season 2024 (October 2024 to December 2024) and all individual components of environment are described in detail. An in-depth analysis of available information has been made for working out an effective Environmental Management Plan.

1.4.1 PRESENT STUDY

The Project Proponent has assigned M/s. Global Mining Solutions, Salem for conducting Environment Impact Assessment / Environmental Management Plan (EIA/EMP) for this project. The Environmental Impact Assessment and Environmental Management Plan of this cluster quarry addressing all the environmental related impacts and mitigation measures. The EMP report is based on the data generated from October 2024 to December 2024 by M/s. Shrient Analytical & Research Labs Private Limited, Chennai and the data generated by the FAE of the M/s. Global Mining Solutions, Salem. The study evaluates the prevailing baseline environmental conditions. The objectives of the present study are given below.

- ✦ To prepare the present baseline scenario through primary field monitoring and secondary data for different environmental descriptors such as air, water, noise, traffic, biodiversity, socio-economic etc.
- ✦ To identify the activities of mining that have bearing on the environment
- ✦ To Assess the impact of proposed project activity
- ✦ To suggest preventive mitigation measures
- ✦ To prepare an Environmental Management Plan (EMP) including environmental monitoring.
- ✦ To Prepare Disaster Management Plan.

1.4.2 STATUS OF LITIGATIONS

This is a Rough Stone and Gravel Quarry project. There is no litigation/court case pending against this project.

a. Precise Area Communication:

The Project Proponent has obtained Precise Area Communication from the District Collector, Department of Geology and Mining, Tirunelveli, vide Rc.No.M2/547/2023, Dated: 17.11.2023. The letter copies enclosed as Annexure – 2.

b. Mining Plan Approval Letter:

The project proponent has prepared mining plan under rule 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Joint / Assistant Director (i/c) Department of Geology and Mining, Tirunelveli vide Letter No. Rc. No. M2/547/2023 dated 24.11.2023. The approval letter along with approved plan is enclosed as Annexure – 3.

c. 500m radius quarry features:

The project proponent has obtained an official letter from the Joint Director / Assistant Director (i/c), Department of Geology and Mining, Tirunelveli vide Letter No. Rc. No. M2/547/2023 dated 24.11.2023. The letter copy enclosed as Annexure – 4.

d. Project Proponent undertaking affidavit:

The project proponent has issued an affidavit under MoEF & CC O.M. No. 3-50/2017-IA.III(Pt.) dated 30.05.2018 to comply with the direction of the Hon'ble SC made on 2.08.2017 in W.P. (C) 114 of 2014 in matter of Common Cause vs Union of India & Ors. The Affidavit copy is enclosed as Annexure – 12.

e. Land document of the proposed lease area:

It is patta land registered in the name of the M/s. SAV Blue Metals Pvt Ltd, vide patta no.2522. The copy of the Patta, Adangal and A-Register are enclosed as Annexure - 4.

CHAPTER 2

PROJECT DESCRIPTION

2.1 TYPE OF PROJECT

The type of the project is Rough Stone and Gravel Quarry with Opencast Semi-Mechanized mining method to excavate Rough Stone and Gravel within the proposed Mine Lease area with drilling, blasting, loading and transportation. This project is located at S.F.No. 291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80Ha in Irukkandurai Part II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments the project comes under Schedule 1 (a) under Category B1 (Lease area >5 to 250 Ha), considering cluster situation and the total cluster area is 23.44.80 Ha. The details of mines located in the cluster area is certified by Joint Director / Assistant Director (i/c), Department of Geology and Mining, Tirunelveli vide Letter No. Rc. No. M2/547/2023 dated 24.11.2023.

Table 2.1 Cluster Mines Details

S.No	Name of the Quarry Owner	S.F. Nos & Village	Lease Period	Area
a. Abandoned Quarry				
Nil				
b. Existing Quarry				
1.	K.Bagavathiyappan, S/o. Kumaresan, 8/42,Radhapuram Road, Kavalkinaru, Perungudi Village, Radhapuram Taluk.	Irukkandurai part-II(V) & SF.Nos.297/2	Period of 5 years	3.65.50
2.	Tvl.S.A.V Manilal Blue Metal, Prop.M.Sudeshlal, No.10-166, Vadakku Bazar Street, Vadakkankulam, Perungudi Village, Radhauram Taluk.	Irukkandurai part-II(V) & SF.Nos.292/1A(P) & 295/2B(P)	07.11.2020	1.24.00
3.	TVL.S.A.V.Blue metals Pivate Limited, Prop.A.Ajeshlal, 12-725-B7, Kavalkinaru Road, Vadakkankulam, Radhapuram Taluk, Tirunelveli District.	Irukkandurai part-II(V) & SF.Nos.155/2(P)	to	4.87.80
4.	Tvl. Hi Tech Rock Products & Aggregates Limited	Irukkandurai part-II & SF.Nos.282/3B(P),283/	06.11.2025	3.98.10

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

		3(P), 278/2(P),277/1B(P), 284/1A1(P) and 284/2(P)		
5.	Tvl. Hi Tech Rock Products & Aggregates Limited	Irukkandurai part-II& SF.Nos.289/1A(P),289/2(P) and 161/1A(P)	Period of 5 years	4.71.40
6.	Tvl. Hi Tech Rock Products & Aggregates Limited	Irukkandurai part-II& SF.Nos.290/1B(P), 290/2(P), 160/1A(P), 289/1A(P) and 289/2(P)	26.02.2021	3.74.00
Area of total Existing Quarry		12.20.5 Ha		
c. Proposed Quarry				
1.	Thiru.A.Arunmuthukumar, S/o.Arasappan, No.133/1, Yathavar street, Pattarapuram, Eraippuvarari, Nnguneri Taluk, Tirunelveli District.	Irukkandurai part-II(V) & SF.Nos.291/2A2, 292/1C2 & 293/3B	-	4.87.80
Area of Proposed Quarry		23.44.80 Ha		

The proposed production is 5,57,310 m³ of Rough Stone and 47,816 m³ of Gravel by open cast semi-mechanized mining method.

2.2 NEED FOR THE PROJECT

The salient features of the proposed Rough Stone and Gravel quarry of Thiru.A.Arunmuthukumar.

Table 2.1a Salient features of the project		
S.No.	Type of Detail	Description
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	New Project
3	Category	B1
4	Nature of mineral	Minor Mineral
5	Life of the mine	5 years
6	Production Quantity for five years	Rough Stone – 5,57,310 m ³ Gravel – 47,816 m ³
7	Waste generation and management	Nil
8	Bench height and width	Proposed bench height & width is 5.0m respectively and number of proposed benches is 10Nos (1+9).

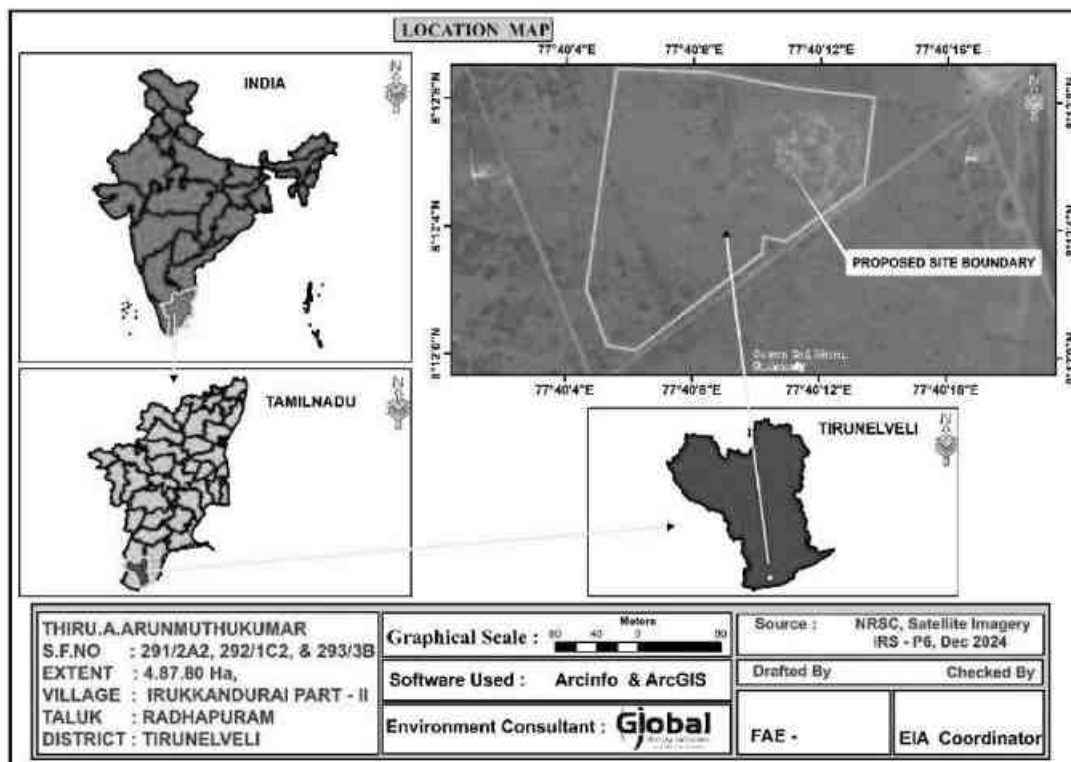
Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

9	Ultimate pit depth	47m Below Ground Level
10	End use	The excavated Rough Stone and Gravel is used for construction industries for Government & Public sector projects besides catering domestic housing and infrastructure projects in and around the district.

2.3 LOCATION (MAPS SHOWING GENERAL LOCATION, SPECIFIC LOCATION, PROJECT BOUNDARY & PROJECT SITE LAYOUT):

This project site is located in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu. There is Irukkandurai - Nakkneri village road - 400m (NW). The Nearest Railway line is Tirunelveli to Nagarcoil line which is about 13 Km on the Northwestern side of the area. The National Highway ((NH-44) Salem to Kanniyakumari which is 10.5km on Western side of the area. The State Highway (SH-176) Anjugramam to Ramankudi which is 2.4km on southern side of the area. The general location is given in Figure 2.1. The specific location is given in Figure 2.2.

FIGURE 2.1 LOCATION MAP



Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

Table 2.2 Co-Ordinates of the Project Site

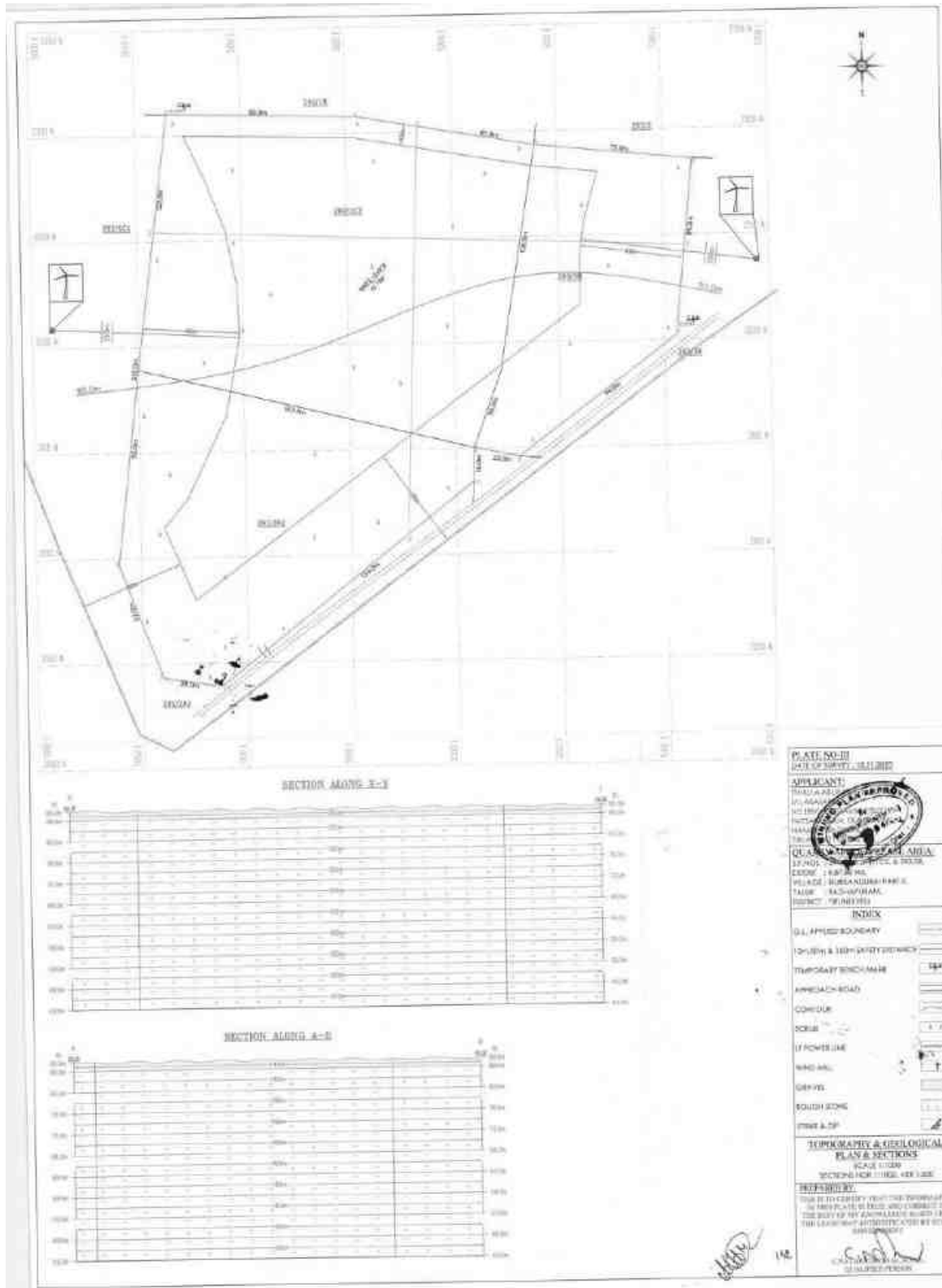
Corners	Co- ordinates		Distance between the corners
	Latitude	Longitude	
1	8°12'00.29"N	77°40'05.66"E	1-2 = 57.0m
2	8°12'02.03"N	77°40'05.01"E	2-3 = 215.0m
3	8°12'08.96"N	77°40'05.89"E	3-4 = 89.8m
4	8°12'08.87"N	77°40'08.83"E	4-5 = 85.8m
5	8°12'08.38"N	77°40'11.58"E	5-6 = 75.0m
6	8°12'08.12"N	77°40'14.02"E	6-7 = 84.0m
7	8°12'05.40"N	77°40'13.73"E	7-8 = 94.0m
8	8°12'03.59"N	77°40'11.25"E	8-9 = 22.0m
9	8°12'03.74"N	77°40'10.55"E	9-10 = 16.0m
10	8°12'03.21"N	77°40'10.53"E	10-11 = 154.0m
11	8°12'00.14"N	77°40'06.56"E	11-12 = 28.0m

FIGURE 2.2 GOOGLE IMAGE SHOWING PROJECT SITE



Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

FIGURE - 2.4 GEOLOGY MAP OF PROJECT AREA



Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

2.3.1 PROJECT SITE LAYOUT

The proposed Mine Lease area is Patta Land and the Land use pattern of the project site is given below Table 2.3.

Table 2.3 Current Land Use Pattern			
S. No.	Land Use	Present Area (Ha)	Area in use during the quarrying period (Ha)
1	Quarrying Pit	Nil	2.39.50
2	Infrastructure	Nil	0.01.00
3	Roads	Nil	0.01.00
4	Green Belt	Nil	2.46.30
5	Unutilized	4.87.80	Nil
	Total	4.87.80	4.87.80

2.3.2 LAND USE AT MINE CLOSURE STAGE

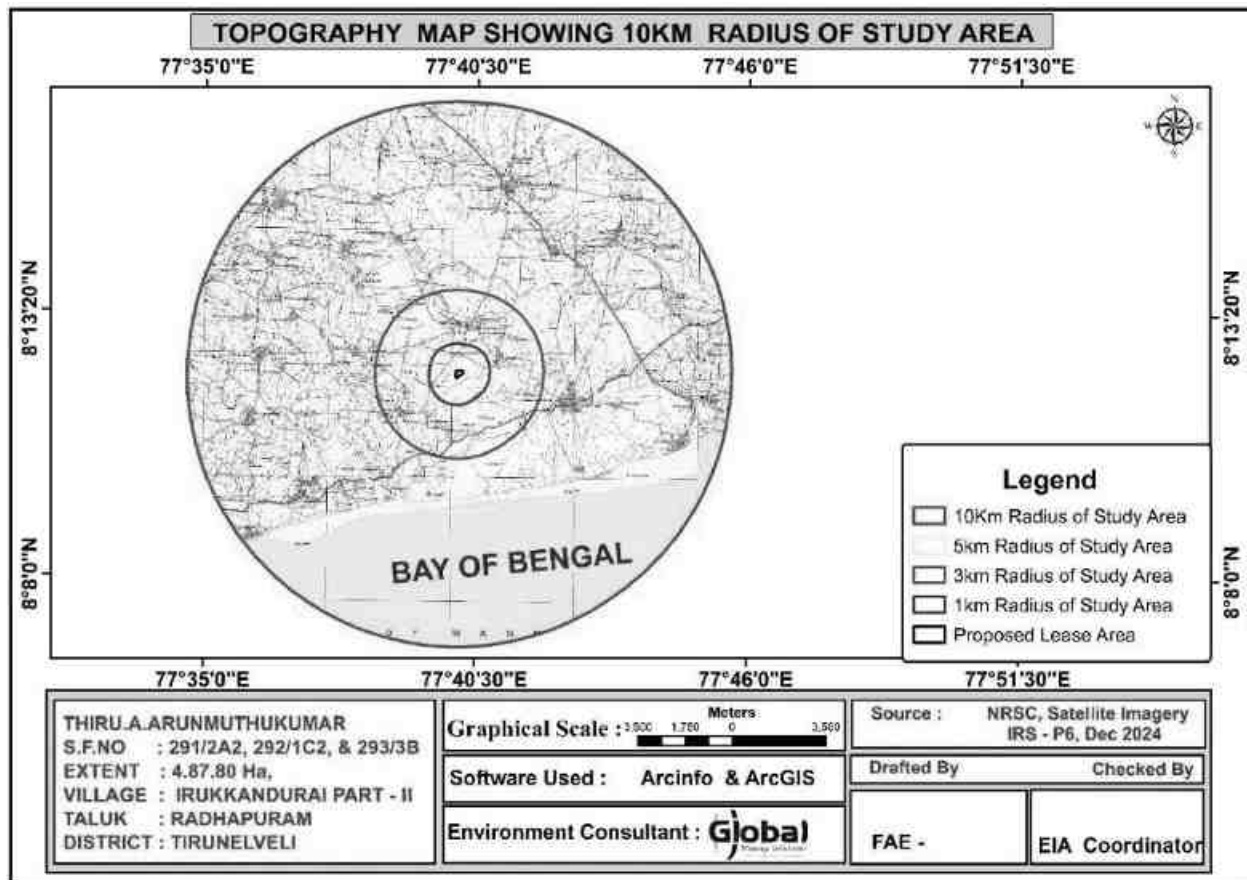
Table 2.4 Land Use at Mine Closure Stage		
S. No.	Land Use	Area in use during the quarrying period (Ha)
1	Area left for water body	2.39.50
2	Green Belt	2.46.30
3	Remaining area	0.02.00
	Total	4.87.80

2.3.3 SALIENT FEATURES OF THE LEASE AREA

Sr.No	Salient Features	Description
1	Nearest Roadway	National Highway (NH-44) Salem to Kanniyakumari – 10.5km (W) State Highway (SH-176) Anjugramam to Ramankudi – 2.4km (S)
2	Nearest Village	Sanganeri – 1.4km, NE
3	Nearest Railway station	Panakudi Railway Station– 15.0 km (NW)
4	Nearest Airport	Tuticorin Air Port – 70.0 km (NE)

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

Figure 2.5 Topo Map showing existing site features



2.6 PROJECT SITE PHOTOGRAPHS



2.4 SIZE OR MAGNITUDE OF OPERATION(INCL.ASSOCIATED ACTIVITIES REQUIRED BY OR FOR THE PROJECT):

The proposed production is 5,57,310 Cu.m of Rough Stone and 47,816 Cu.m of Gravel by Opencast Semi-Mechanized mining method. Available Geological Resources of 21,88,620 Cu.m of Rough Stone and 97,272 Cu.m of Gravel, Cost of the project is Rs. 396.83 lakhs including land cost. Capital cost for EMP is Rs. 34.77 lakhs and recurring cost for the EMP is Rs. 30.03Lakh/Annum.

2.4.1 STATUS OF STATUTORY CLEARANCES, PERMISSIONS, NO OBJECTION CERTIFICATES, CONSENTS:

The mining project will be implemented after getting all the Statutory Clearances, Permissions, No Objection Certificates, consents etc. which are required/necessary for this project under various Acts, Rules and Regulations is as given in table below:

Table - 2.5 Status of Statutory Clearances, Permissions, NOC, Consents

S.No	Particular	Status
1	Mining Plan Approval Status	The project proponent has prepared mining plan under rule 19(1)41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Joint / Assistant Director (i/c) Department of Geology and Mining, Tirunelveli vide Letter No. Rc. No. M2/547/2023 dated 24.11.2023
2	Environment Clearance Status	ToR Letter Received vide file no TO24B0108TN5694496N, dated 11.01.2025.
3	Grant of Consent to Establish (CTE)	After 30 days from grant of EC (Duration as per TNPCB)
4	Grant of Consent to Operate (CTO)	After 30 days from grant of EC (Duration as per TNPCB)

2.5 PROPOSED SCHEDULE FOR APPROVAL & IMPLEMENTATION

Proposed schedule for approval of the proposed mining project is given as under:

Table - 2.6 Proposed Schedule for Approval

S.N	Activity Description	MAY 2025	JUNE 2025	JULY 2025	AUG 2025
1	Submission of Final EIA/EMP Report to SEIAA-TN				
2	Consideration for EC by SEAC				
3	Recommendation of SEAC to SEIAA				
4	Grant of EC by SEIAA				

Proposed schedule has been prepared as per EIA Notification, 2006

Note: Application was submitted to Parivesh Portal on 25.06.2024, ToR was granted on 11.01.2025. Baseline data Collection during Summer Season (Oct to Dec 2024). After obtaining EC from SEIAA-TN, CTE and CTO under section 21 of the Air (Prevention and Control Act) 1981 and section 25/26 Water (Prevention and Control of Pollution Act) 1974 will be obtained from Tamil Nadu State Pollution Control Board (TNPCB).

2.5.1 IMPLEMENTATION

Implementation of the proposed mining project will be done in accordance with the existing Acts and Rules applicable on mining operations as well as in accordance with any Act/Rule/Guidelines issued by Central or State Government from time to time and as per Mining Plan and Progressive Mine Closure Plan approved by Assistant Joint Director (AC), Department of Geology and Mining, Tirunelveli vide Letter No. Rc. No. M2/547/2023 dated 24.11.2023.

2.6 TECHNOLOGY & PROCESS DESCRIPTION

2.6.1 BASIC REQUIREMENTS FOR THE PROJECT

The project requirements such as water, power, man-power, fuel, machinery with source of supply is described in the sections below.

2.6.2 WATER REQUIREMENTS

In the proposed mines water will be mainly used for domestic purpose, dust suppression & plantation. Total water requirement for the project is 12 KLD which will be sourced from outside agencies. Negligible sewage of 1.5 KLD will be generated, for which a septic tank with soak pit will be set up. The water balance diagram is given below.

FIG 2.7 WATER BALANCE DIAGRAM

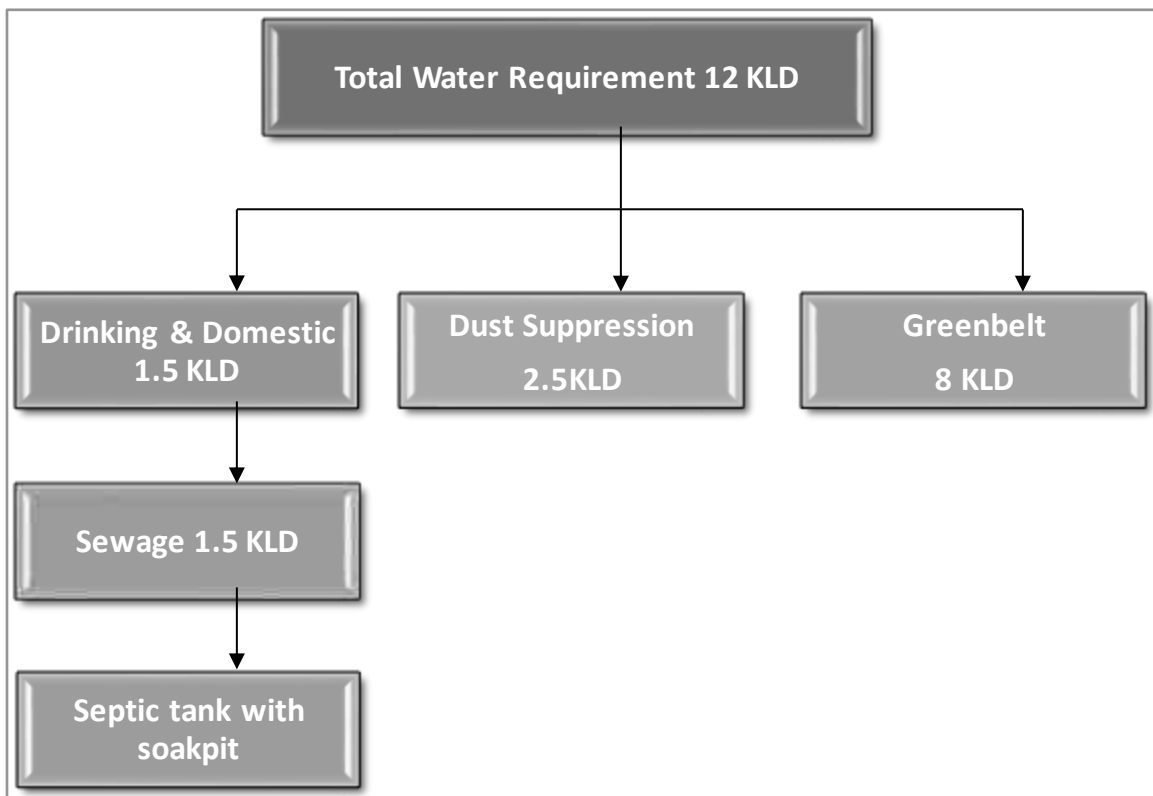


Table - 2.7 Water Requirement

S. No	Particular	Water Requirement (KLD)
1	Dust suppression	2.5
2	Drinking/Domestic	1.5
3	Greenbelt/Plantation	8
Total		12

2.6.3 POWER REQUIREMENT

Total Fuel requirement is 453.826 KL for entire life of the project. Power will be used only in the office building

2.6.4 MAN POWER REQUIREMENT

Total Manpower requirement will be 30 persons which out of which 20 persons (Mines manager, Foreman, Mining Mate, etc.,) and other are drivers and workman's categories. Beside this, 10 workmen will be drivers and workmen. Preference will be given to the locals as per their eligibility.

S.No	Description	Employment potential
1	Mines Manager	1 No.
2	Foreman / Mate	2 Nos.
3	Operator	12 Nos.
4	Mechanic	1 No.
5	Driver	4 Nos.
6	Labours	10 Nos
Total		30 Nos

2.6.5 EXTENT OF MECHANIZATION

Table 2.8 Machineries involved in the project				
S.No.	Particulars	capacity	Motive Power	Nos
1.	Jack hammer	32mm dia	Compressed air	10
2.	Compressor	1 psi	Diesel drive	3
3.	Excavator with Bucket and Rock Breaker	0.90 m ³	Diesel drive	2
4.	Tippers	5/10 Ts	Diesel drive	4

Source: Approved Mining Plan

Note: The mining equipment's of the above capacities are adequate for total material handling requirements for the proposed production of Rough stone in the ML area.

2.6.6 GEOLOGY AND TOPOGRAPHY

Topography

The mine lease area of 4.87.80 Ha is covered in the Survey of India Toposheet 58 H/12 and is bounded by Latitude: 08°12'00.14"N to 08°12'08.96"N and Longitude: 77°40'05.01"E to 77°40'14.02"E. No major river is found nearby the lease applied area. Water table is found at a depth of 65m in summer and 62m in rainy season. Temperature of the area is reported to be 18°C to a maximum of 42°C during summer. Rainfall of this area is about 800 mm to 900 mm during the both NE & SW monsoons.

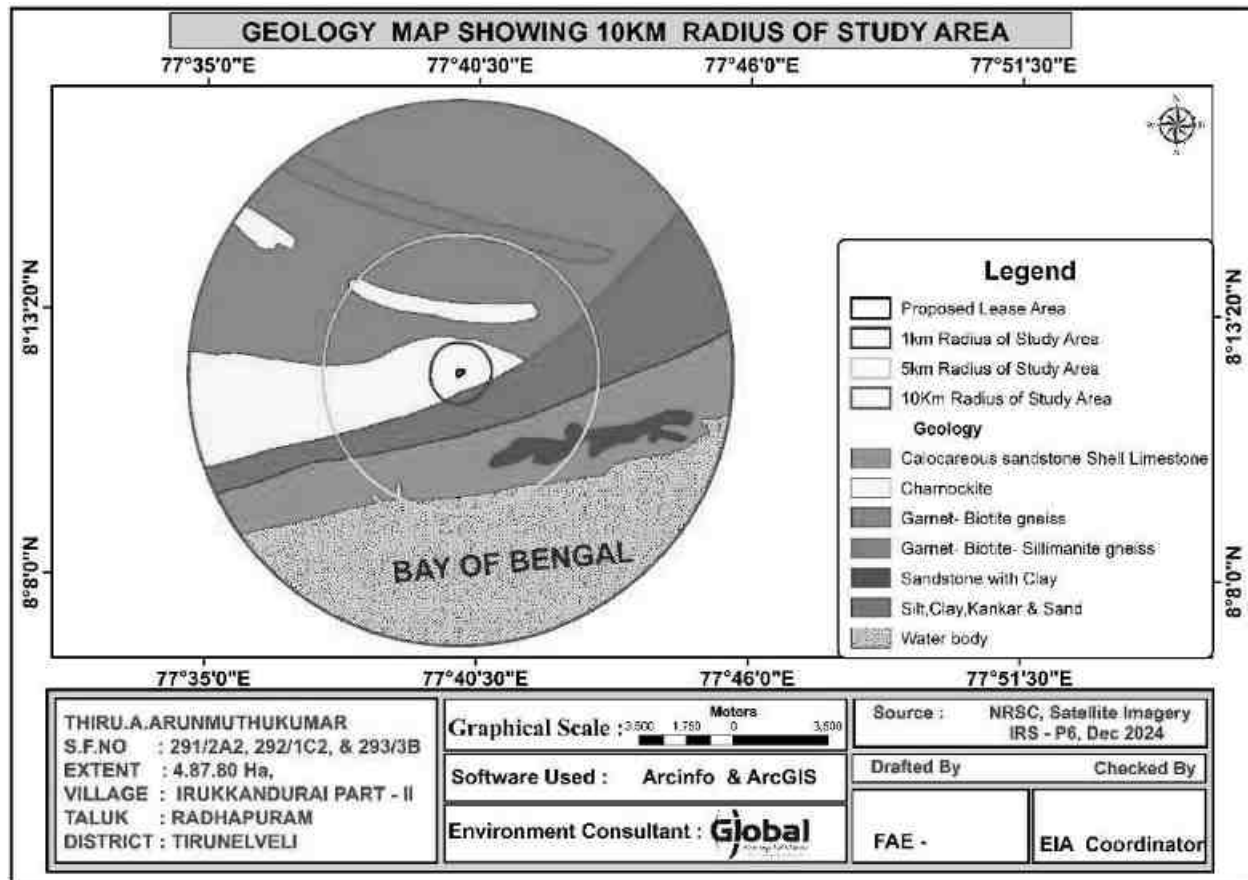
The topo map showing the lease area of the proposed quarry is given in Figure 2.1 and Satellite map showing proposed lease area is given in Figure 2.2.

The elevation of the proposed quarry is 90 m (maximum) from MSL. There is no forest land in the mine lease area. The project site is dry land which is not fit for any cropping.

2.6.7 Regional Geology

Geologically Tirunelveli District is mostly underlain by the Archaean crystalline and metamorphic complex. The geology of the district is complicated due to recurring tectonic and magmatic activities occurred during Pre-Cambrian period. The famous Sittampundi Anorthosite Complex which is known for its complex geology and occurrences of Platinum Group of Elements is situated in this district. Hornblende Biotite Gneisses are the oldest rocks in four taluks of the district. It is very fissile and present widely in plains. The gneisses are highly weathered upto 30 m at some places. The Charnockites are coarse grained, massive and foliated at places and their colour is bluish dark to grey. They are the second largest rock type present in the district. They are massive and less weathered than the gneisses. They exhibit 2 to 3 distinct set of joints and most of them are vertical with steep dips. Iron ore deposits associated with quartz feldspathic gneiss and garnetiferous quartz gneisses are present in some areas. These rocks are highly folded and jointed and less weathered. Quartzite and crystalline lime stones are exposed in patches in north and central parts of the district. The thickness of these bands varies from a few metres to ten metres and the length extends to few kilometres. Numerous lenses of dunite with magnesite veins of various dimension are exposed within gneiss. There are number of basic dykes present in the study area. Granites are found in some parts of the district. They are massive and jointed poorly. Thin veneer of alluvium is found along the course of the Cauvery and Thirumanimuthar. However, alluvium of few meters thickness is found near the junction of river Thirumanimuthar and river Cauvery. Several faults and shears are occurring mostly with north east-southwest trend. They are expected to influence the course of groundwater movement, its storage and developmental potentials in the district. Regional Geology map for the 10 Km radius from the proposed project site is given as Figure 2.4.

FIGURE 2.8 REGIONAL GEOLOGY MAP -10Km RADIUS FROM PROJECT AREA



2.6.8 Local Geology

Geological Resources

The area is undedain by the wide range of metamorphic rocks of peninsular gneissic the Area complex. These rocks are extensively weathered and overlain by the recent valley fills and alluvium at places. The geological formations found in the district are Archaean rocks like Gneisses, Granites, Charnockites basic granulites and calc-gneisses. The younger formations are Quartz veins and pegmatite. The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, metamorphic rock. The strike of the Chamockite formation is N450E -S450W with dipping towards SE600.The general geological succession of the area is given as under.

↑	Age		Rock Type
	Recent	-	gravelly soil
	Archaean	Unconformity	
			Dolerite dyke
		-	Charnockite
			Peninsular Gneissic complex and Calc Gneiss

2.7 PROJECT DESCRIPTION INCLUDING DRAWING SHOWING PROJECT LAYOUT COMPONENTS OF PROJECT ETC., SCHEMATIC REPRESENTATION OF THE FEASIBILITY DRAWING WHICH GIVE INFORMATION IMPORTANT For EIA PURPOSE.

2.7.1 PROCESS DESCRIPTION

PROPOSED METHOD OF MINING

Opencast Semi-Mechanized method with 5.0 m height 5.0m width and overall, 80° slope of the bench. It is proposed to 5,57,310 Cu.m of Rough Stone and 47,816 Cu.m of Gravel. No wastage is envisaged as the entire material available is Rough Stone and Gravel only.

TIMING

Mining will be done on single shift basis. Timing will be 8 hours from 8 AM to 1 Noon and 2 PM to 5 PM. Lunch time will be provided between 1 Noon and 2 PM. Timing may be variable from season to season depending upon the sunrise and sunset. Weekly one day will be declared as holiday.

BENCH GEOMETRY

Height (max) and Width (max) of the benches will be maintained as 5m each and overall slope angle will be at around 80° with the horizontal.

DEVELOPMENT OF MINING FACES

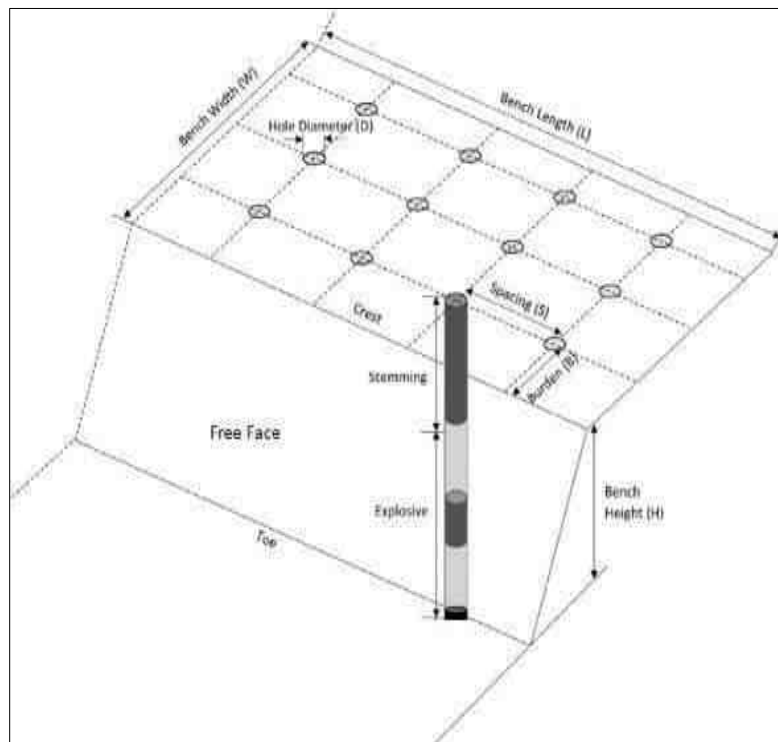
The proposed mining method is Opencast Mechanized mining. Site preparation as such bush cleaning, approach road, office and sanitary facilities will be done after obtaining all the statutory clearances as such Environmental Clearance, Consent to

Operate, Lease Deed, etc., Once site is ready will start the quarrying operation and it is anticipated in the month of Aug 2025.

DRILLING & BLASTING

Drilling will be done upto maximum depth of 47m BGL (Drilling diameter will be 32 mm). Jackhammer will be used for drilling with water spray. Powder factor of explosives for breaking such hard rock shall be in the order of 6 Tonnes per Kg of explosives and dia 25 mm explosive is proposed to be used for shattering and heaving effect for removal of Rough Stone and Gravel. The proposed blasting pattern is given as Figure 2.9.

FIGURE 2.9 BLASTING PATTERN



Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

LOADING & TRANSPORTATION OF ROUGH STONE AND GRAVEL

Hydraulic excavator will be used for lifting and loading of the rough stone and Gravel. This excavator in combination with Tippers (5/10T) capacity of 4 nos will be used.

FIGURE 2.10 FLOW CHART OF THE QUARRY OPERATION

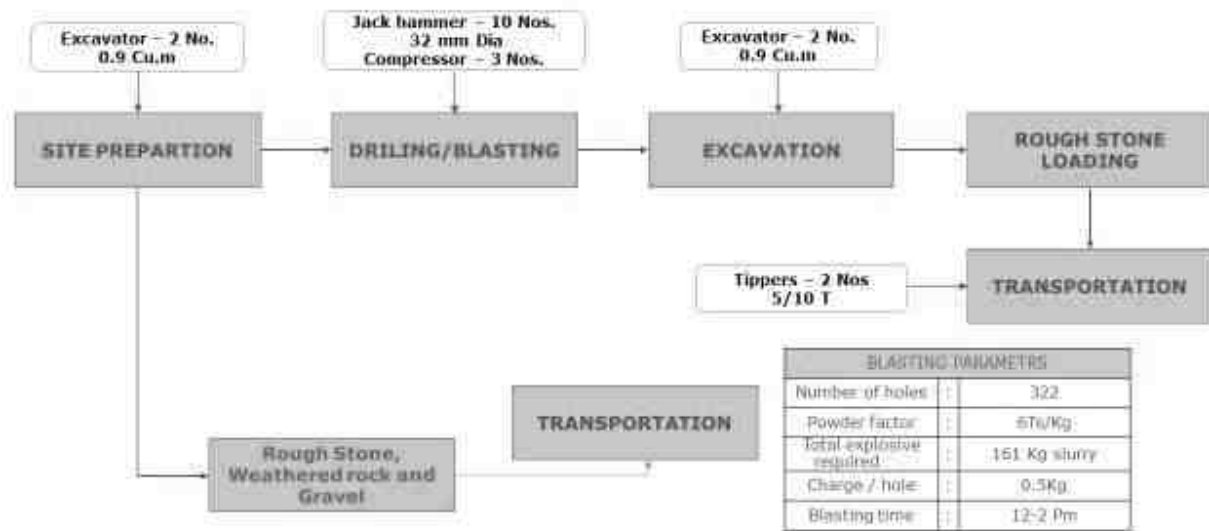


TABLE - 2.9 MINING DETAILS

Sl. No	Description	Details	Remarks
1.	Method of Mining	Opencast method of Semi Mechanized Mining with 5.0 m height 5.0 m width and overall 80° slope of the bench. Hydraulic excavator will be used for the excavation and 5/10T tippers will be used for the Hauling.	Excavator – 2 Nos. Tippers – 2 Nos.
2.	Mineral Use	The excavated Rough Stone will be used for construction industries for Government & Public sector projects besides catering for domestic housing and infrastructure projects in and around the district.	-
3.	Proposed Depth of mining for the first five years	47m (BGL)	The water table in the area is around 65m BGL

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

4.	Proposed Production quantity	5,57,310 Cu.m of Rough Stone and 47,816 Cu.m of Gravel	Five years
5.	Safety Zone	Out of 4.87.80 Ha, 2.46.30 Ha will be maintained as a Safety Zone during mining operations.	Around 2000 nos of saplings will be planted in this safe area.
6.	Water requirement	12 KLD	Procured by the outside water vendors
7.	Energy requirement	453826 liters of HSD (Entire Project Life)	All the equipment will be diesel-operated. No electricity is needed for mining operations.
8.	Manpower	30 Nos	This project will give employment opportunities to 30 people.
9.	Shift	General Shift	8.00 AM – 5.00 PM
10.	Project Cost	396.83 lakhs	(Including Fixed Asset + Operational & EMP cost)
11.	EMP Cost	200.71 lakhs	for the five years has been allocated as EMP cost
12.	CER Cost	10.0 Lakhs.	The amount will be utilized for the development of nearby government schools.

2.7.2 YEAR WISE PRODUCTION & EXCAVATION DETAILS

Year wise Production of Rough stone and Gravel from the area will be upto maximum capacity. The recovery factor is up to 100% hence no waste expected to be generated. All excavated quantity is saleable. The summary of proposed development and production during the mine plan period is given in Table 10.

Table 2.10 Summary of production for 5 Years

Table 2.10 Summary of production for 5 Years								
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m³	Gravel in m³	Mineable reserve of Rough stone in m³
I	XY-AB	I	92	139	2	25576	25576	
		II	89	133	5	59185		59185
		III	84	123	5	51660		51660
Total							25576	110845
II	XY-AB	I	80	139	2	22240	22240	
		II	77	133	5	51205		51205
		III	72	123	5	44280		44280
		IV	28	113	5	15820		15820
Total							22240	111305
III	XY-AB	IV	118	113	5	66670		66670
		V	88	103	5	45320		45320
Total								111990
IV	XY-AB	V	48	103	5	24720		24720
		VI	126	93	5	58590		58590
		VII	69	83	5	28220		28220
Total								111530
V	XY-AB	VII	48	83	5	19920		19920
		VIII	106	73	5	38690		38690
		IX	96	63	5	30240		30240
		X	86	53	5	22790		22790
Total								111640
Grand Total							47816	557310

2.7.3 CONCEPTUAL PERIOD

During conceptual stage the mined-out area will be converted into water reservoir and safety zone as well as upper benches will be used for plantation at the conceptual period. It will also serve the purpose as socio economic and corporate social responsibility of the lessee by way of supplying water for irrigation purpose or at will of the local people. This will help in ground water recharging as well. The conceptual plan and section of mine lease area is given in Figure 2.11. Ultimate extent and size of the quarry at the conceptual stage is given below as Table 2.9 and Land Use pattern is given as Table 2.10. The conceptual plan is given as Figure 2.11.

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

TABLE 2.11 Ultimate Pit Dimension

Pit No.	Length (max) (m)	Width (Avg) (m)	Depth (max) (m)
I	172	139	47m BGL

TABLE 2.12 Land Use at Mine Closure Stage

S. No.	Land Use	Area in use during the quarrying period (Ha)
1	Area left for water body	2.39.50
2	Green Belt	2.46.30
3	Remaining area	0.02.00
Total		4.87.80

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

FIGURE 2.11 CONCEPTUAL PLAN



2.8 DESCRIPTION OF MITIGATION MEASURES INCORPORATED INTO THE PROJECT TO MEET ENVIRONMENTAL STANDARDS ENVIRONMENTAL OPERATING CONDITIONS, OR OTHER EIA REQUIREMENTS (AS REQUIRED BY THE SCOPE)

The mitigation measures given in this section are for management of the emissions (particulate or gaseous), Noise pollution, wastewater & surface run-off generated from the mining operations to meet the environmental standards and environmental operating conditions are as follows:

2.8.1 AIR QUALITY MANAGEMENT

Drilling

Drilling machines are proposed to be equipped with wet drilling arrangements and cyclone dust collectors.

Blasting

- Controlled blasting is proposed to be adopted and optimum use of explosive energy will help in reducing the air pollution.
- Secondary blasting will be avoided.
- Rock breakers are proposed to be used for breaking oversized boulders in order to reduce the dust generation.
- Use of good quality of explosives having proper oxygen balance with regular monitoring.
- Ensuring proper stemming after charging of explosives. Proper stemming material will help in minimizing dust throw thereby lowering the spread of dust particles in ambient air pollution.
- Water spray on blasted muck pile before dozing/loading to control dust generation.

Loading & Transportation

- Water spray on haulage roads, access roads, operating benches and proper maintenance of haul roads.
- Development of green belt/plantation around mine boundary, roads and other places will be carried out to control the air pollution.
- Proper maintenance of the HEMMs & transportation vehicles will be done.
- Vehicular emissions will be kept under norms.
- Personal Protective Equipment like dust masks will be provided to all employees. ➤ Regular air quality monitoring will be carried out.
- Compliance of conditions laid by MoEF&CC and TNPCB to minimize environmental impacts

2.8.2 NOISE MANAGEMENT

Drilling

- Drilling with sharp drill bits to achieve optimum drilling performance and to reduce noise generation at source will be adopted.
- Personal protective equipment's i.e. earplug in drilling & in high noise area shall be used.

Blasting

- As blasting will be done in accordance with standards prescribed by DGMS for controlled blasting; therefore, ground vibrations will not affect the structures in the vicinity of mine area.
- Explosives charge per hole and per delay will be maintained as per DGMS guidelines.
- Blasting will be carried out by use of non-electric detonators (NONEL) system and the impacts of noise generated due to blasting are momentary.
- Vibrations and noise generated by blasting will be monitored regularly

Transportation

- Adequate silencers in HEMMs will be provided to reduce generation of noise.
- Proper and regular maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise.
- All HEMMs will be equipped with acoustic a/c closed cabins for operators.
- The workers employed at HEMMs will be provided with protective equipment, earmuffs and earplugs as protective measures from the high noise level generated at the mine site and wherever required.
- Development of green belt & plantation around the mining activity and other areas, will be carried out.
- Regular monitoring of noise will be carried out.

2.8.3 WATER MANAGEMENT

Waste Water

Septic Tanks and soak pits will be provided for the disposal of effluent generated from mine office.

Surface Run-off

- Garland drains are proposed to be constructed around the temporary overburden soil dump to channelize the runoff water from dumps and also around the active pit to restrict rainy water from entering in to the working pit.
- Rain water falling directly into the mine pits will be stored and used for plantation & dust suppression.
- Regular monitoring of water quality will be carried out

GREENBELT/ PLANTATION

The mine lease area is devoid of major plantation. Shrubs and bushes are majorly found within the lease area. The proponent has planned to develop green belt in an area of 0.26.50 Ha. Trees like Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc., will be planted around the mine lease area. A total of 2000 trees inside the lease area are planned to be planted. Spacing will be 3m x 3m.

2.9 ASSESSMENT OF NEW & TESTED TECHNOLOGY FOR THE RISK OF TECHNOLOGICAL FAILURE:

From the nature and extent of the deposit, the reserves and the quality have been proved with adequate degree of reliability. Considering the type of mineralization, opencast mechanized method is the most feasible method for mining in the proposed mine lease. It is also a matter of fact that the mining machineries are upgrading with time and therefore the project proponent would act fast to adopt more advanced equipment and automation for safe and environment friendly mining technology in the years to come.

CHAPTER -3

DESCRIPTION OF THE ENVIRONMENT

3.1. STUDY AREA, PERIOD COMPONENTS AND METHODOLOGY

The project area is located in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State over an extent of 4.87.80 Ha, The project area is considered as Core zone and the area in the surrounding 10km radius is considered as Buffer Zone. The baseline environmental monitoring was conducted by Shrient Analytical & Research Labs Private Limited, Chennai it is an NABL and MOEF recognized laboratory for various components of environment, viz. Air, Noise, Water, Land was carried out during Summer Season i.e. october 2024 to december 2024 in the study area covering 10 km radial distance from the rough stone and Gravel mine. Other environmental data on flora and fauna, land-use pattern, forest etc. were also generated through field surveys and secondary information collected from different State Govt. departments. Sampling methods and analysis. Socio-economic survey was conducted, through interaction with the people, sarpanch and medical officers by floating questionnaires and collection of information are supported by census data for demographic structures, amenities, and infrastructure availability within the study area. Baseline values for various environmental components are discussed in this Chapter.

ENVIRONMENTAL SETTING OF THE STUDY AREA

ENVIRONMENTAL SETTING OF THE STUDY AREA

Table 3.1 Description of the lease area				
S.No.	Areas	Distance from project site		
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil within 15km radius		
2	Areas which are important or sensitive for ecological reasons			
A	Wetlands, water courses or other water bodies,	Water bodies	Distance	Direction
		Kuttai	410m	N
		Radhapuram Canal	3.1km	NW
		Hanuman Nadi	3.3km	SW

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

		Uppar River	5.2km	SW	
B	Coastal zone, biospheres,	Nil within 10km radius			
C	Mountains, forests	Kanniyakumari Wildlife Sanctuary – 12.7km (W)			
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	Nil within 15km radius			
4	Inland, coastal, marine or underground waters	Nil within 15km radius			
5	State, National boundaries	Nil within 15km radius			
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Nil within 15km radius			
7	Defense installations	Nil within 15km radius			
8	Densely populated or built-up area	Sanganeri Village – 1.4 km (NE)			
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Sanganeri Village – 1.4 km (NE)			
10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Nil			
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	Nil			
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earth quakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions) similar effects	No. The area is not prone to earthquakes, floods, etc.			

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

FIG 3.1 ENVIRONMENTAL SETTING OF THE STUDY AREA

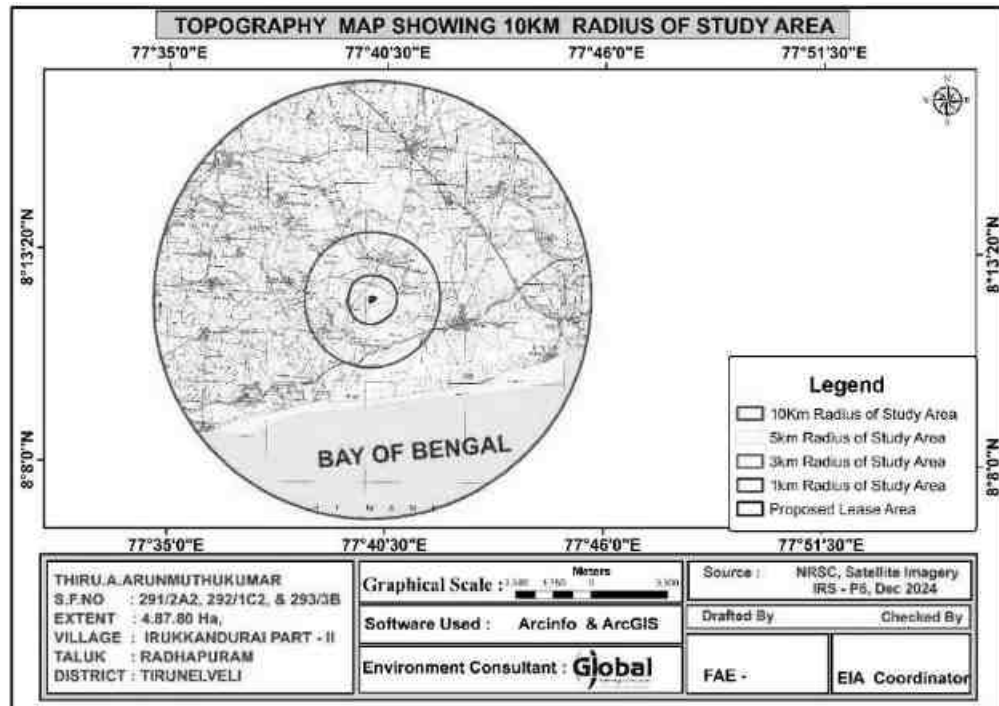
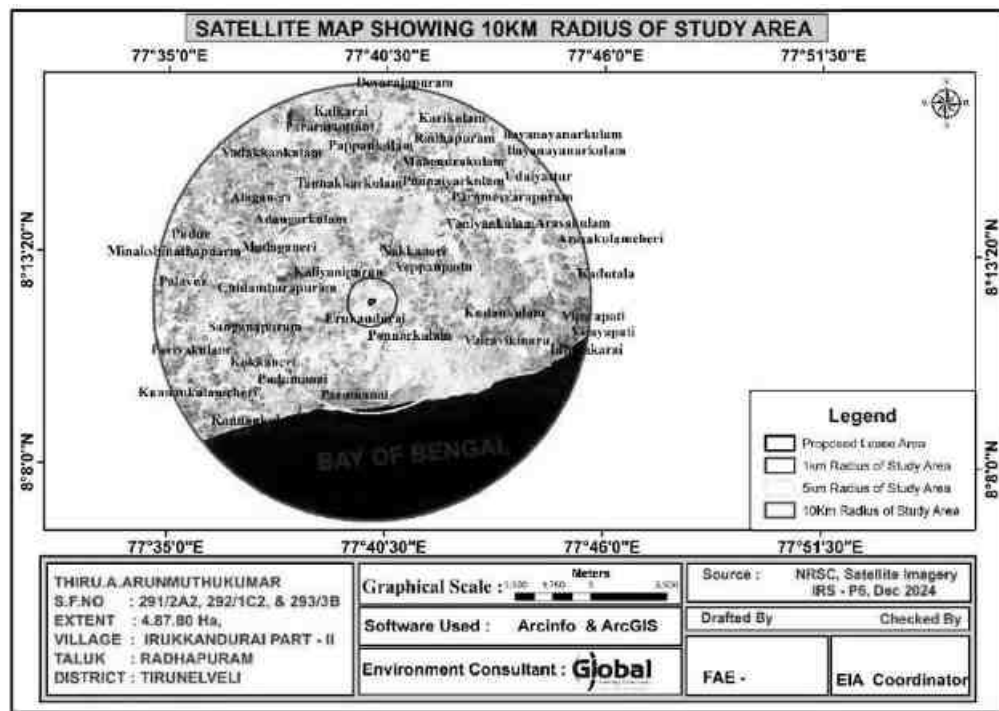


FIGURE 3.2 SATELLITE MAP OF THE PROJECT AREA (10 KM RADIUS)



STUDY PERIOD

The relevant information and data (both primary and secondary) were collected in core as well as buffer zone (10 km distance from the mine boundary) during Summer Season (Oct to Dec 2024) in accordance with the guidelines for preparation of EIA studies in order to assess the impact of the mine site within the 10 Km study area on existing physical, biological and social environment.

3.2. ENUMERATION OF THE STRUCTURES LOCATED WITHIN 500 M RADIUS FROM THE PROPOSED QUARRY

A site survey has been conducted to identify and list structures located within a 300 m radius from the proposed Quarry and are detailed below. There are no permanent structures or temples within a 300-meter radius from the project site. The PP has obtained a letter from Village Administrative Office (VAO), Tenkasi stating that there are no structures situated within 300 m radius

FIG 3.3 GOOGLE MAP SHOWING ENVIRONMENTAL FEATURES LOCATED WITHIN 500 M RADIUS FROM THE PROPOSED QUARRY SITE



Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

Table 3.2 Structures located within 500m		
S. No.	Name of the Feature	Distance and Direction
E1	Kuttai	410m (N)
E2	Windmill	104m (W)
E3	Windmill	101m (E)
E4	Windmill	125m (S)
E5	Windmill	235m (N)
E6	Windmill	325m (NW)
E7	Windmill	365m (SE)
E8	Windmill	430m (SE)
E9	Road	10m (S)
E10	Radhapuram-Kanniyakumari Road	400m (NW)

FIG 3.4 PHOTOS OF STRUCTURES LOCATED WITHIN 500 M RADIUS FROM THE PROPOSED QUARRY SITE



E1-KUTTAL-410m (N)



E2-WINDMILL -104m (W)



E3-WINDMILL-101m (E)



E4-WINDMILL-125m (S)

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar



E5-WINDMILL-235 m (N)



E6-WINDMILL-325m (NW)



E7-WINDMILL-365 m (SE)



E8-WINDMILL-430 m (SE)



E9-ROAD-10 m (S)



E10- Radhapuram – Kanniyakumari Road
(NW)

FIG 3.5 GOOGLE MAP & PHOTOS SHOWING SCHOOLS, TEMPLES AND INHABITED VILLAGE WITHIN 500M RADIUS FROM THE PROJECT SITE



Sl. No	Radius	School	Temple	Inhabited Village	Remark
1	0-100 m	Nil	Nil	Nil	Nil
2	100-200 m	Nil	Nil	Nil	Nil
3	200-300 m	Nil	Nil	Nil	Nil
4	300-400 m	Nil	Nil	Nil	Nil
5	400-500 m	Nil	Nil	Nil	Nil

Fig 3.6 GOOGLE MAP SHOWING STRUCTURES LOCATED WITHIN 500 M RADIUS FROM THE PROPOSED QUARRY SITE



S. No	Name of the Structure	Distance and Direction	Ownership	Occupant	Type	Age
S1	Existing quarry office	135m (SW)	Not belongs to PP		Concrete	More than 5 Years
S2	Existing quarry office	145m (SW)				
S3	Crusher office	220m (NE)			Masonry with G.I Shed	Less than 5 Years
S4	Crusher storage shed	225m (NE)			G.I Shed	
S5	Existing quarry office	245m (SW)			Masonry with G.I Shed	
S6	Storage Shed	245m (SW)			G.I Shed	
S7	Crusher Plant	250m (NE)			G.I Shed	More than 5 Years



S1 – Existing quarry office – 135m (SW)



S2 – Existing quarry office – 145m (SW)



S3 & S4– Crusher office & Storage Shed – 220m (NE) & 225m (NE)



S5 & S6– Existing quarry office & Storage Shed – 245m (SW)



S7– Crusher Plant – 250m (NE)

As per filed study, there are 7 structures observed within 300m radius of the proposed site. All the structures within 300m radius are crusher plant and its related structures. Hence, there are no habitations/houses within 300m radius of the project site.

3.3. ESTABLISHMENT OF BASELINE FOR VALUED ENVIRONMENTAL COMPONENTS:

Information on the following components/parameters were collected to understand the existing scenario of the core and buffer area:

- ✚ Meteorological environment
- ✚ Air environment
- ✚ Water environment
- ✚ Noise environment
- ✚ Soil environment
- ✚ Biological environment
- ✚ Land use & Land cover
- ✚ Socio economic environment
- ✚ Hydrogeology

BASELINE DATA COLLECTION

Baseline environment data on various components of the environment in the study area were collected during Summer Season (October, to December, 2024) to assess the present scenario of the area. Details are given in the table given below.

Baseline data collection During Post Monsoon Season (October, to December, 2024)

Sr.No	Environment al Component	Primary data		
		Parameters	Frequency	Monitoring/ Sampling locations
1	Land	Agriculture, Habitation, Industry, Stony waste/ Quarries, Forest area, Plantation/ Vegetation, Open scrub, Water bodies etc.	Once in a Season	10 km radius study area
2	Meteorology	Temperature, Relative Humidity, Wind Speed, Wind Direction.	Hourly	1

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3	Air	PM10, PM2.5, SO2, NO2, CO & PAH	twice a week (24 hourly)	6
4	Noise	Equivalent noise levels in Leq in dB (A)	Once in a season (day & night time)	6
5	Water	Parameters as per IS 10500 - 2012	Once in a season	
A	Surface Water	Parameters as per IS 10500 - 2012	Once in a season	2
B	Ground Water	Parameters As per IS 2720/USDA	Once in a season	6
6	Soil	Parameters As per IS 2720/USDA	Once in a season	6
7	Biological Environment	Flora and Fauna	Once in a season	Study Area
8	Socio-Economic Environment	Socio-Economic Environment	Once in a season	Study Area

INSTRUMENTS USED FOR ENVIRONMENTAL BASELINE DATA COLLECTION

The following instruments were used at the site for environmental baseline data collection work.

- Respirable Dust Sampler with attachment for gaseous Pollutants, Envirotech APM 460.
- Fine Particulate Matter (FPS) Sampler APM 550
- Sound Level Meter Model Envirotech SLM - 100
- Digital D.O. Meter Model - 831 E (CPCB Kit)
- Weather Monitoring Station Model Enviro WM 271
- Water Level Indicator and
- Global Positioning System (GPS) Apart from collecting samples of air, water, noise and soil from representative sampling points given in proceeding sections, the data on land use, vegetation and agricultural crops were also collected by the field team through interaction with a large number of local inhabitants of the

study area and different Government departments/agencies. This provided an excellent opportunity to the members of the field team for obtaining clear scenario of the existing environment of the study area.

3.3.1 METEOROLOGICAL ENVIRONMENT

Meteorological conditions prevailing in the buffer zone is given below

Climate

The climate of Tirunelveli District is tropical. The period from the weather is pleasant during the period from November to January. The normal temperature varies between 24.4°C and 27.1°C mean minimum, whereas the hottest climate experiences from March to May with mercury reaching 38.5°C at the highest.

Rainfall

Tirunelveli district generally experiences hot and humid climate conditions. The district receives rain under the influence of both southwest and northeast monsoons. Most of the precipitation occurs in the form of cyclonic storm caused due to depressions in Bay of Bengal chiefly during NE monsoon period. The SW monsoon is highly erratic and summer rains are negligible. Rainfall of this area is about 800mm to 900 mm during the both NE & SW monsoons. The excess rainfall is 192% (Source: Mausam.imd.gov.in)

Rainfall received from 2017 to 2021 is given below

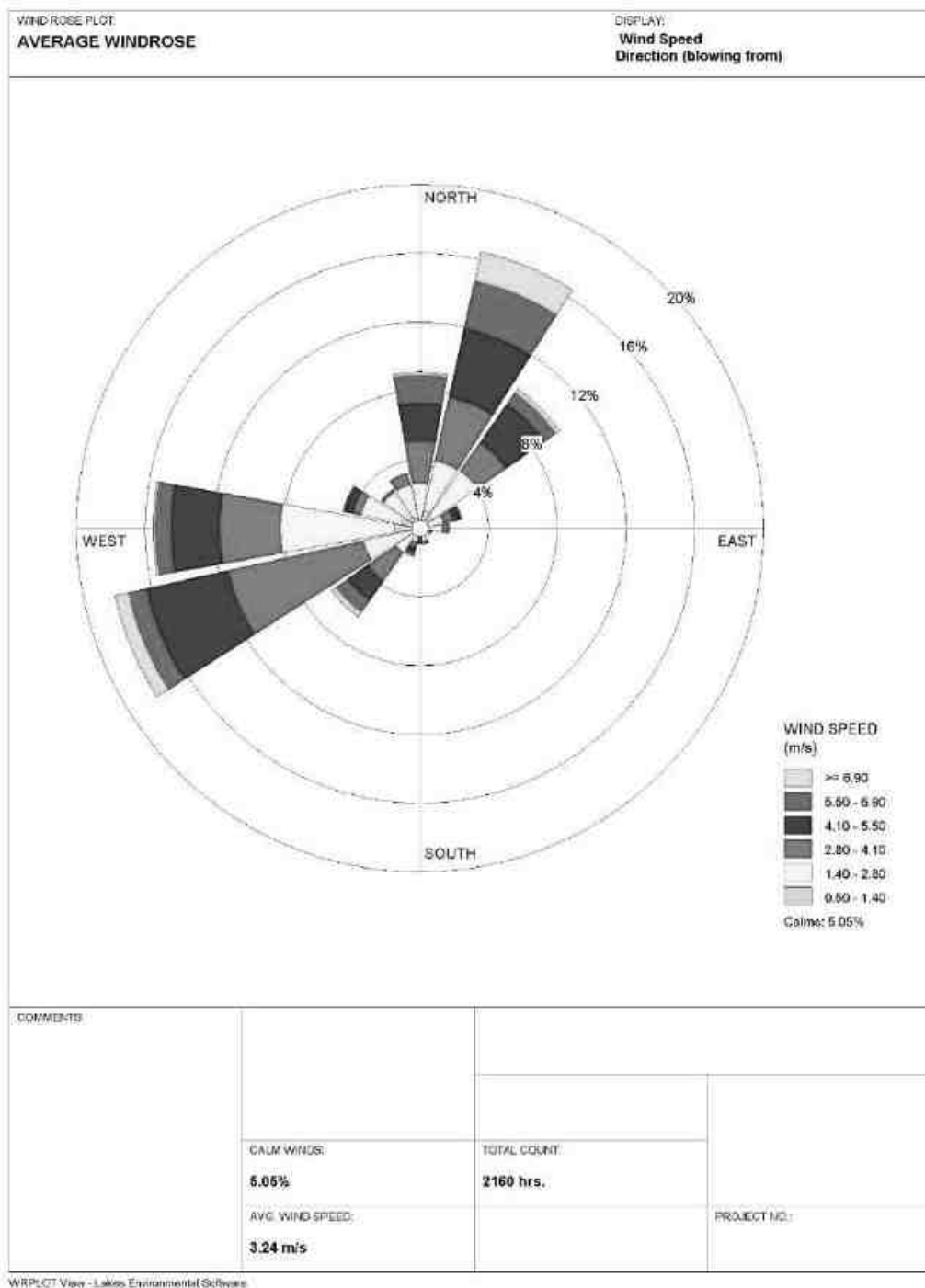
Table 3.3 Rainfall data					
Actual Rainfall in mm					Normal rainfall in mm
2017	2018	2019	2020	2021	
1251.3	799.2	1071.9	1034.5	1592.2	985

Relative Humidity

The relative humidity, in general around the year is between 55 and 65% in most parts of the district, except during the north-east monsoon season when it is over 65%. However, the coastal areas will be comparatively more humid.

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FIG 3.8 WIND ROSE PLOT DURING OCTOBER TO DECEMBER 2024
WINDROSE FLOWING FROM



Meteorological data of the project area

The meteorological data collected in the study area from OCTOBER 2024 to DECEMBER 2024 which includes Temperature, Wind speed, Wind direction and Relative humidity. The predominant wind blows from West. The temperature of the area is reported to be 18°C to a maximum of 42°C during summer.

3.3.2 AMBIENT AIR MONITORING DATA

Ambient air quality monitoring has been carried out in 6 locations. One in the core zone and remaining five locations in the buffer zone areas. Monitoring locations have been chosen such that the measurement represents the overall air condition prevailing in the area. The study area represents mostly rural environment with stone mining quarries & crushers.

The regional climatologically data, was used as a guideline to know the predominant wind direction during study period. The locations were identified keeping in view predominant wind directions prevailing during study period, sensitive receptors, human settlements, and mining activities around.

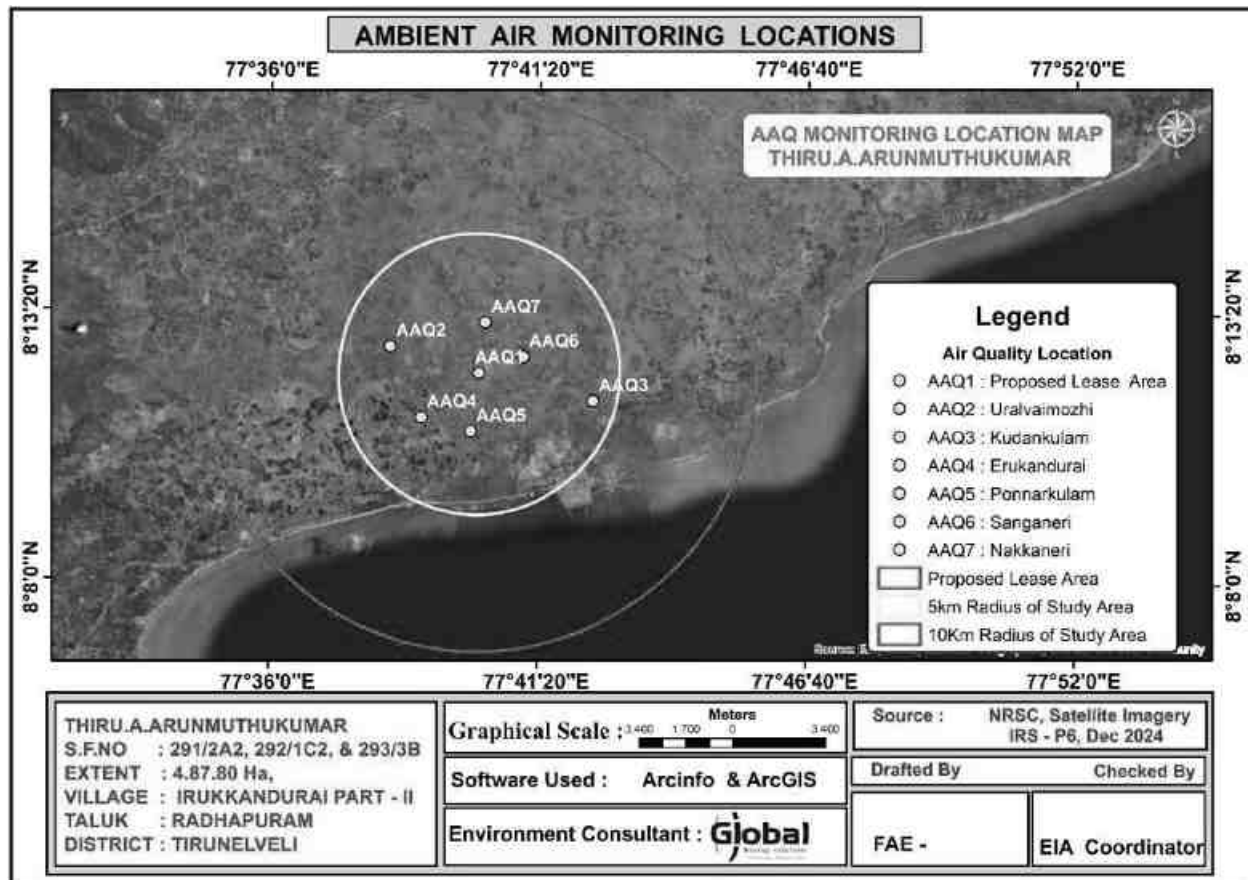
The levels of Respirable Particulate Matter (PM₁₀), Fine Particulates (PM_{2.5}), Sulphur Dioxide (SO₂) and Oxides of Nitrogen (NO_x) were monitored for establishing the baseline status. PM₁₀ were sampled with the help of Respirable Dust Samplers on filter papers and SO₂ & NO_x were absorbed in the respective absorption media in the impingers attached to RD samplers and analyzed Spectro-photometrically. PM_{2.5} was monitored with the help of Fine Particulate Samplers. The monitoring locations for ambient air study are given in Table – 3.3 and Figure 3.5 below.

Table 3.4: Details Of Ambient Air Quality Monitoring Locations				
S. No.	Station Code	Locations	Distance & Direction	Coordinates
1	AAQ 1	Proposed Mine Site	Core Zone	08°12'00.14"N & 77°40'05.01"E
2	AAQ 2	Uralvaimozhi	4km	8°12'26.51"N & 77°37'57.72"E
3	AAQ 3	Kudankulam	3.9km	8°11'34.55"N & 77°42'21.02"E

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Table 3.4: Details Of Ambient Air Quality Monitoring Locations				
S. No.	Station Code	Locations	Distance & Direction	Coordinates
4	AAQ 4	Erukkandurai	2.9km	8°11'19.21"N & 77°38'55.53"E
5	AAQ 5	Ponnaukulam	2.1km	8°10'57.42"N & 77°39'53.57"E
6	AAQ6	Sanganeri	1.6km	8°12'29.22"N & 77°40'57.17"E
7	AAQ7	Nakkaneri	1.8km	8°13'4.69"N & 77°40'26.93"E

FIG 3.9 BASE MAP OF AMBIENT AIR MONITORING LOCATIONS



The concentrations of various air pollutants at the 6 locations are given below. For all the components in the table, the unit are in $\mu\text{g}/\text{m}^3$.

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

Table.3.5 Results of Air sampling Analysis in 7 locations

Station ID	Min	Max	Avg.
Particulate matter PM₁₀ - (µg/m³)			
AAQ-1	50.9	69.7	60.84
AAQ-2	49.1	64.5	56.2
AAQ-3	47.4	60.9	54.4
AAQ-4	49.4	69.4	60.5
AAQ-5	47.3	58.7	53.1
AAQ-6	46.6	59.0	52.4
AAQ-7	44.2	56.6	50.0
CPCB NAAQS 2009 for PM₁₀ - 100 µg/m³			
Particulate matter PM_{2.5} (µg/m³)			
AAQ-1	24.2	33.3	29.0
AAQ-2	23.5	31.0	27.0
AAQ-3	22.6	29.1	25.9
AAQ-4	23.4	32.8	28.5
AAQ-5	22.4	27.9	25.2
AAQ-6	22.2	28.2	25.0
AAQ-7	21.6	27.6	24.4
CPCB NAAQS 2009 for PM_{2.5} - 60 µg/m³			
Sulphur Di-oxide as SO₂ (µg/m³)			
AAQ-1	5.7	8.8	9.3
AAQ-2	5.7	8.5	7.0
AAQ-3	5.3	8.4	6.6
AAQ-4	5.5	8.7	6.9
AAQ-5	4.8	7.7	6.1
AAQ-6	5.1	7.8	6.4
AAQ-7	4.2	6.9	5.5
CPCB NAAQS 2009 for SO₂ - 80 µg/m³			
Oxide of Nitrogen as NO₂ (µg/m³)			
AAQ-1	9.3	12.5	10.68
AAQ-2	5.3	8.4	6.6
AAQ-3	8.6	11.1	9.7
AAQ-4	9.1	12.0	10.3
AAQ-5	7.8	10.5	9.1
AAQ-6	8.0	10.8	9.3
AAQ-7	6.1	9.5	10.9
CPCB NAAQS 2009 for NO₂ - 80 µg/m³			

The results are summarized in graph and given as below Fig. 3.5

FIGURE 3.10 AMBIENT AIR QUALITY DATA – PM₁₀

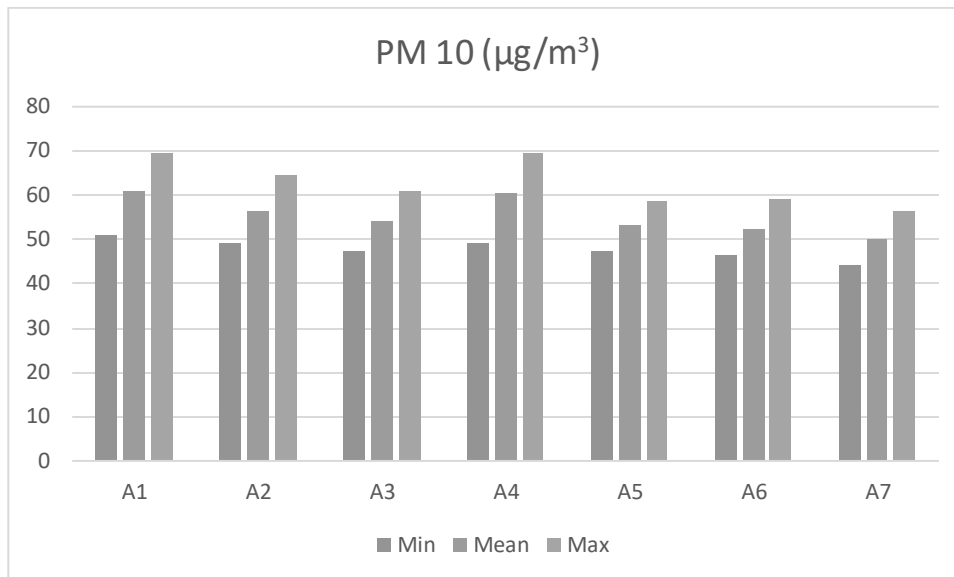


FIG 3.11 AMBIENT AIR QUALITY DATA – PM_{2.5}

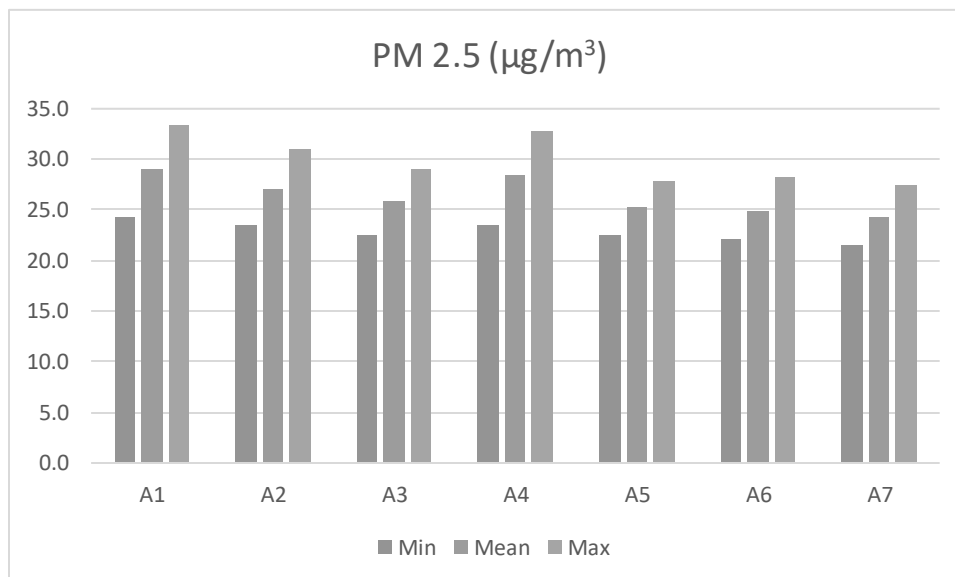


FIG 3.12 AMBIENT AIR QUALITY DATA - Sulphur Di-Oxide

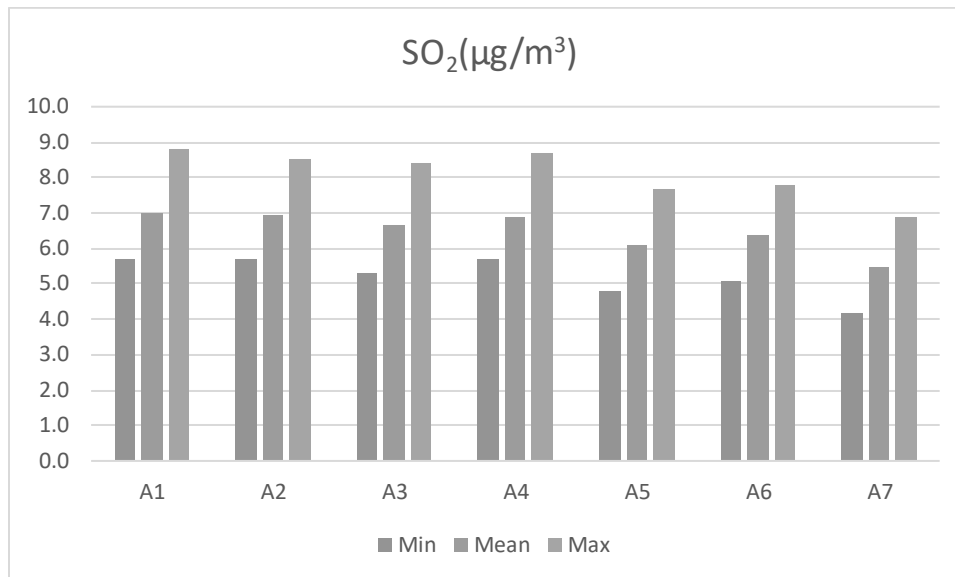
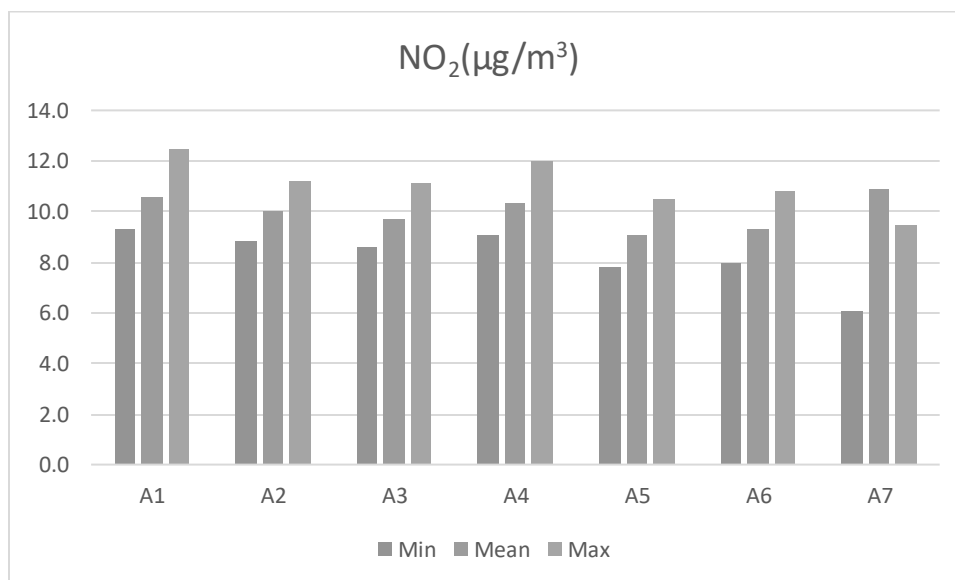


FIG 3.13 AAQ DATA – Nitrogen Di Oxide



From the above results, it is observed that the ambient air quality with respect to PM₁₀, PM_{2.5}, SO₂, and NO₂ at all the monitoring locations was within the permissible limits specified by CPCB.

3.3.3 WATER ENVIRONMENT

Assessment of baseline data on water environment includes:

- Identification of water resources
- Collection of water samples
- Analyzing water samples collected for physico-chemical parameters as per standards.

Ground Water

The rainfall is the main source for the availability of water both in surface and sub-surface. The quantum of rainfall varies every year depending upon the monsoon. However, the extraction of surface and sub-surface water is increasing year by year. It leads to environmental impact on the water sources like depletion of water level, deterioration of water quality. It makes the demand for the quantification of available water and also its quality for various purposes like agriculture, industries, drinking and domestic purposes. Total six (07) ground water monitoring locations were identified for assessment in different villages around the project site based on the usage of sub surface water by the settlements/ villages in the study area. The groundwater results are compared with the acceptable and permissible water quality standards as per IS: 10500 (2012) for drinking water. Groundwater quality monitoring locations and results are given in Table 3.5 and Figure 3.10.

Sampling Locations

Two (2) surface water samples and six (6) ground water samples were collected from the study area and were analyzed for physio-chemical, heavy metals and bacteriological parameters in order to assess the effect of mining and other activities on water bodies. The samples were analyzed as per the procedures specified by CPCB, IS-10500:2012. The water sampling locations are given in Table 3.5 and shown as Figure 3.11.

The monitoring locations were selected based on:

- Location of the major water bodies
- Location of project site,

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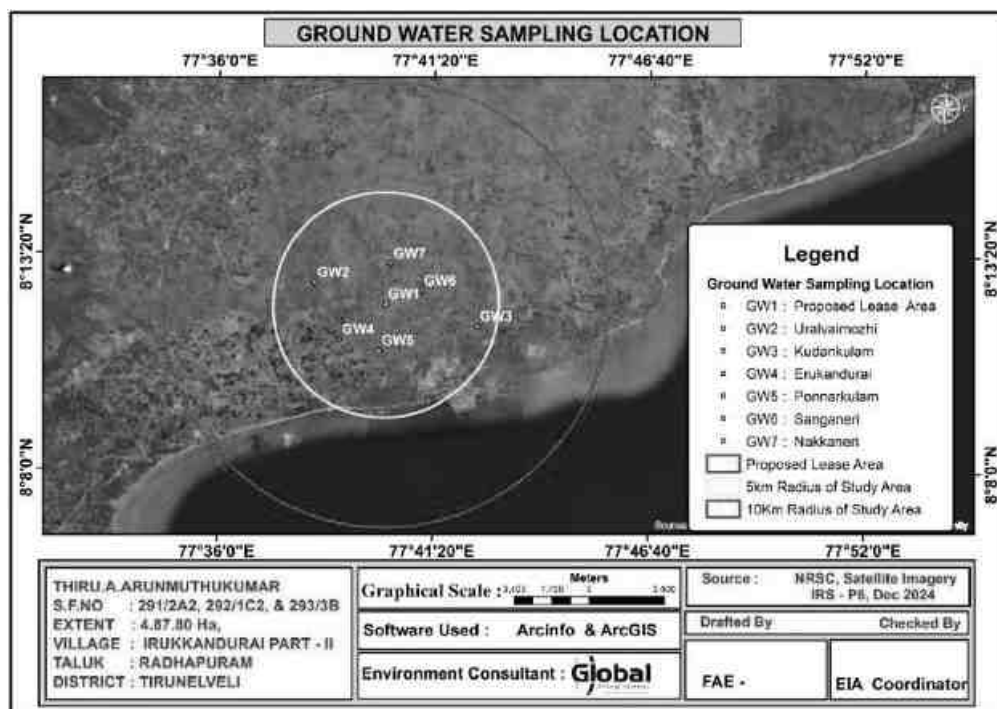
- Likely areas that can represent baseline conditions

Water bodies nearby

Table 3.6 Water Sampling Locations

S.NO	Location Code	Monitoring Locations	Latitude and longitude
Ground Water			
1	GW1	MINE LEASE AREA	08°12'00.14"N & 77°40'05.01"E
2	GW2	URALVAIMOZHI	8°12'26.51"N & 77°37'57.72"E
3	GW3	KUDANKULAM	8°11'34.55"N & 77°42'21.02"E
4	GW4	ERUKKANDURAI	8°11'19.21"N & 77°38'55.53"E
5	GW5	PONNARKULAM	8°10'57.42"N & 77°39'53.57"E
6	GW6	SANGANERI	8°12'29.22"N & 77°40'57.17"E
7	GW7	NAKKANERI	8°13'4.69"N & 77°40'26.93"E 77°40'26.93"E

FIG 3.14 BASE MAP OF GROUND WATER SAMPLING LOCATIONS



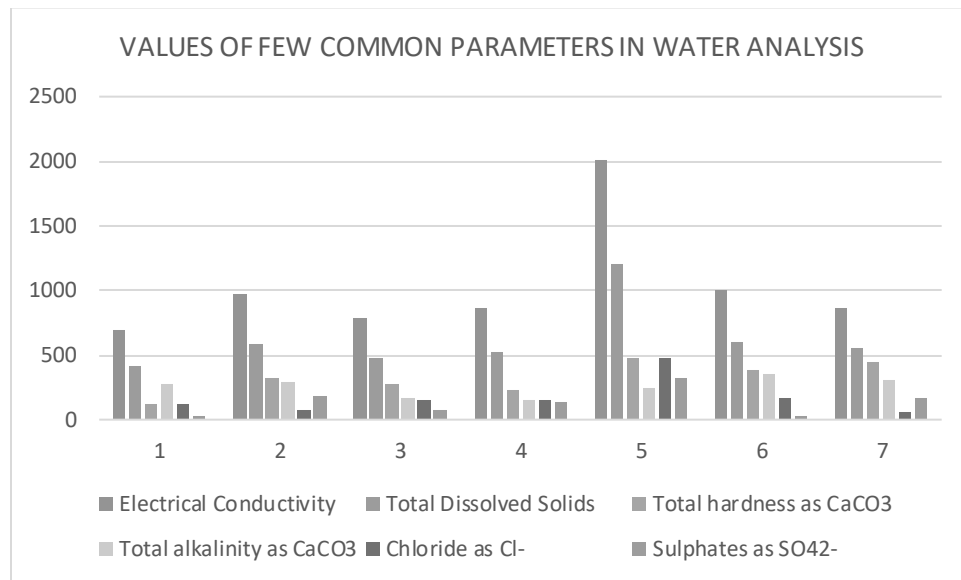
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The samples were analyzed by Shrient Analytical & Research Labs Private Limited; Chennai and the results are summarized below.

Table 3.7 Results of Ground Water sampling Analysis in 6 locations								IS:10500: 2012	
	GW1	GW2	GW3	GW4	GW5	GW6	GW7	Desirable	Permissible
Odour	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	Agreeable	Agreeable
Turbidity	<1	<1	<1	<1	<1.0	<1	<1	Agreeable	Agreeable
pH at 25 °C	8.28	7.55	7.53	7.91	7.7	7.22	7.01	6.5 - 8.5	No Relaxation
Electrical Conductivity	690.4	976.4	783.1	865.3	2006	1005	858.9	1	5
Total Dissolved Solids	415	580	472	520	1204	606	560	500	2000
Total hardness as CaCO ₃	117	321	274	234	476	387	439	1	15
Calcium as Ca	42.6	70.6	59.2	65.6	137.6	109	83.1	200	600
Magnesium as Mg	2.4	34.8	30.2	16.8	31.8	27.6	55.5	200	600
Calcium as CaCO ₃	106	176	148	164	344	272	208	75	200
Magnesium as CaCO ₃	11.5	145	126	70	132	115	231		
Total alkalinity as CaCO ₃	272	286	164	153	241	360	314		
Chloride as Cl ⁻	125	76.3	152	147	478	165	56.7	250	1000
Free Residual chlorine as Cl ⁻	BDL(D.L-0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL(D.L-0.2)	BDL(D.L-0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	30	100
Sulphates as SO ₄ ²⁻	35.6	183	68.9	138	323	35.2	173	45	No Relaxation
Iron as Fe	0.11	0.08	0.04	0.04	0.08	0.06	0.14	200	400
Nitrate as NO ₃	2.55	7.13	2.35	2.56	4.34	1.97	2.25	1	No Relaxation
Fluoride as F	0.32	0.53	0.42	0.46	0.58	0.35	0.66	0.1	0.3
Manganese as Mn	BDL(D.L-0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL(D.L-0.05)	BDL(D.L-0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	Not Specified	Not Specified

Some of the common parameters including EC, TDS, Total Hardness, Total Alkalinity, Chlorides and Sulphates in the 6 locations were plotted and the graph is provided below.

FIG 3.15 VALUES OF FEW COMMON PARAMETERS IN WATER ANALYSIS



All the values were found to be within the permissible limits.

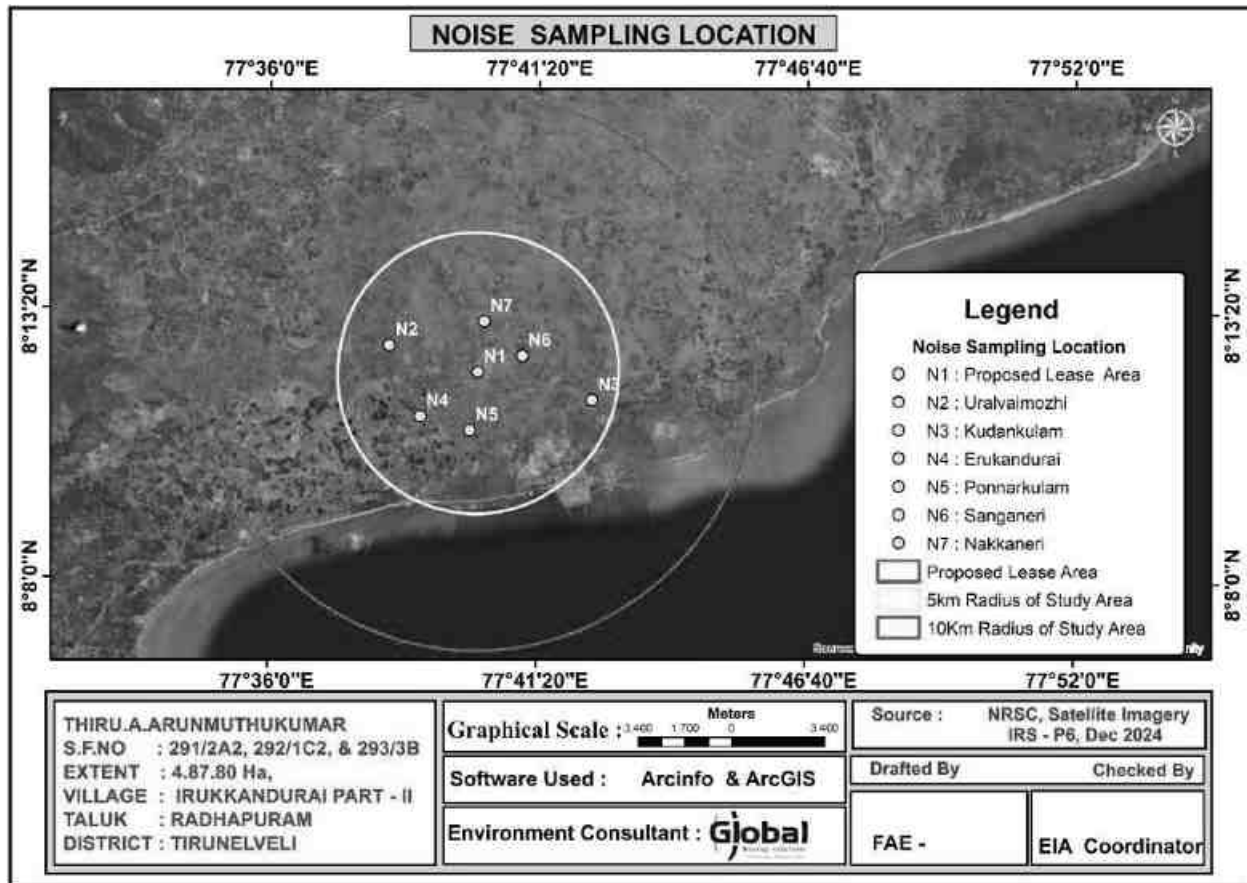
3.3.4 NOISE MONITORING

Noise level monitoring was calculated using a noise level meter by NABL Accredited lab and the results are summarized below.

The noise monitoring locations are given in Fig 3.12

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

FIG 3.16 BASE MAP OF NOISE MONITORING LOCATIONS

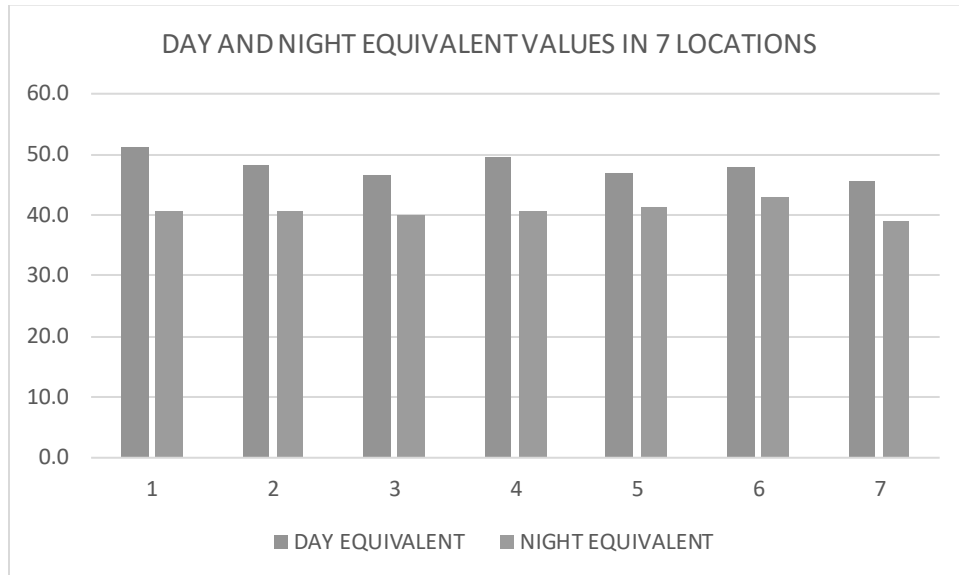


The results are given in Table below.

Table 3.8 Noise monitoring results					
S. No	Location	Day equivalent	Night equivalent	Day equivalent limits by CPCB	Night equivalent limits by CPCB
1	MINE LEASE AREA	51.1	40.8	75	70
2	URALVAIMOZHI	48.3	40.8		
3	KUDANKULAM	46.7	40.1		
4	ERUKKANDURAI	49.5	40.7		
5	PONNARKULAM	46.9	41.3		
6	SANGANERI	47.8	43.1		
7	NAKKANERI	45.5	38.9		

The results are plotted as below.

FIG 3.17 DAY AND NIGHT EQUIVALENT VALUES IN 7 LOCATIONS



All the values are found to be within CPCB norms.

3.3.5 SOIL SAMPLING ANALYSIS

Soil samples have been collected from the mine lease area and 6 other locations from Uralvaimozhi, Kudankulam, Erukkandurai, Ponnarkulam and Sanganeri Villages. The locations are shown in figure below.

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

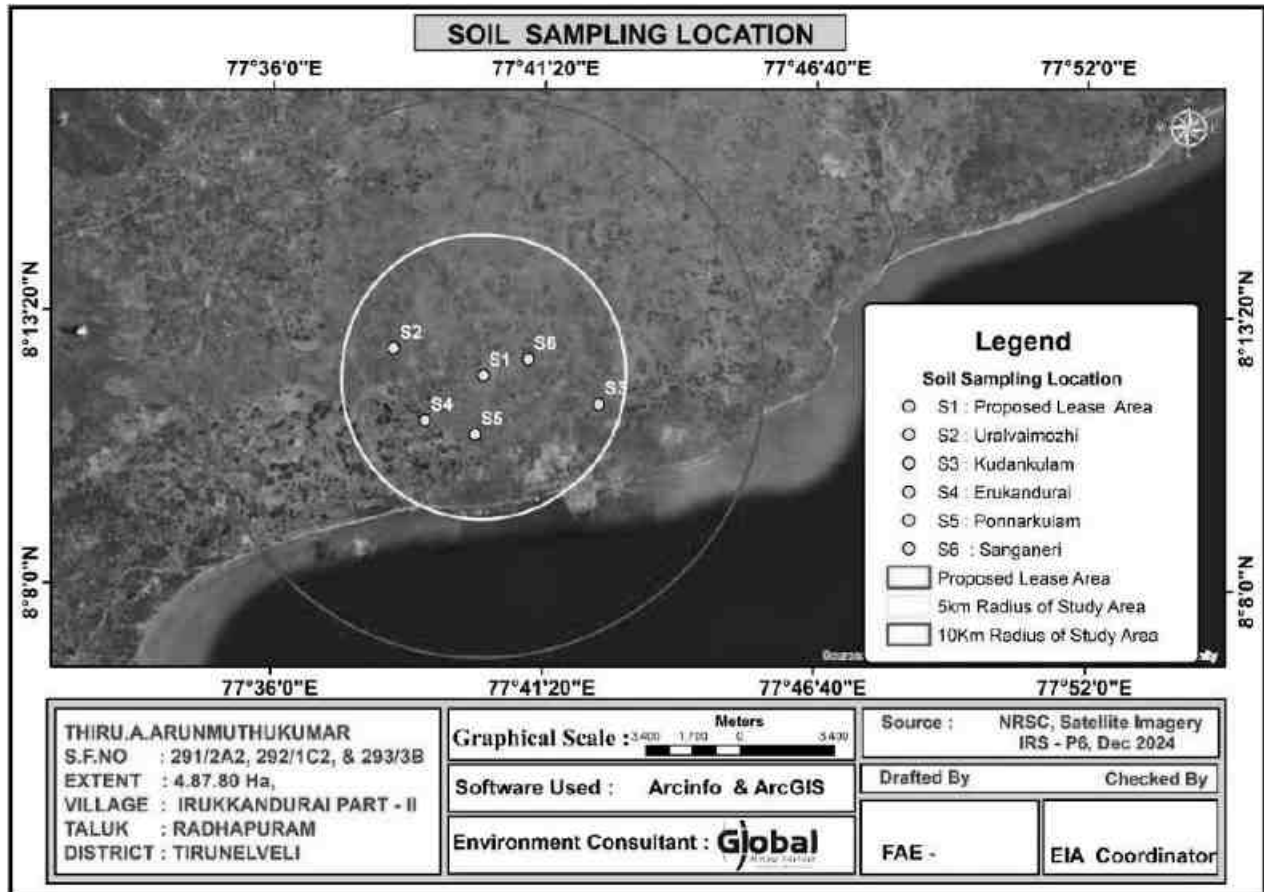


FIG 3.18 BASE MAP OF SOIL SAMPLING LOCATIONS

The results are summarized in the table below.

Table 3.9 Results of Soil Sample Analysis								
S. No	Parameter	Unit	S1	S2	S3	S4	S5	S6
S. No	Parameter	Unit						
1	pH at 25 °C	-	7.24	7.52	7.68	7.36	7.75	7.84
2	Electrical Conductivity	µmhos /cm	38.12	44.32	76.59	42.58	55.27	90.17
3	Dry matter content	%	98.21	96.58	95.27	98.59	97.85	96.76
4	Water Content	%	1.79	3.42	4.73	1.41	2.15	3.24
5	Organic Matter	%	0.61	1.24	0.78	0.72	0.36	0.92
6	Soil texture	-	Clay loam	Clay loam	Silt loam	Clay loam	Clay loam	Silt loam
7	Grain Size Distribution	%	30.32	30.26	21.32	31.65	32.45	23.12
	i. Sand							

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

8	ii. Silt	%	35.75	39.96	52.65	36.98	40.47	53.47
9	iii. Clay	%	33.93	29.78	26.03	31.37	27.08	23.41
10	Phosphorous as P	mg/kg	1.68	2.21	1.55	1.82	2.36	1.78
11	Sodium as Na	mg/kg	452	470	358	472	490	376
12	Potassium as K	mg/kg	784	802	652	798	820	672
13	Nitrogen and Nitrogenous Compounds	mg/kg	102	155	94.5	120	176	106
14	Total Soluble Sulphate	%	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)	BDL(D.L. 0.02)

3.3.6 BIOLOGICAL ENVIRONMENT

The biological study of the area has been conducted in order to understand the ecological status of the existing flora and fauna to generate baseline information and evaluate the probable impacts on the biological environment. The details are given below.

Flora in the study area

We have conducted field survey during study period. The flora population in each quadrant is summed up for the total population in the study area. Also, data from the State Forest department is used.

Core Zone

During the field visit, it is observed that there are no national parks / Sanctuaries / forests in the 10km buffer area. The study area is devoid of any major plantations.

Table 3.10 Flora in Core Zone			
S.No.	Scientific name	Vernacular/English name	Type of flora
1	Calotropis gigantea	Erukku	Shrubs
2	Cassia auriculata	Aavarai	
3	Achyranthes aspera	Nayuruvi	

Buffer zone

Only common trees, shrubs, bushes, etc. are found. The list is given below.

Table 3.11 Flora in Buffer zone			
S.No.	Scientific name	Vernacular/English name	Type of flora
1	Azadirachta indica	Neem	Trees
2	Carica papaya	Papaya	
3	Mangifera indica	Mango	
4	Acacia leucophloea	Velamaram	
5	Acacia nilotica	Karu- velamaram	
6	Moringa oleifera	Murungai	
7	Tamarindus indica	Puli	
8	Tectona grandis	Theku	
9	Manilkara zapota	Sappota	
10	Musa paradisiaca	Valzhilai	
11	Borassus flabelliformis	Panna-maram	
12	Ficus benghalensis	Alamaram	
13	Ficus religiosa	Arasamaram	
14	Phyllanthus emblica	Nelli	Shrubs
15	Calotropis gigantea	Yerukku	
16	Cassia auriculata	Aavarai	
17	Ricinus communis	Aamanakku	
18	Tecoma stans	Arali	
19	Aloe vera	Kathalai	Herbs
20	Catharanthus roseus	Nithyakalyani	
21	Acalypha indica	Kuppaimeni	
22	Coccinia grandis	Kovai	Climbers
23	Cissus quadrangularis	Pirandai	
24	Jasminum angustifolium	malli	
25	Ziziphus oenoplia	Ilandai	
26	Cymbopogon	Kanam	Grasses
27	Cyperus rotundus	Kora grass	
28	Cynodon dactylon	Arugu	

Fauna in the study area

There is no specific Fauna found within ML area. The buffer zone Fauna in the area is studied by direct observation method. Secondary data collected from Forest

department and the same is used in this report. People in the nearby locality were also consulted. The commonly found fauna in the area are given below.

Table 3.12 Fauna in buffer zone				
S.No.	Scientific name	Common name	Type of fauna	Schedule to which the species belong
1	Canis familiaris	Common dog	Mammals	IV
2	Felis catus domesticus	Domestic cat		IV
3	Golunda ellioti	Indian bush rat		IV
4	Funambus palmarum	Squirrel		IV
5	Lepus nigricollis	Indian hare		IV
6	Bos indicus	Domestic cow		IV
7	Common Crow	Corvus splendens	Birds	V
8	House Sparrow	Passer domesticus		IV
9	Common Myna	Acridotheres tristis		IV
10	Streptopelia chinensis	Pigeon		IV
11	Calotes versicolor	Lizard	Amphibia	IV
12	Ptyas mucosa	Snake		IV
13	Rana hexadactyla	Frog		IV

lush natural vegetation, mostly *prosopis*, with first onset of precipitation.

Methodology Adopted for the Land Use Study

Present study involves micro level analysis of landuse pattern showing 10 km radius and changes in landuse pattern using satellite data. This necessitates a careful analysis of satellite data adopting a well-defined methodology.

To cater the requirement, a preliminary assessment of terrain using digital analysis helping to infer relationship between terrain and landuse has been carried out. Such an approach provides lucid understanding of landuse units and enhances the knowledge on the landuse pattern assisting in impact assessment.

The knowledge base thus generated is used to delineate various landuse units while carrying out interpretation of the satellite image. The derived landuse information is transformed into a GIS based spatial database using geo-referencing techniques. Besides, a limited but well focused field investigation also carried out and coordinates of significant landuse units using handheld GPS (Global Positioning System) are gathered to be used as control points for geo-referencing. Interpreted landuse units are verified in the field to carryout necessary corrections wherever is required before preparing final landuse map.

Using the image elements such as color, tone, texture, size, shape and associated elements various landuse units are delineated following the categorization and nomenclature adopted for the national level landuse classification system as recommended by National Remote Sensing Centre (NRSC), Department of Space, Government of India. Some of the landuse units that are identified in the study area are listed in **Table No. 3.13** given below.

Field Verification:

Field verification involved collection, verification and record of the different surface features that create specific spectral signatures / image expressions on FCC. In the study area, doubtful areas identified in course of interpretation of imagery is systematically listed and transferred on to the corresponding SOI topographical maps for ground verification. In addition to these, traverse routes were planned with reference to SOI topographical maps to verify interpreted LU/LC classes in such a

manner that all the different classes are covered by at least 6 sampling areas, evenly distributed in the area. Ground truth details involving LU/LC classes and other ancillary information about crop growth stage, exposed soils, landform, nature and type of land degradation are recorded and the different land use classes are taken the Land use map.

Table No.3.13: Major Land use Units of the Study Area

Sr. No.	1st level classification	2nd level classification
1	Built-Up Or Habitation	Residential
		Commercial / Industrial
2	Agriculture	Crop / Fallow Land
		Plantation
3	Water Bodies	Reservoir / Lake / Pond
		River
4	Vegetation Cover	Scrub
		Open Vegetation
		Close Vegetation
		Mangroves
5	Waste Land	Open Without Scrub
		Open With Scrub
6	Others	Mudflow
		Salt Pan
		Brick Manufacturing

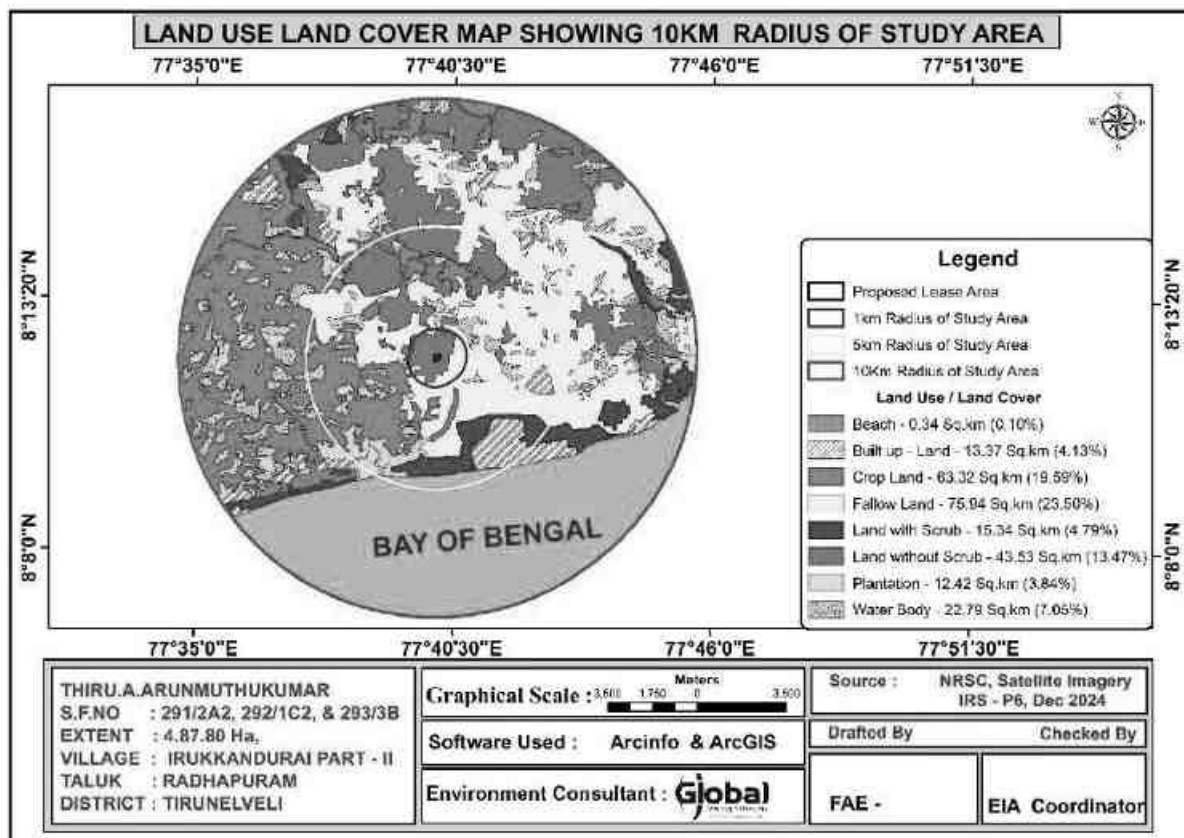
Land Use Pattern of 10 km Radial Buffer Area of Project Site

The existing land use pattern and land cover distribution of the whole acquired block, have been studied from the satellite imagery and subsequent ground checking during the field surveys.

It mainly comprises of agricultural land with bi-annual crops of Kharif (Kharif: Jowar, Bajra, Cotton, etc. Season: July to October) and Rabi (Rabi: Wheat, Rai etc. Season: December to March). The presence of the agricultural land is followed by few dense settlements Ezhacheri village natural or man-made pond etc. The shortage of rainfall, availability of ground water at deeper level and other climatic condition do not support good agricultural productivity inspite of having enough land. There is no demarcated forest land within the study area, however, some scattered forest is found throughout the 10 km radius, especially along the periphery of the villages.

The general landuse pattern of the core and buffer may be broadly classified into four major types – Buildup or habitation, Agriculture, Water Bodies, Waste land and Other categories. Under buildup or habitation category covered villages, town and infrastructure. Under agriculture category considered crop land/fallow land and plantation. Under the water body categories Reservoir/ lake, pond, River and stream. Under wasteland category considered land with scrub and land without scrub is interpreted. Lastly other category's covered Mines area and forest are interpreted under this category. These categories are delineated from the selected satellite image using image elements such as color, tone, texture, size, shape and associated elements. The delineated land use units are transformed into a spatial database in GIS environment. Estimated for area and representation of each category in the study area. The total area of LULC in the study area is calculated as 246.05 sq. km and spatial distribution of various LULC categories within buffer area are discussed below. The 5km and 10km radius lands map is shown above. The details are given below.

FIG 3.20 LAND USE/LAND COVER MAP OF THE STUDY AREA



Land Use / Land Cover Classification classified into first level classification and second level classification and major land use/land cover classes were demarcated in the study area following Level II classification. A thematic map of 1:50,000 scale was generated incorporating these classified categories considering the area of the project.

Built-up / Settlements

Settlements in the study area are generally small to medium size in stature and area scattered. Nakkaneri is the relatively larger settlements observed at the north part of the study area. Interpretation of settlement from the satellite image is based upon the image elements such as color, tone, texture and association. It is delineated by their typical red color. Association with linear features such as roads reaffirmed the presence of delineation of settlements. The spatial extent of settlement is estimated as 13.37 sq. km representing 4.13% of the study area .

Agricultural Land

Under the broad category of agriculture crop land, fallow land and plantation is delineated. Cultivation is mostly dependent upon river water for irrigational activities are good. River, Ponds and tanks in each village act as rainwater storage units and do support domestic requirement and even cultivation to some extent. Because of these conditions, minimal water requiring crops such as corn, sunflower, oil seeds, grams, millets and coriander are cultivated. Cultivation is the most predominant crop cultivated and even if it failed their stalks are used as fodder for cattle.

Crop and Fallow land are interpreted using their image elements such as light to green, smooth to medium tone, they are the second most predominant land use category delineated in the buffer area. As explained earlier, cultivation mostly depends upon river, canal and rainfall and majority of the land parcels are tilled and ready for cultivation with even a scanty Canal. Hence, cropland category is estimated at 22.79 Sq.km representing 19.59 % of the buffer area.

Wasteland

The last category of the landuse units in the study area is “Wasteland” which denotes land parcels that could not be utilized for cultivation even after conservation measures – such as land with scrub, land without scrub area.

Next to agricultural area, natural vegetation such as land with scrub forms the predominant LULC category of the buffer area. Land with scrub is sparse and delineated as patches scattered in all the parts of the buffer area. The spatial pattern of scrub suggests it is closely associated with water courses. This category occupies fallow land with an area of 74.94 sq.km representing 123.50 % of the total core and buffer area.

Land without scrub, on the other hand is interpreted using brown to white color, medium tone and medium texture and is generally restricted around land covered with scrub and fallow land. They occur as small patches and very minimal area covering 15.34 sq.km representing 4.79 % of the buffer area.

Water bodies

Many Streams small and big water bodies are seen in the study area distributed all over the study area. They support the domestic water requirements and for cattle. At some places, they may also use for irrigation purpose and are very limited. Few dry stream courses are also seen in the study area. In the satellite image, water bodies are interpreted by their light blue to greyish blue color, smooth tone and smooth texture.

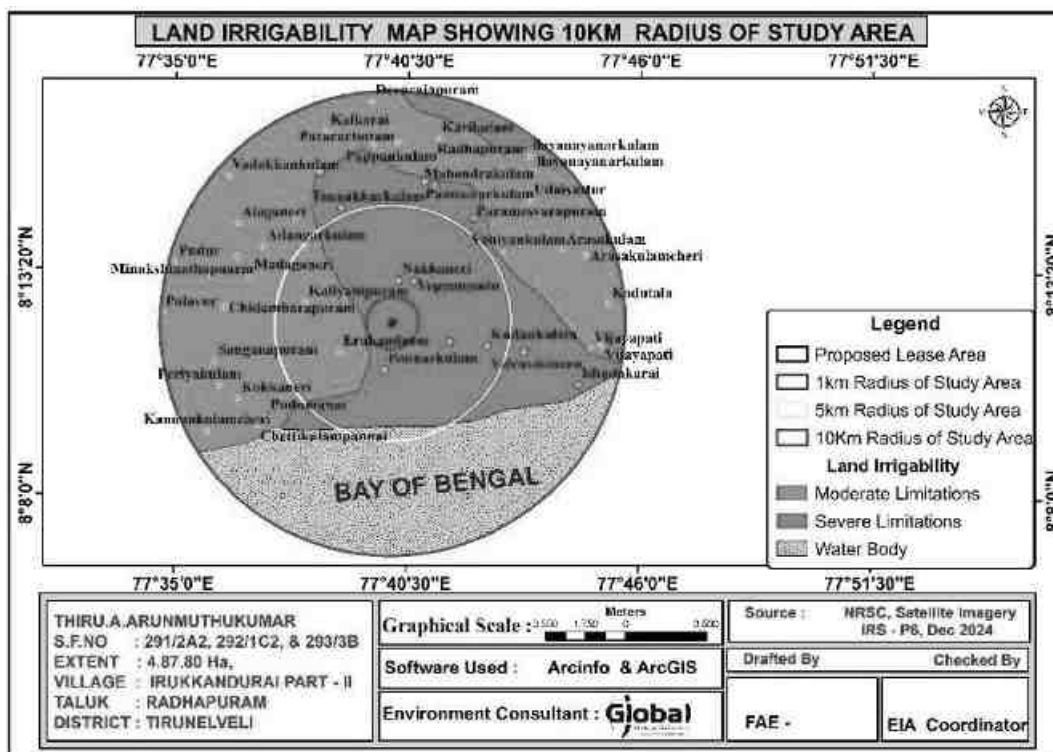
Most of the water bodies retain water for a shorter period after precipitation due to the soil constraint and hence go dry soon. Spatial extent of rivers, stream and water bodies is estimated at 22.79 sq.km and 7.05 %.

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

Table No. 3.14: Major Land Use Units of the Study Area in Percentage

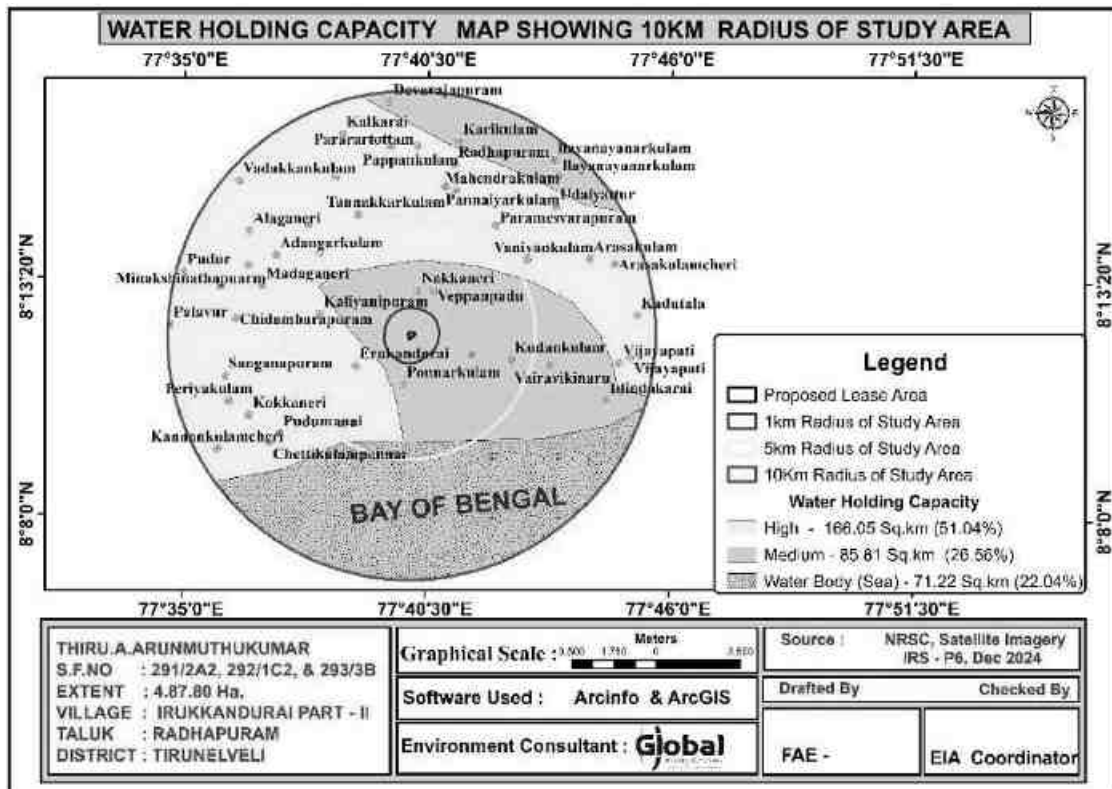
S. No	1st Level Classification	Area (sq.km)	in Percentage (%)
1	Built-up or habitation	13.37	4.13
2	Agriculture	63.32	19.59
3	Water bodies	22.79	7.05
4	Fallow Land	74.94	23.50
5	Beach	0.34	0.10
6	Land with scrub	15.34	4.79
7	Land without scrub	43.53	13.47
8	Plantation	12.42	3.84
Total		246.05	100

FIG 3.21 LAND IRRIGABILITY MAP



Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

FIG 3.22 WATER HOLDING CAPACITY



3.3.8 SOCIOECONOMIC ENVIRONMENT

The socio-economic environment of the study area is studied by conducting primary sites through site visits and conducting sample surveys. The secondary data obtained from Census 2011 is also used. The following data area collected from secondary data:

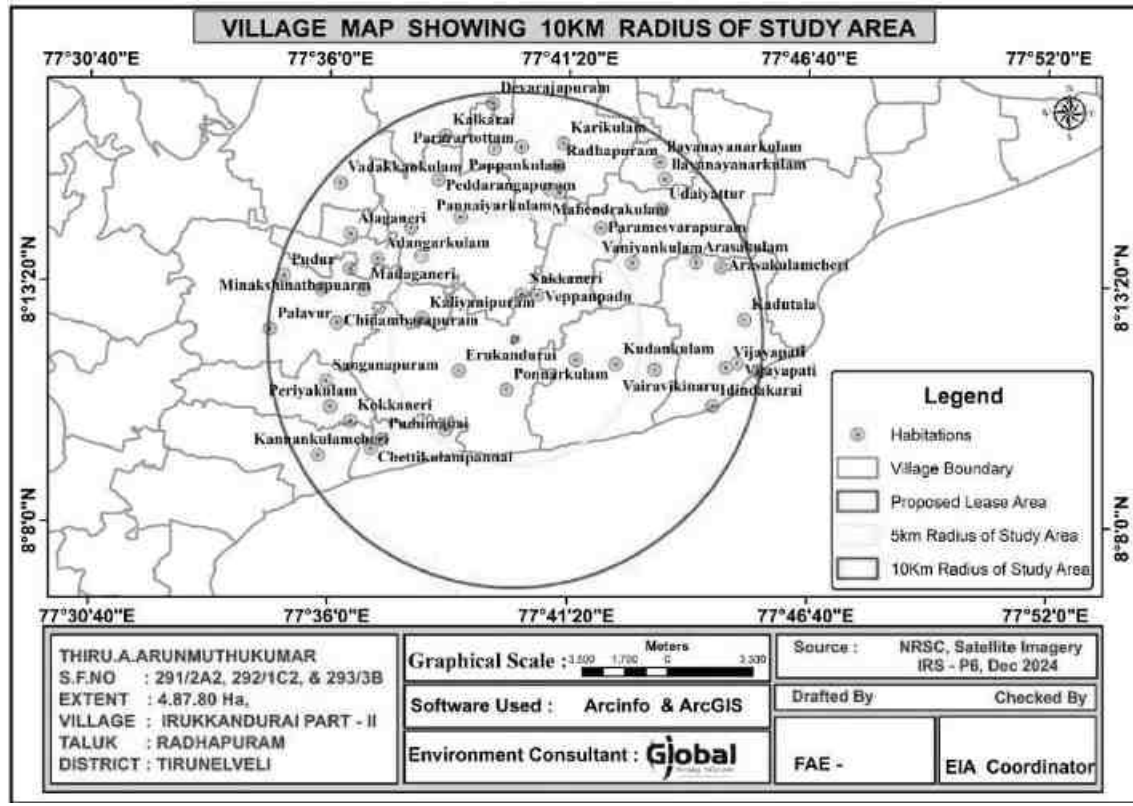
- Demographic pattern.
- Health pattern
- Occupational structure.

DETAILS OF VILLAGES

The profile of the villages located in the study area is given in Fig 3.16 below.

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

FIG 3.23 VILLAGE MAP OF THE STUDY AREA



DETAILS OF VILLAGES

The project is located in Tirunelveli Taluk, Tirunelveli District. The total population is 135488 which comprise of 67738 males and 67750 females. There are 36 rural villages and one urban area in the study area. List of villages are given below.

Table 3.15 Village details in study area				
S.No.	Village/Town Name	Radius	Taluk Name	District Name
1	Melathiruvengadanathapuram	1-5km	Palayamkottai	Tirunelveli
2	Kilathiruvengadanathapuram			
3	Munnirpallam			
4	Tharuvai			
5	Araikulam			
6	Kongandanparai			
7	Melathidiyur			
8	Kuravankulam			
9	Thidiyur			
10	Kondanagaram	6-10km	Tirunelveli	Tirunelveli
11	Palavoor			
12	Suttamalli			

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

13	Thenpathu			
14	Pettai			
15	Kunnathur			
16	Tirunelveli (M Corp.)			
17	Reddiarpatti			
18	Sengulam			
19	Pudukkulam			
20	Ponnakkukdi			
21	Gangainadarkulam			
22	Cheranmadevi (TP)			
23	Pathamadai (TP)			
24	Melacheval (TP)			
25	Gopalasamudram (TP)			
26	Thiruviruttanpuli			
27	Karisalpatti			
28	Venkatarengapuram			
29	Singikulam (NEW)			
30	Melkarai			
31	Thottakudi			
32	Poolam			
33	Tennirkulam			
34	Singikulam (OLD)			
35	Kilakaduvetti			
36	Karanthaneri			

Table 3.16 Population profile of the study area		
Particulars	No of Population	Percentage (%)
A. Population break-up by Gender		
Male Population	67738	49.99
Female Population	67750	50.00
Total	135488	100
B. Population break-up by Caste		
Scheduled Caste	13676	10.09
Scheduled Tribes	13968	10.31
Others	107844	79.60
Total	135488	100
C. Literacy Level		
Male Literate Population	55113	40.68
Female Literate Population	48964	36.14
Male Illiterate	12625	9.32

Female Illiterate	18786	13.87
Total	135488	100
D. Occupational structure		
Main workers	51908	
Marginal workers	10444	
Total Workers	62352	46.02
Total Non-workers	73136	53.97
Total	135488	100

The above table shows that the male and female population ratios are almost equal. Among the total population 10.31 % belong to Scheduled Tribes, 10.09 % are Scheduled Caste and the balance 79.60 % people belong to other castes. Among the total population, 76.82 % of the people are literate. Among the total population, 9.32% are literate males and 13.87 % are literate females. This shows that the male literates are higher than the female literates. The results are plotted in figures below.

FIGURE 3.24 GENDER-WISE POPULATION DISTRIBUTION

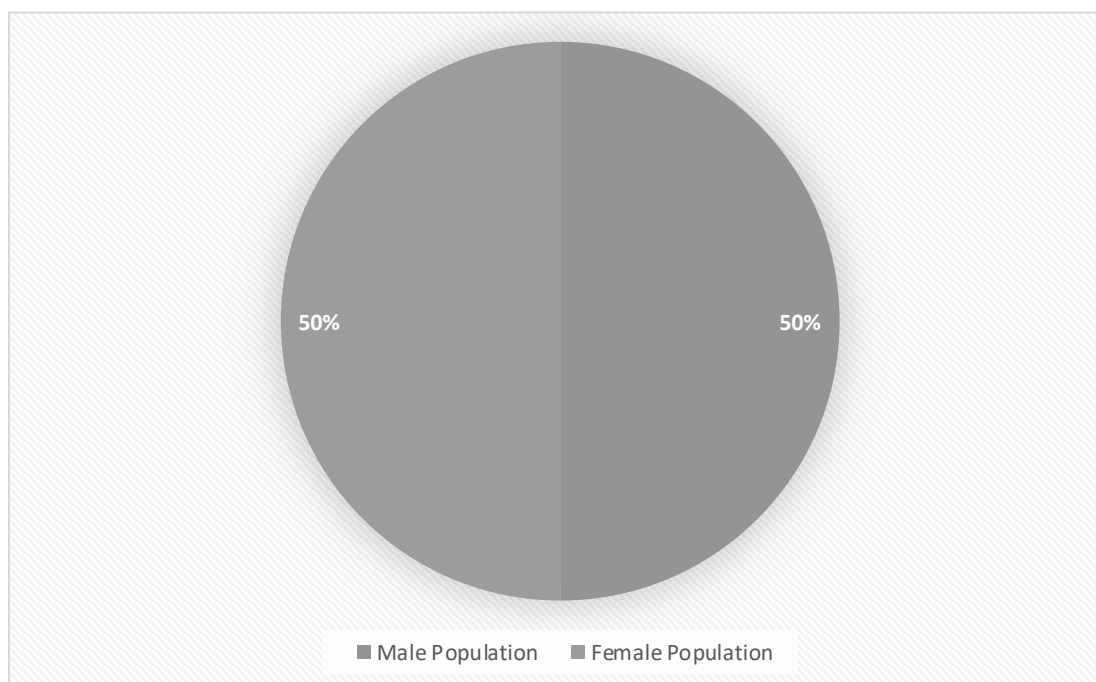


FIGURE 3.25 GENDER WISE LITERACY DISTRIBUTION

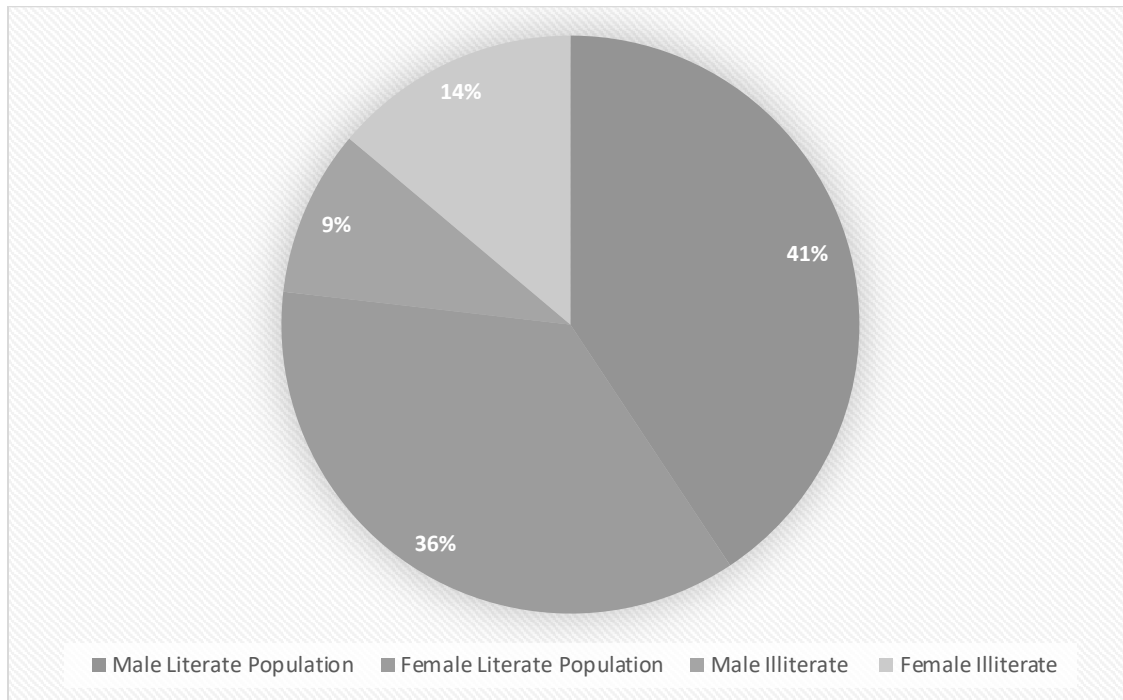
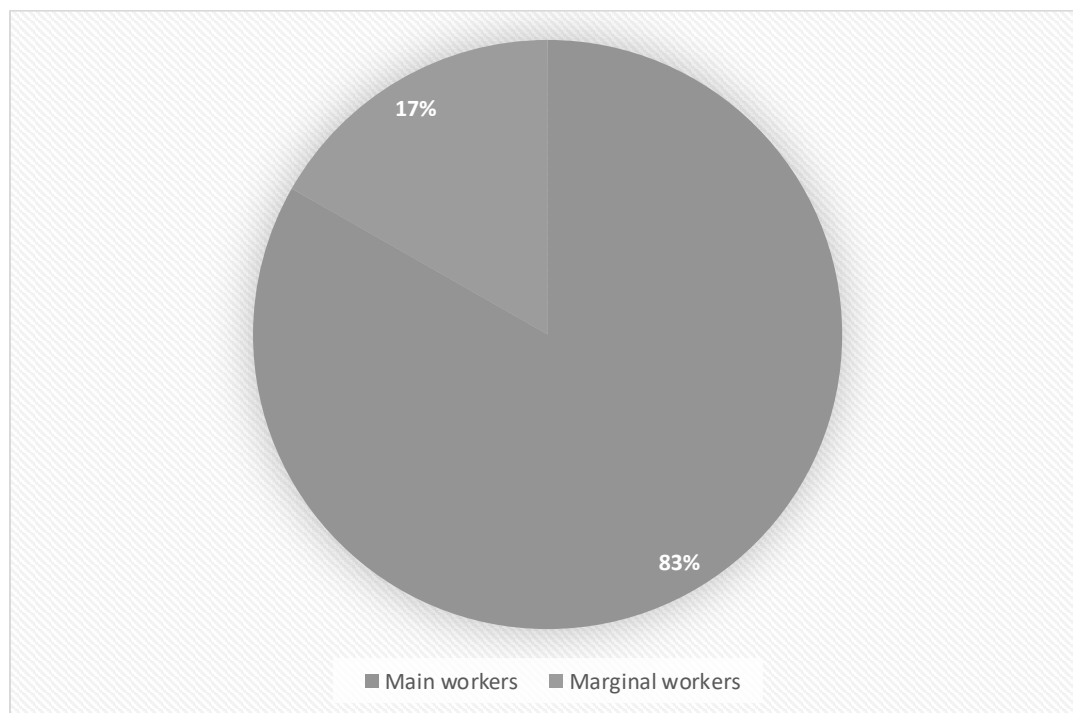


FIGURE 3.26 OCCUPATIONAL STRUCTURE WITHIN BUFFER ZONE



Infrastructure facilities in the study area

Education

Table 3.17 Educational infrastructure		
S. No.	Particulars	Available in village(Nos)
1	Govt. Primary School	Palayamkottai - 20
2	Govt. Middle School	26
3	Govt. Secondary School	17
4	Govt. Senior Secondary School	10
5	Govt. Arts and Science Degree College	32
6	Govt. Engineering College	0
7	Govt. Medicine College	0
8	Govt. Management Institute	0
9	Govt. Polytechnic	0
10	Govt. Vocational Training School/ITI	0

In the study area, there are totally 32 Primary Schools functioning in these 26 urban areas. Among them 17 villages have 3 primary school, 6 villages have 2 primary schools & 2 villages have more than 2 primary school.

Healthcare

In the study area, the following facilities are available.

Table 3.18 Medical Infrastructure		
S.No.	Particulars	Available in village (Nos)
1	Community Health Centre	5
2	Primary Health Centre	3
3	Primary Health Sub Centre	15
4	Maternity And Child Welfare Centre	16
5	TB Clinic	5
6	Hospital Allopathic	0

Other Infrastructure

The other infrastructure facilities available are given below.

Table 3.19 Other Infrastructure

S.No.	Particulars	Available in village
1	Tap Water-Treated	32
2	Covered Well	12
3	Hand Pump	16
4	Tube Wells/Borehole	14
5	Post office	6
6	Public bus services	23
7	Commercial Bank	5
8	Cooperative bank	10

Sample Survey

The expert visited 3 villages in the study area namely Tharuvai, Sengulam and Melathidiyur villages. Discussions were held with the people from nearby locality to study the social and economic conditions prevailing in the area. The expert also visited nearby hospitals, primary health centres and Tharuvai. The following observations were made.

Primary schools are available in many villages. For hospital facilities, people in the locality have to go to hospital in Tharuvai which is about 1.3 km from the lease area. Major schools with higher secondary and senior secondary schools are located in Tharuvai. The major Tharuvai Union located in the area is Tirunelveli. Facilities like petrol pump stations, ATM facility are available in Tharuvai.

Social infrastructure available are provided below:

Table 3.20 Social infrastructure available

Sl.No	Details	Village name	Distance
1	Post office	Nakkaneri	1.8km - N
2	Police station	Kudankulam	3.2km -SE
3	Town	Radhapuram	7.0km -N
4	DSP office	Nagercoil	26.0km -W
5	Register office	Radhapuram	7.0km -N
6	Hospital	Radhapuram	7.0km -N
7	School	Nakkaneri	2.0km -N
8	Petrol bunk	Ponnarkulam	2.2km -S
9	Panchayat union	Radhapuram	7.0km -N

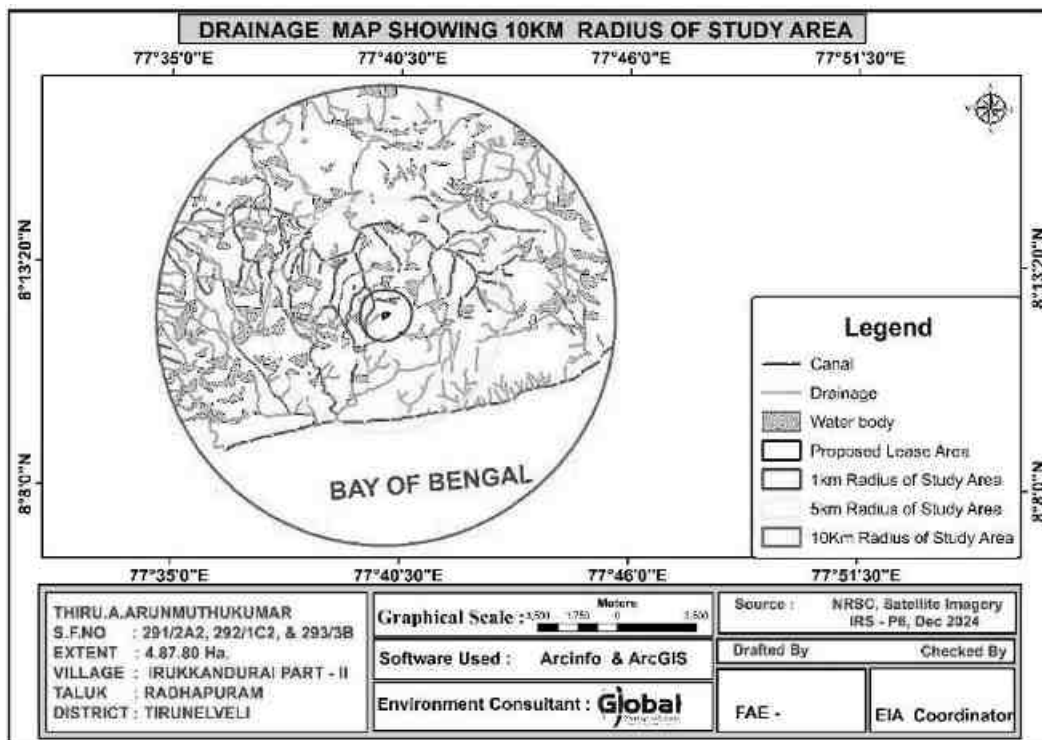
3.3.9 HYDROGEOLOGY OF THE STUDY AREA

There is kuttai is located at a distance of 410 m in North and Radhapuram Canal is located at a distance of 3.1 km in North West direction of lease area and Hanuman Nadi at the distance of 3.3km in south west and Uppar rover at a distance of 52km in South West the hydrological and hydrogeological pattern of the study area is studied in detail using satellite imagery.

HYDROGEOLOGICAL STUDY

To assess the hydrogeological condition of the surrounding proposed mine lease area. The study area is located in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State is considered to understand the nature of the general hydrogeological conditions of the surrounding proposed mine lease area.

FIGURE 3. 27 10 KILOMETER RADIUS OF THE DRAINAGE MAP



PHYSIOGRAPHY AND DRAINAGE

Physiography: The area applied for quarry lease is exhibits plain topography covered by rough stone and Gravel formation. The massive Charnockite formation is clearly

visible right from the surface and gentle towards Southwestern side of the area, the altitude of the area is above 90 m (maximum) from MSL.

Drainage: The drainage pattern study reveals that from the proposed mine lease area with around 1 Km radius and 10 Km study observed in Figure 3.20. There is kuttai is located at a distance of 410 m in North and Radhapuram Canal is located at a distance of 3.1 km in North West direction of lease area and Hanuman Nadi at the distance of 3.3km in south west and Uppar rover at a distance of 52km in South West.

GEOLOGY, GEOMORPHOLOGY AND SOIL

Geology:

Geologically Tirunelveli District is mostly underlain by the Archaean crystalline and metamorphic complex. The geology of the district is complicated due to recurring tectonic and magmatic activities occurred during. Pre-Cambrian period. Hornblende Biotite Gneisses are the oldest rocks of the district. It is very fissile and present widely in plains. The gneisses are highly weathered upto 30 m at some places.

The Charnockites are coarse grained, massive and foliated at places and their colour is bluish dark to grey. They are the second largest rock type present in the district. They are massive and less weathered than the gneisses. They exhibit 2 to 3 distinct set of joints and most of them are vertical with steep dips. Iron ore deposits associated with quartz feldspathic gneiss and garnetiferous quartz gneisses are present in some areas. These rocks are highly folded and jointed and less weathered. Quartzite and crystalline lime stones are exposed in patches in north and central parts of the district. The thickness of these bands varies from a few meters to ten meters and the length extends to few kilometers. Numerous lenses of dunite with magnesite veins of various dimension are exposed within gneiss .There are number of basic dykes present in the study area. Granites are found in some parts of the district. They are massive and jointed poorly. Several faults and shears are occurring mostly with north east-southwest trend. They are expected to influence the course of groundwater movement, its storage and developmental potentials in the district. Regional Geology map for the 10 Km radius from the proposed project site is given as Figure 3.23.

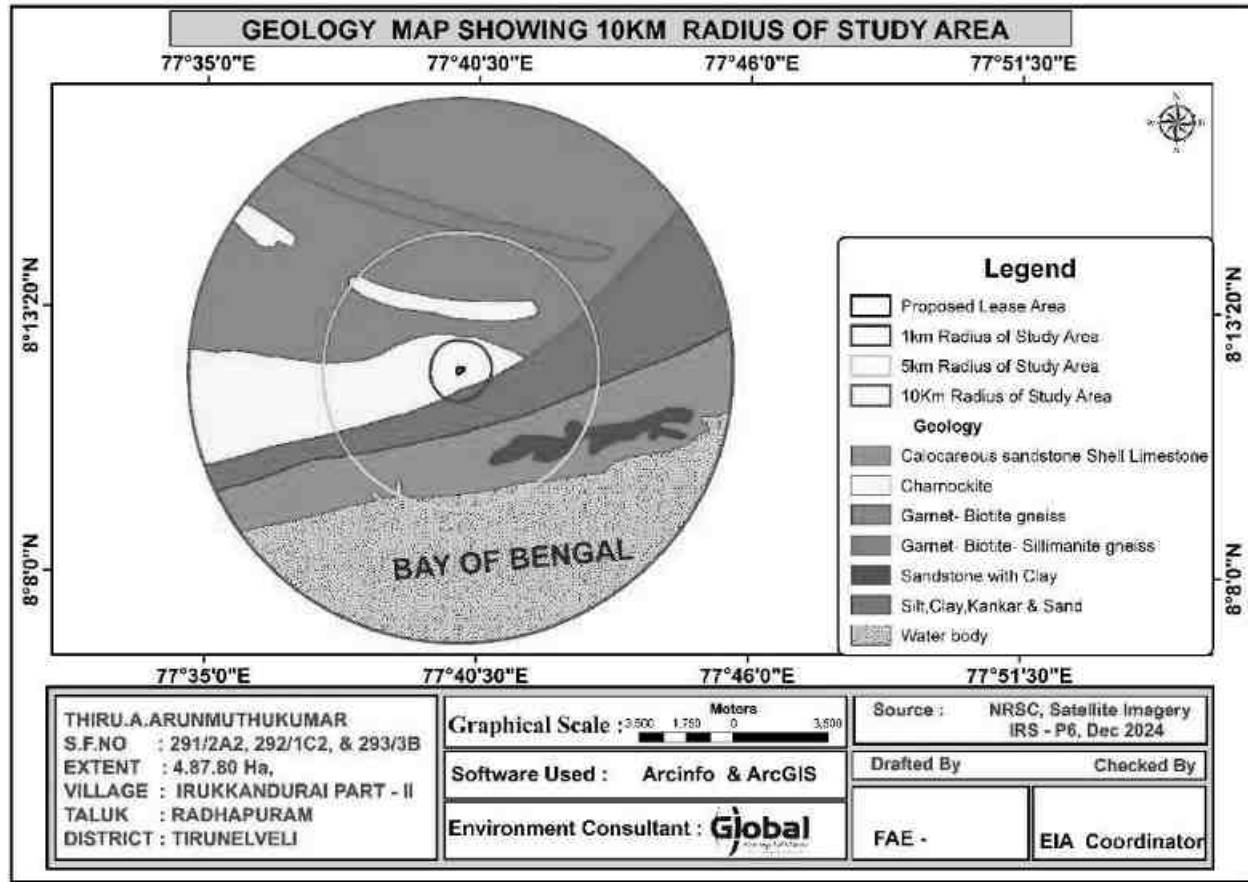
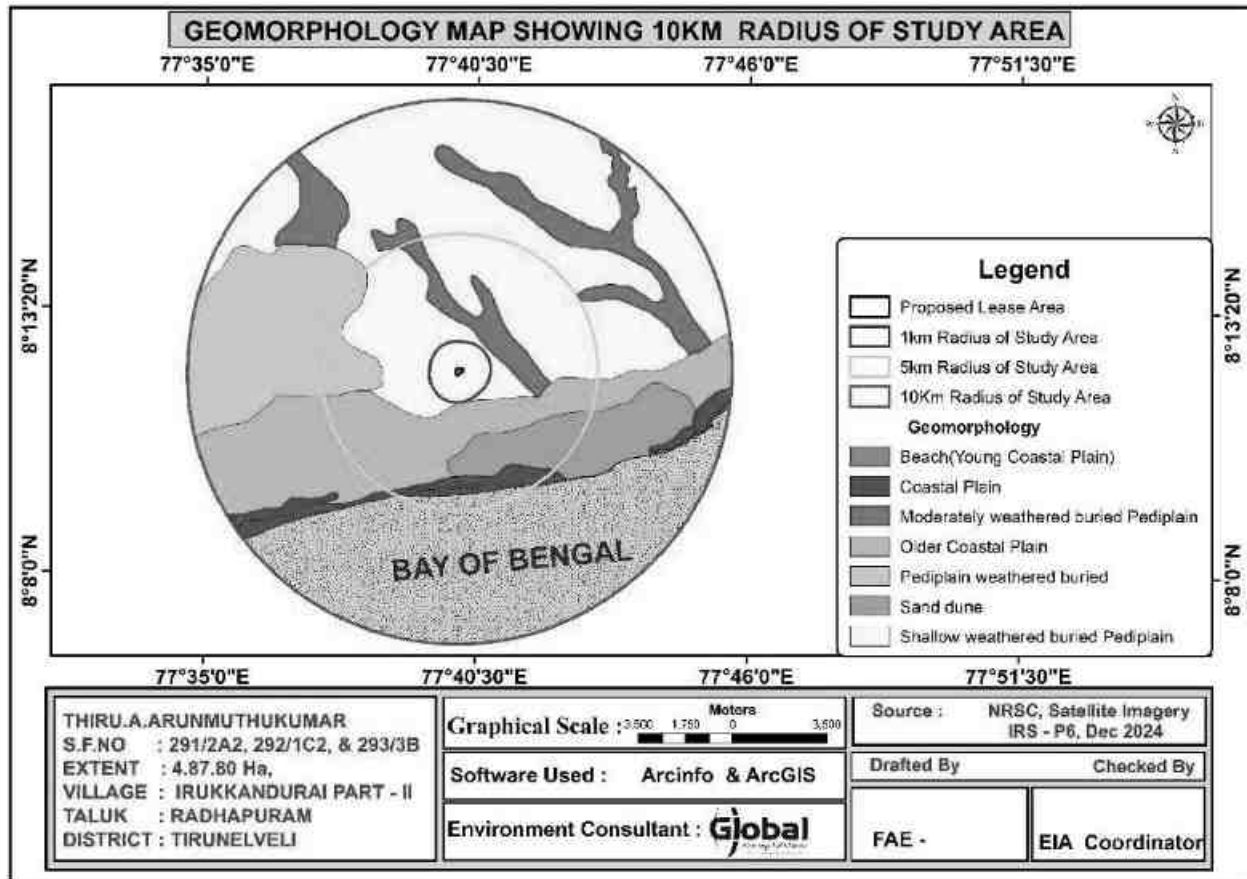


FIGURE 3. 28 10 KILOMETER RADIUS OF THE GEOLOGY MAP

Geomorphology: The Core and 10 Km buffered zone geomorphological features (Figure 3.22) shows that the Tirunelveli district forms part of the upland plateau region of Tamil Nadu with many hill ranges, hillocks and undulating terrain with a gentle slope towards east. The prominent geomorphic units identified in the district through interpretation of Satellite imagery are 1) Calcareous Sandstone Shell Limestone, 2) Charnockite, 3) Garnet-Biotite Gnesis, 4) Garnet-Biotite-Sillimanite Gnesis, 5) Sandstone with Clay And (6) Silt, Clay, Kankar & Sand. The southern part is a water body that is Bay Of Bengal. The proposed lease area is majorly Charnockite unit and meagerly silt, clay, Kankar and sand.

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

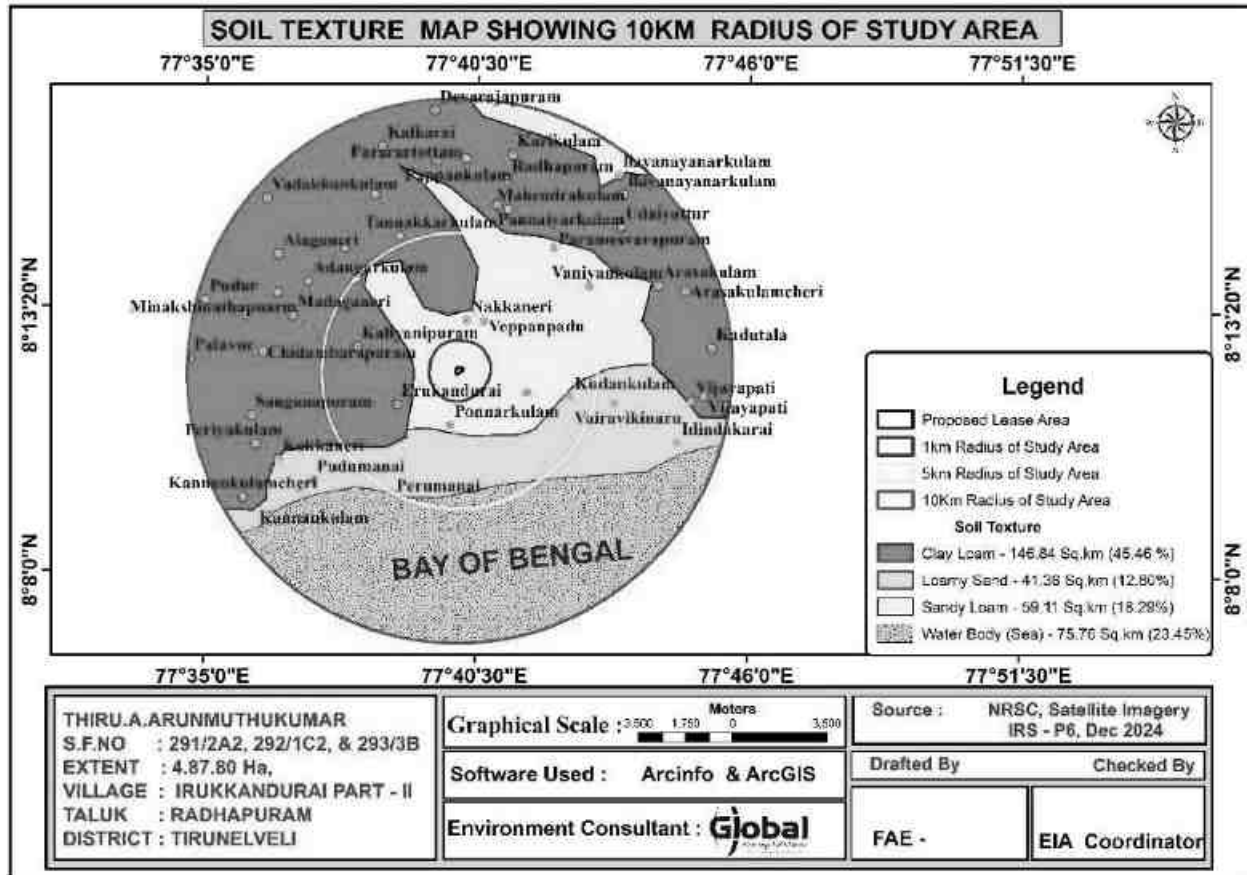
FIGURE 3. 29 10 KM RADIUS OF THE STUDY AREA GEOMORPHOLOGY MAP



Soil: The soil types in the study area are Young coastal plain, Coastal plain, moderately weathered buried pediplain, older coastal plain, pediplain weathered buried, older coastal plain, pediplain weathered buried sand dune and shallow weathered buried pediplain. (Figure 3.23.). shallow weathered buried pediplain was distributed over the study area.

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

FIGURE 3.30 10 KM RADIUS OF THE STUDY AREA SOIL TEXTURE



The shallow depth of groundwater level in the monsoon season. It is interesting to note that the water level is increased because of heavy rainfall during the southwest and northeast monsoon. The groundwater table level is substantially increased in the monsoon season.

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The study has revealed that potential fractures are encountered at deeper levels. The water in the wells is available mainly monsoon and it reduces during non-monsoon demanding the groundwater. Bore wells are deep and it reflects that the yield is only better at deeper water levels.

Rain water collected in the tanks in the region acts as a good source of water during monsoon season. In order to increase the recharge, tanks, and percolation ponds may be provided with the recharge wells/recharge shafts penetrating this impervious layer to make it more effective in recharging the aquifer.

CHAPTER 4

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

INTRODUCTION

This chapter deals with the various anticipated environmental impacts and mitigation measures of the proposed mining activity. The proposed method of mining is Opencast Mechanized and the quarry operation involves Shallow Jack Hammer Drilling, Blasting, Excavation, Formation of benches, Loading and Transportation of minerals. The above activities may affect the surrounding environment like removal of rock mass, Loss of flora and fauna of the area, surface water discharge, change in air and water quality, etc., If adequate measures are not taken for the proposed operations, it will cause the environmental degradation of the area and it will lead to affect to the ecosystem of the surrounding environment.

In order to maintain the existing environmental scenario of the proposed mine lease area it is mandatorily required to assess the present ecology and environment of the proposed mine lease area and buffer area of the project before starting mining operations. The various environmental impacts which are identified by the proposed quarrying activities have been discussed below and its subsequent paragraphs.

- ❖ Land Environment
- ❖ Soil Environment
- ❖ Water Environment
- ❖ Air Environment
- ❖ Noise Environment
- ❖ Biological Environment
- ❖ Socio Economic Environment

4.1 DETAILS OF INVESTIGATED ENVIRONMENTAL IMPACTS DUE TO PROJECT LOCATION POSSIBLE ACCIDENTS, PROJECT DESIGN, PROJECT CONSTRUCTION, REGULAR OPERATIONS FINAL DECOMMISSIONING OR REHABILITATION OF A COMPLETE PROJECT.

This is a proposed Rough Stone & Gravel Quarry of Thiru.A.Arunmuthukumar at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. The method of mining is Opencast semi-mechanized with a bench width and height of 5m. It is proposed to excavate to 5,57,310 Cu.m of Rough Stone and 47,816 Cu.m of Gravel formation upto a depth of 47 m (BGL) for the period of five years. There is no stream/odai within the mine lease area.

The main anticipated impact on the Land Environment due to quarrying operation is change in Landscape, change in Land – use Pattern.

The entire mine lease area is Patta land. The project area of 4.87.80Ha boundary barrier except in eastern direction. It is proposed to be altered by effective quarrying operation such as excavation (2.39.50 Ha), Infrastructure (0.01.0), Road (0.01.0 Ha) and green belt will be developed in the safety zone of 2.46.30 Ha. The ultimate depth of quarrying is proposed with maximum depth of 47m BGL and will not intersect the ground water table.

4.2 MEASURES FOR MINIMIZING AND /OR OFFSETTING ADVERSE IMPACTS IDENTIFIED

Aspect	Impact	Mitigation measures																																																						
Topography	The area is exhibits plain region covered by rough stone and Gravel formation. Quarrying activity will lead to change in geological setting of the area i.e., Due to the quarrying activity in the mine lease area will leads to affect the aesthetic view on the environment. Further, due to the movement of heavy vehicles in and around the mine lease area will leads to affect the surrounding agricultural lands, ecology and biodiversity, human habitations due to the emissions from vehicles like SO₂, NO_x, PM₁₀, PM_{2.5}, etc., The existing land use pattern is given as under. <table><tr><th>Land Use</th><th>Present Area (Ha)</th><th>Area in use during the quarrying period (Ha)</th></tr><tr><td>Quarrying Pit</td><td>Nil</td><td>2.39.50</td></tr><tr><td>Infrastructure</td><td>Nil</td><td>0.01.00</td></tr><tr><td>Roads</td><td>Nil</td><td>0.01.00</td></tr><tr><td>Green Belt</td><td>Nil</td><td>2.46.30</td></tr><tr><td>Unutilized</td><td>4.87.80</td><td>Nil</td></tr><tr><td>Total</td><td>4.87.80</td><td>4.87.80</td></tr></table> The ultimate pit dimension of the mine lease area is given below.	Land Use	Present Area (Ha)	Area in use during the quarrying period (Ha)	Quarrying Pit	Nil	2.39.50	Infrastructure	Nil	0.01.00	Roads	Nil	0.01.00	Green Belt	Nil	2.46.30	Unutilized	4.87.80	Nil	Total	4.87.80	4.87.80	The major impact due to this project on land environment is the change in land use. Mining activity will be carried out upto a depth of 47 m Below ground level. At the end of mining period, the quarried pit will act as a water reservoir to store the rain water. Land Use at the end of mine will be as follows. <table><tr><th>Land Use</th><th>Area in use during the quarrying period (Ha)</th></tr><tr><td>Area left for water body</td><td>2.39.50</td></tr><tr><td>Green Belt</td><td>2.46.30</td></tr><tr><td>Remaining area</td><td>0.02.0</td></tr><tr><td>Total</td><td>4.87.80</td></tr></table> At the mine closure stage 0.66.0 Ha of lease area will be left as harvesting pond 0.26.5 Ha will be developed with green belt. Greenbelt shall be developed around the mine lease area and the details has been given below. <table><tr><th>Year</th><th>Species</th><th>No. of trees</th><th>Spacing</th><th>Survival</th></tr><tr><td>I</td><td rowspan="5">Azadirachta indiac</td><td>400</td><td rowspan="5">3m x 3m</td><td rowspan="5">80%</td></tr><tr><td>II</td><td>400</td></tr><tr><td>III</td><td>400</td></tr><tr><td>IV</td><td>400</td></tr><tr><td>V</td><td>400</td></tr><tr><td>Total</td><td></td><td>2000</td><td></td><td></td></tr></table> Due to the thick vegetation around the mine lease area and sprinkling of water around the haul roads the dust emissions arises from the vehicles will be controlled.	Land Use	Area in use during the quarrying period (Ha)	Area left for water body	2.39.50	Green Belt	2.46.30	Remaining area	0.02.0	Total	4.87.80	Year	Species	No. of trees	Spacing	Survival	I	Azadirachta indiac	400	3m x 3m	80%	II	400	III	400	IV	400	V	400	Total		2000		
		Land Use	Present Area (Ha)	Area in use during the quarrying period (Ha)																																																				
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Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

	Ultimate Pit dimension at the end of Mining plan Period				At the end of mining period, fencing will be provided around the mine lease area to arrest the entry of public/cattle to the mining area. The rough stone and Gravel are proposed to quarry 5m bench height and 5m width with 80° slope and with conventional Opencast semi-Mechanized method. As per the approved mining plan a safety distance of 7.5m shall be provided. There is no overburden anticipated during the entire Rough Stone and Gravel quarrying operation. The excavated rough stone and Gravel will be directly loaded into tipper to the needy crusher/other buyers.
	Pit No.	Length (max) (m)	Width (Avg) (m)	Depth (max) (m)	
	I	172	139	47 m Below ground level	
	If mining is not done systematically it will lead to the dumping failure in the mining area.				
Drainage	Mine drainage is surface water or groundwater that drains from an active or abandoned mine. One of the adverse impacts of mine drainage is it will contaminate the ground water.				As per the approved mining plan the ultimate pit limit is 47m (BGL). The ground water table is reported as 65m. In the proposed mining plan only 47 m below ground level has been envisaged as workable depth for safe & economic quarrying for the entire lease period. Hence the quarrying operation may not affect the ground water.
Soil Quality and Agriculture	In monsoon seasons due to the excavation of minerals soil erosion and sediment deposition will occur in the nearby water bodies.				It is proposed to quarry upto a depth of 47m below ground level and the nearby water table is 65 m. So, the mining activity will not affect the ground water. To prevent the soil erosion during monsoon season, garland drain will be constructed with silt traps.
Visual impact on surrounding environment	Quarrying activities and rock extraction generally cause several environmental effects on the surrounding areas. The alteration of landscape due to activities like excavation, drilling or blasting, in particular, often generates a visual impact on the receptors set in the surroundings. Among these effects, the shape, extent, or chromatic contrast of the mining surface with the original land form may represent a huge loss of appeal for the growth of new urban settlements.				The reclamation of the post mined quarry surface is aimed at restoring the ecological balance taking into account geological parameters but also local flora and climate. Further the ultimate depth of mining is 47m. In the post mining stage, the quarried-out pit will be used for rainwater harvesting.

4.2.1 SOLID WASTE GENERATION AND MANAGEMENT

The plastic waste generation is very negligible and it will be collected from the source level in specific dustbin and disposed through the municipal bins.

- Identification of solid waste generations
- Providing dustbins to collect with different color coding
- Creating awareness among the employees
- Developing common storage yards
- Disposal to the nearby municipal yards
- Record keeping
- Review once in quarter

4.2.2 WATER ENVIRONMENT

Impact on Surface Water Resources

There is kuttai is located at a distance of 410 m in North and Radhapuram Canal is located at a distance of 3.1 km in North West direction of lease area and Hanuman Nadi at the distance of 3.3km in south west and Uppar rover at a distance of 52km in South West. Surface run-off water of the M.L. area is drained through proposed drainage and collected in the bottom of the quarry and collected water will be used for same quarry operation as such for plantation & dust suppression.

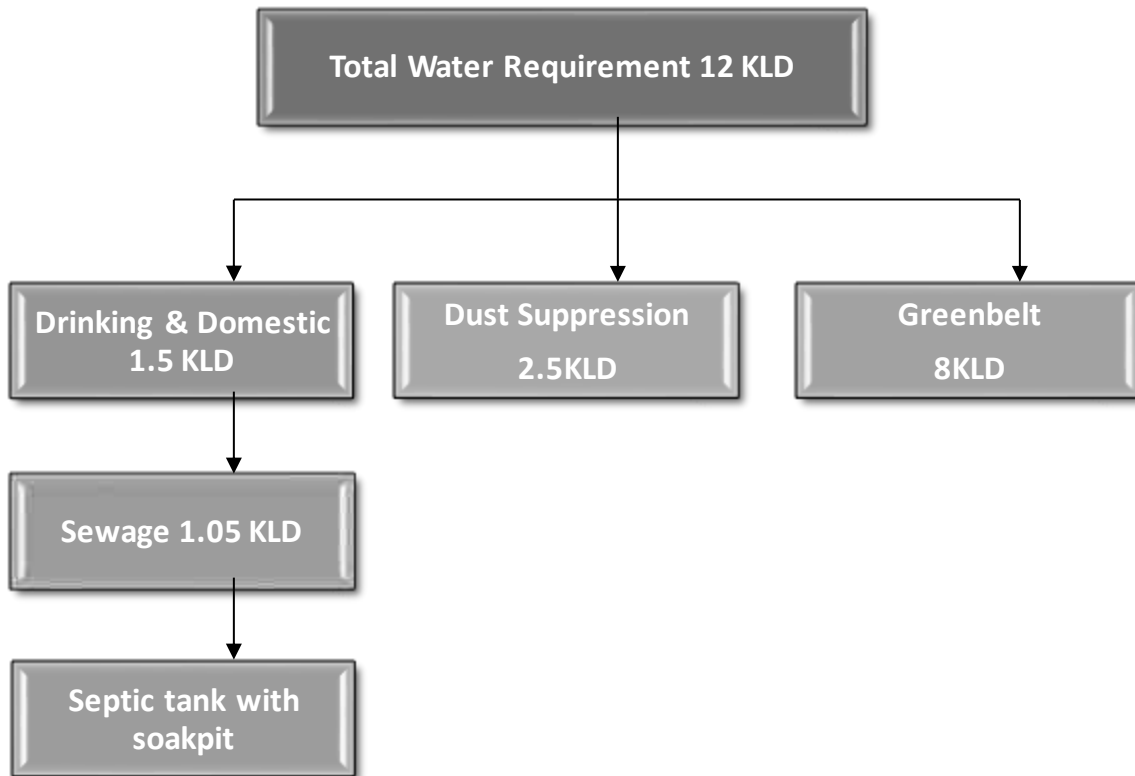
Since these water bodies are located outside the lease area and there is no discharge of effluent or any untreated water from the mines will be made into these water bodies, there is no major impact. The project proponent will restrict the mining operation only within the lease and no other work will be carried out outside the mining lease.

Impact due to Water use in Mines

In the proposed mines water will be mainly used for domestic purpose, dust suppression & plantation. Total water requirement for the project is 12 KLD which will be sourced from outside agencies. Negligible sewage of 1.5 KLD will be generated,

for which a septic tank with soak pit will be set up. The water balance diagram is given below.

FIG 4.1 WATER BALANCE DIAGRAM



Impact on Ground Water

The mining activity is not likely to intersect ground water as the ground water table occurs at a depth of 64m. The mining will go up to the maximum depth of 47 m BGL. So, there will be no chance of intersecting the ground water table by the mining activity. So, the impact of mining on the ground water is not envisaged.

Mitigation measures

- Entire lease area will be provided with proper garland drains.
- Check wears will be provided to prevent solids from wash off.
- Construction of garland drains around freshly excavated so that flow of water with loose material is prevented.

- The mine water will be passed through the natural slopes and valleys and gets accumulated in the settling tank (Bottom pit)

Ground water environment in buffer zone

The scenario of ground water in Tirunelveli Districts is given below.

Table 4.1 Ground Water Level Status in Tiruvannamalai District							
S. No.	Assessment Unit (Firka)	Net Annual Ground water availability	Existing gross ground water consumption for irrigation	Existing gross ground water consumption for domestic and industrial water supply	Existing gross ground water consumption for all uses	Stage of ground water development	Category
1	Tirunelveli	1,496.90	0.00	2,768.26	2,768.26	185	Over Exploited

Source:nwm.gov.in

It is planned to carryout appropriate rainwater harvesting schemes and artificial recharge schemes in the area.

4.2.3 VEGETATION

VEGETATION IN THE CORE ZONE

The mine lease area is devoid of major plantation. Shrubs and bushes are majorly found within the lease area. The proponent has planned to develop green belt in an area of 2.46.30 Ha. Trees like Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc., will be planted around the mine lease area. A total of 2000 trees are planned to be planted. Spacing will be 3m x 3m.

FAUNA

There are no sanctuaries/national parks in the buffer zone of 10km study area. The commonly found fauna in the buffer zone are given in Chapter III. During mining activity the impacts and mitigation measures for Fauna are given in below table.

Table 4.2 Impacts and mitigation measures for Fauna

S.No.	Impact	Mitigation measure
1	Fauna is affected due to noise and vibration.	Sirens will be blown before blasting in the mines. To reduce noise levels, plantation will be done. Blasting will be carried out only in the allotted time.
2	Dust generation due to mining activities	To reduce dust generation, mist sprayers will be used. During transportation, the material will be covered with tarpaulin. Water sprinkling will be done to reduce generation of pollutants.
3	Change in land use of the lease area	After the mine closure stage, the mine pit will be left as rain water collecting tank, which can attract bird population in the nearby areas.
4	Accidental falling of animals	To prevent entry of animals, the mine lease surrounding area will be properly fenced with barbed wire.

4.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF ENVIRONMENTAL COMPONENTS.

4.3.1 IMPACT DUE TO MINING OPERATION

Impact prediction is a very important phenomenon in evaluating the environmentally potential adverse impacts for any proposed mine project. The impact prediction is always carried out under worst possible conditions so as to mitigate or to eliminate the environmental hazards. These predictions thus calculated are superimposed over the baseline data to calculate the net impact on the environment after the proposed mine Project comes into production.

4.3.2 IMPACT ON AIR ENVIRONMENT

The impacts on air environment from a mining activity depend on various factors like production capacity, machinery involved, operations and maintenance of various equipment's and vehicle. Apart from these, there will be other activities associated

viz., transportation of mineral and waste, stocking facilities and dump management within the mine lease area that may contribute to pollution.

4.3.3 Air Emissions

The impacts on air environment from a mining activity depend on various factors like production capacity, machinery involved, operations and maintenance of various equipment and vehicle. Apart from these, there will be other activities associated viz., transportation of mineral and waste, stocking facilities and dump management within the mine lease area that may contribute to pollution.

4.3.4 Quantitative Estimation of Impacts on Air Environment

An attempt has been made to predict the incremental rise of various ground level concentrations above the baseline status in respect of air pollution due to proposed is 5,57,310 Cu.m of Rough Stone and 47,816 Cu.m of Gravel by the opencast Semi-mechanized mining method.

The pollutants released into the atmosphere will disperse in the down wind direction and finally reach the ground at farther distance from the source. The concentration of ground level concentrations mainly depends upon the strength of the emission source and micrometeorology of the study area.

In order to estimate the ground level concentrations due to the emission from the proposed project, EPA approved Industrial Source Complex ISC AERMOD View Model has been employed.

The mathematical model used for predictions on air quality impact in the present study is ISC-AERMOD View-6.8.6. It is the next generation air dispersion model, which incorporates planetary boundary layer concepts.

The AERMOD is actually a modeling system with three separate components:

AERMOD (AERMIC Dispersion Model), AERMAP (AERMOD Terrain Preprocessor) and AERMET (AERMOD Meteorological Preprocessor).

Special features of AERMOD include its ability to treat the vertical inhomogeneity of the planetary boundary layer special treatment of surface releases, irregularly shaped

area sources, a plume model for the convective boundary layer, limitation of vertical mixing in the stable boundary layer, and fixing the reflecting surface at the stack base.

The AERMET is the meteorological preprocessor for the AERMOD. Input data can come from hourly cloud cover observations, surface meteorological observations and twice-a-day upper air soundings. Output includes surface meteorological observations and parameters and vertical profiles of several atmospheric parameters.

The AERMAP is a terrain preprocessor designed to simplify and standardize the input of terrain data for the AERMOD. Input data include receptor terrain elevation data. Output includes, for each receptor, location and height scale, which are elevations used for the computation of airflow around hills.

Salient features of the AERMOD model are given hereunder:

- ❖ Excavation operations are considered as area sources.
- ❖ Transportation of material on haulage roads has been considered as line source

The predicted ground level concentrations for study period computed using AERMOD model are plotted as isopleths.

4.3.5 Sources of Dust Emission

The proposed mining is carried out by mechanized opencast method. The air borne particulate matter generated by ore handling operations, transportation and screening of ore is the main air pollutant. The emissions of sulphur dioxide (SO₂), Oxides of Nitrogen (NO_x) contributed by diesel operated excavation/loading equipment and vehicles plying on haul roads are marginal. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions. Based on the various operations involved in the production of minerals, the various emission sources has been identified as given below.

- a. Area sources.
- b. Line sources.

Extraction of mineral from mine, are considered as area sources. Transportation of material from mining benches to various end points are considered as line sources. The impact of above sources on air environment is discussed below:

The other sources of air pollution are the dust generated during the movement of tippers on the haul road. Water tankers with spraying arrangement will be used for regular water sprinkling on the haul roads to ensure effective dust suppression. The tippers are well maintained so that exhaust smoke does not contribute abnormal values of noxious gases and un-burnt hydrocarbons.

4.3.6 Emission Details

All the emissions discussed above are quantified for proposed maximum production of is 5,57,310 Cu.m of Rough Stone and 47,816 Cu.m of Gravel by the open-cast semi-mechanised mining method. The existing air quality levels are covered in the baseline scenario. Excavation, loading and transportation through tippers are the major sources, which are of significance. Therefore, the emissions considered for modeling are from drilling blasting, excavation & transportation rough stone and Gravel.

The emissions are computed based on AP-42 emission factors. Operational hours, activity rate, wind speed and moisture content have been considered for estimation of emissions from point and area sources. For line source, apart from operational hours, activity rate, moisture, silt content and vehicle weight have been considered. Predictions are carried out for the worst-case scenario of simultaneous operation of excavators (area sources) and tippers for transportation from mine pit to loading pit (line sources) over a distance of 500 m.

The number of working days has been taken at 300 days per year with 8 hours of operation/day, hence the concentrations predicted are considered to be the worst case. With control measures, the emissions have been taken at 30% of uncontrolled emissions for handling and 10% of uncontrolled emissions for transportation.

4.3.7 Meteorological Data

The meteorological data recorded continuously during the month of October 2024 – December 2024 on hourly basis on wind speed, wind direction and temperature has been processed to extract the 24- hourly mean meteorological data as per the guidelines of IMD and MoEF for application of AERMOD model. Stability classes computed for the mean hours is based on guidelines issued by CPCB on modeling. Mixing heights representative of the region have been taken from the available published literature.

4.3.8 Summary of Predicted Ground Level Concentrations

Ground level concentrations due to the mining activities have been estimated to know the incremental raise and extent of impact in the study area.

The maximum ground level concentration is estimated to be about 1.01 $\mu\text{g}/\text{m}^3$ of PM_{2.5} & <1 $\mu\text{g}/\text{m}^3$ of PM₁₀ within the mine area and surrounding cluster area 1.5 $\mu\text{g}/\text{m}^3$ of PM_{2.5} & 6 $\mu\text{g}/\text{m}^3$ of PM₁₀, where mining operations are being carried out. The impact of mining operations would be negligible beyond 0.5 km.

Figure – 4.1 represents the spatial distribution of the predicted ground level concentrations of PM₁₀ due to emissions from mine.

4.3.9 Emission sources & Quantification

Various point and non-point sources of emissions from Proposed Rough Stone and Gravel Quarry of Thiru.A.Arunmuthukumar (Total Material handling (Rough Stone & Gravel) is quantified and presented below:

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

FIG 4.2 Isopleth of GLC Prediction for PM_{2.5}

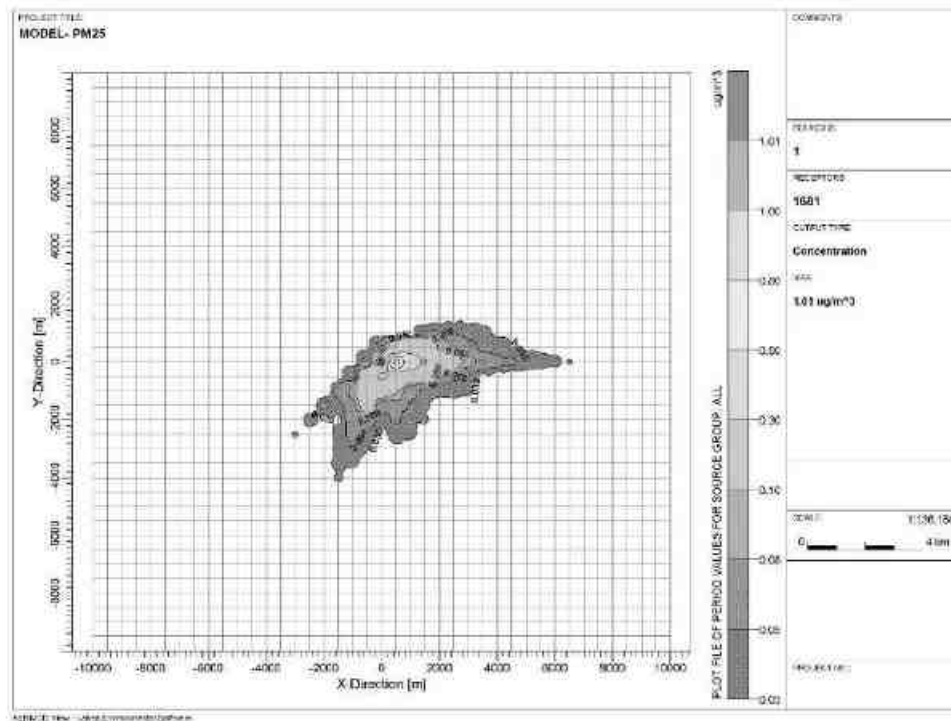


FIG 4.3 Isopleth of GLC Prediction for PM₁₀

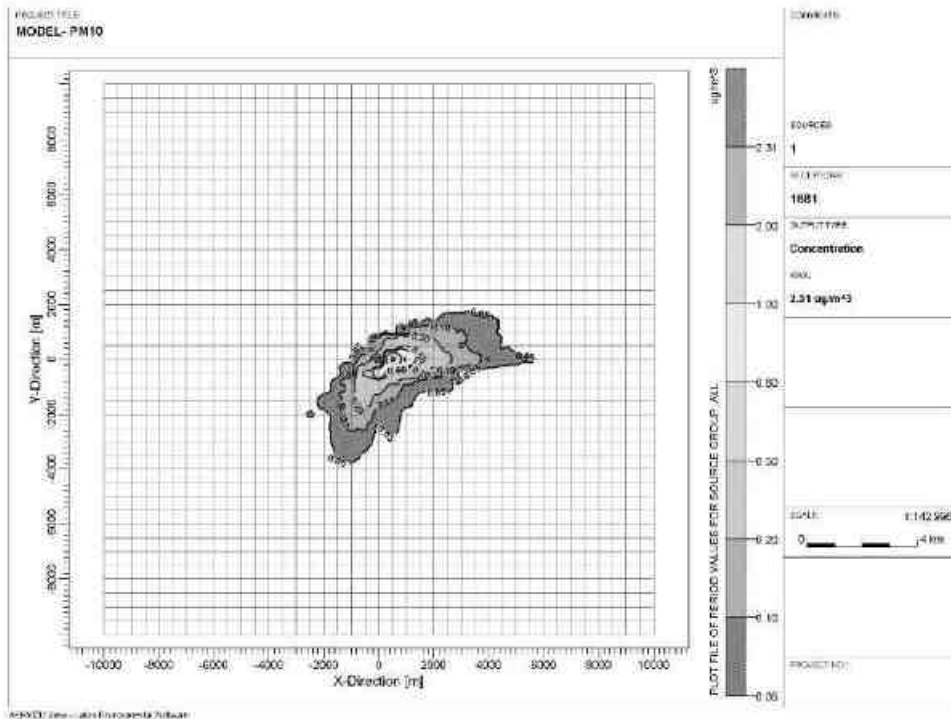


FIG 4.4 Isopleth of GLC Prediction –Cumulative for PM_{2.5}

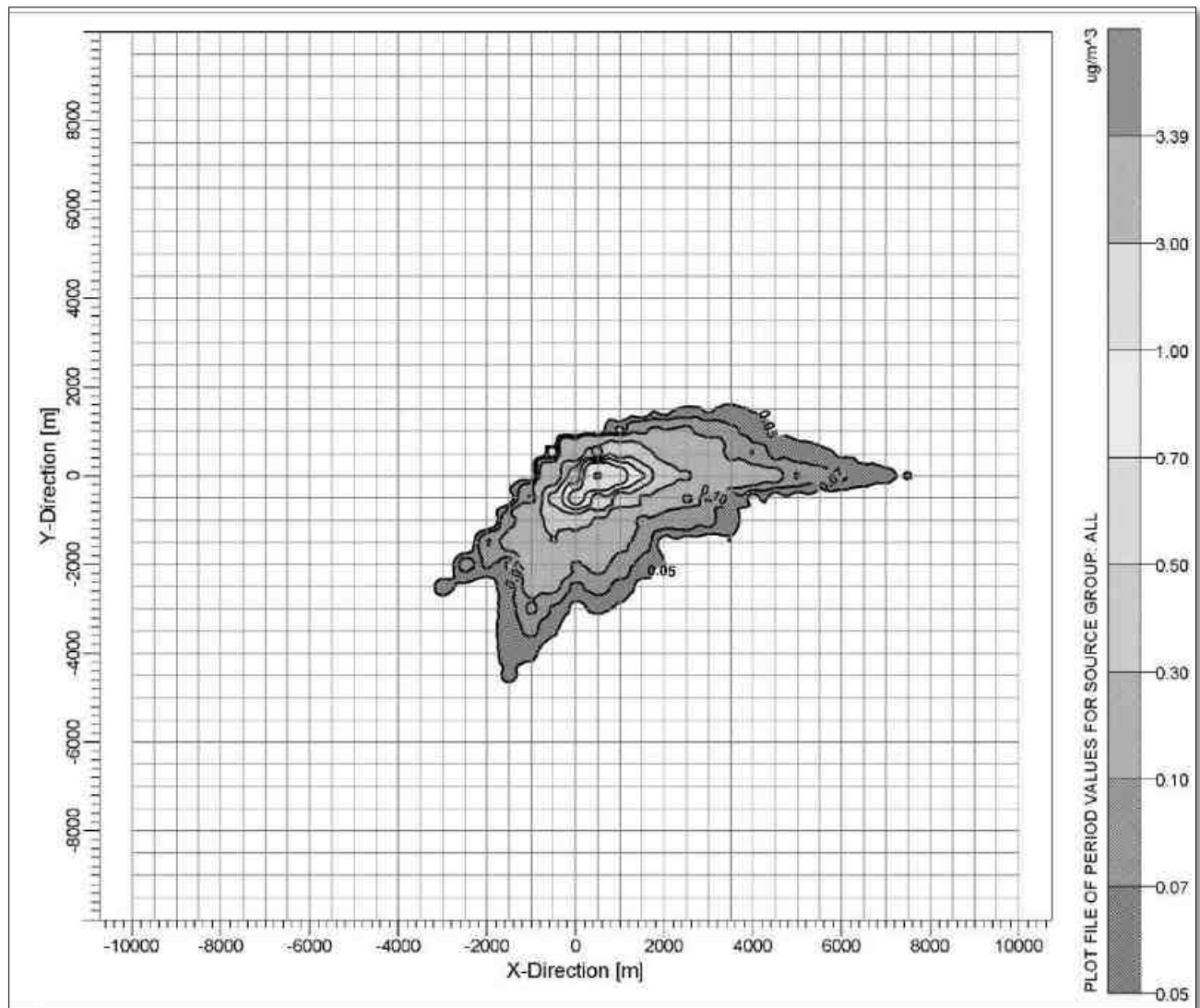
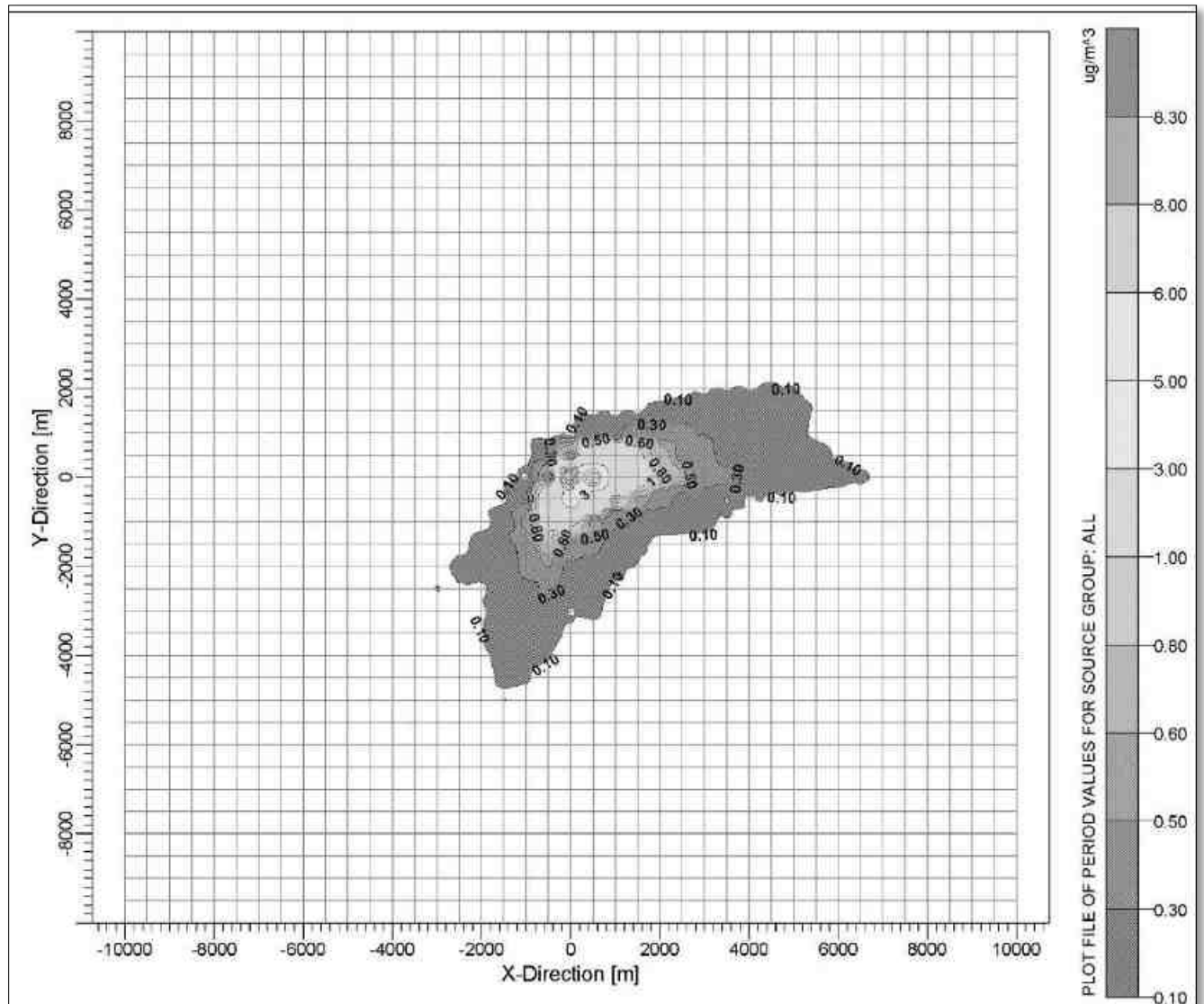


FIG 4.5 Isopleth of GLC Prediction –Cumulative for PM₁₀



PREDICTED AMBIENT AIR QUALITY:

The post project Concentrations of PM₁₀, PM_{2.5}, (GLC) (base line + incremental) after adopting necessary control measures is given in Table No - 4.3.

Table 4.3a Concentrations of PM ₁₀ after Project Implementation					
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Proposed Mine Site	69.7	<1	70.7	100

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

2	Uralvaimozhi	64.5	<1	65.5	
3	Kudankulam	60.9	<1	61.9	
4	Erukkandurai	69.4	<1	70.4	
5	Ponnaukulam	58.7	<1	59.7	
6	Sanganeri	59.0	<1	60.0	
7	Nakkaneri	56.6	<1	57.6	

Table 4.3b Cluster Concentrations of PM10 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Proposed Mine Site	69.7	6	75.7	100
2	Uralvaimozhi	64.5	<1	65.5	
3	Kudankulam	60.9	<1	61.9	
4	Erukkandurai	69.4	<1	70.4	
5	Ponnaukulam	58.7	<1	59.7	
6	Sanganeri	59.0	<1	60.0	
7	Nakkaneri	56.6	<1	57.6	

Table 4.3c Concentrations of PM2.5 after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Proposed Mine Site	33.3	1.01	34.31	60
2	Uralvaimozhi	31.0	<1	32.0	
3	Kudankulam	29.1	<1	30.1	
4	Erukkandurai	32.8	<1	33.8	
5	Ponnaukulam	27.9	<1	28.9	
6	Sanganeri	28.2	<1	29.2	
7	Nakkaneri	27.6	<1	28.6	

Table 4.3d Cluster Concentrations of PM_{2.5} after Project Implementation

SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Proposed Mine Site	33.3	1.5	34.8	60
2	Uralvaimozhi	31.0	<1	32.0	
3	Kudankulam	29.1	<1	30.1	
4	Erukkandurai	32.8	<1	33.8	
5	Ponnaukulam	27.9	<1	28.9	
6	Sanganeri	28.2	<1	29.2	
7	Nakkaneri	27.6	<1	28.6	

The above report seems that, even in the worst-case scenario, the resultant added concentrations with baseline figures show that the values of ambient air quality for PM₁₀ are in the range of 57.6 $\mu\text{g}/\text{m}^3$ to 70.7 $\mu\text{g}/\text{m}^3$ and for PM_{2.5} are in the range of 28.6 $\mu\text{g}/\text{m}^3$ to 34.31 $\mu\text{g}/\text{m}^3$ and PM₁₀ are surrounding area range of 57.6 $\mu\text{g}/\text{m}^3$ to 75.7 $\mu\text{g}/\text{m}^3$ and for PM_{2.5} are in the range of 28.6 $\mu\text{g}/\text{m}^3$ to 34.8 $\mu\text{g}/\text{m}^3$ which are within the statutory limits in each case. The mitigation measures undertaken in the mine for control of air pollution are given below.

- Wet drilling will be practiced in drilling operation.
- Water sprinkling will be done in haul roads & loading etc.
- The mines workers are provided with the dust masks.
- Three-layer plantation in the safety zone.

DG sets shall be periodically maintained as per manufacturer's specifications.

4.4 ASSESSMENT OF SIGNIFICANCE OF IMPACTS (CRITERIA FOR DETERMINING SIGNIFICANCE, ASSIGNING SIGNIFICANCE).

4.4.1 NOISE ENVIRONMENT

The main noise generating source during mining operation and related activities are drilling, excavation, loading and transportation. Intermittent noise is generated due to operation of diesel generator.

4.4.2 Likely Noise Levels in Lease Area due to mining activity

S.No.	Source Name	Noise Level in dB (A)
1	Diesel generator	90
2	Excavator Operation	86
3	Trucks movement	82
4	Drilling	96
5	Blasting	102

It is expected that the generated noise will be limited within the mine lease area and there will be no profound effect of noise on the buffer zone. The noise level will be maintained below the threshold limit by vigorous maintenance of the machineries. Wet drilling with dust extractor is being used to reduce the noise level during the mining operation.

Noise levels were measured in the lease area and in the nearby villages Arasanipalai, Village, Chithalapakkam Village, Ezhacheri Village, Pavor Village and Punnai village the values are given below.

Table 4.4 Noise Levels In Monitoring Locations and Results					
S. No	Location	Day equivalent	Night equivalent	Day equivalent limits by CPCB	Night equivalent limits by CPCB
1	Mine Lease Area	51.1	40.8	75	70
2	Uralvaimozhi	48.3	40.8		
3	Kudankulam	46.7	40.1		
4	Erukkandurai	49.5	40.7		
5	Ponnarkulam	46.9	41.3		

6	Sanganeri	47.8	43.1		
7	Nakkaneri	45.5	38.9		

The noise levels are within the MoEF & CC limits of 75 dB(A) in the working area and in the buffer areas, the values are below the limit of 70 dB(A). Since, the residential area norm has been considered for all five locations mentioned above, during mining operation mine lease area will be considered as industrial area/quarry area for which DGMS norms 85 dB(A)/CPCB guidelines 75 dB(A)

4.4.3 Impact of Noise due to mining

- ✚ Noise generation in mining is due to operation like drilling, blasting and transportation of minerals within and outside the lease area.
- ✚ As per DGMS (Directorate General of Mines Safety) limits, the acceptable noise level is 85 dB(A) for an exposure period of 8 hours.
- ✚ Exposure to loud noise can also cause high blood pressure, heart disease, sleep disturbances, and stress. Noise pollution also impacts the health and well-being of wildlife.
- ✚ Noise exceeding prescribed limits may cause impairment like abnormal loudness perception, tinnitus which causes a persistent high-pitched ringing in the ears, paracusis or distorted hearing.

4.5 MITIGATION MEASURES

4.5.1 Noise level control.

- ✚ As the distance between the source and receptor increases, the noise level decreases. Hence, there will be a natural attenuation.
- ✚ The proponent has planned to develop green belt in the periphery of the lease area which diminishes sound volume by dampening them.
- ✚ All the equipment/machinery/tippers involved will be properly maintained to control noise generation.
- ✚ Conducting regular health checkups for employees involved.
- ✚ Employees will be made to work on shifts to reduce their exposure time.
- ✚ Providing earplugs to all employees.
- ✚ Providing green walls/nets wherever possible.

By adopting these measures, the noise levels will be maintained well within MoEF & CC limits since the baseline value is low.

4.5.2 IMPACTS DUE TO VIBRATION

There will be negligible vibration of ground due to the following activities.

- ✦ Due to Blasting
- ✦ Due to Drilling
- ✦ Due to movement of machinery

Impacts

- ✦ Though vibration will be only felt by the people working inside the lease area it is usually undesired.
- ✦ Vibration may also cause fly rocks.
- ✦ It may frighten the birds and small insects in the lease area. However, it will be felt only for a short period.

Mitigation measures

- ✦ The DG set will be kept within the acoustic enclosure made by the stone blocks.
- ✦ Drills will be equipped with sharp bits and wet drilling will be adopted.
- ✦ A well planned green belt is proposed for the mining to reduce noise level.
- ✦ Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.
- ✦ Regular maintenance of the machineries and vehicles to reduce the noise level.
- ✦ Use of ear muffs by the workers with occupational exposure to noise.
- ✦ Carrying out blasting on limited scale, only from 12:00 PM to 2:00 PM
- ✦ Control of fly rock and vibration by maintaining peak particle velocity within the standard as prescribed by the DGMS and MOEF & CC.
- ✦ Shallow depth jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive.
- ✦ Supervising blasting by competent and statutory Foreman/ Mines Manager.

4.5.3 SOCIO ECONOMIC IMPACT

The lease area is Patta land. The proponent has planned to spend INR 10, 00,000 for CER activities.

4.5.4 OCCUPATIONAL HEALTH

Impacts on humans due to various mining activities

The occupational risk due to proposed mining may be due to drilling, blasting, excavation and transportation. A total of 30 workers will be engaged in the mining activity. Mining activity may cause various health problems to the mines workers as follows:

- Dust generated during excavation, drilling, stone cutting, sizing and transportation may cause health problems like Silicosis, Asthma, Tuberculosis and other respiratory lungs disorders.
- Heavy weight lifting by the workers may cause injuries to arms, legs and back.
- Noise generated during the mining activity may cause Noise Induced Hearing Loss (NIHL).

Table 4.5 Impacts on humans due to various mining activities		
S.No.	Type of activity	Impact
1	Dust generation due to drilling and blasting	Continuous exposure to dust causes Pneumonia, Tuberculosis, Rheumatic arthritis and Segmental Vibration
2	Noise generation due to drilling and blasting	Short term impact will be lack of sleep, high blood pressure and heart ailments. Long term exposure may lead to partial or permanent deafness
3	Unexpected accidents	Risks include fly rocks, cracks or fissures due to improper mining methods

Mitigation measures

- The mines worker will be provided with dust mask to minimize the inhalation of the dust.
- Water sprinkling twice in a day is in practice on the haul roads, near excavation and roads to reduce the fugitive dust emission.

- Wet drilling and drilling with dust extractor will be practiced.
- Ear muffs will be supplied to the workers working in the noise prone area
- The mining site will be supplied with first aid facilities and the entire mines worker will have access to that.
- The mines workers will be well trained about the safety practices in the mining activities.
- As per Mines Rules, 1955, medical examination of employees at the initial stage and periodically, shall be done by a team of qualified medical officers provided by the project proponent.
- Regular medical checkup camps shall also be arranged for detection of occupational diseases and minor disease in the nearby rural population.
- Free checkup and medicine for treatment for their acute and chronic illness shall be provided by the lessee. Conducting periodical Medical Examination as per DGMS.
- Making all first aid kits available in mines office
- Keeping fire extinguisher in place
- Educating the employees about how to handle unexpected happenings
- Posting information containing emergency contact numbers in mines office
- By adopting all these measures, the safety of the employees working in the quarry will be ensured.

4.5.5 WASTE MANAGEMENT

Solid Waste

Since the entire mined out material will be utilized there will not be any solid waste generation from this project. However, the Solid waste (MSW) generated from administrative activities will be properly collected and disposed to Govt. Authorized yards / Re-cylers / Disposers.

Liquid Waste

There is no process effluent generation from this mine. Hence no liquid waste is generated. Domestic wastewater i.e 1.5 KLD will be discharged in soak pit via septic tank.

Hazardous Waste Management

In this project the following management practices will be followed:

In the quarrying operation, the source of hazardous waste is from machinery maintenance activities that are waste oil/ Waste lubricants / Used filters / Used Hydraulic hoses. The said hazardous waste are very negligible quantity, it will be properly collected in the source level, stored in impervious storage yards and disposed of as per the Hazardous waste (Trans-boundary Movement) Management Rules, 2016.

Plastic Waste

Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

CHAPTER 5

ANALYSIS OF ALTERNATIVES

5.1 DESCRIPTION OF EACH ALTERNATIVE

Analysis of alternative site helps in selection of best possible site for the project. On one hand it helps to closeness to the existing infrastructure and on other hand it also helps to minimize the impact of project on environment.

5.2 SUMMARY OF ADVERSE IMPACTS OF EACH ALTERNATIVE

The project proponent has prepared mining plan under rule 19(1) 41 & 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the same has been approved by the Joint Director (AC), Department of Geology and Mining, Tirunelveli vide Letter No. Rc. No. M2/547/2023 dated 24.11.2023.

- There is no forest land or other Eco-sensitive places.
- Proposed mine site is selected on the basis of occurrence of mineral for suitable end use.

Hence seeking alternative site is not required.

5.3 MITIGATION MEASURES PROPOSED FOR EACH ALTERNATIVE

The mining technology is mechanized Opencast in single-shift operation without any change in technology. The operation will be carried out as per DGMS norms. No alternate technology will be used. Details of the technology used are given in Chapter II.

5.4 SELECTION OF ALTERNATIVE

In case of Mining projects alternate site selection is not necessary as the mining is site specific and the area in which mining will be carried out has been adequately proved for presence of mineral. The deposit is also having good infrastructural facilities for access and development.

CHAPTER 6

ENVIRONMENTAL MONITORING PROGRAMME

6.1 TECHNICAL ASPECTS OF THE MONITORING THE EFFECTIVENESS OF MITIGATION MEASURES (INCL MEASUREMENTS, METHODOLOGIES, FREQUENCY LOCATION DATA ANALYSIS, REPORTING SCHEDULES EMERGENCY PROCEDURES DETAILED BUDGET AND PROCUREMENT SCHEDULES)

6.1.1 ENVIRONMENTAL MONITORING

Monitoring is done to measure the efficiency of control measures implemented. Regular monitoring of various environmental parameters like air, water, noise and soil environments is needed to assess the status of environment during the project operation.

A schedule is framed with timeline to monitor various parameters during the operation of the project. The schedule is framed based on MoEF&CC and Tamil Nadu State Pollution Control Board. In case the SEIAA/TNPCB/MoEF&CC or other statutory bodies demand monitoring of any additional parameter/factor, the same will also be done.

The proposed quarry is a small quarry. Hence the Mines-in-charge will be responsible for environmental related activities. After obtaining EC, the conditions mentioned in EC will be strictly followed. The Mines-in-charge will be responsible for implementing the conditions. EC compliance report will also be submitted periodically.

6.1.2 OBJECTIVES OF ENVIRONMENTAL MONITORING

The objectives of Environmental Monitoring are as follows.

- ✚ Monitoring and analysis of air and water samples
- ✚ Implementing the control and protective measures.
- ✚ Coordinating the environment related activities within the project as well as with outside agencies. Collecting statistics of health of workers and population of the surrounding villages. Green belt development etc.
- ✚ Monitoring the progress of implementation of Environmental Management Programme.

- ✚ Monitoring the noise generation in and around the project areas.
- ✚ Monitoring of wastewater treatment and disposal of solid waste.
- ✚ The laboratory will be suitably equipped for sampling/testing for various environmental pollutants.

6.1.3 **ENVIRONMENTAL MONITORING SCHEDULE**

To evaluate the effectiveness of Environmental Management Programme, regular monitoring of the important environmental parameters will be taken up. The frequency of monitoring different parameters is given in table 6.1.

Table 6.1 Environmental Monitoring Schedule			
Sl.No.	Description of Parameters	Parameters	Frequency
1	Air	Air Quality for SPM, PM-10, PM-2.5, SO ₂ and NO _x	24 hour average samples Once in a 3 month
2	Water	General, Physical, and chemical parameters	Once per season
3	Noise	Leq, L _{max} , L _{min} , Leq Day & Leq Night dB(A)	8 hour average samples Once in a 3 month
4	Soil	Physical and Chemical characteristics	Once per season

6.1.4 **LOCATION**

Monitoring of the above-mentioned environmental parameters would be done at appropriate and sensitive areas. The exact location of monitoring is given as Figure – 3.4, 3.10, 3.12 & 3.14.

6.1.5 **MEASUREMENT METHODOLOGY**

(a) Ambient Air Quality

Ambient air quality will be monitored for SO₂, NO_x, PM₁₀ and PM_{2.5}. The instruments like high volume air samplers and Respirable dust samplers would be used for this purpose. These parameters will be monitored as mentioned in the monitoring schedule previously.

(b) Water Quality

Water quality analysis will be done quarterly and the monitored parameters include pH, Temperature, TDS, etc. as specified by SPCB from time to time.

(c) Noise Monitoring

Noise level will be monitored in working environment mainly noise producing sources over the boundary and around the mining area.

(d) Green Belt and Afforested Areas

Continuous vigilance and monitoring of green belt will be done for performance and survival rate of the saplings. Watch and ward personnel will properly guard the plantation. Provision will be made for fertilizers application and watering on schedule.

(e) Socio-Economics

Socio-economic of the core and buffer zone details elaborated in Chapter-3.

6.1.6 TECHNICAL ASPECTS OF MONITORING THE EFFECTIVENESS OF MITIGATION MEASURES

The above monitoring schedule will be followed periodically. After collection of the data, the mines-in-charge will analyze the data obtained. The data thus obtained will be incorporated in the EC Compliance report submitted to the Regional office, MoEF&CC. The measurement methodologies will be as per CPCB/BIS/MoEF&CC/DGMS norms.

6.1.7 EMERGENCY PROCEDURES

In case of any emergency due to environmental conditions, the mines in-charge will immediately report to the top-level management and the emergency response protocol will be implemented as per MoEF&CC/ SPCB / DGMS norms.

6.1.8 REPORTS TO BE GENERATED

The Project Proponent will maintain records of each test and its interpretation so as to formulate an adequate Environmental Management Plan. The set of records planned to be maintained by Project Proponent are given in below table 6.2.

Table 6.2 Important Records to be maintained by PP

S.No.	Particulars
1	Monitoring results for Air, Water & Soil.
2	Records of slope failure, land erosion & drainage.
3	Plantation Records
4	Environmental and related standards/ norms
5	Records pertaining to statutory consents, approvals.
6	Periodic Medical examination (PME) records.
7	Complain register (Environmental pollution)
8	Records on water and electricity consumption
9	Periodic progress records.
10	Environmental Expenses Records

6.1.9 DETAILED BUDGET AND PROCUREMENT SCHEDULES

The budget planned for environmental monitoring is given below.

Table 6.3 - Environmental Management Plan Budget

Sl .No	Budget planned for	Capital Cost Amount (INR)	Recurring Cost/Annum Amount (INR)
1	Air Environment	11,69,000	2,74,000
2	Noise Environment	50,000	14,02,000
3	Water Environment	30,000	22,000
4	Mine closure	16,14,000	87,000
4	Implementation of EC, Mining Plan & DGMS Condition	6,14,000	12,18,000
Total		34,77,000	30,03,000

CHAPTER 7

ADDITIONAL STUDIES

The additional studies covered for this EIA / EMP report are,

- Public consultation
- Risk Assessment
- Social Impact Assessment, R&R Action Plans
- Cumulative Environmental Impact Assessment Study
- A detailed Hydrogeological Study
- Slope Stability plan

7.1 PUBLIC CONSULTATION

After the preparation of the draft EIA/EMP report, it must be submitted to the State Pollution Control Board. A public consultation will be conducted on behalf of the Pollution Control Board through the District Collector and the officials from the PCB. A prior notice must be issued about the event, along with the time and date, in two leading newspapers. The opinions, suggestions, demands, and objections of people, NGO environmentalists, etc. are sought, and the proceedings are recorded. The replies of the proponent and corresponding officials will be recorded in the final EIA/EMP report.

7.2 RISK ASSESSMENT & MANAGEMENT

(a) Objectives

Risk assessment is a method in which possible threats/hazards which may arise during mining operations are identified so that adequate machinery/equipment are made available in precaution. The objectives of environmental risk assessment are governed by the following, which excludes natural calamities:

- ✚ To identify the potential hazardous areas so that necessary design safety measures can be adopted to minimize the probability of accidental events.
- ✚ To identify the potential areas of environmental disaster which can be prevented by proper design of the installations and its controlled operation.
- ✚ To manage the emergency situation or a disastrous event, if any, from the mining operation.

The major hazards related to the mining activities are as follows

- ✚ Open cast bench slope failure
- ✚ Accident due to fall of quarry sides
- ✚ Accident due to machineries
- ✚ Accident due to explosives
- ✚ Accident due to large block cutting, separation and loading

Some of the common hazards are identified and the corresponding precautionary measures are drafted.

Table 7.1 Hazards and Precautionary measures		
S.No.	Hazard	Precautionary measures
1	Fire	Fire suppressants will be made available at mines office and explosive storage room.
2	Explosion	Controlled blasting will be done. DGMS norms will be strictly followed during blasting. Blasting will be done only by trained professionals.
3	Combustion of chemicals or hazardous substances	Combustible Substances are stored with all precautionary measures. Fire suppressant is made available at storage site
4	Landslide	Width, height and slope will be maintained as suggested by DGMS
5	Accidents during handlings	All vehicles will be properly maintained. Overloading will not be done. Only trained/certified people will be employed.
6	Accidental fall of people or animals	The lease area will be fenced properly. Only people working in the mines will be permitted to enter.

7.3 SOCIAL IMPACT ASSESSMENT (R & R) ACTION PLAN

No land is acquired from people dwelling in the area. The lease area is an uninhabited land. No R & R plan is proposed.

7.3.1 **CUMULATIVE ENVIRONMENTAL IMPACT ASSESSMENT STUDY**

The details of other quarries located within the 500m radius of this project are provided below:

Table 7.2 500m Radius Cluster Mines Details (as per 500m certificate)				
S.No	Name of the Quarry Owner	S.F. Nos & Village	Lease Period	Area
a. Abandoned Quarry				
Nil				
b. Existing Quarry				
1.	K.Bagavathiyappan, S/o. Kumaresan, 8/42,Radhapuram Road, Kavalkinaru, Perungudi Village, Radhapuram Taluk.	Irukkandurai part-II(V) & SF.Nos.297/2	Period of 5 years	3.65.50
2.	Tvl.S.A.V Manilal Blue Metal, Prop.M.Sudeshlal, No.10-166, Vadakku Bazar Street, Vadakkankulam, Perungudi Village, Radhauram Taluk.	Irukkandurai part-II(V) & SF.Nos.292/1A(P) & 295/2B(P)	07.11.2020	1.24.00
3.	TVL.S.A.V.Blue metals Pivate Limited, Prop.A.Ajeshlal, 12-725-B7, Kavalkinaru Road, Vadakkankulam, Radhapuram Taluk, Tirunelveli District.	Irukkandurai part-II(V) & SF.Nos.155/2(P)	to	4.87.80
4.	Tvl. Hi Tech Rock Products & Aggregates Limited	Irukkandurai part-II & SF.Nos.282/3B(P),283/3(P), 278/2(P),277/1B(P), 284/1A1(P) and 284/2(P)	06.11.2025	3.98.10
5.	Tvl. Hi Tech Rock Products & Aggregates Limited	Irukkandurai part-II& SF.Nos.289/1A(P),289/2(P) and 161/1A(P)	Period of 5 years	4.71.40
6.	Tvl. Hi Tech Rock Products & Aggregates Limited	Irukkandurai part-II& SF.Nos.290/1B(P), 290/2(P), 160/1A(P), 289/1A(P) and 289/2(P)	26.02.2021	3.74.00
Area of total Existing Quarry				12.20.5 Ha
c. Proposed Quarry				

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

1.	Thiru.A.Arunmuthukumar, S/o.Arasappan, No.133/1, Yathavar street, Pattarapuram, Eraippuvarari, Nguneri Taluk, Tirunelveli District.	Irukkandurai part-II(V) & SF.Nos.291/2A2, 292/1C2 & 293/3B	-	4.87.80
Area of Proposed Quarry		23.44.80 Ha		

A cumulative impact of these two proposed quarries has been studied and the details are given in Chapter IV.

7.3.2 AIR QUALITY IMPACT PREDICTION FOR THE CLUSTER

The AERMOD atmospheric dispersion modeling (AERMOD Cloud remote version) is used for assessment of incremental Ground level concentration (GLC) for the cluster area. Area source model taken into consideration taking into consideration of wet drilling and loading of the cluster mines. Further line source model was taken into consideration for transportation through haul road. Baseline meteorological studies were conducted for the period of october to december 2024. The following sources are considered.

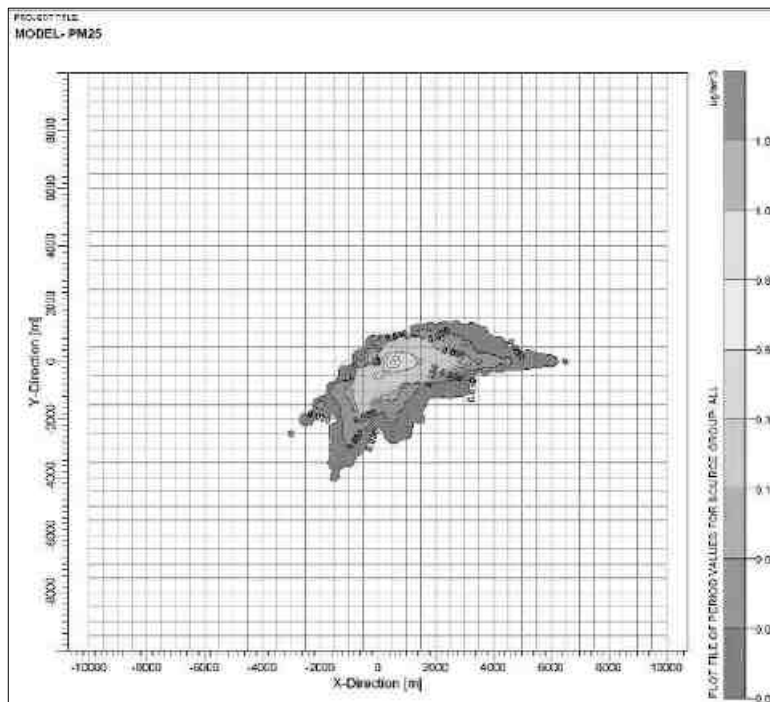


FIG 7.1 Isopleth of GLC Prediction for PM_{2.5}

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

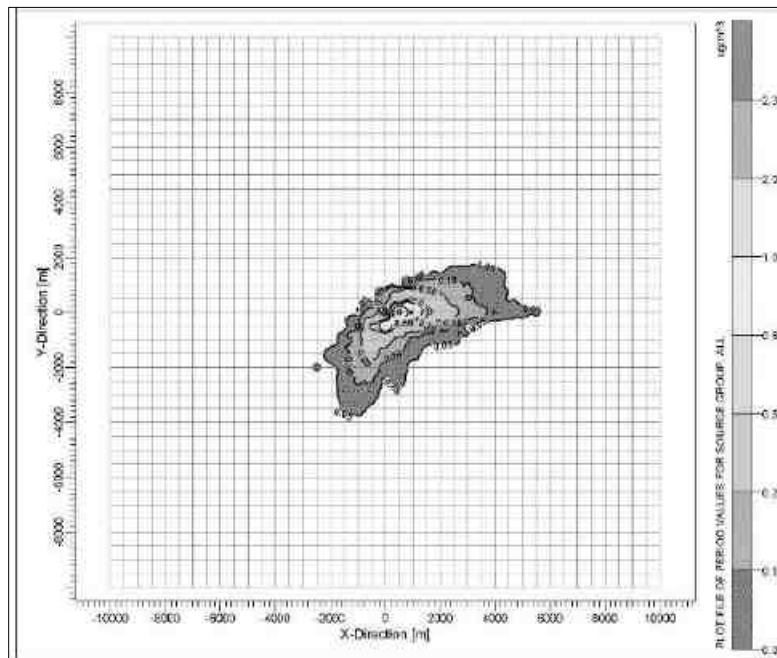


FIG 7.2 Isopleth of GLC Prediction for PM₁₀

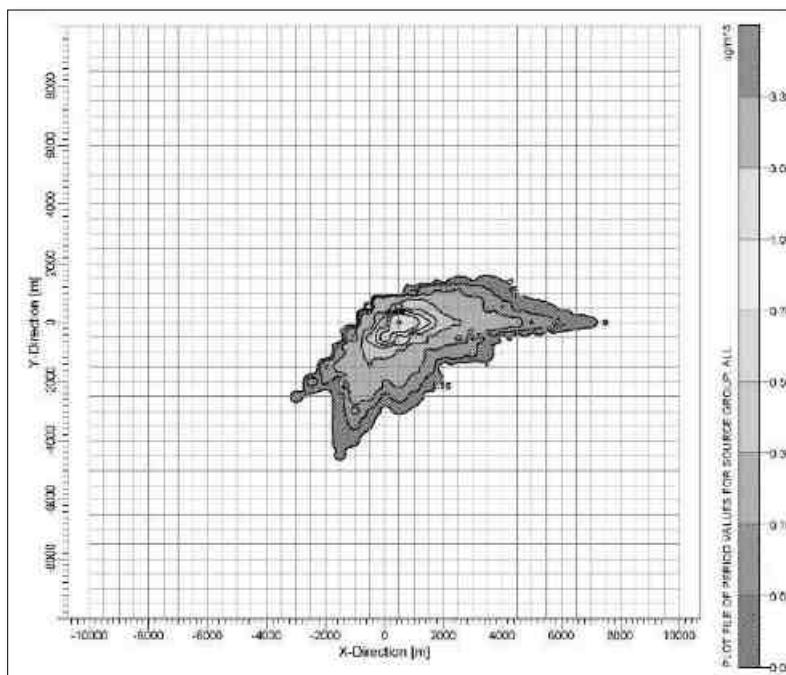


FIG 7.3 Isopleth of GLC Prediction –Cumulative for PM_{2.5}

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

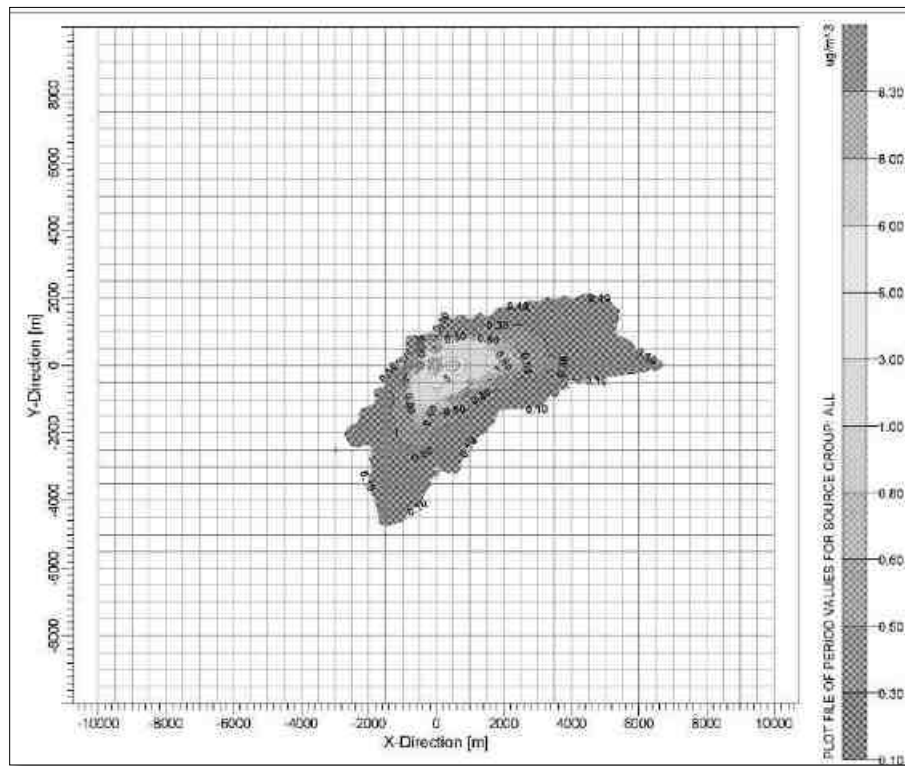


FIG 7.4 Isopleth of GLC Prediction –Cumulative for PM₁₀

PREDICTED AMBIENT AIR QUALITY:

The post project Concentrations of PM₁₀, PM_{2.5}, (GLC) (base line + incremental) after adopting necessary control measures is given in Table No - 7.3.

Table 7.3a Concentrations of PM₁₀ after Project Implementation					
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in $\mu\text{g}/\text{m}^3$
1	Proposed Mine Site	69.7	<1	70.7	100
2	Uralvaimozhi	64.5	<1	65.5	
3	Kudankulam	60.9	<1	61.9	
4	Erukkandurai	69.4	<1	70.4	
5	Ponnaukulam	58.7	<1	59.7	
6	Sanganeri	59.0	<1	60.0	

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

7	Nakkaneri	56.6	<1	57.6	
Table 7.3b Cluster Concentrations of PM10 after Project Implementation					
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Proposed Mine Site	69.7	6	75.7	100
2	Uralvaimozhi	64.5	<1	65.5	
3	Kudankulam	60.9	<1	61.9	
4	Erukkandurai	69.4	<1	70.4	
5	Ponnaukulam	58.7	<1	59.7	
6	Sanganeri	59.0	<1	60.0	
7	Nakkaneri	56.6	<1	57.6	
Table 7.3c Concentrations of PM2.5 after Project Implementation					
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Proposed Mine Site	33.3	1.01	34.31	60
2	Uralvaimozhi	31.0	<1	32.0	
3	Kudankulam	29.1	<1	30.1	
4	Erukkandurai	32.8	<1	33.8	
5	Ponnaukulam	27.9	<1	28.9	
6	Sanganeri	28.2	<1	29.2	
7	Nakkaneri	27.6	<1	28.6	
Table 7.3d Cluster Concentrations of PM2.5 after Project Implementation					
SL. No	Location	Background Concentration	Predicted incremental Concentration	Post Project Concentration	Statutory Limits in µg/m³
1	Proposed Mine Site	33.3	1.5	34.8	60
2	Uralvaimozhi	31.0	<1	32.0	
3	Kudankulam	29.1	<1	30.1	
4	Erukkandurai	32.8	<1	33.8	

5	Ponnaukulam	27.9	<1	28.9	
6	Sanganeri	28.2	<1	29.2	
7	Nakkaneri	27.6	<1	28.6	

The above report seems that, even in the worst-case scenario, the resultant added concentrations with baseline figures show that the values of ambient air quality for PM10 are in the range of 57.6 µg /m³ to 70.7 µg/m³ and for PM2.5 are in the range of 28.6 µg/m³ to 34.31 µg/m³ and PM10 are surrounding area range of 57.6 µg/m³ to 75.7 µg/m³ and for PM2.5 are in the range of 28.6 µg/m³ to 34.8 µg/m³ which are within the statutory limits in each case. The mitigation measures undertaken in the mine for control of air pollution are given below.

- Wet drilling will be practiced in drilling operation.
- Water sprinkling will be done in haul roads & loading etc.
- The mines workers are provided with the dust masks.
- Three-layer plantation in the safety zone.

DG sets shall be periodically maintained as per manufacturer's specifications.

Cumulative Impact on Traffic

The mined-out minerals will be transported by means of trucks to the consumers like crusher units for producing stone aggregates of different sizes or construction of roads, bridges, buildings and other buyers etc. The cumulative impact on traffic due to transportation of minerals from these three leases are provided below:

Table 7. 5 – Impact on Traffic

Description	Rough Stone and Gravel Production Per day in tons	No. of Lorry Load per day
Proposed Quarry	1100	110
Cluster Quarries	12870	1287
Total		1397

The proposed projects will bring 1397 trips per day. The existing road can absorb this additional traffic due to this project. Various measures like proper maintenance of

road, covering of the loaded truck with tarpaulin, water sprinkling will be carried out to ensure no adverse impact on the logistical front.

7.3.3 HYDROGEOLOGICAL STUDY

There is kuttai is located at a distance of 410 m in North and Radhapuram Canal is located at a distance of 3.1 km in North West direction of lease area and Hanuman Nadi at the distance of 3.3km in south west and Uppar rover at a distance of 52km in South West. Due to the presence of these water bodies nearby, a detailed hydrogeological study has been done. As suggested in the Precise Area Communication letter, safety distances of 7.5m to adjacent Patta land.

7.3.4 SLOPE STABILITY STUDY

The proposed quarry is a very small quarry and the production is also less. Opencast-Mechanized mining with a bench height of 5m and bench width of 5m and 80° Slope is proposed. The depth of mining is proposed as 47 m (BGL), which is the ultimate pit limit. Also, there is no overburden since the entire mined out material will be utilized.

As far as technical factors are concerned, the following precautionary measures will be adopted:

- Strict adherence to DGMS norms
- Frequent inspection by Mines-in-charge/Mines Manager
- Bench height, width, slope will be as per DGMS norms

7.3.5 DISASTER MANAGEMENT PLAN

Proper preventive mechanism exists already in the mines.

- Precautionary measures are well explained to all staff by the mines in-charge.
- PPE necessary for all staff are available in the quarry. No person is allowed to enter inside without PPE. Avoiding quarrying during unfavorable environmental conditions.

- Carrying out safe blasting by following DGMS norms
- Safety equipment like fire extinguisher, first aid kit, etc are present in the mine.
- Proper maintenance of machinery used for mining
- In case of any emergency, the contact numbers of mines in-charge, mines manager, Management contact are available in the mines office.

7.3.6 MINE CLOSURE PLAN

The quarrying operation is proposed up to a depth of 47m (BGL) only, which will be achieved in 5 years. The ultimate pit dimension will be 100m x 66m x 27m. After completion of quarrying operation, the mined-out pit will be left as rain water harvesting pond. The quarry will be properly fenced with barbed wire.

CHAPTER 8

PROJECT BENEFITS

INTRODUCTION

Thiru. A.Arunmuthukumar has proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State.

PROJECT BENEFITS

Project benefits are attributed in various ways as under:

- Environment Benefits
- Employment Potential: Skilled, Semi-skilled & Un-skilled
- Economic Benefits
- Social Benefits

8.1 IMPROVEMENTS IN THE PHYSICAL INFRASTRUCTURE

The project area is located on Patta land, thereby causing no impact on the loss of agriculture or forest land. The project will create employment opportunities in the area. There will be no adverse effect of mining on the socioeconomic status of the people; rather, mining activities will improve their standard of living. The mining activity creates employment opportunities for the local people, and this definitely raises their economic status. Apart from the overall beneficial impact of the project on the local people of the region, it is felt necessary to augment facilities in the fields of education, health, and social awareness, including concern for the environment and ecosystem.

8.2 IMPROVEMENTS IN THE SOCIAL INFRASTRUCTURE

The proposed project will help in improving the socio-economic status of the near-by villages by generating direct or indirect employment opportunities. Substantial amount of indirect revenue will be generated by transportation activities along with employment e.g. labour, helper etc.

ECONOMIC BENEFITS:

The execution of proposed mine will boost the economy of the area by creating direct & indirect jobs for locals. There will be a positive cumulative impact of the project on the economy.

8.3 EMPLOYMENT POTENTIAL: SKILLED, SEMI-SKILLED & UN-SKILLED

The mining activity at proposed Rough Stone and Gravel of Thiru. A.Arunmuthukumar will create direct employment opportunity for 30 local people. As per MOEF & CC Notification CER cost is arrived for an amount of 10 Lakhs, it will be utilized as per the CER letter received from the competent authority,

8.4 OTHER TANGIBLE BENEFITS

The mine management will recruit semi-skilled & unskilled eligible workers from the nearby villages depending upon requirement in the mines and the eligibility, qualification and experience of local persons.

The overall effect will result in higher standard of living viz. better education, improved health and sanitation facilities, housing and acquisition of consumer durables. Housing, transport, medical, educational and other civic amenities will get improved in the future. This is envisaged as a major positive benefit.

CHAPTER 9

ENVIRONMENTAL COST BENEFIT ANALYSIS

As per EIA Notification dated 14th Sept., 2006, as amended from time to time, 'Environmental Cost Benefit Analysis' is applicable only if the same is recommended at the Scoping stage.

As per the ToR points issued by SEIAA-TN vide ToR Identification No. TO24B0108TN5694496N, dated 11.01.2025 for the proposed project, the 'Environmental Cost Benefit Analysis' is not prescribed.

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

10.1 DESCRIPTION OF THE ADMINISTRATIVE ASPECTS OF ENSURING OF ENSURING THAT MITIGATIVE MEASURES ARE IMPLEMENTED AND THEIR EFFECTIVENESS MONITORED AFTER APPROVAL OF THE EIA.

10.1.1 OBJECTIVES

The Environmental Management Plan is developed to ensure that a project is implemented in an environmentally sustainable manner, where all contractors and subcontractors, including consultants, understand the potential environmental risks arising from the project and take appropriate actions to minimize those risks. EMP also ensures that the project implementation is carried out in accordance with the planned design and by taking appropriate mitigation measures to reduce adverse environmental impacts during the project's life cycle. The impacts due to this mining project are detailed in Chapter 4 and Mitigation measures at the source level and an overall Management Plan at the site level are elaborated on in this chapter.

10.1.2 BASIC OF EMP

The Environmental Management Plan for the proposed project activities is formulated taking into considerations the following key environmental issues.

- ✚ Project activities
- ✚ Studies on Environmental Impact Assessment
- ✚ Air & water pollution control
- ✚ Working zone environment improvement
- ✚ Occupational hazards & safety
- ✚ Environmental monitoring facilities
- ✚ Environmental management costs

EMP covers all phases of the project considering the impacts with mitigation measures and monitoring programme. The plan outlines the measures that will be undertaken to ensure compliance with environmental legislations and to minimize adverse impact. Details of EMP measures for implementation in the mine are given below.

Table 10.1 Environmental Management Plan

Environmental Parameter	Mitigation Measures
Air	Wet drilling to suppress the dust emission from drill machine
	Regular water sprinkling on haulage road through fixed water sprinkler.
	2.0 KLD of water will be used for dust suppression.
	Avoiding blasting during high wind period, night times and temperature inversion periods.
	Regular grading of haul road to clear accumulation of loose material.
	It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements
	Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution
	Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted air pollution control measures.
	Afforestation for control of dust.
Surface water	There is kuttai is located at a distance of 410 m in North and Radhapuram Canal is located at a distance of 3.1 km in North West direction of lease area and Hanuman Nadi at the distance of 3.3km in south west and Uppar rover at a distance of 52km in South West
	Surface runoff management structures like garland drain of required length which is connected to a settling pond will be constructed around the quarry to collect the rain water. Monthly or after rainfall, inspection will done to ensure performance of water management structures and systems. There is no discharge of any effluent into nearby water bodies.
Ground Water	The quarrying operation is proposed upto a depth of 47 m below ground level, Water table is found at a depth of 64m, hence the project will not intersect the Ground water table during entire quarry period.
Water Consumption and Wastewater generation	Water required for this project will be sourced from vendors.
	Domestic wastewater generation of 1.5 KLD will be treated in septic tank with soak pit.
	Conduct ground water and surface water monitoring for parameters specified by CPCB

Noise	The workers employed are provided with protection equipment, earmuffs and ear-plugs for the protection from high noise level generated at the mine site wherever required.
	Noise levels are controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes.
	Development of thick greenbelt all along the safety Zone (7.5 m) of the project area to attenuate the noise and the same will be maintained.
	Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation.
	Annual ambient noise level monitoring are carried out in the project area and in surrounding villages to assess the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring.
Ground Vibration and Fly Rock Control	Controlled blasting using delay detonators will be carried out to maintain the PPV value well within the prescribed standards of DGMS.
	Drilling and blasting will be carried under the supervision of qualified persons.
	Will be Ensured that blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material.
	To be Undertake noise or vibration monitoring.
Land Environment	At conceptual stage, the mining pits will be converted into Rain Water Harvesting pit. Remaining area will be converted into greenbelt area.
	No external dumping i.e., outside the project area. The entire material will be sold.
	Garland drains with catch pits / settlement traps to be provided all around the project area to prevent run off affecting the surrounding lands.
	The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.
	Frequent Soil and ground water testing as per Environmental Monitoring Plan.
Top Soil / Overburden	There is no overburden anticipated during the quarrying operation.
Biological Environment	During mining, thick plantation will be carried out on the mentioned safety zone areas.
	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.
	Regular review on Green belt development programme.

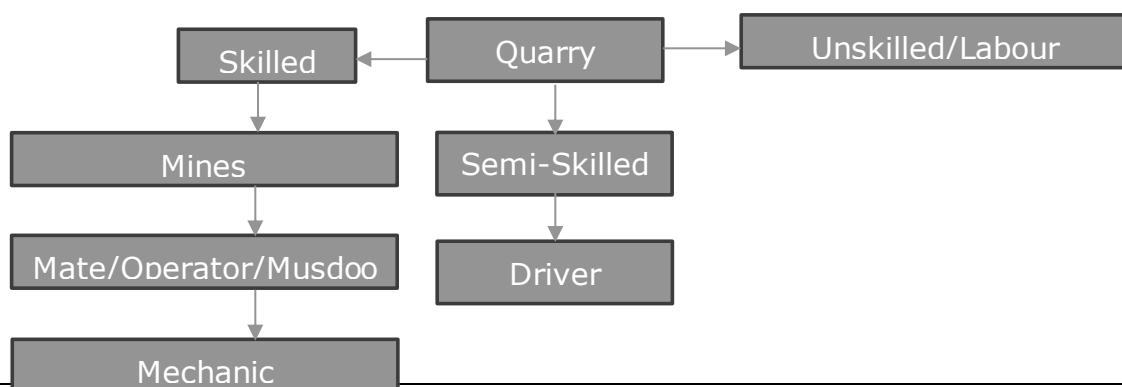
Year wise greenbelt development plan mentioned in Chapter III will be monitored.

10.1.3 **ADMINISTRATION AND TECHNICAL SETUP**

Since this is a very small quarry, the mines in-charge will take care of all environment related aspects. He will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level. The action plan for monitoring consists of monitoring of following environmental components.

- ✦ 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.

Fig. 10.1 Organization Chart



1	Skilled	Mines Manager	1 No
		Foreman/Mate	2 Nos
		Operator	12 Nos
		Mechanic	1 No
2	Semi-Skilled	Diver	4 Nos
3	Un-skilled	Labours	10 Nos
Total			30 Nos

10.1.4 ENVIRONMENTAL POLICY

- The Project Proponent has stipulated a well-defined Environmental policy by which the lessee is committed to conducting business with a strong environmental conscience towards the community, customers, and employees. The Environment policy is given as below.
- The Environment policy of "Rough Stone & Gravel Quarry of Thiru.A.Arunmuthukumar is that the rules and commitment are driven towards conservation of the environment.
- The lessee is committed to efficient use of natural resources based on the reduce, recycle and reuse method.
- The project is committed to the identification of possible impacts and will take the necessary management steps to mitigate the impacts.
- Environment performance will be regularly monitored and reported for continual improvement of our environment and health performance.

10.1.5 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

Occupational safety and health are very closely related to productivity and a good employer-employee relationship. The main factors affecting occupational health in quarries are fugitive dust and noise. Safety of employees during quarrying operations and maintenance of mining equipment will be taken care of as per the Mines Act 1952 and Rule 29 of the Mines Rules 1955. To avoid any adverse effect on the health of workers due to dust, noise, and vibration, sufficient measures have been provided. The health status of workers in the mine will be regularly monitored under an occupational surveillance programme. Under this programme, all employees are subjected to a detailed medical examination at the time of employment. Before the induction of employees, a pre-medical checkup is done. In addition, a periodical medical checkup will be done annually for all employees.

COST OF ENVIRONMENTAL CONTROL MEASURES

The effective implementation of EMP is not only reduce pollution load and comply the regulatory requirement but also increase productivity and improve marketability of product. The capital and recurring cost of EMP for the cluster of mines has been given in below table.

Table 10.2 - Environmental Management Plan Budget			
Activities	Mitigation Measure	Capital cost	Recurring Cost per Annum
Air Environment	Compaction, gradation and drainage on both sides for Haulage Road	0.49	0.49
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	8.00	0.50
	Muffle blasting – To control fly rocks during blasting	0.00	0.05
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	2.50	0.25
	No overloading of trucks/tippers/tractors	0.00	0.11
	Stone carrying trucks will be covered by tarpaulin	0.00	0.10
	Enforcing speed limits of 20 km/hr within ML area	0.20	0.02
	Regular monitoring of exhaust fumes as per RTO norms	0.00	0.05
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	0.00	0.98
	Installing wheel wash system near gate of quarry	0.50	0.20
Sub-Total (A)		11.69	2.74
Noise Environment	Provision for Portable blaster shed	0.50	0.02
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	0.00	14.00
Sub-Total (B)		0.50	14.02
Waste Management	Provision for domestic waste collection and disposal through authorized agency	0.25	0.20
	Installation of dust bins	0.05	0.02
Sub-Total (C)		0.30	0.22
Mine Closure	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	0.49	0.05
	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	9.76	0.10
	Plantation inside ML area (320 Nos.)	2.60	0.39

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

	Plantation outside ML area (340 Nos.)	3.30	0.33
	Sub-Total (D)	16.14	0.87
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	0.10	0.01
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	0.00	0.50
	Workers will be provided with Personal Protective Equipment's	1.20	0.30
	Health checkup for workers will be provisioned	0.00	0.30
	First Aid facility Provision	0.00	0.10
	Signage & boards for safety precautions	0.10	0.02
	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	2.44	0.10
	Installation of CCTV cameras in the mines and mine entrance	0.30	0.05
	Implementation as per Mining Plan and ensure safe quarry working (Statutory)	0.00	10.80
	Slope Stability Analysis	2.00	0.00
	Sub-Total (E)	6.14	12.18
	Grant Total	34.77	30.03

Environmental Management Plan Budget for 5 years			
Sl. No	Year	Capital cost (Lakhs)	Recurring Cost @ 5% Escalation (Lakhs)
1	1 st Year	34.77	30.03
2	2 nd Year	-	31.53
3	3 rd Year	-	33.11
4	4 th year	-	34.76
5	5 th year	-	36.50
Total		34.77	165.93
Grand Total (Lakhs)		200.71	
The total EMP Cost is 200.71 Lakhs for a period of Five years have been proposed. i.e., Capital cost of Rs. 34.77 Lakhs + Recurring cost of Rs. 165.93 lakhs.			

10.1.6 CONCLUSION

Various aspects of mining activities were considered, and related impacts were evaluated. Considering all the possible ways to mitigate the Environmental concerns, an Environmental Management Plan was prepared, and INR 200.71 lakhs has been allocated for the same. The EMP is dynamic, flexible, and subjected to periodic review. For projects where major environmental impacts are associated, EMP will be under regular review. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP, and the project will have a positive impact on the study area.

CHAPTER 11

SUMMARY& CONCLUSION

11.1 OVER ALL JUSTIFICATION FOR IMPLEMENTATION OF THE PROJECT

INTRODUCTION

Thiru.A.Arunmuthukumar has obtained Precise Area Communication Letter from Joint Director (AC), Department of Geology and Mining, Tirunelveli to quarry out 5,57,310 m³ of Rough Stone and 47,816 m³ of Gravel from an extent of 4.87.80Ha located in S.F.No. 291/2A2, 292/1C2 and 293/3B in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments the proposed “Rough Stone and Gravel Quarry” of Thiru.A.Arunmuthukumar mines cluster falls under Schedule 1(a) of EIA Notification and its subsequent amendments the project comes under Category B1. The ToR for preparation of EIA/EMP report of the project was approved vide ToR Identification No. TO24B0108TN5694496N, dated 11.01.2025. This report has been prepared in line with the approved TOR for production of maximum excavation of 5,57,310 m³ of Rough Stone and 47,816 m³ of Gravel.

S.No.	Description	Status/Remarks
1.	Sector	Non-coal mining
2.	Category of the project	B1
3.	Proposed mineral	Rough Stone & Gravel quarry
4.	Type of Lease	New Project
5.	Extent of the lease	4.87.80 Ha
6.	Proposed depth of Mining	47m BGL
7.	Method of mining	Opencast- Semi-mechanized
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years
10.	Proposed production quantity for five years	Rough Stone: 5,57,310 m ³ Gravel: 47,816 m ³

The Lessee. Thiru.A.Arunmuthukumar is an individual with sound experience in the identification, quarrying and marketing of Rough Stone and Gravel. The proposed land is a Patta land attached as Annexure 6.

11.1.1 LOCATION

This project site is located in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State with Latitude 08°12'00.14"N to 08°12'08.96"N and Longitude: 77°40'05.01"E to 77°40'14.02"E. with Survey of India Topo Sheet No. 58 H/12. To conduct the study, the proposed mine lease area (core zone) and an impact zone of 10 km radius (called buffer zone) around the proposed mine site were considered. The EIA report is based on three months baseline data (i.e. October 2024 to December 2024)

11.1.2 GEOLOGY

The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high grade metamorphic rock. The strike of the Charnockite formation is N50°E – S50°W with dipping towards SE70°.

11.1.3 PROJECT DESCRIPTION

This is a proposed Rough Stone and Gravel quarry by Opencast-Mechanized mining method with drilling and blasting. The quarrying is restricted up to a depth of 47 m below ground level. The geological method is estimated to be 21,88,620 Cu.m of Rough Stone and 97,272 Cu.m of Gravel. The mineable reserve calculated by deducting 7.5 m safety distance and bench loss. The mineable reserves is 5,57,310 Cu.m of Rough Stone and 47,816 Cu.m of Gravel which will be recovered at the rate of 100% recovery upto a depth of 47m Below ground level for the period of five years.

- It is proposed to quarry out rough stone and Gravel with 5m bench height, 5m width with 80° slope using conventional Open cast mechanized method. The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough Stone and Gravel.
- There is no overburden anticipated during entire rough stone and Gravel quarrying operation.

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

S.No.	Type of Detail	Description
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	New Project
3	Category	B1
4	Nature of mineral	Minor Mineral
5	Production	5,57,310 Cu.m of Rough Stone and 47,816 Cu.m of Gravel
6	Life	5 years
7	Waste generation and management	Nil
8	Bench height and width	Proposed bench height & width is 5.0m respectively and number of proposed benches is 10 Nos (1+9).
9	Ultimate pit depth	47 m BGL
10	End use	The excavated Rough Stone and Gravel is used for construction industries for Government & Public sector projects besides catering domestic housing and infrastructure projects in and around the district.

11.1.4 PROJECT REQUIREMENTS

The requirements of the project is given below.

S.No.	Nature of requirement	Description
1	Water requirement	Total water requirement of 12 KLD which will be procured from the outside agencies. 1.5 KLD drinking water requirement, green belt development is 8 KLD and dust suppression is 2.5 KLD.
2	Power requirement	No electricity is needed for mining operations, for office demands, it will be met from the state grid.
3	Manpower requirement	30 Nos of Employes.
4	Financial requirement	The total project cost as per PFR will be INR 396.83 lakhs including Operational cost, Fixed Asset cost and EMP cost
5	Funds for Socio economic development	INR 10 Lakhs (CER) is allocated. In addition, any demand raised by people during public hearing will also be met.

11.1.5 DESCRIPTION OF LEASE AREA

Table 11.1 Description of the lease area					
S.No.	Areas	Distance from project site			
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil within 15km radius			
2	Areas which are important or sensitive for ecological reasons				
A	Wetlands, water courses or other water bodies,	Water bodies	Distance	Direction	
		Kuttai	410m	N	
		Radhapuram Canal	3.1km	NW	
		Hanuman Nadi	3.3km	SW	
		Uppar River	5.2km	SW	
B	Coastal zone, biospheres,	Nil within 10km radius			
C	Mountains, forests	Kanniyakumari Wildlife Sanctuary – 12.7km (W)			
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration	Nil within 15km radius			
4	Inland, coastal, marine or underground waters	Nil within 15km radius			
5	State, National boundaries	Nil within 15km radius			
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	Nil within 15km radius			
7	Defense installations	Nil within 15km radius			
8	Densely populated or built-up area	Sanganeri Village – 1.4 km (NE)			
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Sanganeri Village – 1.4 km (NE)			

10	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Nil
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	Nil
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earth quakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions) similar effects	No. The area is not prone to earthquakes, floods, etc.

The features in the study area are given below.

The baseline data collection for meteorology, air, water, noise and soil environments have been carried out during October to December 2024.

Air, water, noise and soil samples are collected and analyzed through NABL accredited lab.

11.2 EXPLANATION OF HOW ADVERSE EFFECTS HAVE BEEN MITIGATED

11.2.1 AIR ENVIRONMENT

The air monitoring have been carried out in 6 locations and the results are given below.

Table 11.2 Details Of Ambient Air Quality Monitoring Locations				
S. No.	Station Code	Locations	Distance & Direction	Coordinates
1	AAQ 1	Proposed Mine Site	Core Zone	08°12'00.14"N & 77°40'05.01"E
2	AAQ 2	Uralvaimozhi	4km	8°12'26.51"N & 77°37'57.72"E
3	AAQ 3	Kudankulam	3.9km	8°11'34.55"N & 77°42'21.02"E
4	AAQ 4	Erukkandurai	2.9km	8°11'19.21"N & 77°38'55.53"E
5	AAQ 5	Ponnaukulam	2.1km	8°10'57.42"N & 77°39'53.57"E
6	AAQ6	Sanganeri	1.6km	8°12'29.22"N & 77°40'57.17"E
7	AAQ7	Nakkaneri	1.8km	8°13'4.69"N & 77°40'26.93"E

Air Quality Monitoring Results

Station ID	Min	Max	Avg.
Particulate matter PM₁₀ - (µg/m³)			
AAQ-1	24.2	33.3	29.0
AAQ-2	23.5	31.0	27.0
AAQ-3	22.6	29.1	25.9
AAQ-4	23.4	32.8	28.5
AAQ-5	22.4	27.9	25.2
AAQ-6	22.2	28.2	25.0
AAQ-7	21.6	27.6	24.4
CPCB NAAQS 2009 for PM₁₀ - 100 µg/m³			
Particulate matter PM_{2.5} (µg/m³)			
AAQ-1	50.9	69.7	60.84
AAQ-2	49.1	64.5	56.2
AAQ-3	47.4	60.9	54.4
AAQ-4	49.4	69.4	60.5
AAQ-5	47.3	58.7	53.1
AAQ-6	46.6	59.0	52.4
AAQ-7	44.2	56.6	50.0
CPCB NAAQS 2009 for PM_{2.5} - 60 µg/m³			
Sulphur Di-oxide as SO₂ (µg/m³)			
AAQ-1	5.7	8.8	9.3
AAQ-2	5.7	8.5	7.0
AAQ-3	5.3	8.4	6.6
AAQ-4	5.5	8.7	6.9
AAQ-5	4.8	7.7	6.1
AAQ-6	5.1	7.8	6.4
AAQ-7	4.2	6.9	5.5
CPCB NAAQS 2009 for SO₂ - 80 µg/m³			
Oxide of Nitrogen as NO₂ (µg/m³)			
AAQ-1	9.3	12.5	10.68
AAQ-2	5.3	8.4	6.6
AAQ-3	8.6	11.1	9.7
AAQ-4	9.1	12.0	10.3
AAQ-5	7.8	10.5	9.1
AAQ-6	8.0	10.8	9.3
AAQ-7	6.1	9.5	10.9
CPCB NAAQS 2009 for NO₂ - 80 µg/m³			

All the values of pollutant concentrations were found to be within the NAAQS Standards.

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

WATER ENVIRONMENT

Details Of Ambient Water Quality Monitoring Locations			
S.NO	Location Code	Monitoring Locations	Latitude and longitude
Ground Water			
1	GW1	MINE LEASE AREA	08°12'00.14"N & 77°40'05.01"E
2	GW2	URALVAIMOZHI	8°12'26.51"N & 77°37'57.72"E
3	GW3	KUDANKULAM	8°11'34.55"N & 77°42'21.02"E
4	GW4	ERUKKANDURAI	8°11'19.21"N & 77°38'55.53"E
5	GW5	PONNARKULAM	8°10'57.42"N & 77°39'53.57"E
6	GW6	SANGANERI	8°12'29.22"N & 77°40'57.17"E
7	GW7	NAKKANERI	8°13'4.69"N & 77°40'26.93"E 77°40'26.93"E

Table 11.3 Results of Ground Water sampling Analysis in 6 locations								IS:10500: 2012	
	GW1	GW2	GW3	GW4	GW5	GW6	GW7	Desir able	Perm issibl e
Odour	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	Agreeable	Agreeable
Turbidity	<1	<1	<1	<1	<1.0	<1	<1	Agreeable	Agreeable
pH at 25 °C	8.28	7.55	7.53	7.91	7.7	7.22	7.01	6.5 - 8.5	No Relaxation
Electrical Conductivity	690.4	976.4	783.1	865.3	2006	1005	858.9	1	5
Total Dissolved Solids	415	580	472	520	1204	606	560	500	2000
Total hardness as CaCO ₃	117	321	274	234	476	387	439	1	15
Calcium as Ca	42.6	70.6	59.2	65.6	137.6	109	83.1	200	600
Magnesium as Mg	2.4	34.8	30.2	16.8	31.8	27.6	55.5	200	600
Calcium as CaCO ₃	106	176	148	164	344	272	208	75	200
Magnesium as CaCO ₃	11.5	145	126	70	132	115	231		
Total alkalinity as CaCO ₃	272	286	164	153	241	360	314		
Chloride as Cl ⁻	125	76.3	152	147	478	165	56.7	250	1000

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

Free Residual chlorine as Cl-	BDL(D.L-0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	BDL(D.L-0.2)	BDL(D.L-0.2)	BDL (D.L - 0.2)	BDL (D.L - 0.2)	30	100
Sulphates as SO42-	35.6	183	68.9	138	323	35.2	173	45	No Relaxation
Iron as Fe	0.11	0.08	0.04	0.04	0.08	0.06	0.14	200	400
Nitrate as NO3	2.55	7.13	2.35	2.56	4.34	1.97	2.25	1	No Relaxation
Fluoride as F	0.32	0.53	0.42	0.46	0.58	0.35	0.66	0.1	0.3
Manganese as Mn	BDL(D.L-0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	BDL(D.L-0.05)	BDL(D.L-0.05)	BDL (D.L - 0.05)	BDL (D.L - 0.05)	Not Specified	Not Specified

All the values were found to be within permissible limits.

11.2.2 NOISE ENVIRONMENT

Noise levels were measured in 6 locations and the results are given below.

Table 11.4 Noise monitoring results					
S. No	Location	Day equivalent	Night equivalent	Day equivalent limits by CPCB	Night equivalent limits by CPCB
1	MINE LEASE AREA	51.1	40.8	75	70
2	URALVAIMOZHI	48.3	40.8		
3	KUDANKULAM	46.7	40.1		
4	ERUKKANDURAI	49.5	40.7		
5	PONNARKULAM	46.9	41.3		
6	SANGANERI	47.8	43.1		
7	NAKKANERI	45.5	38.9		

11.2.3 SOIL ENVIRONMENT

Soil samples are collected from 6 locations and the results are given below.

Table 11.5 Results of Soil Sample Analysis								
S. No	Parameter	Unit	S1	S2	S3	S4	S5	S6
1	pH at 25 °C	-	6.59	5.17	6.20	7.43	7.56	8.86
2	Electrical Conductivity	µmhos/cm	84.59	97.63	149.9	125.6	74.6	58.97
3	Dry matter content	%	94.55	97.72	93.65	89.90	90.70	95.57
4	Water Content	%	5.45	2.28	6.35	10.10	9.30	4.43
5	Organic Matter	%	1.36	1.17	1.97	2.99	2.09	1.34

6	Soil texture	-	sandy loam	silty clay loam	silty clay loam	silty clay loam	loam	silty clay loam
7	Grain Size Distribution	%	53.28	8.24	7.80	8.31	39.57	6.88
	i. Sand							
8	ii. Silt	%	35.44	62.18	60.09	55.59	40.32	61.76
9	iii. Clay	%	11.28	29.59	32.11	36.10	20.11	31.45
10	Phosphorous as P	mg/kg	1.22	0.97	0.22	0.77	0.75	1.12
11	Sodium as Na	mg/kg	896	556	974	860	460	795
12	Potassium as K	mg/kg	632	280	692	554	230	398
13	Nitrogen and Nitrogenous Compounds	mg/kg	320	220	212	345	160	296
14	Total Soluble Sulphate	%	BDL(D.L .0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)	BDL(D.L.0.02)
15	Porosity	%	20.1	20.4	23.1	25.4	21.6	24.5
16	Water Holding Capacity	Inches /foot	44	38	40	42	39	44

11.2.4 BIOLOGICAL ENVIRONMENT

FLORA

For measuring the extent of flora present in the study area, the area is divided into 4 quadrants. The flora population in each quadrant is summed up for the total population in the study area. Field survey is done. Erukku, Aavarai and Nayuruvi are found in lease area. In the buffer zone, common trees like Neem, papaya, mango, teak, etc and shrubs like Avarai, Aloe vera, etc, climbers like Kovai, jasmine etc are found.

FAUNA

In the study area, commonly found animals like dogs, cats, bush rat, cows, birds like crow, Myna, Sparrow, etc were found.

11.2.5 LAND USE

The land use land cover data is found using the LANDSAT – 9 satellite imagery. The number of bands used are 11. The land use pattern is given below:

Table No. 11.6: Major Land Use Units of the Study Area in Percentage

S. No	1st Level Classification	Area in (sq.km)	Percentage (%)
1	Built-up or habitation	13.37	4.13
2	Agriculture	63.32	19.59
3	Water bodies	22.79	7.05
4	Fallow Land	74.94	23.50
5	Beach	0.34	0.10
6	Land with scrub	15.34	4.79
7	Land without scrub	43.53	13.47
8	Plantation	12.42	3.84
Total		246.05	100

11.2.6 SOCIO ECONOMIC ENVIRONMENT

The socio-economic environment of the study area is studied by conducting primary sites through site visits and conducting sample surveys. The secondary data obtained from Census 2011 is also used.

The following data area collected from secondary data.

- Demographic pattern.
- Health pattern
- Occupational structure.
- Amenities available.

The expert visited 3 villages in the study area namely Tharuvai, Sengulam and Melathidiyur villages. Discussions were held with the people from nearby locality to study the social and economic conditions prevailing in the area. The expert also visited nearby hospitals, primary health centres and Tharuvai. The following observations were made.

Primary schools are available in many villages. For hospital facilities, people in the locality have to go to hospital in Tharuvai which is about 1.3 km from the lease area. Major schools with higher secondary and senior secondary schools are located in Tharuvai. The major Tharuvai Union located in the area is Tirunelveli. Facilities like petrol pump stations, ATM facility are available in Tharuvai.

Social infrastructure available are provided below:

Social infrastructure available			
Sl.No	Details	Village name	Distance
1	Post office	Nakkaneri	1.8km - N
2	Police station	Kudankulam	3.2km -SE
3	Town	Radhapuram	7.0km -N
4	DSP office	Nagercoil	26.0km -W
5	Register office	Radhapuram	7.0km -N
6	Hospital	Radhapuram	7.0km -N
7	School	Nakkaneri	2.0km -N
8	Petrol bunk	Ponnarkulam	2.2km -S
9	Panchayat union	Radhapuram	7.0km -N

11.2.7 HYDROGEOLOGY OF THE LEASE AREA

Since, There is kuttai is located at a distance of 410 m in North and Radhapuram Canal is located at a distance of 3.1 km in North West direction of lease area and Hanuman Nadi at the distance of 3.3km in south west and Uppar rover at a distance of 52km in South West is studied in detail using satellite imagery. But there is no running water currently in the river. Only during monsoons, water gets stagnated at a few places.

There are many tanks located in the study area, which are mostly dry throughout the year. These tanks get water only during monsoons. The factors may be monsoon failure, insufficient rainfall, poor rain water management and water consuming patterns.

11.2.8 GROUND WATER STUDY

For Ground water study, satellite imagery is used. Water levels from monitoring levels are collected through imaging. The pre-monsoon and post-monsoon data are collected and the results are analyzed.

During field visit, it is observed that water is available in wells only after monsoon. The yield is obtained at deep levels only.

As far as the mining lease area is considered, the area is rocky and no major seepage is envisaged. The production quantity is very less and the depth proposed is 47m BGL. Hence, there will not be any major impact due to mining on water levels or ground water levels in the area.

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Environmental impacts on the following environments are identified.

- Land environment
- Water environment
- Vegetation
- Fauna
- Air environment
- Noise environment
- Socio-economic impacts

11.2.9 LAND ENVIRONMENT: IMPACT AND MITIGATION MEASURES

The major impact due to this project on land environment is the change in land use. Since this quarry is a small one and the production is less, mining activity will be carried out upto 47 m BGL. Other than quarrying of minerals, no other change will be done since there is no dumping. To prevent soil erosion during monsoon season, garland drain will be constructed with silt traps. At the mine closure stage 4.87.80 Ha of lease area will be left as rain water harvesting pond 2.46.30 Ha will be developed with green belt. For this, plants like Pungai, Vagai, Vembu, Manjal konrai, Naval, Puvarasu, etc are selected. A total of 500 trees are planned to be planted. Spacing will be 3m x 3m.

11.2.10 WATER ENVIRONMENT: IMPACT AND MITIGATION MEASURES

There is no water body present inside the lease area. The entire water requirement for the project is 12 KLD which will be sourced from outside agencies. Negligible sewage will be generated, for which a septic tank with soak pit will be set up.

During monsoon season, the excess rain water, if any, will be led through garland drain of 0.6m width and 0.3 m depth to the collection pond with silt traps.

Since the mining operation will be limited upto depth of 47 m (BGL), there will not be any seepage. However, the rain water percolation and collection of water from seepage shall be less than 300 lpm and it shall be pumped out periodically by a stand by diesel powered Centrifugal pump motivated with 7.5H.P.Motor. The quality of water is expected to be potable. Hence, water stored in the quarry pit will be pumped into the adjacent agricultural fields. Further the water can also be used for plantation purposes

The major water bodies found in the buffer zone are.

Water bodies	Distance	Direction
Kuttai	410m	N
Radhapuram Canal	3.1km	NW
Hanuman Nadi	3.3km	SW
Uppar River	5.2km	SW

Since these water bodies are located outside the lease area and there is no discharge of effluent or any untreated water from the mines will be made in to these water bodies, there is no major impact. For the canal, adequate safety distance is left. The proponent will restrict the mining operation only within the lease and no other work will be carried out near the canal or any area outside the lease.

It is planned to carryout appropriate rainwater harvesting schemes and artificial recharge schemes in the area.

- Rain water falling in the quarry will be collected efficiently through garland drains.

➤ Water thus collected will be passed through collection tank with silt traps. This water can be used by the proponent for water sprinkling and for green belt purposes.

➤ Excess water after desiltation will be provided to downstream users, if any

11.2.11 BIOLOGICAL ENVIRONMENT: IMPACT AND MITIGATION MEASURES

Impacts

- Fauna is affected due to noise and vibration.
- Dust generation due to mining activities
- Change in land use of the lease area
- Accidental falling of animals

Mitigation measures

- Sirens will be blown before blasting in the mines. To reduce noise levels, plantation will be done. Blasting will be carried out only in the allotted time.
- To reduce dust generation, mist sprayers will be used. During transportation, the material will be covered with tarpaulin. Water sprinkling will be done to reduce generation of pollutants
- After the mine closure stage, the mine pit will be left as rain water collecting tank, which can attract bird population in the nearby areas.
- To prevent entry of animals, the mining area will be properly fenced.

11.2.12 AIR ENVIRONMENT: IMPACT AND MITIGATION MEASURES

The major air pollutants due to mining operations are fugitive emissions like PM₁₀, PM_{2.5}. Other than these pollutants, gaseous emissions of sulfur dioxide (SO₂) and oxides of nitrogen (NO_x) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

The major impacts are Dust emission due to drilling, blasting and transportation. The major mitigation measures include Using Wet drilling methods, Allowing drilling only with PPE, Carrying out blasting only during specified times, Avoiding blasting during

unfavorable weather conditions, Using explosives of good quality, Using mist sprayers Regular wetting of transport, Covering the materials carried in tippers with tarpaulin, Proper maintenance of vehicles used for transportation, Conducting regular emission tests for vehicles used for transport Development of greenbelt is proposed in the safety zone of 7.5m barriers in the lease area.

The anticipated data is calculated using AERMOD software and the projected values are found to be within limits.

11.2.13 NOISE ENVIRONMENT: IMPACT AND MITIGATION MEASURES

Impacts

- ✚ Noise generation in mining is due to operation like drilling, blasting and transportation of minerals within and outside the lease area.
- ✚ As per DGMS (Directorate General of Mines Safety) and OSHA (Occupational Safety and Health Administration) limits, the acceptable noise level is 85 dB(A) for an exposure period of 8 hours.
- ✚ Exposure to loud noise can also cause high blood pressure, heart disease, sleep disturbances, and stress. Noise pollution also impacts the health and well-being of wildlife.
- ✚ Noise exceeding prescribed limits may cause impairment like abnormal loudness perception, tinnitus, which causes a persistent high-pitched ringing in the ears, paracusis or distorted hearing

Mitigation measures

- ✚ As the distance between the source and receptor increases, the noise level also decreases. Hence, there will be a natural attenuation
- ✚ The proposed has planned to develop green belt in the periphery of the lease area, which diminishes sound volume by dampening them.
- ✚ All the equipment/machinery/trucks involved will be properly maintained to control noise generation
- ✚ Conducting regular health checkups for employees involved
- ✚ Employees will be made to work on shifts to reduce their exposure time

- ✚ Providing earplugs to all employees

By adopting these measures, the noise levels will be maintained well within MoEF & CC limits since the baseline value is low.

11.2.14 VIBRATION: IMPACT AND MITIGATION MEASURES

Impacts

- ✚ Though vibration will be only felt by the people working inside the lease area, it is usually undesired.
- ✚ Vibration may also cause flyrocks
- ✚ It may frighten the birds and small insects in the lease area. However, it will be felt only for a short period

Mitigation measures

- ✚ Carrying out blasting on limited scale, only from 12:00 PM to 2:00 PM
- ✚ Control of fly rock and vibration by maintaining peak particle velocity with in standard as prescribed by the DGMS and MOEF & CC.
- ✚ Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive
- ✚ Supervising blasting by competent and statutory foreman/ mines manager

11.2.15 SOCIO ECONOMIC ENVIRONMENT

Impact and Mitigation measures

No land is acquired from anyone. No rehabilitation is needed. Hence, there is no negative impact. The proponent has planned to spend INR 10,00,000 for CER activities. This amount will be subjected to change after public hearing.

11.2.16 OCCUPATIONAL HEALTH

Impacts

Dust generation due to drilling and blasting, Noise generation due to drilling and blasting, unexpected accidents. Continuous exposure to dust causes Pneumonia, Tuberculosis, Rheumatic arthritis and Segmental Vibration, Short term impact will be lack of sleep, high blood pressure and heart ailments. Long term exposure may lead to partial or permanent deafness, Risks include fly rocks, cracks or fissures due to improper mining methods

Mitigation measures

- Using dust suppression measures like water spraying on roads to reduce

rise of air pollutants

- Providing green belt for air pollutant and noise attenuation
- Ensuring slope stability
- Employing only trained professionals for blasting
- Conducting Pre-Medical Examination for employees before inducting
- Conducting periodical Medical Examination once in 6 months.
- Making all first aid kits available in mines office
- Keeping fire extinguisher in place
- Educating the employees about how to handle unexpected happenings
- Posting information containing emergency contact numbers in mines office
- By adopting all these measures, the safety of the employees working in the quarry will be ensured.

11.2.17 ENVIRONMENTAL MONITORING PROGRAMME

Monitoring is done to measure the efficiency of control measures implemented. Regular monitoring of various environmental parameters like air, water, noise and soil environments is needed to assess the status of environment during the project operation. A schedule is framed with timeline to monitor various parameters during the operation of the project. To evaluate the effectiveness of environmental management programme, regular monitoring of the important environmental parameters will be taken up. Air monitoring will be carried out once in 3 months, water sample will be collected once in a season, noise will be monitored once in 3 months, soil samples will be analyzed once per season. For EMP, a budget of INR 200.71 Lakhs is allocated.

11.2.18 PROJECT BENEFITS

Financial benefits

- This project will contribute financially through payment of taxes like royalty, GST, etc
- The project will also contribute via CSR.
- The demands of people during public hearing will also be considered by the project proponent

Social benefits

- This project provides employment to 30 people directly. Local people will be

hired for unskilled labour.

- Through CSR, nearby schools, hospitals will be benefitted.
- For CSR, INR 10,00,000 is allocated.
- Based on the demand of the people during public hearing, further funds will be allocated, if necessary.
- 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 200.71 lakhs for the five years has been allocated as EMP cost. 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. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

CHAPTER 12

DISCLOSURE OF CONSULTANTS

Global Mining Solutions is a NABET Accredited EIA consultant as per NABET certificate NABET/EIA/2326/IA 0110. The registered office of Global Mining Solutions is at Plot No.6, S.F.No.13/2 A2, VS City, RC Chettypatty, Kottamettupatty, Omalur, Salem, Tamilnadu-636455.

Declaration by Experts contributing to the proposed Rough Stone & Gravel Quarry over an extent of 4.87.80 Ha, while total cluster area of 23.44.80 Ha at Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State.

I, hereby, certify that I was a part of the EIA team that developed the above EIA.

EIA Coordinator Name: M. Manikandan


Signature & Date

Period of involvement: Oct 2024 to Dec 2024.

Contact information:

M/s Global Mining Solutions

Plot No.6, SF No. 13/2, A2, VS City, RC Chettypatty,

Kottamettupatty, Omalur,

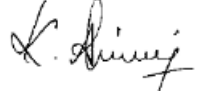
Salem, Tamil Nadu – 636 455

S. No.	Functional areas	Name of the expert/s	Involvement (period and task**)	Signature and Date
1	AP	Dhanalakshmi Ramanathan	Assessment of existing air quality, Impact of the project on ambient air and suggested mitigation measures for air pollution. Period: October 2024 to December 2024.	R. Dhanalakshmi
2	WP	Abirami Kaliaperumal	Assessment of existing water quality, impact of the project on surface and ground water quality, suggested mitigation measures for minimizing the impact. Period: October 2024 to December 2024.	K. Abirami
3	SHW	Ramados N	Assessment of waste generated from the project, suggested waste management practices. Period: October 2024 to December 2024.	N. Ramados
4	SE	Saraswathy K	Baseline SE studies. Data compilation and assessment. Impact of the project on SE status of the area. Formulation of CER plan. Period: October 2024 to December 2024.	K. Saraswathy
5	EB	Saravanan S	Baseline data collection of related to ecology of the area. Period: October 2024 to December 2024.	S. Saravanan
6	HG	Ravinthiran N	Hydrogeological feature of the area. Ground water depth and impact of project on ground water of the area. Period: October 2024 to December 2024.	N. Ravinthiran
7	AQ	Srilatha Thiruveedhula	Air quality modeling utilizing the area source model. Predication of the ground level concentration of the dust. Suggesting suitable mitigation measures. Period: October 2024 to December 2024.	T. Srilatha
8	NV	Dhanalakshmi Ramanathan	Ambient noise study of the area. Incremental noise	R. Dhanalakshmi

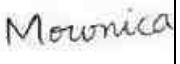
			generation due to quarry operation and impact of the noise due to the project. Period: October 2024 to December 2024.	
9	LU	Srilatha Thiruveedhula	Preparation of land use map based on satellite imagery. Land use classification and analysis. Impact prediction of the project on the surrounding land environment. Period: October 2024 to December 2024.	T. Srilatha
10	RH	S.V. Prashant	Identification of the Risk related to the mining activities. Preparation of emergency disaster management plan. Plan for supply of safety equipment for the worker. Period: October 2024 to December 2024.	S. Prashant
11	SC	Shisu Pal Singh	Soil monitoring, secondary data collection on soil type, soil management practices, utilization of topsoil. Period: October 2024 to December 2024.	Shisu Pal Singh
12	GEO	Valliappan Meyyappan	Geological map, stability of quarry and dump, management plan for mine stability, after use of mining quarry and geological feature of the area. Period: October 2024 to December 2024.	Valliappan Meyyappan

Proposed Rough Stone and Gravel Quarry at S.F.No.291/2A2, 292/1C2 and 293/3B over an extent of 4.87.80 Ha in Irukkandurai PartII Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State. (Cluster Area: 23.44.80 Ha). – Thiru. A.Arunmuthukumar

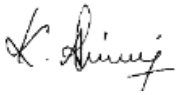
TM- EC

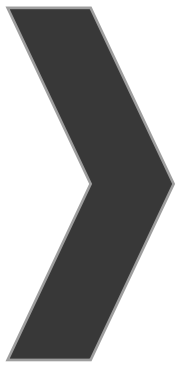
S.No	Name of TM (EC)	Sector (s) proposed	Approved (to work under)	Period of involvement	Type of work	Signature
1.	Abirami Kaliyaperumal	1	Manikandan Manickam	Period: October 2024 to December 2024	Associated with EIA Coordinator in overall preparation of Draft EIA/EMP report.	

TM- FAE:

S. No	Name of TM (FAE)	Functional Area	Approved FAE (to work under)	Period of involvement	Type of work	Signature
1	Kamaraj S	LU	Srilatha Thiruveedhula	Involved in Final EIA Report a Team Member In overall EIA Preparation	Associated with Experts in preparing Land use map based on satellite imagery, Land use classification and analysis, Impact prediction on surrounding land environment.	
		HG	Ashok Kumar Rajagopal	Period: October 2024 to December 2024	Associated with Experts in studying hydrogeological pattern of study area, Studying ground water and the impact of the project on ground water	
2	B.J.Sampatkkumar	SE	Saraswathy K	Period: October 2024 to December 2024	Assisted by the Expert in preparation of socio-economic report.	
		SC	Shishupal Singh	Period: October 2024 to December 2024	Assisted by the Expert in interpretation of soil sampling and their quality involved in the project.	
3	Mownica Balaji	NV	Dhanalakshmi Ramanathan	Period: October 2024 to December 2024	Associated with the expert team in suggesting control measures for noise and Ground Vibration.	
		AP	Dhanalakshmi Ramanathan		Associated with expert team in assessing existing air quality, impact of the	

					project on ambient air and suggesting mitigation measures for air pollution	
4	Balasubramani G	NV	Dhanalakshmi Ramanathan	Period: October 2024 to December 2024	Associated with the expert in selection of base line monitoring stations, Review of Noise quality results, Review of emission sources – drilling, blasting, excavation and transportation, Identification of impacts on environment, identification of remedial measures and input to EIA preparation	
		Geo	Valliappan Meyyappan		Associated with the expert in preparing Geological map.	
5	Suresh Mani	LU	Srilatha Thiruveedhula	Period: October 2024 to December 2024	Associated with Experts in preparing Land use map based on satellite imagery, Land use classification and analysis, Impact prediction on surrounding land environment.	
		HG	Ashok Kumar Rajagopal		Associated with Experts in studying hydro-geology pattern of study area, studying water and the impact of the project on ground water.	
6	Asan Ali S	NV	Srilatha Thiruveedhula	Period: October 2024 to December 2024	Associated with the expert in monitoring and analysis of blast induced ground vibration in order to develop the site-specific equation for its prediction, monitoring of fly rocks & air blast (noise), preparation of SOP's for the safety blasting practice in the mines.	
		Geo	Valliappan Meyyappan		Associated with the Qualified Person & Experts in preparing Geological map, assessing stability of	

					quarry slope faces and dump, management plan for mine stability and after use of mining quarry and geological features of the area during mine plan preparation.	
7	Prabu M	Geo	Valliappan Meyyappan	<i>Period: October 2024 to December 2024</i>	Associated with Experts and involved in Field Investigations, Mapping /Geo-referencing	
8	Abirami Kaliyaperumal	RH	S V Prashant	<i>Period: October 2024 to December 2024</i>	Involved with Expert team and involved in identification of Risk / Hazards and Safety Measures for various activity	
9	Dhanalakshmi Ramanathan	AQ	Srilatha Thiruveedhula	<i>Period: October 2024 to December 2024</i>	Involved with Expert team and involved in calculating air emission values using Meteorological data and Providing inputs for running modelling (ISCT3, AERMOD).	
10	Manikandan Manickam	AP	Ramadoss N	<i>Period: October 2024 to December 2024</i>	Associated with expert team in assessing existing air quality, impact of the project on ambient air and suggesting mitigation measures for air pollution	
		WP	Abirami Kaliyaperumal		Associated with Identification of the source of water, impact and suggesting suitable mitigation measures for water pollution	



ANNEXURE-1



File No: 11539
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment Authority(SEIAA),
TAMIL NADU)



Dated 11/01/2025



To,

Thiru. A. Arunmuthukumar
S/o.Arasappan, No.133/1, Yadhavar Street, Butterpuram, Iraippuvari, Tirunelveli District., Tirunelveli,
TIRUNELVELI, TAMIL NADU, Tirunelveli, 627108
arunmuthukumara53@gmail.com

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

Sir/Madam,

Sub: SEIAA, Tamil Nadu – Proposed Rough Stone & Gravel quarry over an extent of 4.87.80Ha in S.F.Nos. 291/2A2, 292/1C2 and 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu by Thiru. A. Arunmuthukumar - under project category – “B1” and Schedule S.No.1(a) “Mining of Minerals Projects” of EIA Notification, 2006, as amended – ToR issued along with Public Hearing - preparation of EIA report – Regarding.

Ref: 1. Online proposal No. SIA/TN/MIN/ 483219/2024, Dated: 25/06/2024.

2. Your application submitted for Terms of Reference dated:04.12.2024.

3. Minutes of the 523rd SEAC meeting held on 27.12.2024.

4. Minutes of the 787th SEAC meeting held on 08.01.2025.

2. The particulars of the proposal are as below :

(i) TOR Identification No.	TO24B0108TN5694496N
(ii) File No.	11539
(iii) Clearance Type	TOR
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar
(viii) Name of Company/Organization	ARUN MUTHU KUMAR
(ix) Location of Project (District, State)	TIRUNELVELI, TAMIL NADU
(x) Issuing Authority	SEIAA
(xii) Applicability of General Conditions	no

1. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1 (Part A and B) were submitted to the SEIAA for an appraisal by the SEAC under the provision of EIA notification 2006 and its subsequent amendments.

2. The above-mentioned proposal has been considered by (SEIAA) Appraisal Committee of SEIAA in the meeting held on 08.01.2025. The minutes of the meeting and all the Application and documents submitted [(viz. Form-1 Part A, Part B,)] are available on PARIVESH portal which can be accessed by scanning the QR Code above.

3. The State Expert Appraisal Committee (SEAC), based on the information & clarifications provided by the project proponent and after detailed deliberations on all technical aspects recommended the proposal for grant of Terms of Reference with Public Hearing under the provision of EIA Notification, 2006 and as amended thereof subject to the stipulation of specific and general conditions as detailed in Annexure (2).

4. The SEIAA has examined the proposal in accordance with the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and after accepting the recommendations of the SEAC hereby decided to issue the following Terms of Reference with Public Hearing for instant proposal of Thiru. A. Arunmuthukumar under the provisions of EIA Notification, 2006 and as amended thereof.

5. The Ministry/SEIAA-TN reserves the right to stipulate additional conditions, if found necessary.

6. The Terms of Reference with Public Hearing to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.

7. This issues with the approval of the Competent Authority.

Copy To

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

Annexure 1

Specific Terms of Reference for (Mining Of Minerals)

1. Seiaa Specific Condition:

S. No	Terms of Reference
1.1	After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing for the quantity of 5,57,310m ³ of rough stone and 47,816m ³ of gravel upto the depth of 47m BGL and the annual peak production of 1,11,990m ³ of rough stone and 25,576m ³ of gravel for the period of 5 years as per approved mining plan 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, standard conditions stipulated by MoEF&CC & the following conditions:

S. No	Terms of Reference
	1. The PP shall carry out the studies assessing the impact of mining on drainage pattern and agricultural activities and submit the study report and the mitigation measures along with the EIA Report. 2. It was noted from the KML, agricultural activity is carried out around the proposed site. Hence the PP is requested to furnish the No Objection Certificate (NOC) from the competent Authority of Agricultural Department and submit along with the EIA Report. 3. Since tank is located at a distance of 400m from the project site, the PP should carry out the scientific studies to assess the hydrogeological condition in order to understand the groundwater/Drainage Pattern and impacts of the quarrying operation on the ground water level present in the core zone, by a reputed institution and submit along with the EIA Report.

2. Seac Conditions - Site Specific

S. No	Terms of Reference
2.1	1. A Cluster Management Committee (CMC) shall be constituted including all the mines in the cluster as Committee Members for the effective management of the mining operation in the cluster through systematic & scientific approach with appointment of statutory personnel, appropriate environmental monitoring, good maintenance of haul roads and village/panchayat roads, authorized blasting operation etc. The PP shall submit the following details in the form of an Affidavit during the EIA appraisal: (i) Copy of the agreement forming CMC. (ii) The organisation chart of the Committee with defining the role of the members (iii) The 'Standard Operating Procedures' (SoP) executing the planned activities. 2. The PP shall erect the DGPS reference pillars painted with blue & white colour indicating the safety barrier of 7.5 m to be left under the Rule 13 (1) of MCDR, 1988 within the lease boundary and protective bunds and submit the photographic/videographic evidence along with the EIA report. 3. The study on the impacts of the mining on the windmills located nearby shall be carried out and the mitigation measures should be submitted along with the EIA report. 4. The structures within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m & upto 1km shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc. and spell out the mitigation measures to be proposed for the protection of the above structures, if any during the quarrying operations. 5. The proponent shall furnish photographs of adequate fencing, garland drainage built with siltation tank & green belt along the periphery including replantation of existing trees; maintaining the safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 6. The Proponent shall carry out Bio diversity study as a part of EIA study and the same shall be included in the Report. 7. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine. 8. Since the structures such as windmills, etc are situated within a radial distance of 500 m, the PP shall design the controlled blast parameters for reducing the blast-induced ground/air- vibrations and eliminating the fly rock from the blasting operations and a copy of such scientific study report shall be submitted during the EIA appraisal without any deviation. 9. The PP shall provide the strategies & action plan for maintaining curve shaped bench design as proposed in the approved Mining Plan in a realistic manner keeping the safety in mind, during the EIA appraisal. 10. The PP shall furnish the action plan based on the traffic study while allowing the transport

S. No	Terms of Reference
	vehicles passing through the village or any congested areas for ensuring the safety. 11. The PP shall carry out the comprehensive studies on the cumulative environmental impacts of the existing & proposed quarries which included drilling & blasting, loading & hauling on the surrounding village and structures. 12. The PP shall prepare a conceptual working plan accommodating the inclusion of haul road accessibility keeping the benches intact, by ensuring the slope stability of the working benches to be constructed and existing quarry wall.

3. Seac Standard Conditions

S. No	Terms of Reference
3.1	1. In the case of existing/operating mines, a letter obtained from the concerned AD (Mines) shall be submitted and it shall include the following: (i) Original pit dimension (ii) Quantity achieved Vs EC Approved Quantity (iii) Balance Quantity as per Mineable Reserve calculated. (iv) Mined out Depth as on date Vs EC Permitted depth (v) Details of illegal/illicit mining (vi) Violation in the quarry during the past working. (vii) Quantity of material mined out outside the mine lease area (viii) Condition of Safety zone/benches (ix) Revised/Modified Mining Plan showing the benches of not exceeding 6 m height and ultimate depth of not exceeding 50m. 2. Details of habitations around the proposed mining area and latest VAO certificate regarding the location of habitations within 300m radius from the periphery of the site. 3. The proponent is requested to carry out a survey and enumerate on the structures located within the radius of (i) 50 m, (ii) 100 m, (iii) 200 m and (iv) 300 m (v) 500m shall be enumerated with details such as dwelling houses with number of occupants, whether it belongs to the owner (or) not, places of worship, industries, factories, sheds, etc with indicating the owner of the building, nature of construction, age of the building, number of residents, their profession and income, etc. 4. The PP shall submit a detailed hydrological report indicating the impact of proposed quarrying operations on the waterbodies like lake, water tanks, etc are located within 1 km of the proposed quarry. 5. The Proponent shall carry out Bio diversity study through reputed Institution and the same shall be included in EIA Report. 6. The DFO letter stating that the proximity distance of Reserve Forests, Protected Areas, Sanctuaries, Tiger reserve etc., up to a radius of 25 km from the proposed site. 7. In the case of proposed lease in an existing (or old) quarry where the benches are not formed (or) partially formed as per the approved Mining Plan, the Project Proponent (PP) shall the PP shall carry out the scientific studies to assess the slope stability of the working benches to be constructed and existing quarry wall, by involving any one of the reputed Research and Academic Institutions - CSIR-Central Institute of Mining & Fuel Research / Dhanbad, NIRM/Bangalore, Division of Geotechnical Engineering-IIT-Madras, NIT-Dept of Mining Engg, Surathkal, and Anna University Chennai-CEG Campus. The PP shall submit a copy of the aforesaid report indicating the stability status of the quarry wall and possible mitigation measures during the time of appraisal for obtaining the EC. 8. However, in case of the fresh/virgin quarries, the Proponent shall submit a conceptual 'Slope Stability Plan' for the proposed quarry during the appraisal while obtaining the EC, when the depth of the working is extended beyond 30 m below ground level. 9. The PP shall furnish the affidavit stating that the blasting operation in the proposed quarry is

S. No	Terms of Reference
	carried out by the statutory competent person as per the MMR 1961 such as blaster, mining mate, mine foreman, II/I Class mines manager appointed by the proponent. 10. The PP shall present a conceptual design for carrying out only controlled blasting operation involving line drilling and muffle blasting in the proposed quarry such that the blast-induced ground vibrations are controlled as well as no fly rock travel beyond 30 m from the blast site. 11. The EIA Coordinators shall obtain and furnish the details of quarry/quarries operated by the proponent in the past, either in the same location or elsewhere in the State with video and photographic evidences. 12. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines, 13. What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines? 14. Quantity of minerals mined out. · Highest production achieved in any one year · Detail of approved depth of mining. · Actual depth of the mining achieved earlier. · Name of the person already mined in that leases area. · If EC and CTO already obtained, the copy of the same shall be submitted. · Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches. 15. All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone). 16. The PP shall carry out Drone video survey covering the cluster, green belt, fencing, etc., 17. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan. 18. The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment, and the remedial measures for the same. 19. The Project Proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of the Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment. 20. The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of groundwater pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds, etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. 21. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study. 22. The Proponent shall carry out the Cumulative impact study due to mining operations carried out in the quarry specifically with reference to the specific environment in terms of soil health, biodiversity, air pollution, water pollution, climate change and flood control & health impacts. Accordingly, the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind. 23. Rain water harvesting management with recharging details along with water balance (both

S. No	Terms of Reference
	monsoon & non-monsoon) be submitted. 24. Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given. 25. Details of the land for storage of Overburden/Waste Dumps (or) Rejects outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be provided. 26. Proximity to Areas declared as 'Critically Polluted' (or) the Project areas which attracts the court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the TNPCB (or) Dept. of Geology and Mining should be secured and furnished to the effect that the proposed mining activities could be considered. 27. Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided. 28. Impact on local transport infrastructure due to the Project should be indicated. 29. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity. 30. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report which should be site-specific. 31. As a part of the study of flora and fauna around the vicinity of the proposed site, the EIA coordinator shall strive to educate the local students on the importance of preserving local flora and fauna by involving them in the study, wherever possible. 32. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner. 33. Taller/one year old Saplings raised in appropriate size of bags, preferably ecofriendly bags should be planted as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner 34. A Disaster management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period. 35. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report for the complete life of the proposed quarry (or) till the end of the lease period. 36. Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed. 37. Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations. 38. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation. 39. Details of litigation pending against the project, if any, with direction /order passed by any

S. No	Terms of Reference
	Court of Law against the Project should be given. 40. Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc. 41. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project Proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCCB. 42. The PP shall prepare the EMP for the entire life of mine and also furnish the sworn affidavit stating to abide the EMP for the entire life of mine. 43. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Conditions besides attracting penal provisions in the Environment (Protection) Act, 1986.

Standard Terms of Reference for (Mining of minerals)

1.

S. No	Terms of Reference
1.1	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
1.2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given
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
1.4	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the areashould 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)
1.5	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
1.6	Details about the land proposed for mining activities should be givenwith 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
1.7	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-

S. No	Terms of Reference
	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
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
1.9	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
1.10	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
1.11	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
1.12	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 State Expert Appraisal Committees
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
1.14	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
1.15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given
1.16	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
1.17	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
1.18	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

S. No	Terms of Reference
	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 alongwith 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
1.19	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 Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered
1.20	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)
1.21	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
1.22	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
1.23	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
1.24	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
1.25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided

S. No	Terms of Reference
1.26	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
1.27	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
1.28	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 State Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished
1.29	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
1.30	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
1.31	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
1.32	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
1.33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report
1.34	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
1.35	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
1.36	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

S. No	Terms of Reference
1.37	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
1.38	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
1.39	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
1.40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given
1.41	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out
1.42	A Disaster management Plan shall be prepared and included in the EIA/EMP Report
1.43	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
1.44	Besides the above, the below mentioned general points are also to be followed:- a) All documents to be properly referenced with index and continuous page numbering. b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated. c) 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. d) Where the documents provided are in a language other than English, an English translation should be provided. e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted. f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF 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. g) 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. h) 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. i) 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

SEIAA STANDARD CONDITIONS:

Cluster Management Committee

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

Agriculture & Agro-Biodiversity

9. Impact on surrounding agricultural fields around the proposed mining Area.
10. Impact on soil flora & vegetation around the project site.
11. Details of type of vegetation including no. of trees & shrubs within the proposed mining area and. If so, transplantation of such vegetation all along the boundary of the proposed mining area shall committed mentioned in EMP.

12. The Environmental Impact Assessment should study the agro-biodiversity, agro-forestry, horti-cultural plantations, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
13. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
14. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.

Forests

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

Water Environment

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

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

Energy

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

Climate Change

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

Mine Closure Plan

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

EMP

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

Risk Assessment

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

Disaster Management Plan

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

Others

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

38. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.

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

STANDARD CONDITIONS

A. STANDARD TERMS OF REFERENCE

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

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

- 5) Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the

site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.

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

furnished to the effect that the proposed mining activities could be considered.

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

should be indicated.

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

should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed Environmental Management Plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
 - a) Executive Summary of the EIA/EMP Report

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

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

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

1. Project name and location (Village, District, State, Industrial Estate (if applicable)).
2. Process description in brief, specifically indicating the gaseous emission, liquid effluent

and solid and hazardous wastes.

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

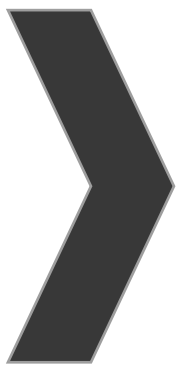
21. Emergency preparedness plan in case of natural or in plant emergencies
22. Issues raised during public hearing (if applicable) and response given
23. CER plan with proposed expenditure.
24. Occupational Health Measures
25. Post project monitoring plan
26. The project proponent shall carry out detailed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

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

- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF& CC vide O.M. No. J-11013/41/2006-IA.II (I) dated 4th August, 2009, which are available on the website of this Ministry should also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and

Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.

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



ANNEXURE-2



From

Thiru.L.Suresh..
Joint Director/
Assistant Director (i/c)
Geology and Mining,
Tirunelveli.

To

Thiru.A.Arunmuthukumar,
S/o.Arassamuthu,
133/1, Yathavar Street,
Pattarapuram, Eraippuvar,
Nanguneri Taluk,
Tirunelveli District.

Rc.No.M2/547/2023

Dated: 17.11.2023

Sir,

Sub: Mines and Quarries - Minor Minerals - Tirunelveli District - Quarry lease application preferred by Thiru.A.Arunmuthukumar, S/o.Arassamuthu, for quarrying roughstone and gravel over an extent of 4.87.80 hectares of palta lands in SF. Nos. 291/2A2, 292/1C2 & 293/3B of Irukkandurai Part-II Village - Radhapuram Taluk - Precise area communicated - Approved Mining Plan - Called for - Reg

Ref: 1. Quarry lease application preferred by Thiru.Arunmuthukumar, S/o.Arassamuthu, Yathavar Street, Pattarapuram, Eraippuvar, Tirunelveli, dated, 25.07.2023.

2. The Sub-Collector(i/c), Cheranmahadevi/ District Supply Officer, Tirunelveli letter No. B4/5841/2023, dated. 06.10.2023.

3. Inspection report of the Joint Director/Assistant Director(i/c) of Geology and Mining, Tirunelveli, dated, 14.11.2023.

Thiru.A.Arunmuthukumar, S/o.Arassamuthu, 133/1, Yathavar Street, Pattarapuram, Eraippuvar, Nanguneri Taluk, Tirunelveli District has applied for grant of quarry lease for quarrying Roughstone and Gravel over an extent of 4.87.80 hectares of palta land in SF. Nos.291/2A2, 292/1C2 & 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk.



Tirunelveli District for a period of 5 years under Rule 19 (1) of the Minor Mineral Concession Rules, 1959.

2. The Sub Collector, Cheranmanadevi(i/c)/District Supply Officer, Tirunelveli and the Joint Director/Assistant Director(i/c) of Geologist of Geology and Mining, Tirunelveli has furnished their reports in the reference 2nd and 3rd cited respectively and recommended for grant of quarry lease in the applied area subject to certain conditions.

3. Based on the recommendations of the Sub Collector, Cheranmanadevi(i/c)/District Supply Officer, Tirunelveli and the Joint Director/Assistant Director(i/c) of Geologist of Geology and Mining, Tirunelveli the application preferred by Thiru A. Arunmuthukumar, S/o. Arasamuthu for grant of quarry lease for quarrying roughstone and gravel in the subject area is considered for grant for a period of 5 years and precise area is hereby communicated over an extent of 4.87.80 hectares of patta land in SF. Nos. 291/2A2 (1.54.0), 292/1C2 (2.35.0) & 293/3B (0.98.80) of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District under Rule 19 of the Tamil Nadu Mineral Concession Rule 1959 and communicated to the applicant company as per the power conferred under amended Rule 41(4) Tamil Nadu Minor Mineral Concession Rules, 1959 subject to following condition.

- i. A Safety distance of 7.5 meters shall be maintained all along the boundary of the area applied for lease.
- ii. A safety distance of 10 meters shall be maintained to the PWD land on the north side of the applied area.
- iii. A safety distance of 150 meters to the wind mill is located on the eastern, western and southern side of the applied area.
- iv. A safety distance of 50 meters to the EB line located on western and south-east side of the applied area.



- v. No hindrance shall be caused to the adjoining pattadars' lands while carrying out quarrying operations.
- vi. No dimensional blocks with a size of 30cm x 30cm x 30cm suitable for polishing shall be produced.

Environmental Clearance should be obtained from the State Level Environment Impact Assessment Authority.

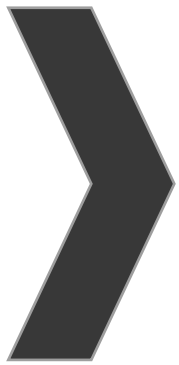
4. In view of the above, you are hereby directed to submit mining plan duly prepared by a Recognized Qualified Person in respect of the precise area notified for granting of the Joint Dir. to Assistant Director (I/c) of Geology & Mining, Tirunelveli within a period of 90 days from the date of receipt of this letter as required under rule 41 (5) of Tamil Nadu Minor Minerals Concession Rules, 1959.

5. You are further directed to produce Approved Mining Plan and Environmental Clearance obtained from the State Level Impact Assessment Authority (SEIAA) as required under rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 for grant of quarry lease for quarrying Roughstone and Gravel in respect of the precise area communicated.


 Joint Director/
 Assistant Director(i/c),
 Geology and Mining,
 Tirunelveli.

Copy to:

The Chairman
 State Level Environmental
 Impact Assessment Authority,
 Chennai.



ANNEXURE-3

From

Thiru.L.Suresh., M.Sc.,
Joint Director/
Assistant Director(i/c).
Geology and Mining,
Tirunelveli.

To

Thiru.A.Arunmuthukumar,
S/o.Arasappan,
No.133/1, Yathavar Street,
Pattarpuram, Eraippuvari,
Nanguneri Taluk,
Tirunelveli District.

Rc.No.M2/547/2023

dated.24.11.2023

Sir,

Sub: Mines and Minerals - Minor Minerals - Tirunelveli District - Quarry lease application preferred by Thiru.A.Arunmuthukumar, S/o.Arasappan for quarrying roughstone and gravel over an extent of 4.87.80 hectares of patta lands in SF. Nos. 291/2A2, 292/1C2 & 293/3B of Irukkandurai Part-II Village - Radhapuram Taluk - precise area communicated - Mining plan submitted - Approval accorded - Reg.

Ref : 1. Quarry lease application preferred by Thiru.Arunmuthukumar, S/o.Arasamuthu, Yathavar Street, Pattarpuram, Eraippuvari, Tirunelveli, dated.25.07.2023.
2. Precise Area Communication letter in Rc. No.M2/547/2023, dated. 17.11.2023.
3. Letter received from the applicant Thiru.Arunmuthukumar, S/o.Arasamuthu, dated. 24.11.2023.

Thiru.A.Arunmuthukumar, S/o.Arasamuthu, 133/1, Yathavar Street, Pattarpuram, Eraippuvari, Nanguneri Taluk, Tirunelveli District has applied for grant of quarry lease for quarrying Roughstone and Gravel over an extent of 4.87.80 hectares of patta land in SF. Nos.291/2A2, 292/1C2 & 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk,

Tirunelveli District for a period of 5 years under Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

2. Based on the recommendations of the Sub Collector, Cheranmahadevi(i/c)/District Supply Officer, Tirunelveli and the Joint Director/Assistant Director(i/c) of Geologist of Geology and Mining, Tirunelveli the application preferred by Thiru.A.Arunmuthukumar, S/o.Arasamuthu for grant of quarry lease for quarrying roughstone and gravel in the subject area was considered for grant for a period of 5 years and precise area was communicated over an extent of 4.87.80 hectares of patta land in SF. Nos. 291/2A2 (1.54.0), 292/1C2 (2.35.0) & 293/3B (0.98.80) of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District vide reference 2nd cited.

3. In response to the precise area communicated, the applicant company has submitted three copies of draft Mining Plan duly prepared by a Qualified Person and requested for approval of the same vide reference 3rd cited.

4. The draft Mining Plan submitted in respect of the precise area communicated have been verified with reference to field conditions. All the conditions stipulated in the precise area communicated have been incorporated in the Mining Plan. The required safely distance of 7.5 meters to the adjacent patta lands and 10 meters to the PWD land on the north side and 150 meters to the wind mill is located on the

eastern, western and southern side and 50 meters to the EB line located on the western and south-east side of the applied area have been clearly demarcated.

5. In exercise of the powers vested under sub rule (2) and (5) of Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan for a period of five years subject to the following conditions:-

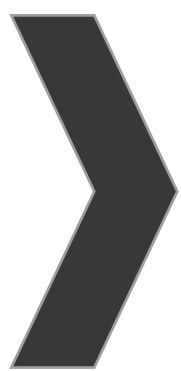
- i. The mining plan is approved without prejudice to any other order or direction from any court of contempt jurisdiction.
- ii. The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- iii. 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) Act 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Indian Explosives Act, 1884 [Central Act IV of 1884] and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- iv. Quarrying operations should be carried out in accordance with the Approved Mining Plan.
- v. The applicant is entitled for production of 5,57,310 cbm of Roughstone, 47,816 cbm of Gravel upto a depth of 47 meters for a period of 5 years as per the Mining Plan.
- vi. A safety distance of 7.5 meters shall be provided for the adjacent patta lands.
- vii. A safety distance of 10 meters shall be maintained to the PWD land on the north side of the applied area.

- viii. A safety distance of 150 meters to the wind mill is located on the eastern, western and southern side of the applied area.
- ix. A safety distance of 50 meters to the EB line located on western and south-east side of the applied area.
- x. No hindrance shall be caused to the adjoin pattadars' lands while carrying out quarrying operations.
- xi. No dimensional blocks with a size of 30c.m x 30c.m x 30cm suitable for polishing shall be produced.
- xii. Environmental Clearance shall be obtained from the State Level Environment Impact Assessment Authority, Chennai.

6. As directed by the Joint Director/Assistant Director(i/c) of Geology and Mining, Tirunelveli in the reference 2nd cited, you are hereby requested to produce Environmental Clearance obtained from the State Level Environment Impact Assessment Authority (SEIAA), Chennai as applicable under Rule 42 of Tamil Nadu Minor Mineral Concession Rules, 1959 for grant of quarry lease, in respect of the precise area communicated.

Encl: Approved Mining plan.


Joint Director/Assistant Director(i/c),
Geology and Mining,
Tirunelveli.



APPROVAL MINING PLAN



MINING PLAN FOR IRUKKANDURAI PART-II ROUGH STONE & GRAVEL QUARRY

(Prepared under rule 19(1), 41 & 42 of Tamil Nadu
Minor Mineral Concession Rules, 1959)

LOCATION OF THE QUARRY LEASE APPLIED AREA

STATE : TAMIL NADU
DISTRICT : TIRUNELVELI
TALUK : RADHAPURAM
VILLAGE : IRUKKANDURAI PART-II
S.F.NOS : 291/2A2, 292/1C2 AND 293/3B
EXTENT : 4.87.80 Ha

ECO-FRIENDLY



SUSTAINABILITY



SAFETY



(PPE)



A.Arunmuthukumar,
S/o.Arasappan,
No.133/1, Yathavar Street,
Pattarpuram, Eraippuvari,
Nanguneri Taluk, Tirunelveli District.

CONSENT LETTER FROM THE APPLICANT

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 4.87.80hectares of Patta lands in S.F.Nos. 291/2A2, 292/1C2 and 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District Tamil Nadu State has been prepared by

C.Natarajan, M.Sc.,M.Phil.,
Qualified Person

I request the Joint Director / Assistant Director (i/c), Department of Geology and Mining, Tirunelveli District to make further correspondence regarding modifications of the Mining Plan with the said Qualified Person on this following address.

C.Natarajan, M.Sc.,M.Phil.,
Qualified Person

No.93/36E2, Subramanியar Kovil Street,
Omalur Taluk, Salem District,
Tamil Nadu, Pin-636 455.
Mobile: 97502 23535 &94446 54520.

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

Signature of the Applicant


A.Arunmuthukumar

Place: Tirunelveli
Date: 18.11.2023



A.Arunmuthukumar,
S/o.Arasappan,
No.133/1, Yathavar Street,
Pattarpuram, Eraippuvari,
Nanguneri Taluk, Tirunelveli District.

DECLARATION

The Mining Plan in respect of **Rough Stone and Gravel** quarry over an extent of 4.87.80hectares of Patta lands in S.F.Nos. 291/2A2, 292/1C2 and 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State has been prepared with my consultation and I have understood the contents and agree to implement the same in accordance with the Mining Laws.

Signature of the Applicant

A.Arunmuthukumar

Place: Tirunelveli

Date: 18.11.2023



C.Natarajan, M.Sc.,M.Phil.,

Qualified Person

No.93/36E2, Subramaniyar Kovil Street,
Omalur Taluk, Salem District,
Tamil Nadu, Pin-636 455.
Mobile:97502 23535 & 94446 54520.

CERTIFICATE

This is to certify that, the provisions of under rules 41 & 42 as Amended in under Tamil Nadu Minor Mineral Concession Rules, 1959, have been observed in the Mining Plan for the grant of **Rough Stone and Gravel** quarry lease over an extent of 4.87.80hectares of Patta lands in S.F.Nos. 291/2A2, 292/1C2 and 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State applied by Thiru.A.Arunmuthukumar, for fresh quarry lease.

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

Certified

Signature of Qualified Person.


C.Natarajan, M.Sc., M.Phil.,

Qualified Person

C.NATARAJAN M.Sc.,M.Phil.,

Qualified Person

Place: Salem

Date: 20.11.2023





C.Natarajan, M.Sc.,M.Phil.,

Qualified Person

No.93/36E2, Subramaniyar Kovil Street,

Omalur Taluk, Salem District,

Tamil Nadu, Pin-636 455.

Mobile:97502 23535 & 94446 54520.

CERTIFICATE

Certified that, in preparation of Mining Plan for **Rough Stone and Gravel** quarry over an extent of 4.87.80hectares of Patta lands in S.F.Nos.291/2A2, 292/1C2 and 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District Tamil Nadu State for Thiru.A.Arunmuthukumar, covers all the provisions of Mines Act, Rules, and Regulations etc., made there under and whenever specific permission are required, the applicant will approach the Director General of Mines Safety, Chennai. The standards prescribed by DGMS in respect of Mines Health will be strictly implemented.

Certified

Signature of Qualified Person.


C.Natarajan, M.Sc., M.Phil.,

Qualified Person

C.NATARAJAN M.Sc.,M.Phil.,

Qualified Person

Place: Salem

Date: 20.11.2023



CERTIFICATE

Certified that I, C.Natarajan, residing at No.93/36 E2, Subramaniyar Kovil Street, Omalur Taluk, Salem District, Tamil Nadu, Pin Code-636 455. I am a Post graduate in Geology (M.Sc., Geology) from Annamalai university and more than five years of experience in mining Field.

Rule 15(1)(a) and (b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) concession Rules 2016 stipulates the eligibility for preparing Mining Plans as "(1)(a) a post graduate degree in Geology granted by a university established" and (1)(b) "Professional experience of five years of working in a supervisory capacity in the field of mining after obtaining the degree". Since my qualification and experience are satisfied the Rule (1)(a) and (1)(b) of 15 of the Said Rules, I am eligible to prepare Mining Plans for both Major and Minor Minerals.

Accordingly I prepared this Mining Plan in respect of Rough Stone and Gravel quarry lease applied for an extent of 4.87.80hectares of Patta land in S.F.Nos.291/2A2, 292/1C2 and 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, by Thiru.A.Arunmuthukumar, for a period of Five years. Since the Mining Plan is prepared as per the provisions contained in Rule 15(1) (a) and (b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) concession Rules 2016, the same may be approved by the Competent Authority.


C.Natarajan, M.Sc.,M.Phil.,

Qualified Person

C.NATARAJAN M.Sc.,M.Phil.,

Qualified Person

Place: Salem

Date: 20.11.2023



CONTENTS

S. No.	Description	Page No.
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9.0	Employment Potentials & Welfare Measures	16
10.0	Environment Management Plan	18
11.0	Mine Closure Plan	21
12.0	Any Other Details Intend to furnish by the Applicant	22



Annexure

S. No.	Description	Annexure No.
1.0	Precise Area Communication letter issued by the Joint Director / Assistant Director (i/c) Department of Geology and Mining,	I
2.0	Copy of FMB	II
3.0	Copy of village map	III
4.0	Copy of Patta	IV
5.0	Copy of Adangal	V
6.0	Copy of A Register	VI
7.0	Copy of Consent Documents	VII
8.0	Copy of Identity Proof	VIII
9.0	Copy of QP Certificate	IX

LIST OF PLATES

S. No.	Description	Plate No.
1.0	Location Plan	I
2.0	Environmental Plan	I-A
3.0	Satellite imagery map	I-B
4.0	Topo sketch of Quarry lease applied area for 10Km Radius	I-C
5.0	Key Plan	I-D
6.0	Quarry lease & Surface plan	II
7.0	Topography and Geological Plan & Sections	III
8.0	Mineable Plan & Sections	IV
9.0	Yearwise Development, Production Plan & Sections	V
10.0	Conceptual Plan & Sections	VI

[Signature]



MINING PLAN FOR MINOR MINERALS

ROUGH STONE AND GRAVEL

Over an extent of 4.87.80 hectares of Patta land in S.F.Nos.291/2A2, 292/1C2 and 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu State.

(PREPARED UNDER RULE 19(1), 41 and 42 OF TNMMCR 1959)

1.0 Introduction and Executive Summary;

1. The present Mining Plan is prepared for Thiru.A.Arunmuthukumar, S/o.Arasappan, No.133/1, Yathavar Street, Pattarpuram, Eraippuvari, Nanguneri Taluk and Tirunelveli District.
2. The application was processed by the Joint Director / Assistant Director(i/c) Department of Geology and Mining, Tirunelveli, and passed an order vide Rc.No. M2/547/2023 dated 17.11.2023 directing the applicant to produce approved Mining Plan under Rule 41(5) of the Tamil Nadu Minor Mineral Concession Rules, 1959 and Environmental Clearance Certificate under Rule 42 from the State Level Environmental Impact Assessment Authority (SEIAA) for the grant of quarry lease to quarry **Rough Stone and Gravel** over an extent of 4.87.80 hectares of Patta lands in S.F.Nos. 291/2A2, 292/1C2 and 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District of Tamil Nadu State for a period of five years.
3. Accordingly, Mining Plan is prepared under the provisions of rule 19(1), 41 and 42 as per the amendments under Tamil Nadu Minor Mineral Concession Rules, 1959 by incorporating all the conditions imposed in the precise area communication letter.
4. Geological Resources is estimated at 21,88,620m³ of Rough stone and 97,272m³ of gravel formation and Mineable Reserves is estimated at 5,57,310m³ of Rough Stone, 47,816m³ of gravel formation and after leaving necessary safety distance from the lease boundary as indicated in the precise area letter and relevant mining laws in force.
5. Production Schedule is proposed production of 5,57,310m³ of Rough Stone, 47,816m³ of gravel formation for the period of five years.
6. The applicant ensured that, child labours under 18 years of age will not be engaged for quarrying operation.



7. The applicant ensure that will appoint should have valid certified persons (Mines Manager, Foreman, Mate) during quarrying operation.

8. Environmental parameters,

- i) The area does not attract the Forest Conservation Act, 1980 as there is no forest around 10Km radius.
- ii) There is no interstate boundary around 10Kms radius.
- iii) There is no wild life animal sanctuary within 10Km radius from the project site area under the Wildlife (Protection) Act, 1972.

Therefore the project seeks clearance only from State Level Environmental Impact Assessment Authority (SEIAA).

9. Environmental measures to be adopted shall be,

- i) Dust Control at source while drilling and blasting,
- ii) Dust suppression at loading point and transport haul roads,
- iii) Noise Control in blasting, control of fly rock missiles and vibration by doing peak particle velocity with in standard as prescribed by the DGMS and MOEF.
- iv) Unnecessary land degradation should be avoided or damaged land should be reclaimed or rehabilitated.
- v) Avoid uneven rat hole mining and follow scientific and systematic mining by safe bench system of open cast mining.
- vi) Mining near major fracture zones if any should be avoided to control ground water fluctuation in the adjacent agricultural lands.
- vii) Emission test of vehicles should be in tack to maintain minimum emission level of flue gases.
- viii) Noise level should not exceed 80db and the vehicles should use only permitted Air Horn while on road near residential areas.
- ix) Safety zones as prescribed by the Department of Geology and Mining from adjacent infrastructures should be strictly adhere to.
- x) And any other conditions as stipulated by the concerned authorities should be followed to protect the environment.



EXECUTIVE SUMMARY:

a.	Name of the Village Panchayat	:	Irukkandurai Part-II	
b.	Name of the Panchayat Union	:	Radhapuram	
c.	The proposed total Movable Reserves	:	5,57,310m ³ of Rough Stone, 47,816m ³ of gravel formation	
d.	The proposed quantity of reserves (level of production) for five years to be mined is(Recoverable reserves)	:	5,57,310m ³ of Rough Stone, 47,816m ³ of gravel formation	
e.	Total extent of the area	:	4.87.80Ha	
f.	Proposed Period of mining	:	Five years	
g.	Existing depth	:	It is fresh quarry lease applied area	
h.	Proposed Depth of mining	:	47m (below ground level) for the proposed mining plan.	
i.	Method of mining/level of mechanization	:	Opencast, Semi-mechanized Mining with a bench height of 5m and bench width of 5m is proposed.	
j.	Types of Machineries used in the quarry	:	Machineries like Tractor mounted compressor attached with Jack hammers, Excavators are proposed to deploy for quarrying operation.	
k.	Cost of the Project A. Fixed Assets Cost B. Operational Cost C. EMP Cost		Rs. 32,26,800/- Rs. 82,50,000/- Rs. 8,70,000/- Total Project cost= Rs. 1,23,46,800/	
l.	The area applied for lease is bounded by eleven corners and the coordinates are clearly marked in plate no II.			
	Corners	Co-ordinates	Distance between the corners	
		Latitude	Longitude	
	1	08° 12' 00.29" N	77° 40' 05.66" E	1-2 = 57.0m
	2	08° 12' 02.03" N	77° 40' 05.01" E	2-3 = 215.0m
	3	08° 12' 08.96" N	77° 40' 05.89" E	3-4 = 89.8m
	4	08° 12' 08.87" N	77° 40' 08.83" E	4-5 = 85.8m
	5	08° 12' 08.38" N	77° 40' 11.58" E	5-6 = 75.0m
	6	08° 12' 08.12" N	77° 40' 14.02" E	6-7 = 84.0m
	7	08° 12' 05.40" N	77° 40' 13.73" E	7-8 = 94.0m
	8	08° 12' 03.59" N	77° 40' 11.25" E	8-9 = 22.0m
	9	08° 12' 03.74" N	77° 40' 10.55" E	9-10 = 16.0m
	10	08° 12' 03.21" N	77° 40' 10.53" E	10-11 = 154.0m
	11	08° 12' 00.14" N	77° 40' 06.56" E	11-1 = 28.0m

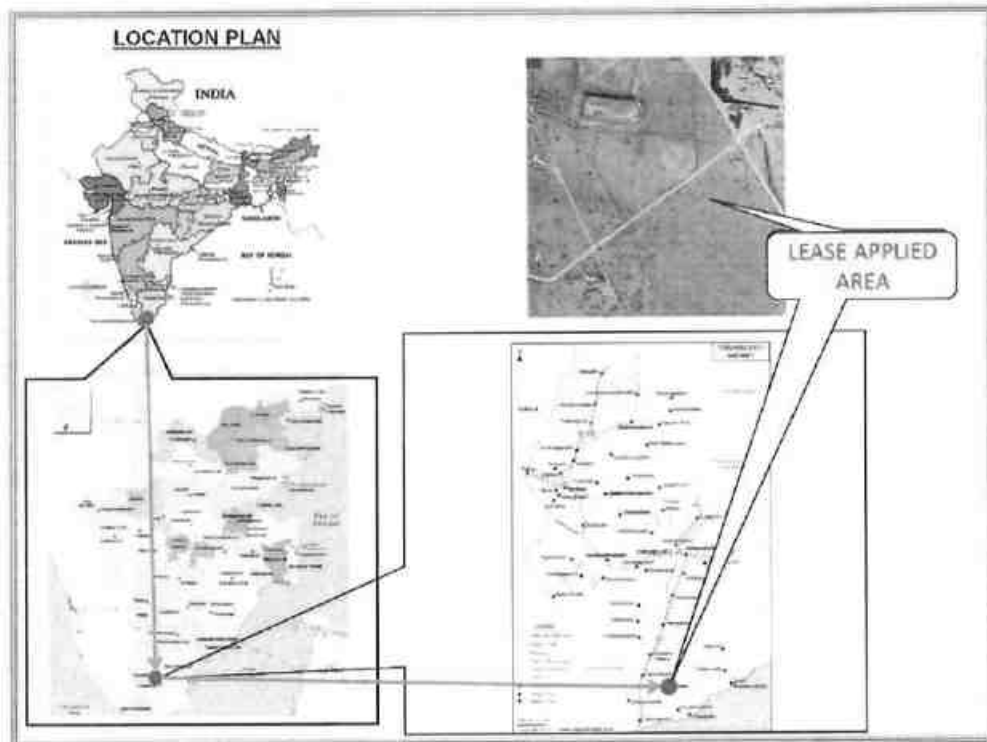


2.0 General Information:			
2.1	a.	Name of the Applicant	: Thiru.A.Arunmuthukumar
	b.	Address of the Applicant with phone No and e-mail id if any	: S/o.Arasappan, No.133/1, Yathavar Street, Pattarpuram, Eraippuvari, Nanguneri Taluk, Tirunelveli District. Pin code-638001. Cell No.: 97901 48692
	c.	Status of the Applicant	: Individual
2.2	a.	Mineral Which the applicant intends to mine	: Rough Stone and Gravel.
	b.	Precise area communication letter No.	: Precise area communication letter received from the Joint Director / Assistant Director(i/c), Department of Geology and Mining, Tirunelveli, M2/547/2023 dated 17.11.2023
	c.	Period of permission / lease granted	: Joint Director / Assistant Director(i/c), Department of Geology and Mining, Tirunelveli, has grant of lease period for five years.
	d.	Name and Address of the QP preparing Mining Plan	: C.Natarajan, M.Sc.,M.Phil., Qualified Person No.93/36E2, Subramaniyar Kovil Street, Omalur Taluk, Salem District, Tamil Nadu, Pin-636 455. Mobile: 97502 23535 & 94446 54520.



3.0 Location:

S.No	Details of the Area:	
1	Corner Coordinates	Latitude : 08°12'00.14"N to 08°12'08.44"N Longitude : 77°40'05.01"E to 77°40'14.02"E
2	Toposheet Number	58 H/12
3	The altitude of the area	90m (MSL)
4	Extent	4.87.80Ha
5	Survey Nos	291/2A2, 292/1C2 and 293/3B
6	Village	Irukkandurai Part-II
7	Taluk	Radhapuram
8	District	Tirunelveli
9	State	Tamil Nadu





a.	Classification of the Area (Ryotwari / poramboke / others)	:	Patta land
b.	Ownership / Occupancy of the Applied area (Surface rights)	:	It is patta land registered in the name of M/s. SAV Blue Metals Pvt Ltd, vide patta no.2522, the applicant has obtained consent from the pattadar, Please refer Annexure No: IV & VII.
c.	Toposheet No. with Latitude and Longitude	:	Topo Sheet No: 58 H/12 Latitude : 08°12'00.14"N to 08°12'08.96"N Longitude : 77°40'05.01"E to 77°40'14.02"E
d.	Existence of Public Road / Railway line if any nearby the area and approximate distance	:	There is an existing road from the area leads to Irukkandurai –Nakkaneri road on northwestern side of the area. The Nearest Railway line is Tirunelveli – Nagercoil line which is about 13.5km on the northwestern side of the area.



Fig. Location of the lease Applied Area

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PART - A

4.0 Geology and Mineral Reserves:

4.1	a. Topography	: ➤ The area applied for quarry lease exhibits almost plain topography covered by Gravel formation. The massive Charnockite formation is noticed below 2m (Avg) Gravel formation and sloping towards southeastern side of the area, the altitude of the area is above 90m (maximum) from MSL. ➤ No major river is found nearby the lease applied area. ➤ Water table is found at a depth of 65m in summer and 62m in rainy seasons. ➤ Temperature of the area is reported to be 18°C to a maximum of 42°C during summer. ➤ Rainfall of this area is about 800mm to 900 mm during the both NE & SW monsoons.
	b. General Geology of the Area	: The area is underlain by the wide range of metamorphic rocks of peninsular gneissic complex. These rocks are extensively weathered and overlain by the recent valley fills and alluvium at places. The geological formations found in the district are Archaean rocks like Gneisses, Granites, Charnockites basic granulites and calc-gneisses. The younger formations are Quartz veins and pegmatite. The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high grade metamorphic rock. The strike of the Charnockite formation is N45°E -S45°W with dipping towards SE60°.

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			The general geological succession of the area is given as under.												
			<table><tr><th><u>AGE</u></th><th></th><th><u>ROCK TYPE</u></th></tr><tr><td>Recent</td><td>-</td><td>Gravelly soil</td></tr><tr><td></td><td>Unconformity</td><td></td></tr><tr><td>Archaean</td><td>-</td><td>Dolerite dyke Charnockite. Peninsular Gneissic complex and Calc Gneiss</td></tr></table>	<u>AGE</u>		<u>ROCK TYPE</u>	Recent	-	Gravelly soil		Unconformity		Archaean	-	Dolerite dyke Charnockite. Peninsular Gneissic complex and Calc Gneiss
<u>AGE</u>		<u>ROCK TYPE</u>													
Recent	-	Gravelly soil													
	Unconformity														
Archaean	-	Dolerite dyke Charnockite. Peninsular Gneissic complex and Calc Gneiss													
4.2		Details of Exploration already carried out if any	No exploration was carried out, as the rough stone formations are clearly visible from adjacent existing quarry pit.												
4.3	a.	Estimation of Reserves	The Geological and Recoverable reserves are estimated by cross sectional method. Two sections have been drawn, one section drawn length wise as (X-Y) and another one section drawn width wise as (A-B), to cover maximum area considered for lease. The Plans and Sections have been drawn with a scale of 1:1000 and 1:500 respectively. Please refer plate No.III.												

a. Geological Resources

The quarrying is restricted up to a depth of 47m below ground level only. availability of resources is given below.

Table No-1

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel formation in m ³	Geological Resources of Rough stone in m ³
XY-AB	I	252	193	2	97272	97272	
	II	252	193	5	243180		243180
	III	252	193	5	243180		243180
	IV	252	193	5	243180		243180
	V	252	193	5	243180		243180
	VI	252	193	5	243180		243180
	VII	252	193	5	243180		243180
	VIII	252	193	5	243180		243180
	IX	252	193	5	243180		243180
	X	252	193	5	243180		243180
Total						97272	2188620
Gravel Formation					:	97,272m ³	
The Geological Resources of Rough stone					:		21,88,620m ³



b. Mineable Reserve

The mineable reserve calculated by deducting 10m, 50m and 150m safety distance and bench loss.

Table No-2

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel in m ³	Mineable Reserves of Rough stone in m ³
XY-AB	I	172	139	2	47816	47816	
	II	166	133	5	110390		110390
	III	156	123	5	95940		95940
	IV	146	113	5	82490		82490
	V	136	103	5	70040		70040
	VI	126	93	5	58590		58590
	VII	116	83	5	48140		48140
	VIII	106	73	5	38690		38690
	IX	96	63	5	30240		30240
	X	86	53	5	22790		22790
Total						47816	557310

The mineable reserve is computed as 5,57,310m³ of Rough stone, 47,816m³ of Gravel formation upto a depth of 47m below ground level only.

5.0 Mining:

5.1	Method of Mining	:	1. Opencast method of semi mechanized mining with 5.0m height 5m width of the bench is proposed. 2. However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106(2) (b) as above is seldom[possible due to various inherent petrogenetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of mines safety for which necessary provision is available with the regulation 106 (2) (b) of MMR-1961, under Mine Act-1952.



5.2	Mode of Working	:	The rough stone is proposed to quarry 5m bench height, 5m width the conventional opencast semi-Mechanized method. The quarry operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough stone to the needy buyers. The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining. Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers / other buyers. 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 semi mechanized method of mining.
5.3	Proposed bench height & Width	:	Quarrying of Rough Stone is proposed bench height of 5m and bench width of 5m is proposed.
5.4	Details of Overburden / Mineral Production proposed for the first 5 years.	:	The overburden in the form of Gravel, after the excavation of Gravel and Rough stone will be directly loaded into tipper to the needy crushers/other buyers for road project and construction works for filling and leveling of low lying areas.



The Yearwise Production and Development Table

Table No -3

Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel In m ³	Mineable reserve of Rough stone in m ³
I	XY-AB	I	92	139	2	25576	25576	
		II	89	133	5	59185		59185
		III	84	123	5	51660		51660
	Total						25576	110845
II	XY-AB	I	80	139	2	22240	22240	
		II	77	133	5	51205		51205
		III	72	123	5	44280		44280
		IV	28	113	5	15820		15820
	Total						22240	111305
III	XY-AB	IV	118	113	5	66670		66670
		V	88	103	5	45320		45320
	Total							111990
IV	XY-AB	V	48	103	5	24720		24720
		VI	126	93	5	58590		58590
		VII	68	83	5	28220		28220
	Total							111530
V	XY-AB	VII	48	83	5	19920		19920
		VIII	106	73	5	38690		38690
		IX	96	63	5	30240		30240
		X	86	53	5	22790		22790
	Total							111640
Grand Total							47816	557310

The applicant has proposed to carry out 5,57,310m³ of Rough stone and 47,816m³ of Gravel formation upto a depth of 47m below ground level for the period of five years.

5.5	Machineries to be used					
a.	Drilling	:	It is proposed to use following machineries for quarrying rough stone			
	S.No	Type	Nos	Dia Hole mm	Make	Motive power
	1	Jack hammer	10	32	Atlas Copco	Compressed air
	2	Compressor	3	-	Atlas Capco	Diesel Drive



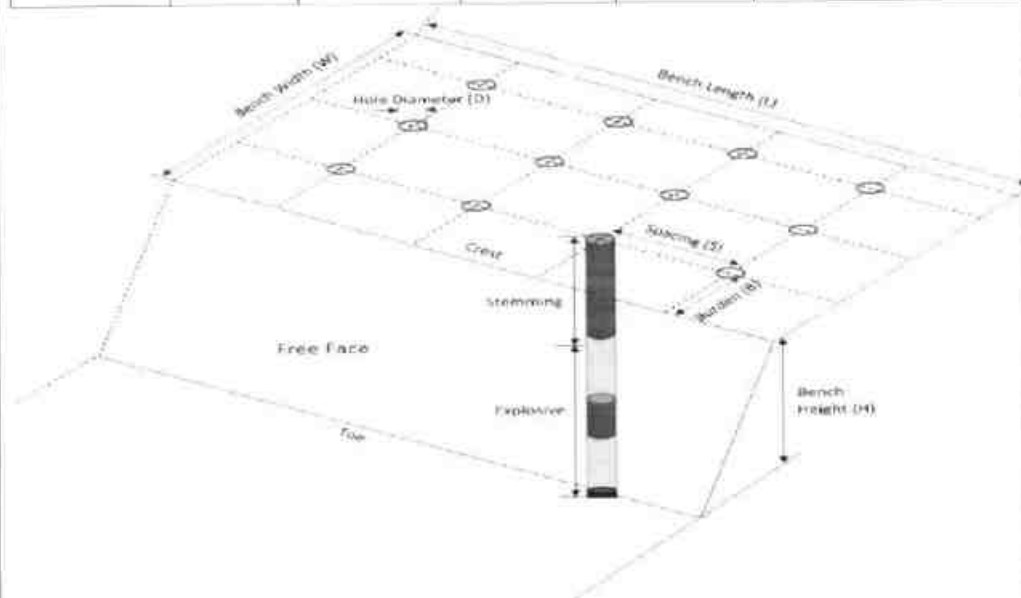
	b.	Loading	: Excavator of 0.90m ³ bucket capacity (with Rock breaker attachment) (2 No)												
	c.	Transportation	: Tipper 4Nos (5/10Ts) capacity.												
5.6		Disposal of Overburden	: The overburden in the form of Gravel, after the excavation gravel will be directly loaded into tipper to the needy buyers for road project and construction works for filling and leveling of low lying areas.												
5.7		Brief Note on Conceptual Mining Plan for the entire lease period	: Conceptual Mining Plan is prepared with an object of five years of systematic development of bench lay outs, selection of ultimate pit limit, depth of quarrying, ultimate pit slope, selection of sites for construction of infrastructures etc. Ultimate pit size is designed based on certain practical factors such as the economical depth of mining, safety zones, permissible areas etc. Ultimate Pit dimension is given as under, <table border="1"> <thead> <tr> <th colspan="4">Ultimate Pit dimension (M) end of Mining plan Period</th> </tr> <tr> <th>Pit No</th><th>Length (max) in (m)</th><th>Width (Avg) in (m)</th><th>Depth(max) in(m)</th> </tr> </thead> <tbody> <tr> <td>I</td><td>172</td><td>139</td><td>47</td> </tr> </tbody> </table> Afforestation has been proposed on all along the boundary barrier by planting trees. All the baseline information studies like Air Quality monitoring, Noise and Vibration monitoring, Water Analysis studies will be carried out every year as per the MOEF norms.	Ultimate Pit dimension (M) end of Mining plan Period				Pit No	Length (max) in (m)	Width (Avg) in (m)	Depth(max) in(m)	I	172	139	47
Ultimate Pit dimension (M) end of Mining plan Period															
Pit No	Length (max) in (m)	Width (Avg) in (m)	Depth(max) in(m)												
I	172	139	47												



6.0 Blasting:

6.1 Blasting Pattern : The massive formation shall be broken into pieces of portable size by drilling and blasting using jack hammers and shot hole blasting. Powder factor of explosives for breaking such hard rock shall be in the order of 6 to 7 Tonnes per K.g of explosives. Blasting parameters are as follows.

Diameter of the hole	Spacing	Depth	Burden for hole	Pattern of hole	Inclination of hole
32-36mm	0.6m	1 to 1.5m	0.6m	Zig Zag	70° from the horizontal



6.2 Types of Explosives : Small dia, 25mm slurry explosive are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed.



6.3	Measures proposed to minimize ground vibration due to blasting	➤ Controlled blasting measures will be adopted for minimizing ground vibration and fly rock. ➤ Shallow depths jackhammer drilling and blasting is proposed to be carried out with minimum use of explosive mainly to give shattering effect in rough stone for easy excavation and to control fly rock. <table border="1"> <tr> <td>Number of holes</td> <td>: 322</td> </tr> <tr> <td>Powder factor</td> <td>: 6Ts/Kg of explosives</td> </tr> <tr> <td>Total explosive required</td> <td>: 161Kg slurry explosives</td> </tr> <tr> <td>Charge / hole</td> <td>: 0.5Kg</td> </tr> <tr> <td>Blasting time</td> <td>: 12-2 Pm</td> </tr> </table>	Number of holes	: 322	Powder factor	: 6Ts/Kg of explosives	Total explosive required	: 161Kg slurry explosives	Charge / hole	: 0.5Kg	Blasting time	: 12-2 Pm
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Powder factor	: 6Ts/Kg of explosives											
Total explosive required	: 161Kg slurry explosives											
Charge / hole	: 0.5Kg											
Blasting time	: 12-2 Pm											
6.4	Storage of Explosives and safety measures to be taken while blasting.	➤ The applicant will engage an authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/ mines manager. ➤ <i>The applicant ensure that will appoint the Mate (Should have Valid Blaster Certificate) during Blasting Operation.</i>										
7.0 Mine Drainage:												
7.1	Depth of Water table	➤ The ground water table is reported as 65m below ground level. In the proposed mining plan only 47m below ground level depth has been envisaged as workable depth for safe & economic quarrying for the entire lease period. Hence the quarrying operation may not affect the ground water.										
7.2	Arrangement and Places where the mine water is finally proposed to be discharged	➤ The ground water may not rise immediately in this type of mining. However, the rain water percolation and collection of water from the seepage shall be less than 300lpm and it shall be pumped about periodically by a stand by diesel powered Centrifugal pump motivated with 7.5H.P.Motor. The quality of water is potable and it is not contaminated with any hazardous things. Hence, water stored in the quarry pit will be pumped into the adjacent agricultural fields. Further the water stored in the old pit will also be used for plantation purposes										



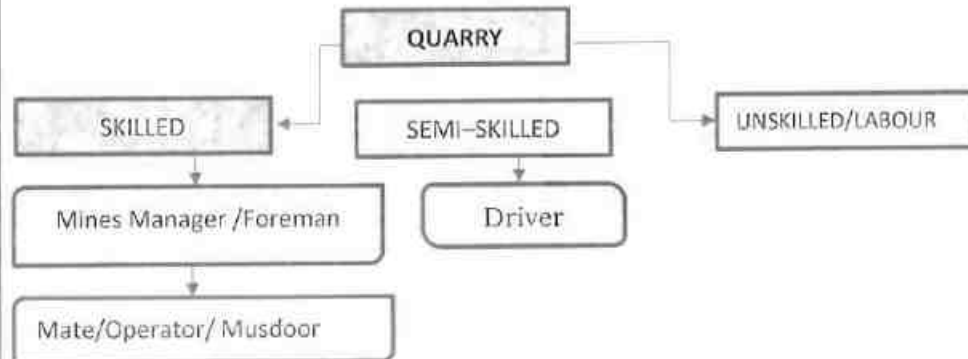
8.0 Other Permanent Structures:		
8.1	Habitations / Village	: There are no habitations within a radius of 300m.
8.2	Power lines (HT/LT)	: There is LT power line passing on southeast and southwestern side of the area and is 50m safety distance maintained from the line.
8.3	Water bodies (River, Pond, Lake, Odai, Channel etc)	: There is no other major Water bodies (River, Pond, Lake, etc) within a radius of 500m.
8.4	Archaeological / Historical Monuments	: There are no Archeological / Historical Monuments within a radius of 300m.
8.5	Road (NH, SH, Village Road etc)	: The National Highway (NH-44) Salem-Kanniyakumari is about 10.5km on western side of the area. The State Highway (SH-176) Anjugramam - Ramankudi is about 2.4Km on Southern side of the area.
8.6	Places of Worship	: There are no Places of Worship within a radius of 50m.
8.7	Reserved Forest / Forest / Social Forest / Wild Life Sanctuary etc.,	: There is no Reserved Forest /Wild Life Sanctuary etc., within a radius of 1Km.
8.8	Any Interstate Border, Protected areas under the Wild Life (Protection) Act, 1972, Critically Polluted Areas as Identified by Central Pollution Control Board and Notified Eco sensitive areas	: There are No inter State border within a radius of 10Kms.
8.9	Any Other Structures	: Nil



9.0 Employment Potential & Welfare Measures:

9.1 Employment Potential (Management & Supervisory personal)

The proposed organization chart



1.	Skilled	Mines Manager	1 No.
		Foreman / Mate	2 No.
		Operator	12 No.
		Mechanic	1 No.
2.	Semi-skilled	Driver	4 No.
3.	Unskilled	Labours	10Nos
			Total = 30Nos

Allowing 10% absentee, the no. of men of roll will be around 27.

The above man power is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply the statutory provisions of Mines Safety Regulations.

- **It is been ensured that, child labours under 18 years of age will not be engaged for quarrying operation.**
- **Necessary life insurance policies will be taken by the applicant to all the employees up to the end of the lease period.**

9.2 Welfare Measures

a.	Drinking Water	:	Packaged drinking water is available from the nearby approved water vendors in Nakkaneri village which is about 1.6Km on northeastern side of the area.
b.	Sanitary facilities	:	Semi-permanent latrines & urinals shall be maintained at convenient places for use of labours as per the provisions of Rule (33) of the Mines Rules, 1960 separately for males and females. Washing facilities shall also be arranged as per rule (36) of the Mines Rules, 1960.

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c.	First Aid Facility	:	First aid kits are kept in Mines office. In case of such eventualities the victim will be given first aid immediately at the site and injured person will be taken to the hospital. Hospital is available at distance of 6.8Km (NE) in Radhapuram the competent and Statutory foreman/ permit manager will be in charge of first aid.
d.	Labour Health	:	As per Mines Rule, Periodic medical examination related to occupational health safety will be conducted to all the workers in applicant's own cost.

e. Precautionary safety measures to the Labourers:

Safety provisions like helmet, goggles, safety shoes, Dust mask, Ear muffs etc., have to be provided as per the circulars and amendments made for Mine labours under the guidance of DGMS being a mechanized operation.

Necessary training will be conducted once in a year to all the employees with the help of qualified and experienced officers to train about the safe and systematic quarrying operation.





PART - B

10.0 Environmental Management Plan:

10.1	Existing Land Use Pattern	:	1. The area is exhibits almost plain topography covered by Gravel formation. 2. Quarrying operation is proposed up to a depth of 47m below ground level for the proposed mining plan period. 3. Fluctuation of Water table in this area is in between 65m and 62m during a year. 4. This region receives the average annual rainfall of 800mm to 900mm. The surrounding area is practiced by the seasonal cultivation. The existing land use pattern is given as under. Table No-4 <table border="1"> <thead> <tr> <th>Sl. No</th><th>Land Use</th><th>Present Area (Ha)</th><th>Area in use during the quarrying period (Ha)</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Quarrying Pit</td><td>Nil</td><td>2.39.50</td></tr> <tr> <td>2.</td><td>Infrastructure</td><td>Nil</td><td>0.01.00</td></tr> <tr> <td>3.</td><td>Roads</td><td>Nil</td><td>0.01.00</td></tr> <tr> <td>4.</td><td>Green Belt</td><td>Nil</td><td>2.46.30</td></tr> <tr> <td>5.</td><td>Unutilized</td><td>4.87.80</td><td>Nil</td></tr> <tr> <td></td><td>Total =</td><td>4.87.80</td><td>4.87.80</td></tr> </tbody> </table>	Sl. No	Land Use	Present Area (Ha)	Area in use during the quarrying period (Ha)	1.	Quarrying Pit	Nil	2.39.50	2.	Infrastructure	Nil	0.01.00	3.	Roads	Nil	0.01.00	4.	Green Belt	Nil	2.46.30	5.	Unutilized	4.87.80	Nil		Total =	4.87.80	4.87.80
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3.	Roads	Nil	0.01.00																												
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5.	Unutilized	4.87.80	Nil																												
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10.2	Water Regime	:	Water table in this area is noticed at a depth of 65m and presently, in the proposed mining plan only 47m below ground level depth has been envisaged as workable depth for safe & economic quarrying for the entire lease period. hence, it will not affect the ground water depletion of this area.																												
10.3	Flora and Fauna	:	Except acacia bushes, no other valuable trees are noticed in the applied area. Further, neither flora of botanical interest nor fauna of zoological interest is noticed in this area.																												
10.4	Climatic conditions	:	Generally subtropical climatic condition prevails throughout the year and there is no sharp variation in climate. This District receives rain both in south west and north east monsoon. The average rainfall is about 800mm to 900mm and the temperature ranges from 18°C during winter and to a maximum of 42°C during the summer.																												



10.5	Human Settlement	:	The nearest habitations with the population is given as under.																				
Table No-5.																							
<table><tr><th>S. No</th><th>Name of the Village</th><th>Approximate distance & Direction from lease applied area</th><th>Approximate population</th></tr><tr><td>1.</td><td>Nakkaneri</td><td>1.6km - NE</td><td>500</td></tr><tr><td>2.</td><td>Uralvimozhi</td><td>1.5Km - NW</td><td>300</td></tr><tr><td>3.</td><td>Sivasubramaniya puram</td><td>2.5Km-SE</td><td>200</td></tr><tr><td>4.</td><td>Irukkandurai</td><td>2.3Km-SW</td><td>600</td></tr></table>				S. No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population	1.	Nakkaneri	1.6km - NE	500	2.	Uralvimozhi	1.5Km - NW	300	3.	Sivasubramaniya puram	2.5Km-SE	200	4.	Irukkandurai	2.3Km-SW	600
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3.	Sivasubramaniya puram	2.5Km-SE	200																				
4.	Irukkandurai	2.3Km-SW	600																				
10.6	Plan for Air, Dust Suppression	:	Air or dust expected to be generated from drilling process, hauling roads, places of excavation etc., will be suppressed by periodical wetting of land by water spraying. Wet drilling and dust extractor arrangements will be provided to drilling units so as to control raise of dust from the site of drilling. Operators, those exposed directly to such conditions will be provide such protective equipment like mask, ear plug, helmet, gloze etc., as per the Mines Act.																				
10.7	Plan for Noise Control	:	Quarrying of Rough Stone will be carried out by drilling and blasting by using low power explosives, and hence, noise will be very minimum. However, periodical noise level monitoring will be carried out to check the noise level in and around the quarry site. Nowhere the noise level should exceed the permissible limit of 80db during the quarry working hours.																				
10.8	Environmental Impact Assessment Statement Describing Impact on mining on the next five years	:	The mining plan proposed is for a small production of Rough stone without involving deep hole drilling and heavy blasting. Such limited mining activity is not likely to cause any impact adversely on environment as far as pollution of air, water and noise is concerned, anyhow environmental impact studies will be conducted as per EIA notification issued by MOEF.																				



10.9	Proposal for Waste Management	:	There is no waste anticipated in this rough stone quarry operation.
10.10	Proposal of Reclamation of Land affected during mining activities and at the end of mining.	:	In the proposed mining plan 47m (below ground level) depth has been envisaged as workable depth for safe & economic mining during the lease period. Hence, after quarry reaches ultimate pit limit (for this lease period) of 47m depth, fencing will be constructed around the quarried pits to prevent inherent entry of the public and cattle.
10.11	Program for Afforestation	:	The 10m, 50m and 150m safety distance along the lease boundary has been identified to be utilized for afforestation. Appropriate native species of Neem/Pungan trees will be planted in the first year. Nearly 24630Sqm area is proposed to use under afforestation by planting 2,957nos of Neem/Pungan trees during first two years with an anticipated survival rate of 80%. The Quarry landuse, layout and afforestation plan is shown in Plate No.III.
10.12	Proposed Financial Estimate / Budget for (EMP) Environment Management		
	A. Fixed Asset Cost:		
	1. Land Cost (600000/1Ha)=		Rs. 29,26,800
	2. First aid room and accessories		Rs.1,00,000
	3. Labour Shed		Rs.1,00,000
	4. Sanitary Facility		Rs.1,00,000
	Total=		Rs. 32,26,800/-
	B.Operational Cost:		
	1. Machineries	:	Rs.80,00,000-
	2. Fencing cost	:	Rs. 2,50,000
	Total	:	Rs.82,50,000/-

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C.EMP Cost:	Budget Provision for the entire quarrying period.
	Air Quality Sampling = Rs. 40,000/-
	Water Quality Sampling = Rs. 40,000/-
	Noise Monitoring = Rs. 20,000/-
	Ground vibration test = Rs. 20,000/-
Expenditure	
1. Drinking water facility	Rs.1,50,000/-
2. Sanitary Arrangements	Rs. 50,000/-
3. Safety kids	Rs. 50,000/-
4. Water sprinkling	Rs. 1,50,000/-
5. Afforestation	Rs. 3,50,000/-
Total=	Rs. 8,70,000/-
Total Project Cost (A+B+C)	Rs. 1,23,46,800/-
CSR Cost(2% of Total Project Cost)	Rs. 2,46,936/

11.0 Mine Closure Plan:

11.1	Steps proposed for phased restoration, reclamation of already mined out area.	: There is no proposal for back filling, reclamation and rehabilitation. The quarried pits after the end of the life of lease will be fenced to prevent inherent entry of public and cattles.
11.2	Measures to be under taken on mine closure as per Act & Rules	: Measures will be taken as per the Acts and Rules. The quarried pit will be fenced by using Barbed wire fencing to prevent inherent entry of public and cattle.
11.3	Mitigation measures to be undertaken for safety and restoration/ reclamation of the already mined out area	: Mitigation measures: Drilling will be carried out by wet drilling mode to control the dust propagation into the air. Blasting will be carried out on limited scale. Mist Water spraying on haul road is proposed to prevent the dust propagation into the air.

12.0 Any Other Details Intend to Furnish by the Applicant:

- (i) Permission will be obtained from the District Mines Office to extract the Rough Stone from the Boundary barriers and for slopes.
- (ii) Care and precautionary measures will be taken for the safety of workers as per Rules and Acts.
- (iii) The applicant will endeavor every attempt to quarry the Rough Stone economically without any wastage and to improve the environment and ecology.
- (iv) The Mining Plan is prepared by incorporating the conditions stipulated in the precise area communication issued and relevant mining laws in force.
- (v) Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Department.



Prepared by

C. Natarajan
C.Natarajan, M.Sc.,M.Phil.,

Qualified Person

C.NATARAJAN M.Sc.,M.Phil.,

Qualified Person

Place : Salem

Date :

This Mining Plan is approved Subject to the
Conditions / Stipulation Indicated in the Mining
Plan Approval
Letter Roc.No. M2/547/2023
Dated 24.11.2023

[Signature]
**Regional Joint Director /
Assistant Director (I/C)
Geology and Mining
Tirunelveli**

[Signature]
24/11/23



From

Thiru.L.Suresh.,
Joint Director/
Assistant Director (i/c)
Geology and Mining,
Tirunelveli.

To

Thiru.A.Arunmuthukumar,
S/o.Arasmuthu,
133/1, Yathavar Street,
Pattarpuram, Eraippuvari,
Nanguneri Taluk,
Tirunelveli District.

Rc.No.M2/547/2023

Dated. 17.11.2023

Sir,

Sub: Mines and Quarries - Minor Minerals - Tirunelveli District - Quarry lease application preferred by Thiru.A.Arunmuthukumar - S/o.Arasmuthu for quarrying roughstone and gravel over an extent of 4.87.80 hectares of patta lands in SF. Nos. 291/2A2, 292/1C2 & 293/3B of Irukkandurai Part-II Village - Radhapuram Taluk - Precise area communicated - Approved Mining Plan - Called for - Reg.

Ref: 1. Quarry lease application preferred by Thiru.Arunmuthukumar. S/o.Arasmuthu, Yathavar Street, Pattarpuram, Eraippuvari, Tirunelveli, dated.25.07.2023.

2. The Sub-Collector(i/c). Cheranmahadevi/ District Supply Officer, Tirunelveli letter No. B4/5841/2023, dated. 06.10.2023.

3. Inspection report of the Joint Director/Assistant Director(i/c) of Geology and Mining, Tirunelveli, dated.14.11.2023.

Thiru.A.Arunmuthukumar, S/o.Arasmuthu, 133/1, Yathavar Street, Pattarpuram, Eraippuvari, Nanguneri Taluk, Tirunelveli District has applied for grant of quarry lease for quarrying Roughstone and Gravel over an extent of 4.87.80 hectares of patta land in SF. Nos.291/2A2, 292/1C2 & 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk.



Tirunelveli District for a period of 5 years under Rule 19 (1) of the Minor Mineral Concession Rules, 1959.

2. The Sub Collector, Cheranmahadevi(I/c)/District Supply Officer, Tirunelveli and the Joint Director/Assistant Director(I/c) of Geologist of Geology and Mining, Tirunelveli has furnished their reports in the reference 2nd and 3rd cited respectively and recommended for grant of quarry lease in the applied area subject to certain conditions.

3. Based on the recommendations of the Sub Collector, Cheranmahadevi(I/c)/District Supply Officer, Tirunelveli and the Joint Director/Assistant Director(I/c) of Geologist of Geology and Mining, Tirunelveli the application preferred by Thiru.A.Arunmuthukumar, S/o.Arasamuthu for grant of quarry lease for quarrying roughstone and gravel in the subject area is considered for grant for a period of 5 years and precise area is hereby communicated over an extent of 4.87.80 hectares of patta land in SF. Nos. 291/2A2 (1.54.0), 292/1C2 (2.35.0) & 293/3B (0.98.80) of Irukkandurai Part-II Village Radhapuram Taluk, Tirunelveli District under Rule 19 of the Tamil Nadu Mineral Concession Rule 1959 and communicated to the applicant company as per the power conferred under amended Rule 41(4) Tamil Nadu Minor Mineral Concession Rules, 1959 subject to following condition.

- i. A Safety distance of 7.5 meters shall be maintained all along the boundary of the area applied for lease.
- ii. A safety distance of 10 meters shall be maintained to the PWD land on the north side of the applied area.
- iii. A safety distance of 150 meters to the wind mill is located on the eastern, western and southern side of the applied area.
- iv. A safety distance of 50 meters to the EB line located on western and south-east side of the applied area.



v. No hindrance shall be caused to the adjoining pattadars' lands while carrying out quarrying operations.

vi. No dimensional blocks with a size of 30cm x 30cm x 30cm suitable for polishing shall be produced.

Environmental Clearance should be obtained from the State Level Environment Impact Assessment Authority.

4. In view of the above, you are hereby directed to submit mining plan duly prepared by a Recognized Qualified Person in respect of the precise area communicated for approval of the Joint Director (i/c) of Geology and Mining, Tirunelveli within a period of 90 days from the date of receipt of this letter as required under rule 41 (5) of Tamil Nadu Minor Minerals Concession Rules, 1959.

5. You are further directed to produce Approved Mining Plan and Environmental Clearance obtained from the State Level Impact Assessment Authority (SEIAA) as required under rule 42 of Tamil Nadu Minor Minerals Concession Rules, 1959 for grant of quarry lease for quarrying Roughstone and Gravel in respect of the precise area communicated.


Joint Director/
Assistant Director(i/c),
Geology and Mining,
Tirunelveli.

Copy to:

The Chairman
State Level Environmental
Impact Assessment Authority,
Chennai.

11

illage : Irukkanthurai Part-2 [252]



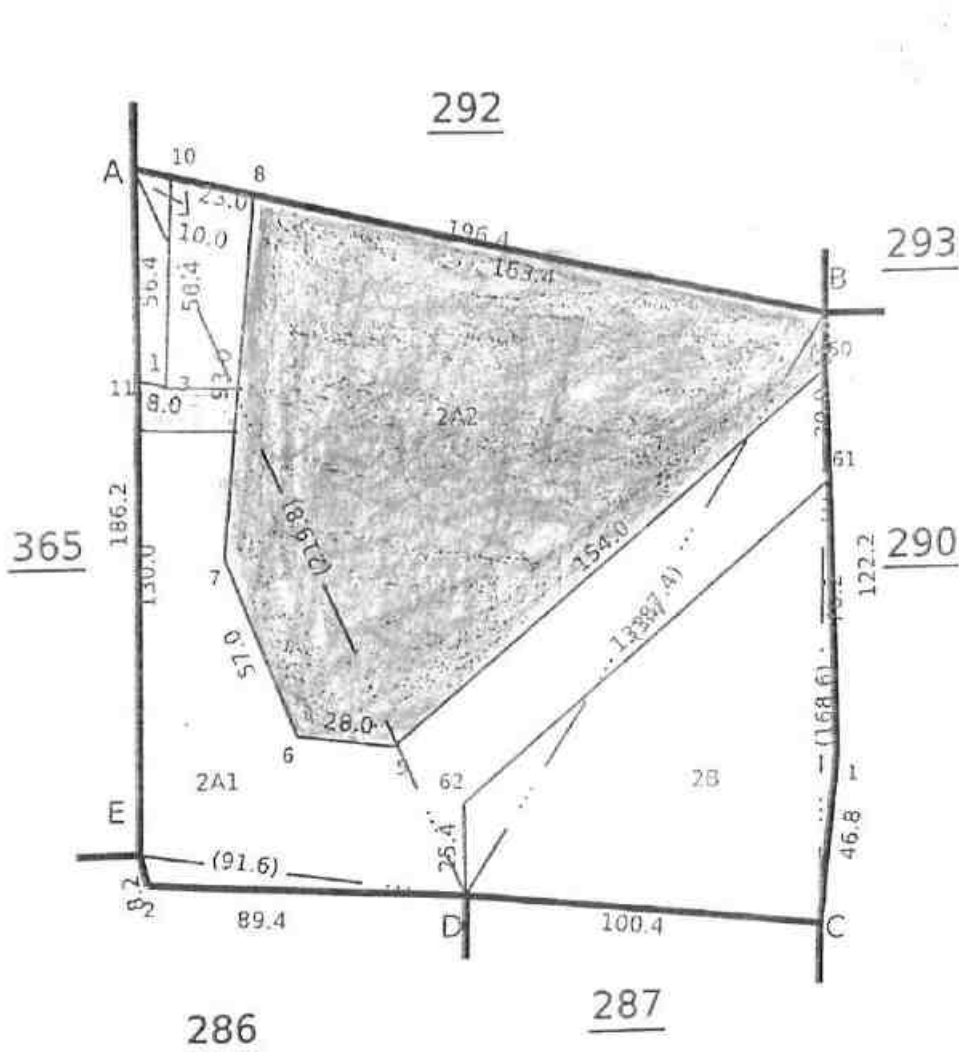
Survey No. 291

Area : Hect 03 Ares 51 50

Scale : 1 : 2000 Tirunelveli Dist



291/2A2: 1.54.00 - HEC.



 சாதாரண கற்கள் எடுக்க
அனுமதி கோரும் படித்

சுனிமம் எடுத்துச்
செல்ல பாதை வசதி

LEASE APPLIED AREA

வட்டாட்சியர்
இராதாபுரம்.

Sw. Garinir
21/7/23

சார் ஆய்வுபாளர்
இராதாபுரம் வட்டம்

Date of Issue: 05-10-2023 19:51:56

260 fv.2

Survey and Settlement Department, Government of TamilNadu



136

Tirunelveli

Radhapuram

Page : Irukkanthurai Part-2 [252]



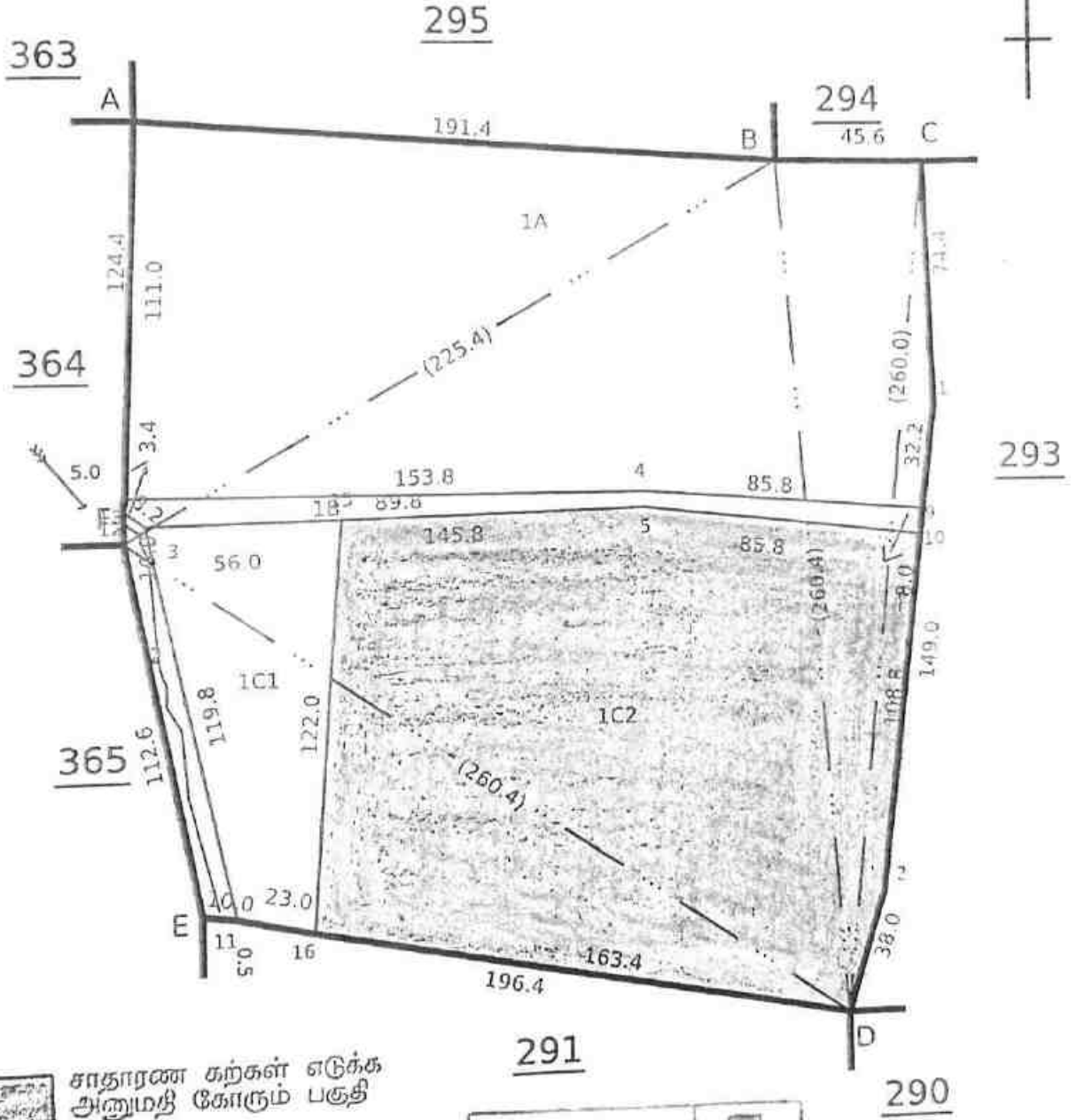
Survey

Area : Hectares 71.50

Scale : 1 : 2000



292/102 - 2,35.00 Hec.



சாதாரண கற்கள் எடுக்க
அனுமதி கோரும் பகுதி

LEASE APPLIED AREA

வட்டாட்சியர்
இராதாபுரம்.
21/9/23

வ.வெள்ளம்
21/9/23

சார் ஆய்வாளர்
இராதாபுரம் வட்டாட்சியர்

Page : Irukkanthurai Part-2 [252]



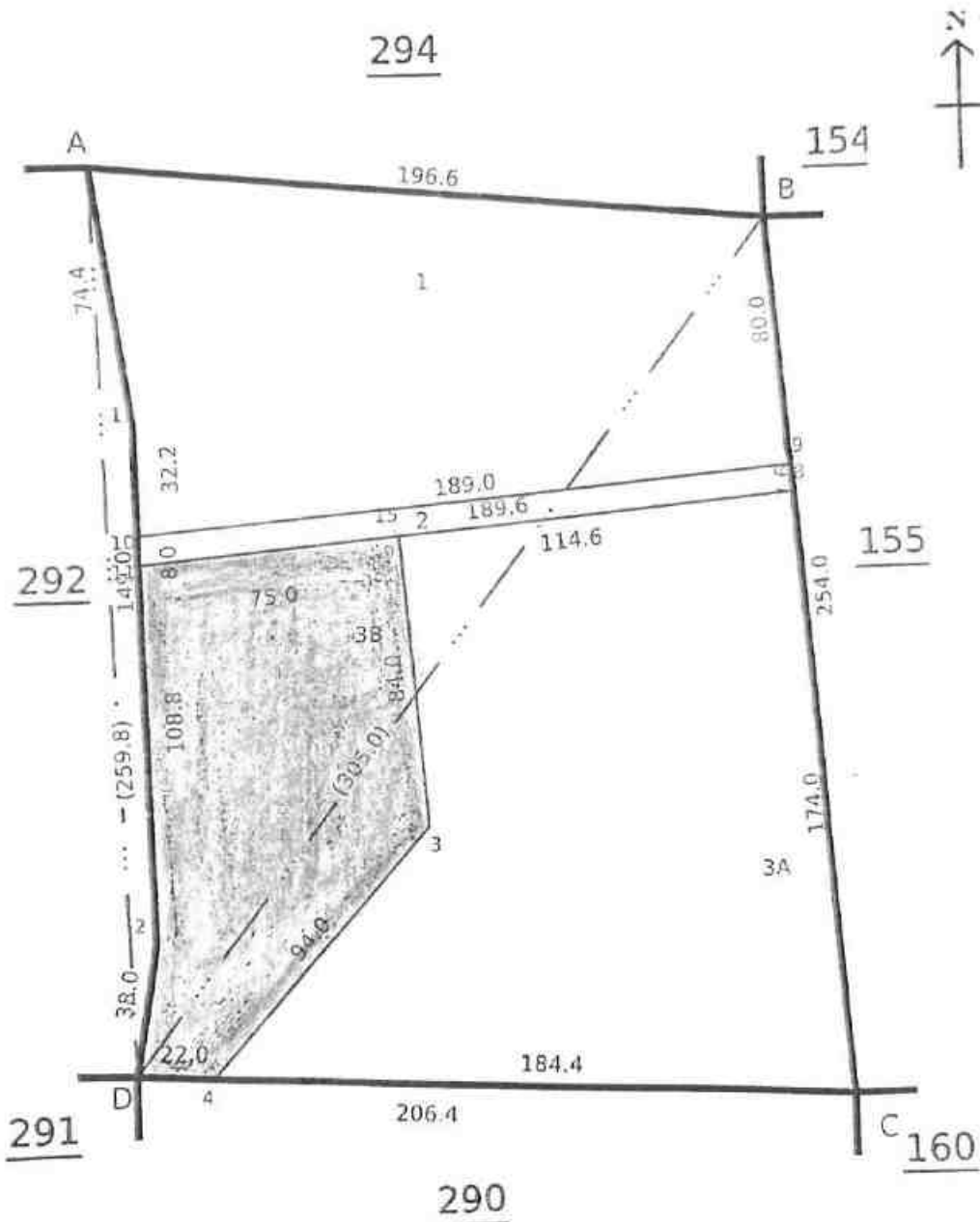
Survey No : 29

Area : Hect 05 Ares 4,00

Scale : 1 : 2000



293/3B-0.98, 80-Hfr.



 சாதாரண சிற்பிகள் எடுக்க
அனுமதி கோரும் பகுதி

LEASE APPLIED AREA

வட்டிபெரிய
இரதாபுரம்.
26/09/22

சார் ஆய்வாளர்
இராதாபுரம் வட்டம்

Date of Issue: 05-10-2023 19:54:39

260 fv.2

Survey and Settlement Department, Government of TamilNadu

138

ANNEXURE 111



LEASE APPLIED AREA

[Handwritten signature]



தமிழக அரசு

வருவாய்த் துறை

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

ANNEXURE IV



வட்டம் : இராதாபுரம்

பட்டா எண் : 2522

மாவட்டம் : திருநெல்வேலி

வருவாய் கிராமம் : இருக்கன்துறை பகுதி-2

உரிமையாளர்கள் பெயர்

1 - மற்றவை

எஸ் ஏ வி புளுமெட்டல்ஸ் பிரைவேட் லிமிடெட்

புல எண்	உட்பிரிவு	புன்செய்		நன்மெய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	
291	2A2	1 - 54.00	1.00	--	--	--	--	2019/0105 /29/080744--2019 /29/09/000130SD -- 21-09-2019
292	1C2	2 - 35.00	1.50	--	--	--	--	2019/0105 /29/080744--2019 /29/09/000130SD -- 21-09-2019
293	3B	0 - 98.80	0.70	--	--	--	--	2019/0105 /29/080744--2019 /29/09/000130SD -- 21-09-2019
		4 - 87.80	3.20					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாய்கள் <https://eservices.tn.gov.in> என்று இணைய தளத்தில் 29/09/252/02522/40211 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 08-12-2022 அன்று 02:01:27 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்.



மி. என். 25. எடுக்கப்படுகிறது பகுதி II

2	3	4	5	6	7	8	9	10	11
287	ர	பு	...	8-5	7	0 62	2 97.0	2 72	929 க. பஸ்கோ கோனார் மற்றும் மூன்று பேர்சனும். 4
288-1	ர	பு	...	8-5	7	0 62	0 39 0	0 81	606 க. வள்ளி யாழ்வார்.
-2	ர	பு	...	8-5	7	0 62	2 42.0	1 54	822 க. மாரகா கோனார் (1). க. பெரிய கோனார் (2). க. தங்க கோனார் (3).
							3 38 0	2 35	
289-1	ர	பு	...	8-5	7	0 62	2 07 0	1 89	698 க. பஸ்கோ கோனார் (1). க. கோலத்த கோனார் (2).
-2	ர	பு	...	8-5	7	0 62	2 18 5	2 00	699 க. சங்கர முத்திரி (1). க. மாரகா கோனார் (2).
							4 25 5	3 89	
290-1	ர	பு	...	8-5	7	0 62	1 75 5	1 61	619 க. வேலாயுத நாடார்.
-2	ர	பு	...	8-5	7	0 62	2 24.5	2 05	698 க. பஸ்கோ கோனார் (1). க. கோலத்த கோனார் (2).
							4 00.0	3 66	
291-1	அ	பு	...	...	...	...	0 03.5	...	...
-2	ர	பு	...	8-5	7	0 62	3 46.0	2 14	590 க. வெங்கடா முத்திரை.
							3 51.5	2 14	

பெரிய
பயிற்சியை
காண்க.

மி. என். 25. எடுக்கப்படுகிறது பகுதி II

2-வது பக்கம்

25. எடுக்கப்படுகிறது பகுதி II

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	1	2	3	4	5	6	7	8	9	10	
								கு. கனம்.	(கி.மீ. அல்லது மீ.)	கு. கனம்.	
292	1A	292-1A	ர	14	...	8-5	7	0 62	2 56.5	1 59	590 க. செக்டர் முதலியம்.
	1B	-1B	அ	140	...	...	...	...	0 16.0	...	..
	1C	-1C	ர	14	...	8-5	7	0 62	2 86.5	1 78	590 ம. செக்டர் முதலியம்.
	2	-2	அ	140	...	...	...	...	0 10.5	...	...
									5 71.5	3 37	
293	1	293-1	ர	14	...	8-5	7	0 62	1 77.5	1 10	752 பெர். பவியர் முத்தி நாடா (1) க. செக்டர் நாடா (2)
	2	-2	அ	140	...	...	...	...	0 15.0	...	..
	3	-3	ர	14	...	8-5	7	0 62	3 07.0	1 90	752 பெர். பவியர் முத்தி நாடா (1) க. செக்டர் நாடா (2)
									4 99.5	3 00	
294	...	294	ர	14	...	8-5	7	0 62	3 38.5	2 09	481 பெர். பவியர்
295	1A	295-1A	ர	14	...	8-5	7	0 62	1 21.5	0 75	304 பெர். செக்டர் நாடா
	1B	-1B	ர	14	...	8-5	7	0 62	1 03.0	0 64	181 அ. பவியர் தேயர்.
	2	-2	ர	14	...	8-5	7	0 62	2 56.5	1 58	700 க. செக்டர் முதலியம் ச. எவத்தி நாடா முதலியம்
									4 81.0	2 97	

2-வது பகுதி

14/10/2013
 கிராம நிர்வாக அலுவலர்
 25, இருக்கங்குறை பகுதி II
 இரதாபுரம் வட்டம்

வட்டாட்சியர் 25/09/2013
 இரதாபுரம்.

25/09/2013

144

செய்த நாள் 6594/2022



भारतीय गैर न्यायिक

भारत INDIA

रु. 500



FIVE HUNDRED
RUPEES

पाँच सौ रुपये

Rs. 500

INDIA NON JUDICIAL

AU 485512

தமிழ்நாடு தமிழ்நாடு TAMILNADU

க. இராஜசேகரன்
குத்தகைகளை நிறுப்பவராக
பெருங்குடி கிராமம்.
ஆய்வு எண். 19956/71
நாள் : 08.12.2022.

சி. குமார் கிருஷ்ணன்
இறைமையாளர்.

குத்தகை பத்திரம்

2022 இரண்டாயிரத்து இருபத்து இரண்டாம் வருடம் டிசம்பர் மாதம் 8 எட்டாம் தேதி திருநெல்வேலி மாவட்டம், இராதாபுரம் வட்டம், பெருங்குடி கிராமம், வடக்கன்குளம் அஞ்சல் 627 114, காவல்கிணறு ரோடு, கதவு எண் 12-725-B7 என்ற முகவரியில் இயங்கும் S.A.V.BLUE METALS PRIVATE LIMITED (PAN - AAZCS2462G) என்ற நிறுவனத்திற்காக அதன் டைரக்டர்களில் ஒருவரும் மேற்படி வடக்கன்குளம் ஊரில் இராதாபுரம் மெயின் ரோடு, கதவு எண் 886 என்ற முகவரியில் வசிக்கும் M.அரவிந்த் அவர்கள் குமாரகுமாரியை A.அஜேஷ்லால் (ஆதார் அட்டை எண்- 9653 4508 6948) (அலைபேசி எண்- 99949 47723) அவர்கள் குத்தகை கொடுப்பவராகவும்

S.A.V. Bluemetals Pvt. Ltd.
S. Subhalal
Managing Director

(குத்தகை கொடுப்பவர்)

(குத்தகை பெறுபவர்)

...பத்திரம் 2022 ம் வருடத்திய... 6594...
...தாள்கள் கொண்டது
...வது தாள்
பதிவு அலுவலர்



தமிழ்நாடு தமிழ்நாடு TAMILNADU

CK 560688

சு. இராஜசேகரன்
முத்திரத்தாள் நிறுவனத்தின்
கிராமத்தார்.
ஆர்.டி. 19956/71
நாள்: 06.12.2022.

சுருதி இத்திரி
இறைப்புவாரி.

மேற்படி திருநெல்வேலி மாவட்டம் நாங்குநேரி வட்டம் இறைப்புவாரி, பட்டர்புரம்,
யாதவ் தேரு, சுதவு எண் 133/1 என்ற முகவரியில் வசிக்கும் அரசப்பன் அவர்கள் குமாரர்
அருண் முத்து குமார் (ஆதார் அட்டை எண் - 4468 4971 0030) (அலைபேசி எண்- 97901
48692) குத்தகை பெறுபவராகவும் சேர்ந்து எழுதிக் கொண்ட குத்தகை பத்திரம்.

S.A.V. Bluemetals Pvt.Ltd.

[Signature]
Managing Director

(குத்தகை கொடுப்பவர்)

புத்தகம் 2022 ம் வருடத்திய-6544	ஆவணம்
தாள்கள் கொண்டது	
வது தாள்	
299 பதிவு அலுவலர்	

(குத்தகை பெறுபவர்)



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தமிழ்நாடு தமிழ்நாடு TAMILNADU

CK 560689

க. இராஜசேகரன்
முத்திரத்தான் விற்பனையாளர்
இராதாபுரம்.
சு.ம. 1995/71
நாள்: 08-12-2019.

சி.மணி இலக்குமணி
இயக்குநர்.

இதனடியில் கண்ட சொத்துக்கள் குத்தகை கொடுப்பவருக்கு M/s Sarjan Realities Private Limited -க்காக ஜெனரல் பவர் ஏஜென்ட் நிலமையில் N.ஐயாக்குட்டி அவர்களால் இராதாபுரம் சார் பதிவாளர் அலுவலக 1930/2019 நம்பராக பதிவு செய்து எழுதிக் கொடுக்கப்பட்ட கிரையப் பத்திரம் மூலமாய் பாத்தியப்பட்டும் குத்தகை கொடுப்பவரின் பெயரால் 2522 நம்பர் கணினி பட்டா பெற்றும் குத்தகை கொடுப்பவரின் அனுபோகத்திலும் ஆளுகையிலும் இருந்து வருபவைகளை குத்தகை பெறுபவர் குத்தகைக்கு கேட்டு குத்தகை

S.A.V. Bluemetals Pvt.Ltd.

Managing Director

(குத்தகை கொடுப்பவர்)

(குத்தகை பெறுபவர்)

புத்தகம் 2022 ம் வருடத்திய 6544 ம் சுவஸம்
தாள்கள் கொண்டது
3 வது தாள்
பதிவு அலுவலர்



கொடுப்பவரும் குத்தகை பெறுபவரும் சம்மதித்து குத்தகைக்கு பேரி நாம் இருவரும் கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு நாம் இருவரும் சேர்ந்து இந்த குத்தகை ஒப்பந்த பத்திரம் எழுதிக்கொண்டோம். ஆகையால் அந்தப்படி நாம் இருவரும் நடந்து கொள்ள வேண்டியது.

நிபந்தனைகள் :

கீழ்க்கண்ட நிபந்தனைகளுக்கு நாம் கட்டுப்பட சம்மதிக்கிறோம்.

இதன்படி,

1. இந்த குத்தகையானது இன்றிலிருந்து 10 வருடங்கள் அமுலில் இருக்கும்.
2. இந்த குத்தகைக்கு முன் பணம் கொடுக்கவோ, வாங்கவோ இல்லை.
3. குத்தகை பெறுவர் வருடம் ஒன்றுக்கு மொத்த நிலத்துக்கும் ரூ.7,000/- வீதம் குத்தகை கொடுக்கும் கம்பெனிக்கு கொடுத்து இரசீது பெற்றுக்கொள்ள வேண்டியது.
4. இந்த குத்தகையானது 09.12.2022 தேதிமுதல் 08.12.2032 தேதி வரை உள்ள 10 ஆண்டு காலத்திற்கு தபசில் கண்ட சொத்துக்களை குத்தகை பெறுவர் கைவசம் வைத்து பயன்படுத்திக் கொள்ள வேண்டியது. குத்தகை பெறுவருக்கு தேவைப்படும் எல்லா வசதிகளையும் குத்தகை பெறுவர் அவரது செலவில் செய்து கொள்ள வேண்டியது.
5. மேற்படி உரிமம் நடைமுறையில் உள்ள காலத்தில் ஏற்படும் அனைத்து வரிகளையும் குத்தகை எடுத்தவரே செலுத்த வேண்டும்.
6. குத்தகை கொடுப்பவர் குத்தகை எடுப்பவருக்கு இன்றே குத்தகை சொத்தினை ஒப்படைத்து விடவேண்டும்.
7. கனிமவள உபயோகத்திற்கும் மற்றும் கல்குவாரி உரிமம் பெற மற்றும் இன்ன பிற சகலபாத்தியங்களையும் அனுபவித்துக் கொள்ளலாம்.
8. இந்த குத்தகையானது மேலே குறிப்பிட்ட காலக்கெடு முடிவடைந்ததும் தானாகவே ரத்தாகிவிடும். இருவரும் விரும்பினால் குத்தகைகாலத்தை அப்போதைய தேவைக்கேற்ப நீட்டித்துக்கொள்ளலாம்.

S.A.V. Bluemetals Pvt.Ltd.

S. A. V. Bluemetals Pvt. Ltd.
Managing Director

(குத்தகை கொடுப்பவர்)

...முத்தகம் 2022 ம் வருடத்திய 6594...	...மூலம்...
...தாங்கள் கொண்ட...	...
...வது தாள்	...
301	பதிய அலுவலர்

(குத்தகை பெறுபவர்)





சொத்து விபரம்

திருநெல்வேலி பதிவு மாவட்டம் இராதாபுரம் சார் பதிவு மாவட்டம் வண்டியூர் ஊராட்சி ஒன்றியம் இருக்ககந்துறை ஊராட்சி இருக்ககந்துறை கிராமம் பகுதி - II அயன் புஞ்சை சர்வே நம்பர் 291(2A2) ஹெக்.1.54.00 (ஏக்கர் 3 செண்டு 80) பூராவும்.

மேற்படி நிலம் ரீசர்வேக்கு முன் சர்வே 291(2)ல் இருந்தது.

2) சர்வே நம்பர் 292(1C2) ஹெக்.2.35.00 (ஏக்கர் 5 செண்டு 80) பூராவும்.

மேற்படி நிலம் ரீசர்வேக்கு முன் சர்வே 292(1C)ல் இருந்தது.

3) சர்வே நம்பர் 293(3B) ஹெக்.0.98.80 (ஏக்கர் 2 செண்டு 44) பூராவும்.

மேற்படி நிலம் ரீசர்வேக்கு முன் சர்வே 293(3)ல் இருந்தது.

ஆக மொத்தம் ஹெக்.4.87.80 (ஏக்கர் 12 செண்டு 4) ஆகிறது.

4) இத்துடன் இணைக்கப்பட்டுள்ள வரைபடங்களில் குறிப்பிட்டுள்ள எழுதிக்கொடுக்கும் கம்பெனிக்கு சொந்தமான பாதைகளில் மாமூலாக பாதை புழங்கிக்கொள்ளும் பாதை பாத்தியமும் சரி.

S.A.V. Bluemetals Pvt.Ltd.

(Signature)
Managing Director

(குத்தகை கொடுப்பவர்)

சாட்சிகள் :

1. *(Signature)*

(ராஜநாயகம் S/o.செல்வநாயகம், கதவு எண் 15/18ஜ், செளந்தரி நகர், வடக்கன்குளம்)
(ஆதார் அட்டை எண் - 7933 9026 6639) (அலைபேசி எண் - 99421 71248)

2. *(Signature)*

(சுதன் S/o. ராஜ், கதவு எண் 10-92, வடக்கு ராஜா தெரு, வடக்கன்குளம்) (ஆதார் அட்டை எண் - 9853 9822 4636) (அலைபேசி எண்- 97903 53683)

இந்த ஆவணம் அசல் வரைவு செய்தவர் *(Signature)*



க. சேதுமுருகன்,
189/6 கீழரத வீதி,
இராதாபுரம் 627111,
திருநெல்வேலி மாவட்டம்,
கைபேசி எண் 98437 25123,
மாவட்ட உரிமம் எண் பி878/திலி/93 நாள் 21.01.2019

புத்தகம் 2022 ம் வருடத்திய-6594	ஆவணம்
தாங்கள் கொண்டுவர	
வது தாள்	
பதிவு அலுவலர்	



(Signature) 149

R/ராதாபுரம்/புத்தகம்-1/6594/2022



ஆண்டு டிசம்பர் மாதம் 08ம் தேதி பி.ப. 03:49 மணியளவில் ராதாபுரம் சார்பதிவாளர் அலுவலகத்தில் தாக்கல்
உடனம் ₹ 1,030/- செலுத்தியவர்.

பெருவிரல்  	 கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி	
எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	S.A.V. Bluemetals Pvt.Ltd. Managing Director "சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற வழி இந்த நபரின் அடையாளம் விரல் ரேகை மூலம் ஆதார் ஆணையத்துடன் சரிபார்க்கப்பட்டது. ஒப்பீட்டு எண் : UKC:950704a9c693027d64d6a99632da0393e6b5f (Details from UIDAI : Ajesh Lal Aravind S/O: Aravind, 27- 03-1993, xxxxxxxx6948)	
எழுதி வாங்கியதாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	 "சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற வழி இந்த நபரின் அடையாளம் விரல் ரேகை மூலம் ஆதார் ஆணையத்துடன் சரிபார்க்கப்பட்டது. ஒப்பீட்டு எண் : UKC:02579644eca1e7c9141eca78086d8aab4eaaa (Details from UIDAI : Arun Muthu Kumar S/O: Arasappan, 29-08-1992, xxxxxxxx0630)	

2022 ஆம் ஆண்டு டிசம்பர் மாதம் 8ம் நாள்

சார்பதிவாளர்
ராதாபுரம்

புத்தகம் 2022 ம் வருடத்திய... 6594... ஆவணம்
...தாள்கள் கொண்டது
...வது தாள்

பதிவு ஆவணம்



தமிழக அரசு

வருவாய்த் துறை



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

வட்டம் : இராசாபுரம்

பட்டா எண் : 2522

மாவட்டம் : திருநெல்வேலி

வருவாய் கிராமம் : இருக்கன்துறை பகுதி-2

உரிமையாளர்கள் பெயர்

1. - மற்றவை

எஸ் ஏ வி புலுமெட்டல்ஸ் பிரைவேட் லிமிடெட்

புல எண்	உட்பிரிவு	புன்செய்		நன்மை		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		தெற்கு - ஏர்	சூ - பை	தெற்கு - ஏர்	சூ - பை	தெற்கு - ஏர்	சூ - பை	
291	2A2	1 - 54.00	1.00	--	--	--	--	2019/0105 /29/080744--2019 /29/09/00013050 -- 21-09-2019
292	1C2	2 - 35.00	1.50	--	--	--	--	2019/0105 /29/080744--2019 /29/09/00013050 -- 21-09-2019
293	3B	0 - 98.80	0.70	--	--	--	--	2019/0105 /29/080744--2019 /29/09/00013050 -- 21-09-2019
		4 - 87.80	3.20					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 29/09/252/02522/40211 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 08-12-2022 அன்று 02:01:27 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படப்பாள் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

S.A.V. Bluemetals Pvt.Ltd.

S. S. S. S. S.

Managing Director

புத்தகம் 2022 ம் வருடத்திய 6546 ம் ஆவணம்
18... தாள்கள் கொண்டது
... வருடம்
பதிவு செய்யப்பட்டது





சென்னைப் பொதுவுரிமைப் படை
Ministry of Industries



அனுமது குமார்
Anun Muthu Kumar
பிறந்த நாள்/DOB: 29/08/1992
ஆண் / MALE



4468 4971 0030

VIN: 9105 7634 5869 3381

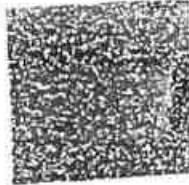
எனது ஆதார, எனது அடையாளம்



भारत सरकार
Geological Survey of India

முகவரி:
S/O: அரப்பா, 133/1, யாதவர் தெரு,
பட்டார்புரம், திருநெல்வேலி,
தமிழ் நாடு - 627108

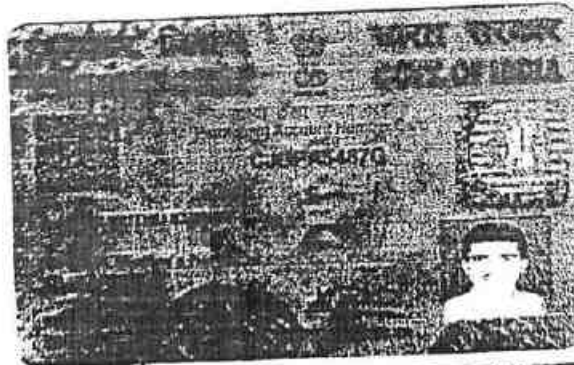
Address:
S/O: Arasappan, 133/1, YATHAVAR
STREET, PATTARPURAM, Tirunelveli,
Tamil Nadu - 627108



Geological Survey of India

4468 4971 0030

VIN: 9105 7634 5869 3381



புத்தகம் 2022 ம் வருடத்திய... 6594 ம் அபவணம்
தாள்கள் கொண்டு
வரு தாள்
பதிவு அலுவலர்

S.A.V. Bluemetals Pvt.Ltd.

A. S. S. S. S.
Managing Director



Handwritten signature

Handwritten signature and number 152

ANNEXURE III



சென்னை மாநகராட்சி
சென்னை மாநகராட்சி



அனன் முத்து குமார்
Anun Muthu Kumar
பிறந்த நாள்/DOB: 25/08/1992
ஆண்/MALE



4468 4971 0030

VID: 9165743458603381

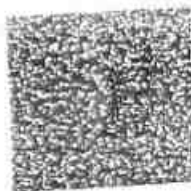
எனது ஆதாரம். எனது அடையாளம்



சென்னை மாநகராட்சி
சென்னை மாநகராட்சி

முகவரி:
S/O: அரவப்பன், 133/1, யாதவன் தெரு,
பட்டார்புரம், திருநெல்வேலி,
தமிழ் நாடு - 627108

Address:
S/O: Arasappan, 133/1, YATHAVAN
STREET, PATTARPURAM, Tiruppur,
Tamil Nadu - 627108



QR Code with description

4468 4971 0030

VID: 9165743458603381

Handwritten signature

CHETTINAD CEMENT CORPORATION LTD.

(Regd. Office: RANI SEETHAI HALL BUILDING IV & V FLOORS, 603, ANNA SALAI, MADRAS 600008.
WORKS OFFICE: PULIYUR.

ANNEXURE IX



TELEPHONE: 21144, 22744, 21745 KARUR
GRAM "CEMENT" Puliur C.F.
Telex: 0456-215.
STD Code: 04324

T.RAJU., B.E.,
MINES MANAGER & DY. GENERAL MANAGER.

22nd September, 1987.

CERTIFICATE.

This is to certify that Mr.C.Natarajan has been working as a Geologist from 14-12-1979 to till date. He has been incharge of supervision of day to day functions in respect of Exploration, Preparation of Geological Plans & Sections, Preparation of Mines Plans, and Quality control and other allied mining activities in the following Pits of our Seethainagar Limestone Mines in Anna District.

<u>Name of the Pit.</u>	<u>Average Raising/day.</u>
1. Alambadi Pit.	- 1,700 T.
2. Mallapuram Pit.	- 900 T.
3. Karikkali Pit.	- 150 T.

Total.	- 2,750 T.

He has got nearly Eight years of total experience in our Mines in the above supervisory capacity.

for CHETTINAD CEMENT CORPORATION LTD.,

(Signature)

(T.RAJU).

Mines Manager & Dy. General Manager.

(Signature)



Faculty of Science

The Senate of the Annamalai University hereby makes known that W. Kateshwar has been admitted to the Degree of Master of Science (by Examination) in Geology, he having been certified by duly appointed Examiners at the examination held in April, 1976 to be qualified to receive the same and that he was placed in the First Class.

Given under the seal of the University.

Annamalainagar
24th December, 1976.

A. Chandrasekha
Vice-Chancellor.



PLAN NO: 1

DATE: 18/11/2023

APPROVED BY: Director (G)

THIRU. ARUNMUTHUKUMAR,

S/O. ARANMUTHUKUMAR,

NO. 133/A, YATHA...

PATTARPURAM, ERAIPPUVARI,

NANGUNERI TALUK,

TIRUNELVELI DISTRICT.

QUARRY APPLIED LEASE AREA:

S.F. NOS : 291/2A2, 292/1/C2, & 293/3B,

EXTENT : 4.87.80 Ha.

VILLAGE : IRUKKANDURAI PART-II,

TALUK : RADHAPURAM,

DISTRICT : TIRUNELVELI.

INDEX

Q. L. APPLIED AREA : ●

TOPO SHEET NO : 58 H / 12

LATITUDE : 08°12'00.14"N to 08°12'08.96"N

LONGITUDE : 77°40'05.01"E to 77°40'14.02"E

LOCATION PLAN

NOT TO SCALE

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

GOVERNMENT

C. NATARAJAN, S.C.M. Phil.,
QUALIFIED PERSON



PLATE NO:ID

DATE OF SURVEY : 18.11.2023

APPLICANT:

THIRU.A.ARUNMUTHUKUMAR,

S/o.ARASAPPAN,

NO.133/1, YATHAVAR STREET,

PATTINAM TALKU,

TIRUNELVELI DISTRICT.

QUANTITATIVE AREA:

1.0000 Hectare (10000 Sq. Mtr.)

Survey No. 133/38,

EXTENT : 4.87.80 Ha

VILLAGE : KADHAPURAM,

TALUK : KADHAPURAM,

DISTRICT : TIRUNELVELI.

INDEX

Q.L. APPLIED AREA



APPROACH ROAD



CART TRACK



PANCHAYAT ROAD



STATE HIGHWAY



HABITATIONS



KEY PLAN

Not To Scale

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GOVERNMENT

GOVERNMENT

C. NATARAJAN, M.Sc.,
QUALIFIED PERSON

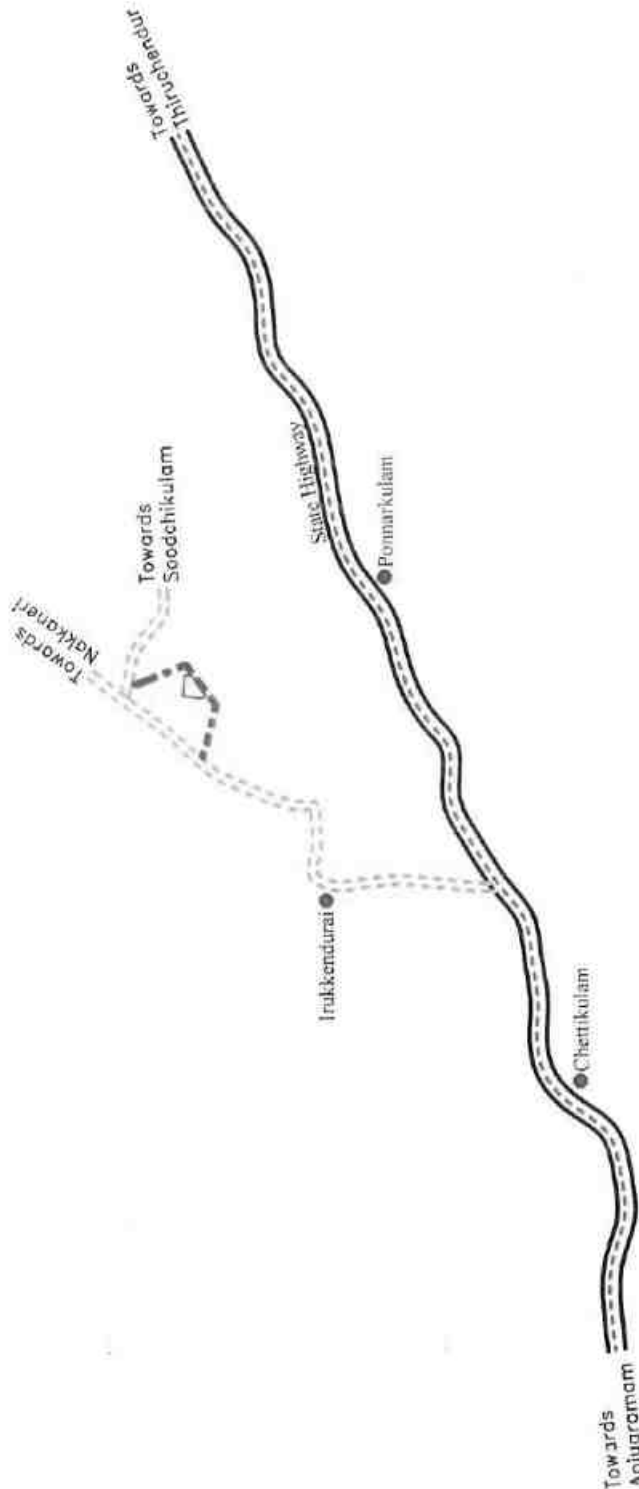




PLATE NO: 1A
DATE OF SURVEY : 18.11.2023

APPLICANT:
THIRU.A.ARUNMUTHUKUMAR,
S/o.ARASAPPAN,
NO.133/1, YATHAVAR STREET,
PATTARPURAM, ERAIPPOOVAR,
NANGUNERI TALUK, TIRUNELVELI DISTRICT.

QUARRY LEASE APPLIED AREA (Hc)
S.F.NOS : 291/2012, 292/1C2 & 293/2012
EXTENT : 4.87.80 Hc
VILLAGE : IRUKKANDURAI PART I
TALUK : RADHAPURAM,
DISTRICT : TIRUNELVELI.

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TOPO SHEET NO : 58 H / 12

LATITUDE : 08°12'00.14"N to 08°12'08.96"N

LONGITUDE : 77°40'05.01"E to 77°40'14.02"E

Q.L.APPLIED AREA

10m, 50m & 150m SAFETY

300M RADIUS

500M RADIUS

1KM RADIUS

APPROACH ROAD

CART TRACK

PANCHAYAT ROAD

BARREN LAND

TREES

AGRICULTURAL LAND

WIND MILL

FACTORY

POWER STATION

QUARRY PIT

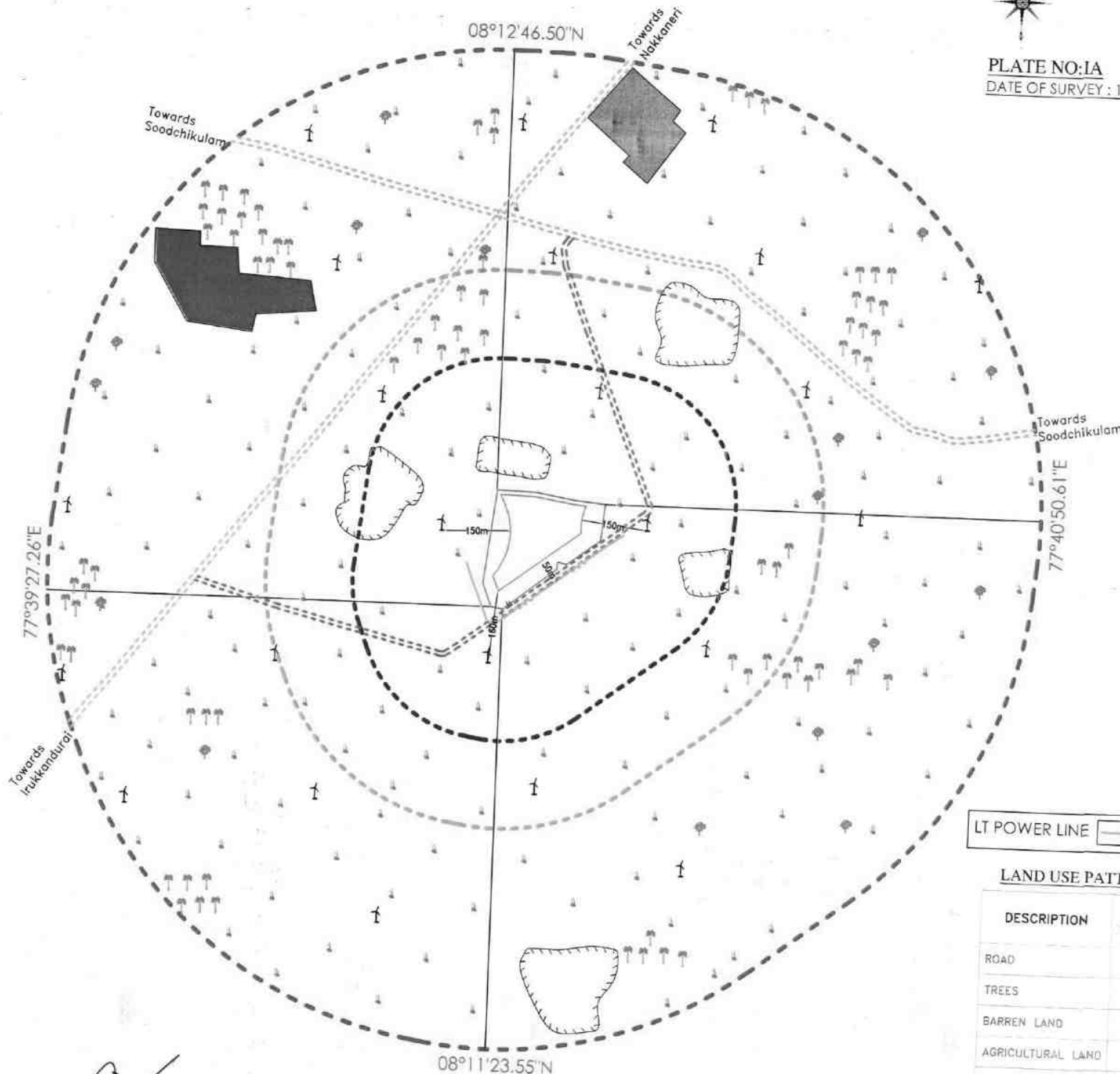
ENVIRONMENTAL PLAN

SCALE 1:10,000

PREPARED BY:

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GOVERNMENT

C.NATARAJAN, M.Sc., M.Phil.,
QUALIFIED PERSON



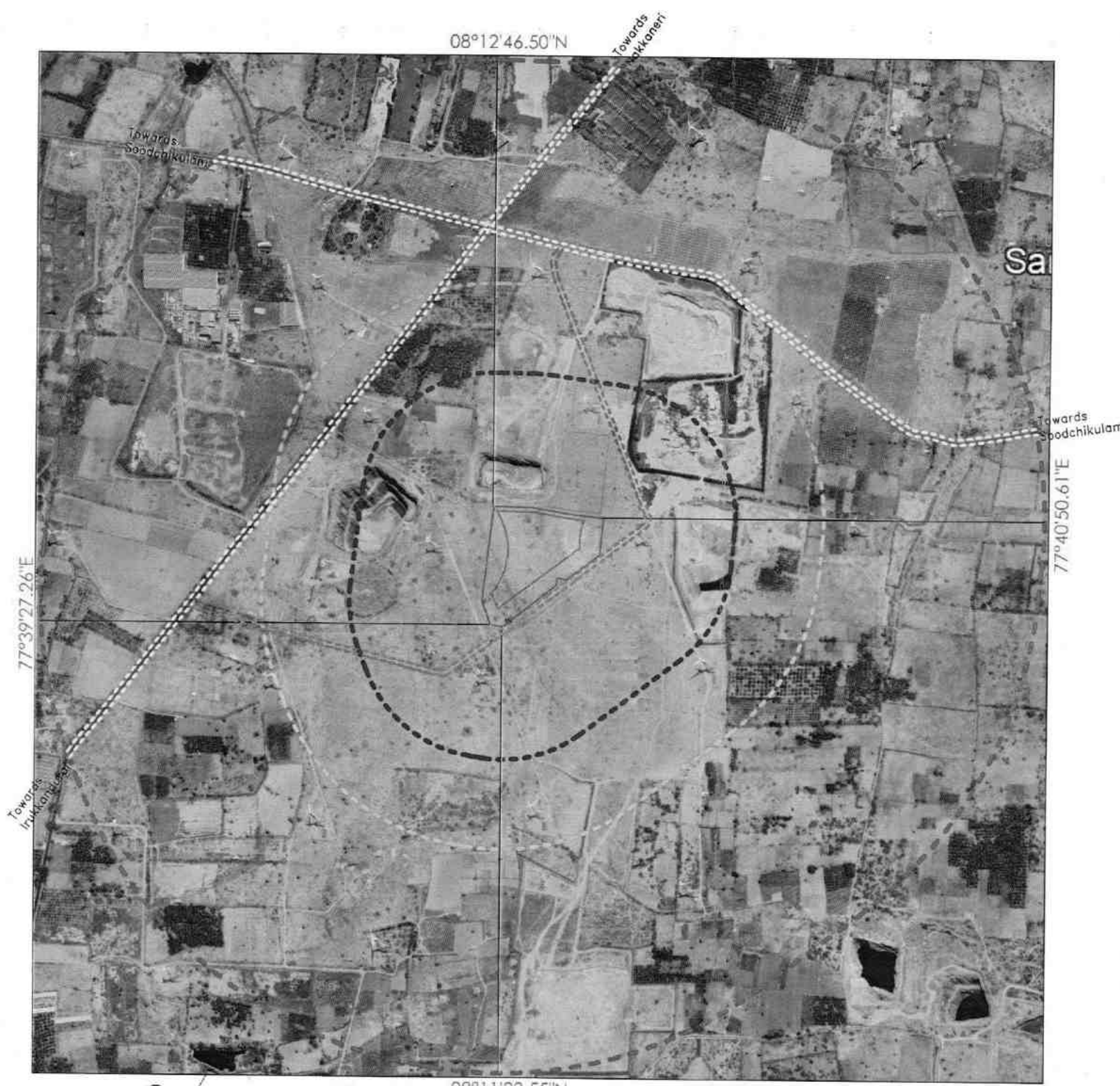


PLATE NO:IB

DATE OF SURVEY : 18.11.2023

APPLICANT:

THIRU.A.ARUNMUTHUKUMAR,
S/o.ARASAPPAN,
NO.133/1, YATHAVAR STREET,
PATTARPURAM, ERAIPPUVARI,
NANGUNERI TALUK, TIRUNELVELI DISTRICT.

QUARRY LEASE APPLIED AREA:

S.F.NOS : 291/2A2, 292/1C2, & 293/3B,
EXTENT : 4.87.80 Ha.
VILLAGE : IRUKKANDURAI PART-II,
TALUK : RADHAPURAM,
DISTRICT : TIRUNELVELI.

INDEX

TOPO SHEET NO : 58 H / 12

LATITUDE : 08°12'00.14"N to 08°12'08.96"N

LONGITUDE : 77°40'05.01"E to 77°40'14.02"E

Q.L.APPLIED AREA	
10m, 50m & 150m SAFETY	
300M RADIUS	
500M RADIUS	
1KM RADIUS	
APPROACH ROAD	
CART TRACK	
PANCHAYAT ROAD	

SATELLITE IMAGERY MAP

SCALE 1:10,000

PREPARED BY :

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GOVERNMENT

C.NATARAJAN, M.Sc., M.Phil.,
QUALIFIED PERSON

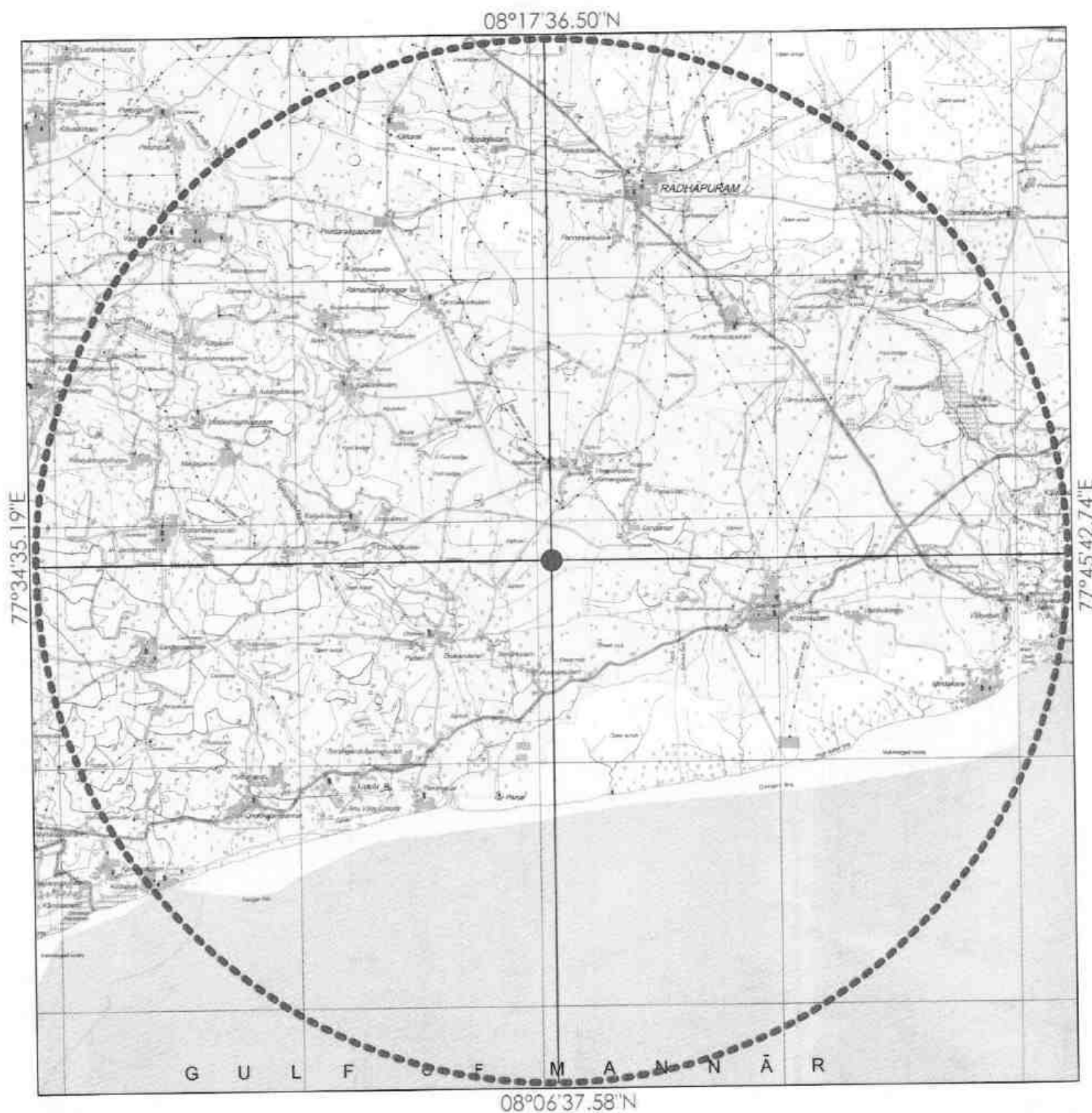


PLATE NO-IC
DATE OF SURVEY : 18.11.2023

APPLICANT:
THIRU.A.ARUNMUTHUKUMAR
S/o ARASAPPAN,
NO.133/1, YATHAVAR STREET,
PATTARPURAM, ERAIPPUKARI,
NANGUNERI TALUK,
TIRUNELVELI DISTRICT.



QUARRY APPLIED LEASE AREA:
S.F.NOS : 291/2A2, 292/1C2, & 293/3B,
EXTENT : 4.87.80 Ha,
VILLAGE : IRUKKANDURAI PART-II,
TALUK : RADHAPURAM,
DISTRICT : TIRUNELVELI.

INDEX

TOPO SHEET NO : 58 H / 12

LATITUDE : 08°12'00.14"N to 08°12'08.96"N

LONGITUDE : 77°40'05.01"E to 77°40'14.02"E

Q.L.APPLIED AREA

10KM RADIUS

CONVENTIONAL SYMBOLS	
Contour lines, 100 ft and 200 ft intervals	
Water, natural, artificial, or man-made	
Highways, roads, and railways	
Boundaries, political, and administrative	
Settlements, urban and rural	
Religious buildings, temples, mosques, etc.	
Public buildings, schools, hospitals, etc.	
Industrial buildings, factories, etc.	
Power lines, telegraph lines, etc.	
Other buildings, etc.	
Vegetation, trees, etc.	
Topography, hills, mountains, etc.	
Coastline, sea, etc.	
Islands, reefs, etc.	
Other features, etc.	

TOPO SKETCH OF QUARRY LEASE

APPLIED AREA FOR

10Km RADIUS

SCALE - 1:100000

PREPARED BY:

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GOVERNMENT

C.NATARAJAN, M.Sc., M.Phil.,
QUALIFIED PERSON

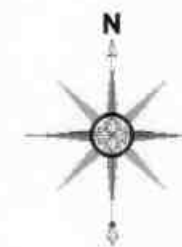
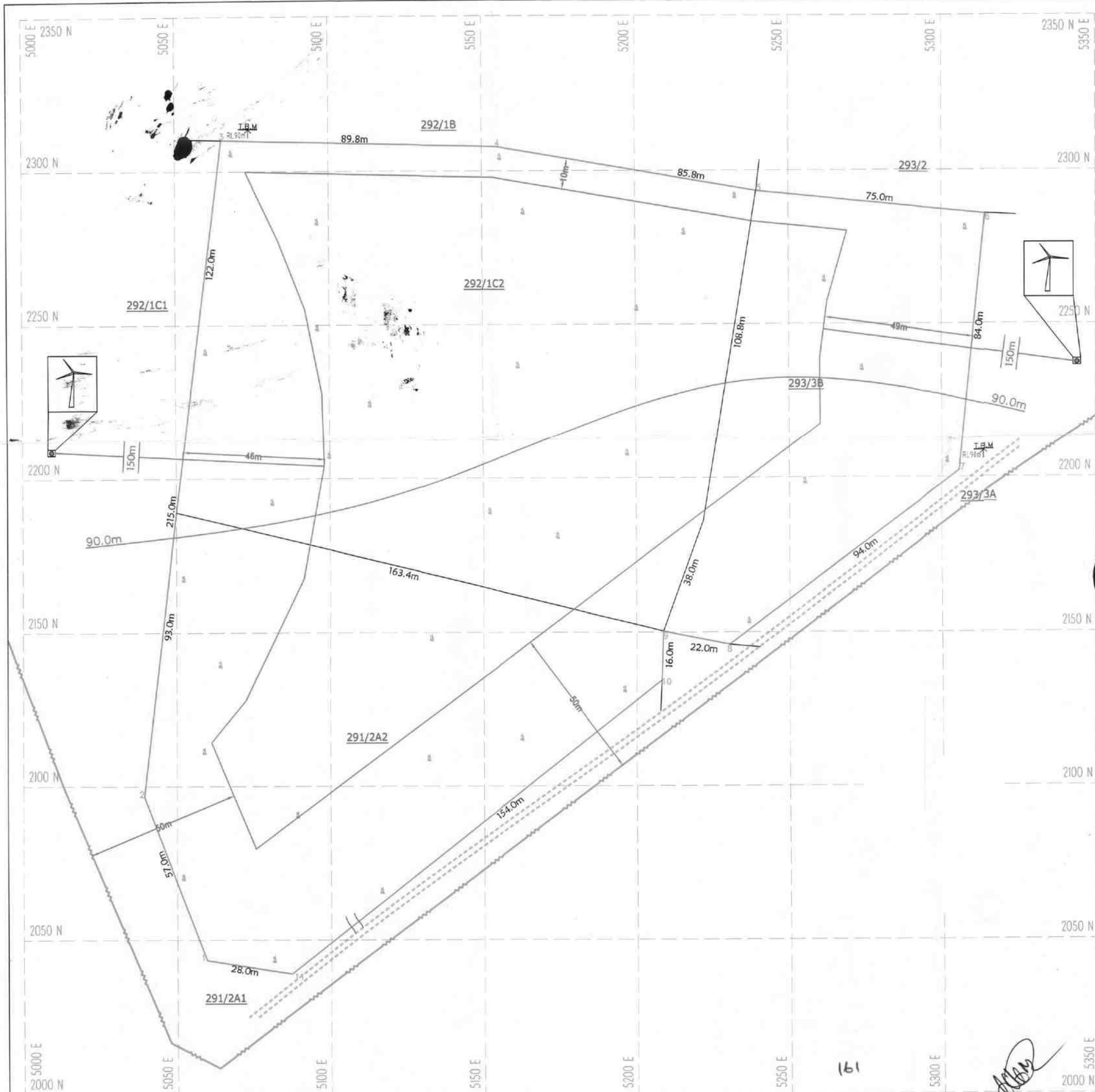
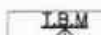


PLATE NO-II
DATE OF SURVEY : 18.11.2023

APPLICANT:
THIRU. S. KARUNANITHI, 100 MAR,
S. S. RAJAPPA N,
V. JESU, YATHAVAR STREET,
ATTARPUR, CHENNAI 600 041,
NANDINERILUR,
TIRUNOVELI DISTRICT.

QUARRY/PAVED LEASE AREA:
S.T. NO. : 291/2A2, 292/1C2, & 293/3B,
EXTENT : 4.87,80 Ha,
VILLAGE : IRUKKANDURAI PART-II,
TALUK : RADHAPURAM,
DISTRICT : TIRUNELVELI.

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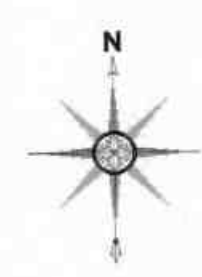
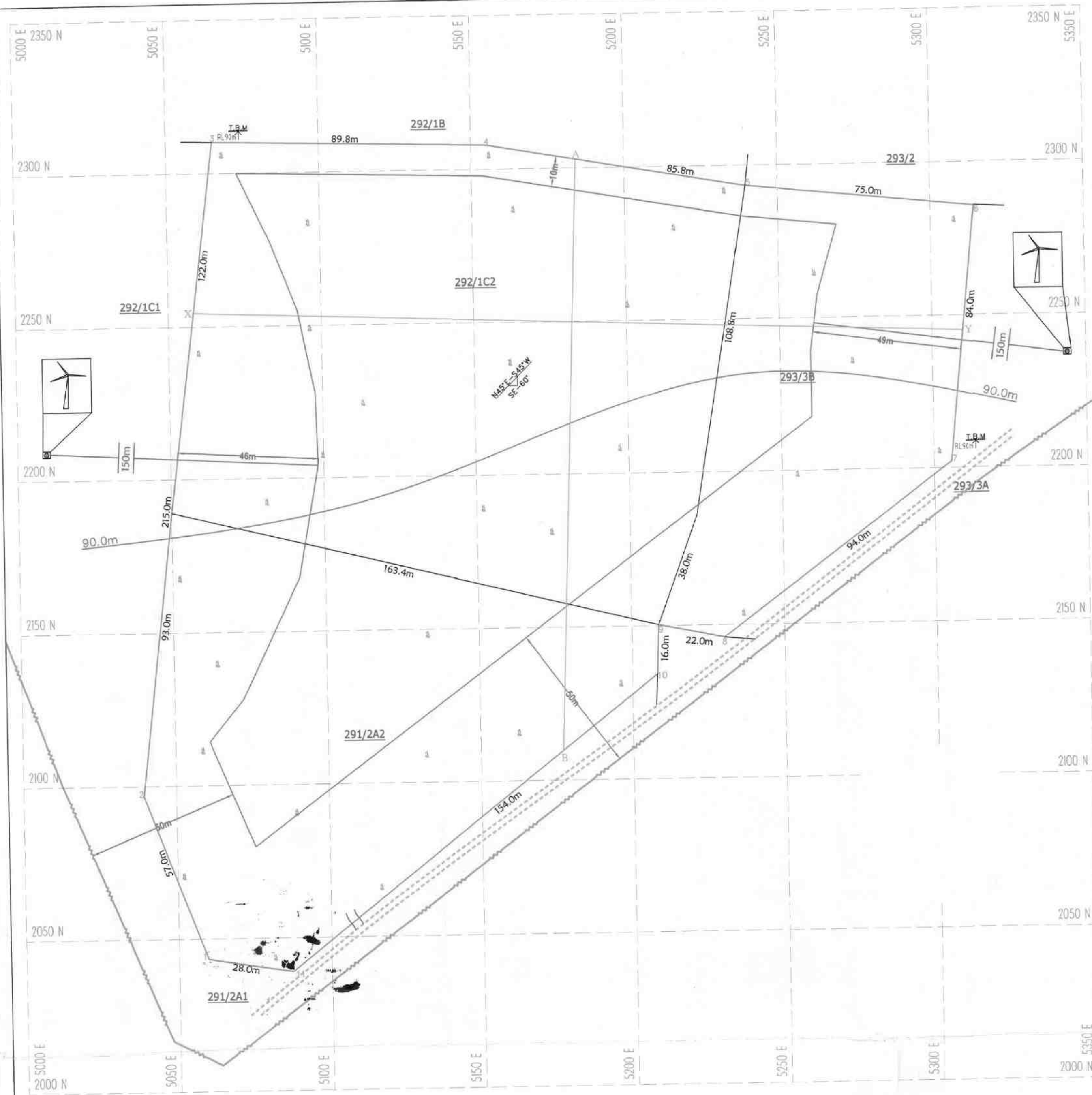
Q.L. APPLIED BOUNDARY	
10m, 50m & 150m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
APPROACH ROAD	
CONTOUR	
SCRUB	
LT POWER LINE	
WIND MILL	

QUARRY LEASE & SURFACE PLAN

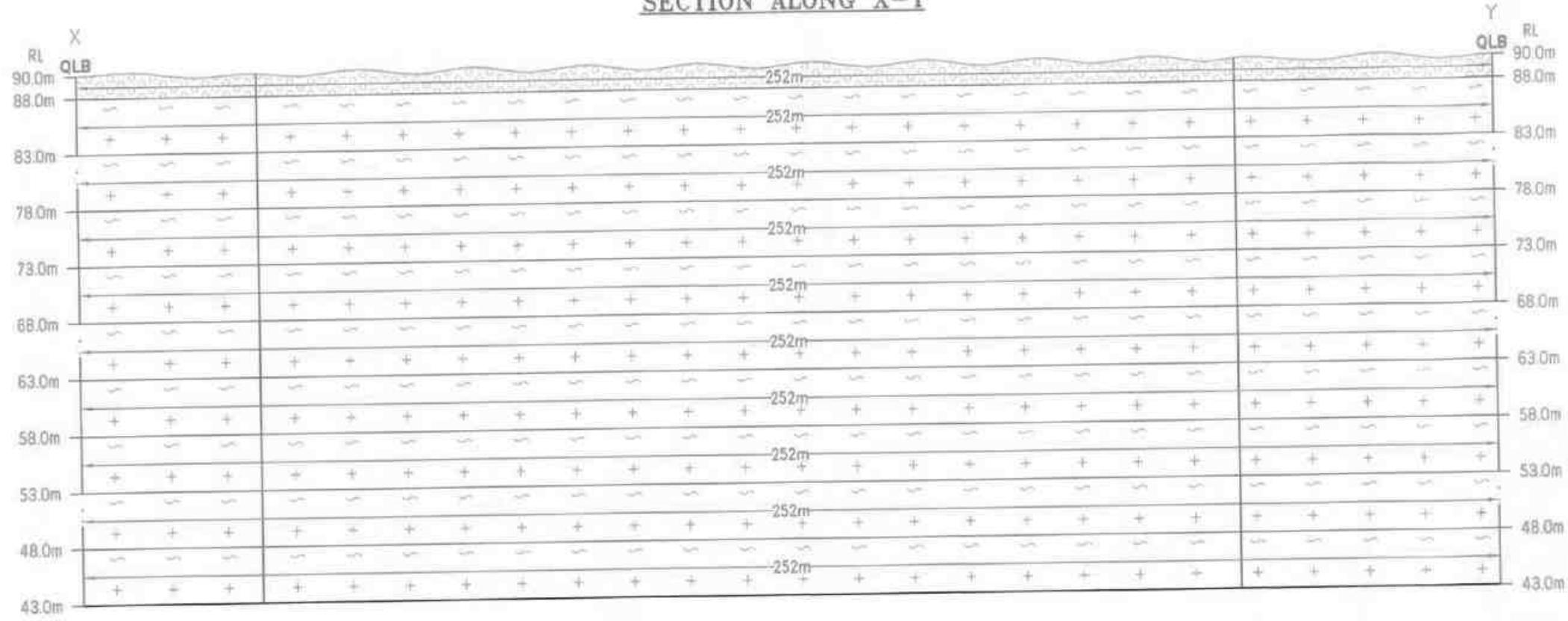
SCALE 1 : 1000

PREPARED BY:
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THE LEASE MAP AUTHENTICATED BY STATE
GOVERNMENT

GOVERNMENT
C. NATARAJAN, B.Sc., M.Phil.,
QUALIFIED PERSON



SECTION ALONG X-Y



SECTION ALONG A-B

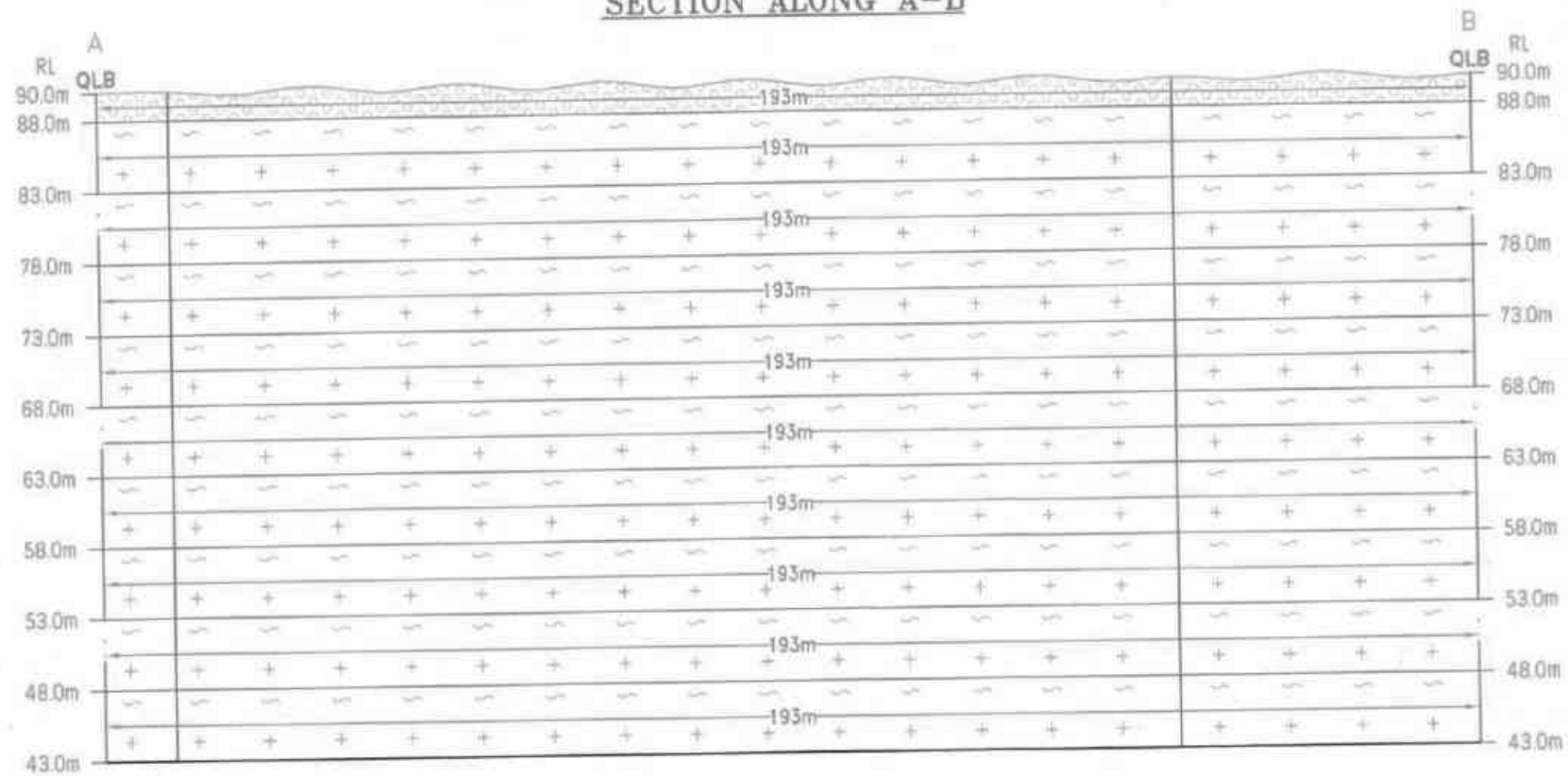


PLATE NO-III
DATE OF SURVEY : 18.11.2023

APPLICANT:
THIRU.A.ARU...
S/o.ARAS...
NO.133/...
PATTAN...
NANG...
TIRUNELV...
QUARRY APPLIED LEASE AREA:
S.F.NOS : 291/2A1, 291/2A2, 292/1C1, 292/1C2, & 293/3B,
EXTENT : 4.87.80 Ha,
VILLAGE : IRUKKANDURAI PART-II,
TALUK : RADHAPURAM,
DISTRICT : TIRUNELVELI.

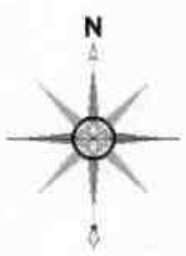
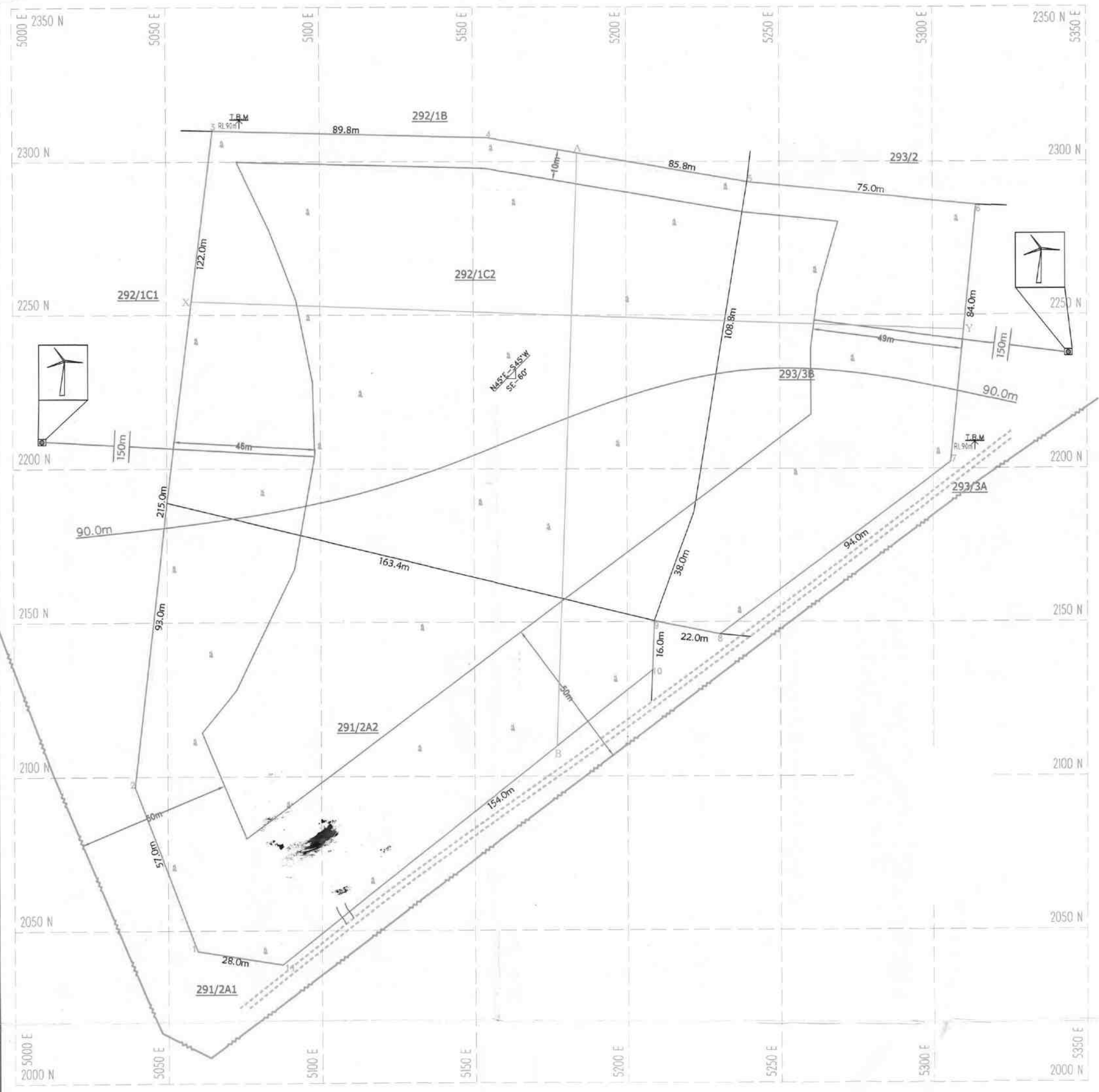
INDEX

- Q.L. APPLIED BOUNDARY
- 10m,50m & 150m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB
- LT POWER LINE
- WIND MILL
- GRAVEL
- ROUGH STONE
- STRIKE & DIP

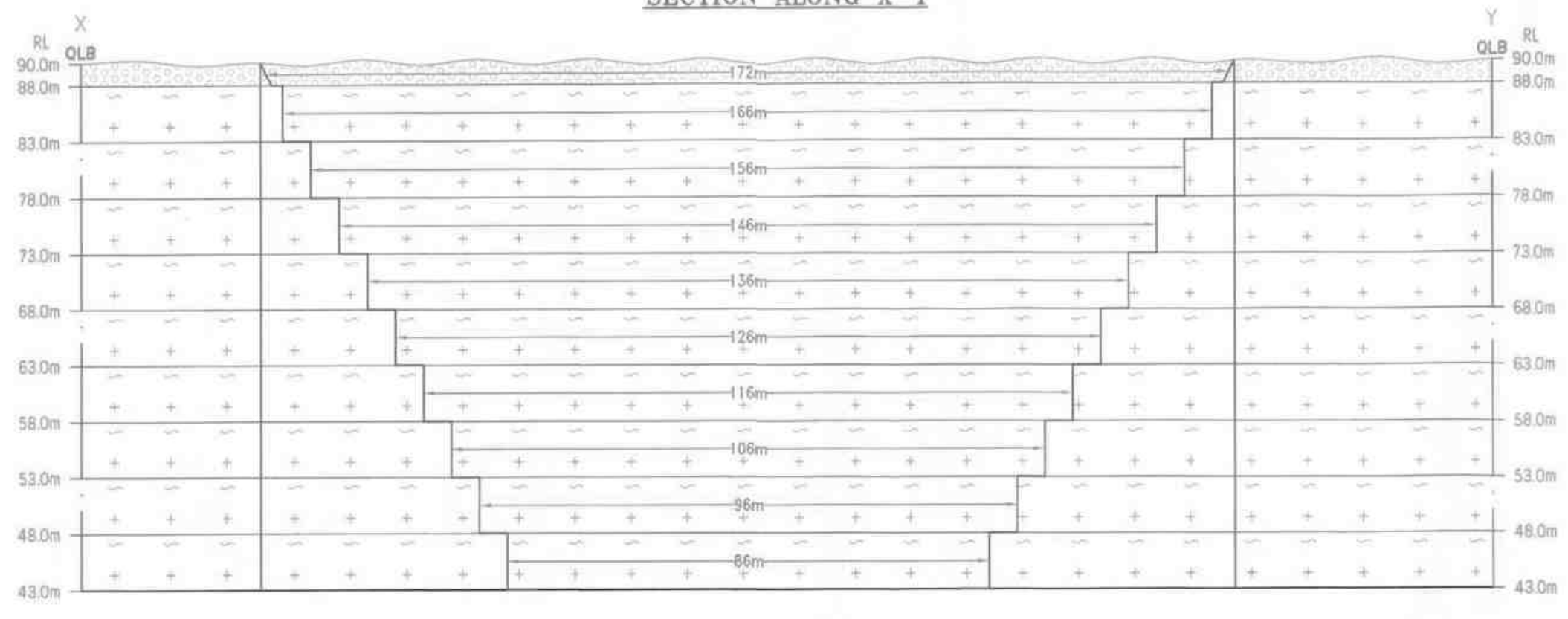
**TOPOGRAPHY & GEOLOGICAL
PLAN & SECTIONS**
SCALE 1:1000
SECTIONS HOR 1:1000, VER 1:500

PREPARED BY:
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THE LEASE MAP AUTHENTICATED BY STATE
GOVERNMENT

C.NATARAJAN,M.Sc.,M.T.M.,
QUALIFIED PERSON



SECTION ALONG X-Y



SECTION ALONG A-B

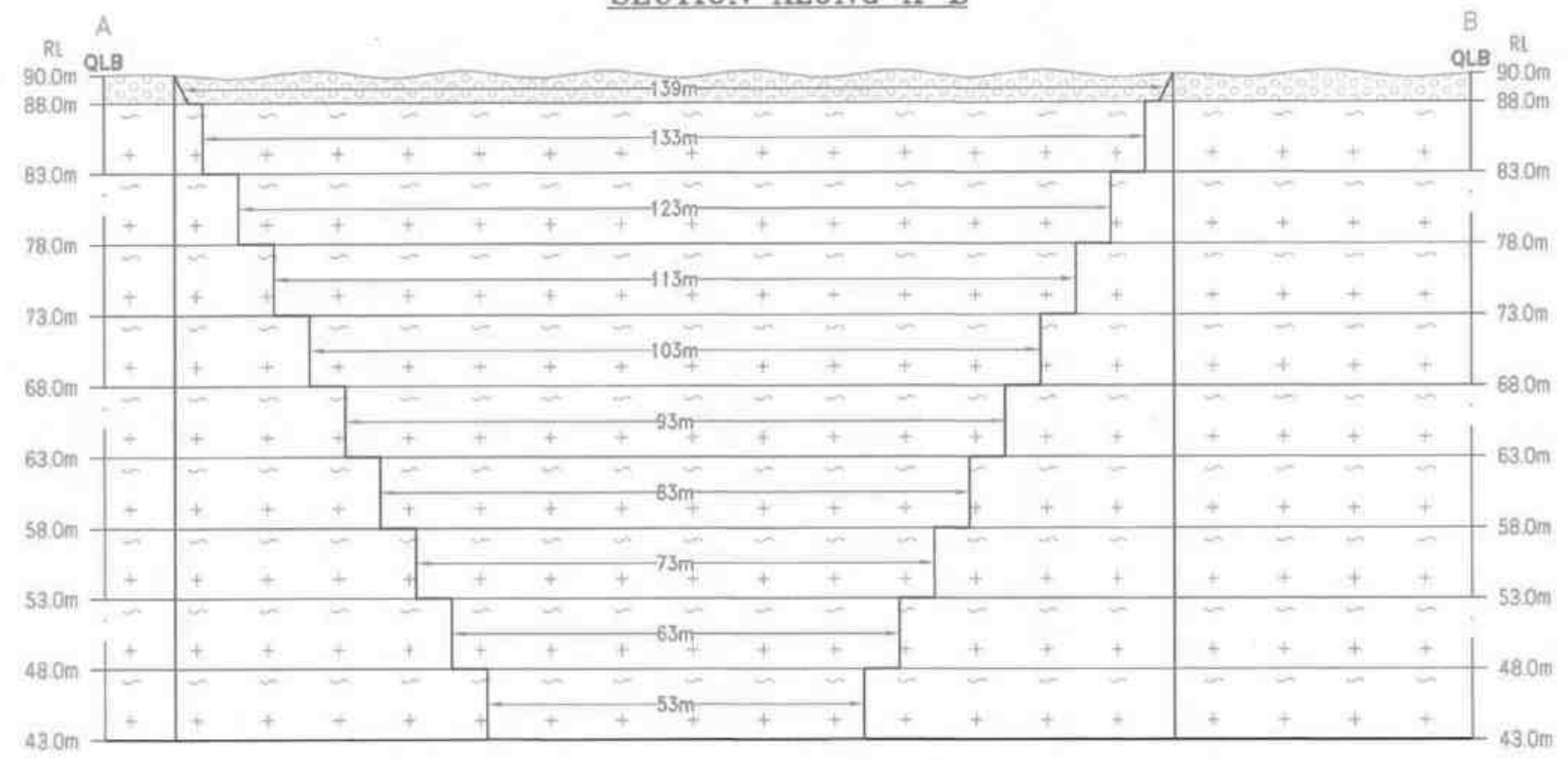


PLATE NO-IV
DATE OF SURVEY : 18.11.2023

APPLICANT
MUTHUKUMAR
SAPPAN (H)
33/1, KATIPAR STREET,
ATTAPURAM, APPLVARI,
TANGUNERI TALUK,
TIRUNELVELI DISTRICT.

QUARRY APPLIED LEASE AREA:
S.F.NOS : 291/2A2, 292/1C2, & 293/3B,
EXTENT : 4.87.80 Ha,
VILLAGE : IRUKKANDURAI PART-II,
TALUK : RADHAPURAM,
DISTRICT : TIRUNELVELI.

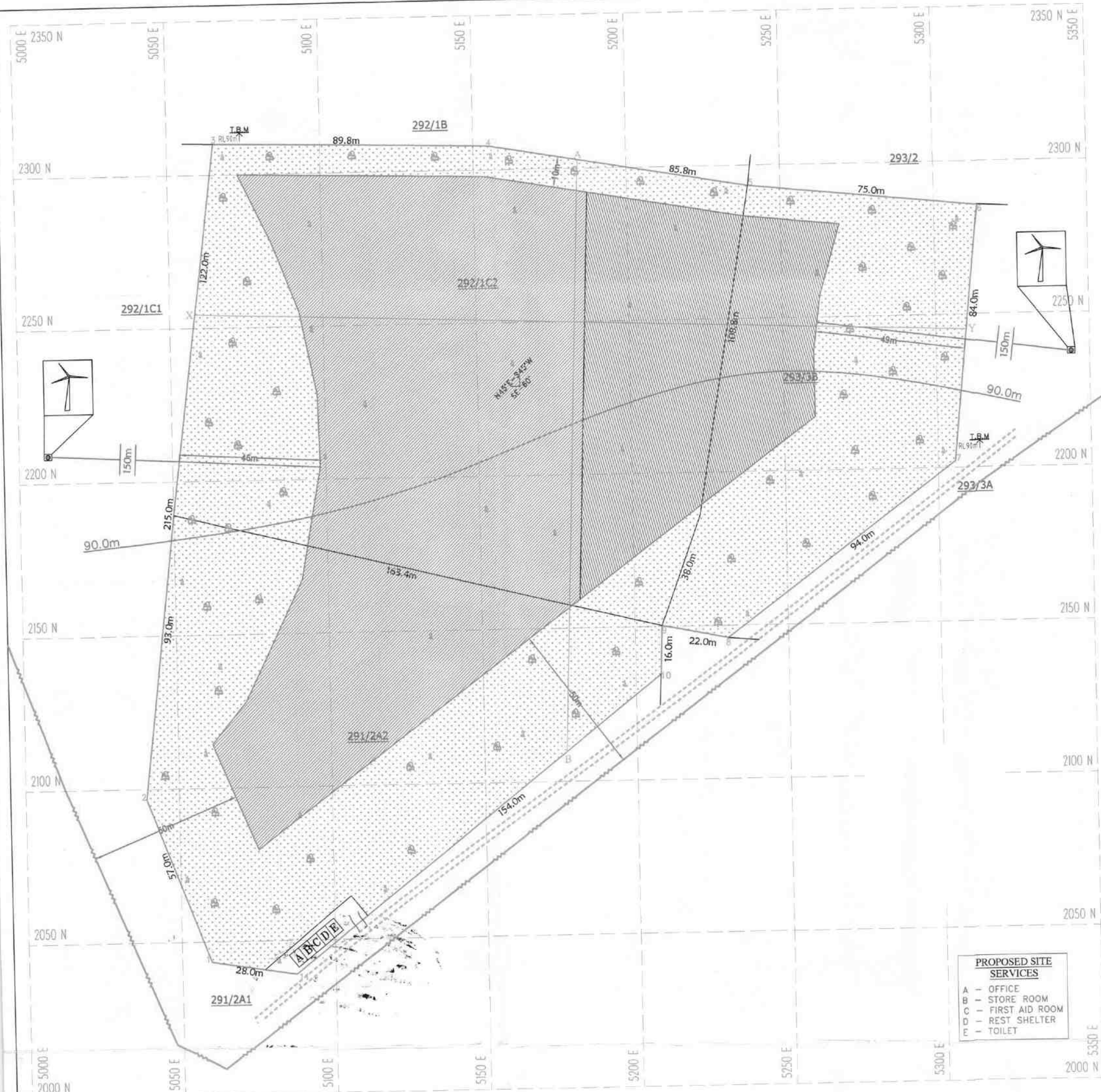
INDEX

Q.L. APPLIED BOUNDARY	
10m, 50m & 150m SAFETY DISTANCE	
TEMPORARY BENCH MARK	
APPROACH ROAD	
CONTOUR	
SCRUB	
LT POWER LINE	
WIND MILL	
GRAVEL	
ROUGH STONE	
STRIKE & DIP	

**MINEABLE
PLAN & SECTIONS**
SCALE 1:1000
SECTIONS HOR 1:1000, VER 1:500

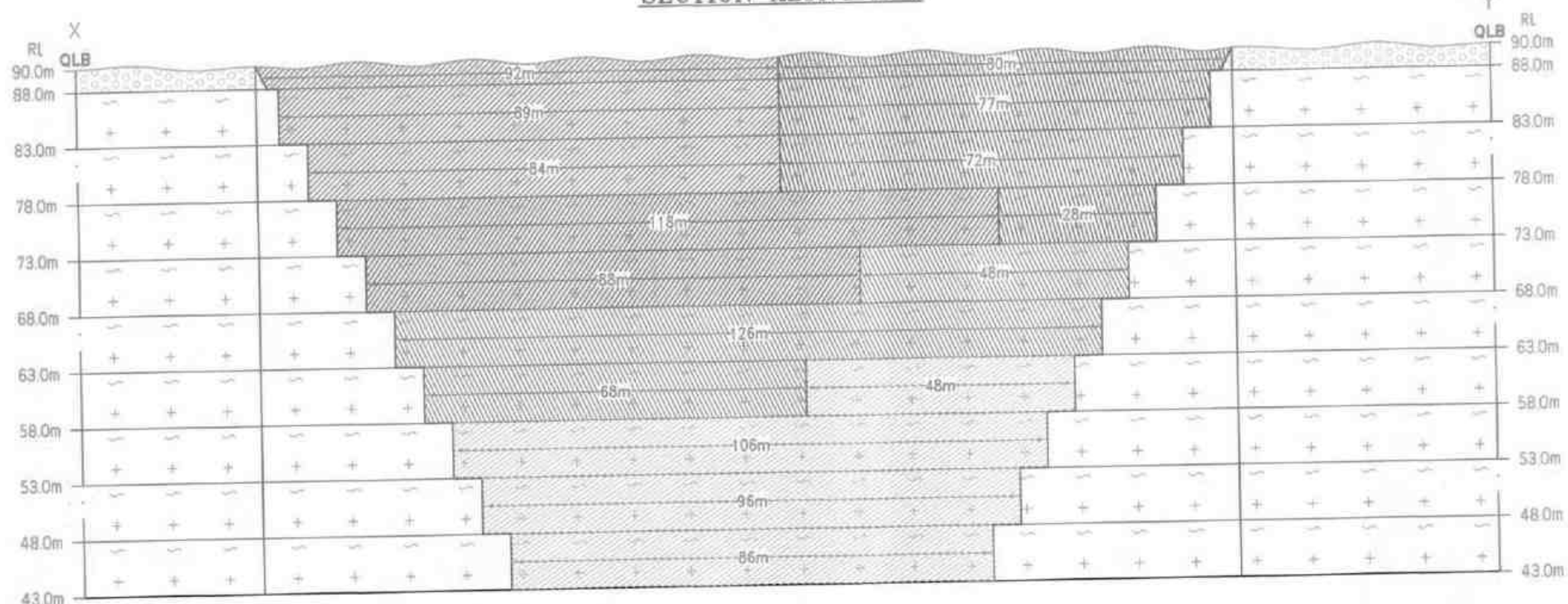
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GOVERNMENT

(Signature)
C. NATARAJAN, M.Sc., M.Phil.,
QUALIFIED PERSON

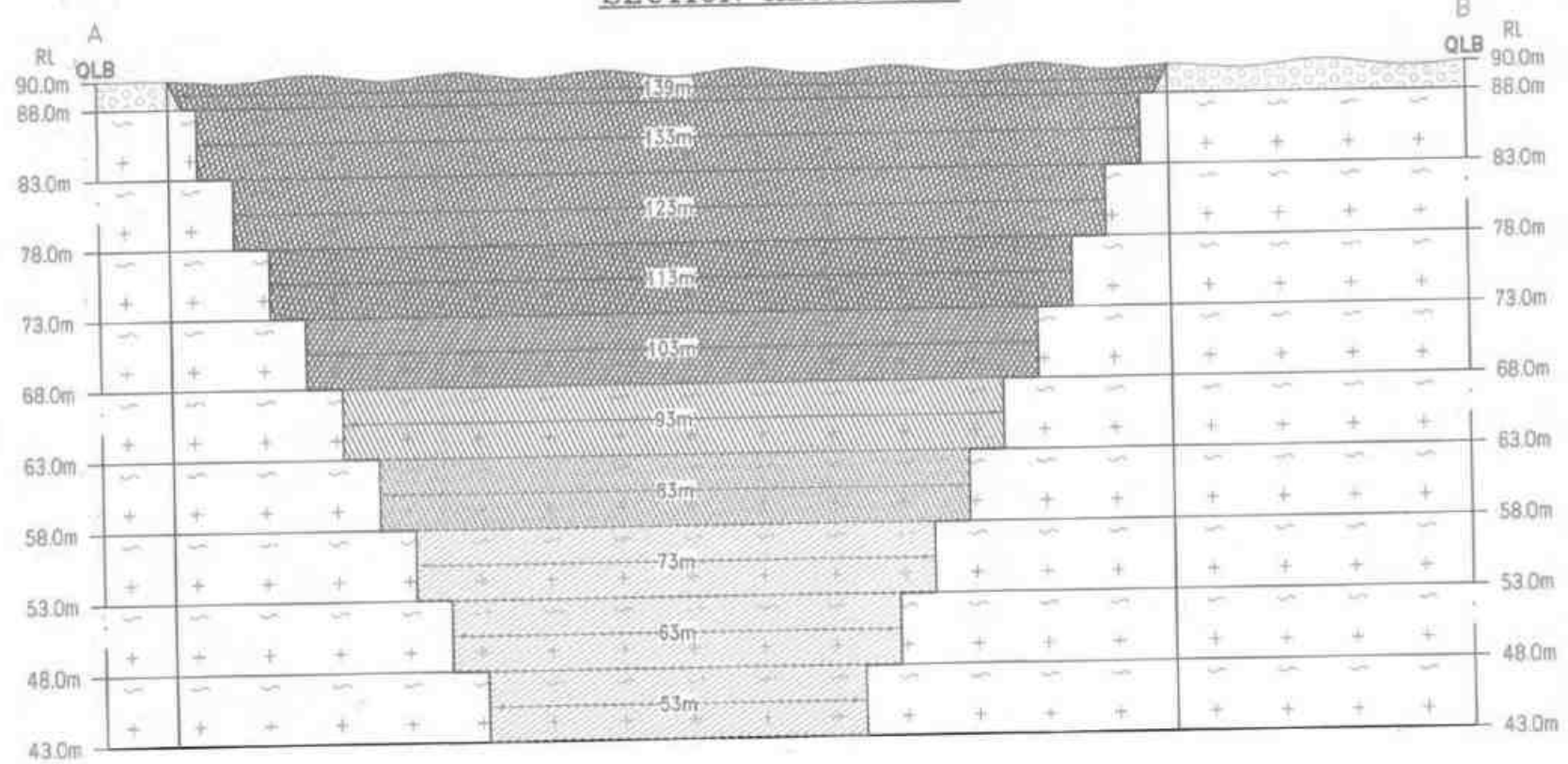


PROPOSED SITE SERVICES
 A - OFFICE
 B - STORE ROOM
 C - FIRST AID ROOM
 D - REST SHELTER
 E - TOILET

SECTION ALONG X-Y



SECTION ALONG A-B



PRESENT & POST LAND USE PATTERN

DESCRIPTION	PRESENT AREA (Ha)	AREA AT THE END OF THIS QUARRYING PERIOD (Ha)
AREA UNDER QUARRYING	NII	2.39.50
INFRASTRUCTURE	NII	0.01.00
ROADS	NII	0.01.00
GREEN BELT	NII	2.46.30
UN-UTILIZED AREA	4.87.80	NII
GRAND TOTAL	4.87.80	4.87.80

- 1st yr Proposed area to be Quarried
- 2nd yr Proposed area to be Quarried
- 3rd yr Proposed area to be Quarried
- 4th yr Proposed area to be Quarried
- 5th yr Proposed area to be Quarried

PLATE NO-V
 DATE OF SURVEY : 18.11.2023

APPLICANT:
 THIRU.A.ARBINDHINIMAR,
 S/o. A.A. S. APPARAO,
 NO. 601, WASHAVAR STREET,
 KANAKPURA, RAIPPUYARTI,
 VANDIYALUR TALUK,
 TIRUNELVELI DISTRICT.

QUARRY APPLIED LEASE AREA:
 S.F. NO. : 291/2A2, 292/1C2, & 293/3B,
 EXTENT : 4.87.80 Ha,
 VILLAGE : IRUKKANDURAI PART-II,
 TALUK : RADHAPURAM,
 DISTRICT : TIRUNELVELI.

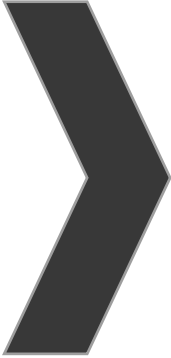
INDEX

- Q.L. APPLIED BOUNDARY
- 10m, 50m & 150m SAFETY DISTANCE
- TEMPORARY BENCH MARK
- APPROACH ROAD
- CONTOUR
- SCRUB
- LT POWER LINE
- WIND MILL
- GRAVEL
- ROUGH STONE
- STRIKE & DIP

YEARWISE DEVELOPMENT & PRODUCTION PLAN & SECTION:
 SCALE 1:1000
 SECTIONS HOR 1:1000, VER 1:500

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

C. NATARAJAN M.Sc., M.Phil.,
 QUALIFIED PERSON



ANNEXURE-4

From

Thiru.L.Suresh., M.Sc.,
Joint Director/
Assistant Director(i/c),
Geology and Mining,
Tirunelveli.

To

Thiru.A.Arunmuthukumar,
S/o.Arasappan,
No.133/1, Yathavar Street,
Pattarpuram, Eraippuvari,
Nanguneri Taluk,
Tirunelveli District.

Rc.No.M2/547/2023

dated.24.11.2023

Sir,

Sub: Mines and Minerals - Minor Minerals - Tirunelveli District - Quarry lease application preferred by Thiru.A.Arunmuthukumar, S/o.Arasappan for quarrying roughstone and gravel over an extent of 4.87.80 hectares of patta lands in SF. Nos. 291/2A2, 292/1C2 & 293/3B of Irukkandurai Part-II Village - Radhapuram Taluk - Certain Particulars requested - for obtaining Environmental Clearance - furnished - reg.

Ref:

1. Quarry lease application preferred by Thiru.Arunmuthukumar, S/o.Arasamuthu, Yathavar Street, Pattarpuram, Eraippuvari, Tirunelveli, dated.25.07.2023.
2. Precise Area Communication letter in Rc. No.M2/547/2023, dated. 17.11.2023.
3. Mining Plan Approval letter No. M2/547/2023, dated.24.11.2023.
4. Letter received from the applicant Thiru.Arunmuthukumar, S/o.Arasamuthu, dated. 24.11.2023.

Thiru.A.Arunmuthukumar, S/o.Arasamuthu, 133/1, Yathavar Street, Pattarpuram, Eraippuvari, Nanguneri Taluk, Tirunelveli District has applied for grant of quarry lease for quarrying Roughstone and Gravel over an extent of 4.87.80 hectares of patta land in SF. Nos.291/2A2, 292/1C2 & 293/3B of Irukkandurai Part-II Village, Radhapuram Taluk.

Tirunelveli District for a period of 5 years under Rule 19 (1) of Tamil Nadu Minor Mineral Concession Rules, 1959.

2. Based on the recommendations of the Sub Collector, Cheranmahadevi(i/c)/District Supply Officer, Tirunelveli and the Joint Director/Assistant Director(i/c) of Geologist of Geology and Mining, Tirunelveli the application preferred by Thiru.A.Arunmuthukumar, S/o.Arasmuthu for grant of quarry lease for quarrying roughstone and gravel in the subject area was considered for grant for a period of 5 years and precise area was communicated over an extent of 4.87.80 hectares of patta land in SF. Nos. 291/2A2 (1.54.0), 292/1C2 (2.35.0) & 293/3B (0.98.80) of Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District vide reference 2nd cited.

3. The Mining Plan submitted by the lessee, Thiru.A.Arunmuthukumar, S/o.Arasmuthu for quarrying roughstone has been approved vide this office letter No.M2/547/2023, dated.24.11.2023 for obtaining Environmental Clearance as per the newly introduced Rule 41 and 42 of Tamil Nadu Minor Mineral Concession Rules, 1959.

4. In the reference 4th cited, Thiru.A.Arunmuthukumar, S/o.Arasmuthu has requested to furnish certain particulars such as existing / proposed / abandoned mines within a radial distance of 500 meters from the periphery of the existing mining lease hold area for

obtaining environmental clearance from the State Level Environment Impact Assessment Authority, Chennai.

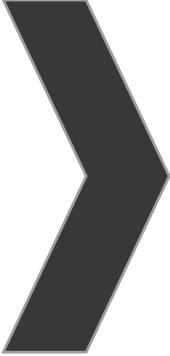
5. The details of quarry leases falling within a radial distance of 500 meters from the subject leasehold area are furnished below:-

Sl. No	Name of the Lessee	Village & SF. No.	Extent - Hects	Lease status
a. Details of Abandoned Quarries				
Nil				
b. Details of Expired Quarries				
1.	N.Esakkappan, S/o.Narayanan, Vettarakathan Kovil Street, Ambalavanapuram, Palavoor Village, Radhapuram Taluk, Tirunelveli District.	Irukkandurai Part-II (V) & SF. Nos.364/1A(P) & 366/1(P)	1.56.0	Proceedings No. M1/48377/2015, dt.19.02.2018 for a period of 5 years, 28.02.2018 to 27.02.2023
c. Existing quarry Quarries				
1.	K.Bagavathiyappan, S/o. Kumaresan, 8/42, Radhapuram Road, Kavalkinaru, Perungudi Village, Radhapuram Taluk	Irukkandurai Part-II (V) & SF. No. 297/2	3.65.5	Proceedings No. M1/10777/2018, dt.31.10.2020 for a period of 5 years from 07.11.2020 to 06.11.2025
2.	Tvl. S.A.V Manilal Blue Metals, Prop.M.Sudeshlal, No. 10-166, Vadakku Bazar Street, Vadakkankulam, Perungudi Village, Radhapuram Taluk, Tirunelveli District.	Irukkandurai Part-II (V) & SF. Nos. 292/1A(P) & 295/2B(P)	1.24.0	Proceedings No. M2/25155/2019, dt.26.02.2021 for a period of 5 years from 26.02.2021 to 25.02.2026

3.	Tvl. S.A.V Blue Metals Private Limited, Prop.A.Ajeshlal, 12-725-B7, Kavalkinaru Road, Vadakkankulam, Radhapuram Taluk, Tirunelveli District.	Irukkandurai Part-II (V) & SF. No. 155/2(P)	1.24.0	Proceedings No. M1/40129/2018, dt.26.02.2021 for a period of 5 years 26.02.2021 to 25.02.2026
d. Present Proposed Quarries				
1.	Thiru.A.Arunmuthukumar, S/o.Arasappan, No.133/1, Yathavar Street, Pattarpuram, Eraippuvari, Nanguneri Taluk, Tirunelveli District.	Irukkandurai Part-II (V) & SF. Nos.291/2A2, 292/1C2 & 293/3B	4.87.80	Instant proposal

Joint Director/
Assistant Director(i/c),
Geology and Mining,
Tirunelveli.

24/11/23

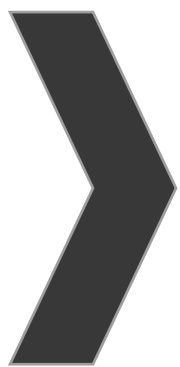


ANNEXURE-5

கிராம நிர்வாக அலுவலர்
இருக்கன்துறை பகுதி -2 - கிராமம்

திருநெல்வேலி மாவட்டம், இராதாபுரம் வட்டம், இருக்கன்துறை பகுதி-2 கிராமம், புல எண்கள் 291/2A2, 292/1C2, 293/3B மொத்த விஸ்தீரணம் 4.87.80 ஹெக்டேர் பட்டா நிலங்களில் சாதாரண கற்கள் வெட்டி எடுக்க குத்தகை உரிமம் வழங்கக்கோரி திரு.அ.அருண்முத்துக்குமார் த/பெ. அரசுமுத்து என்பவர் விண்ணப்பம் செய்துள்ளது தொடர்பாக மேற்படி குவாரி உரிம அனுமதி கோரும் புஞ்சை புலத்தினைச் சுற்றி 300 மீட்டருக்குள் குடியிருப்பு பகுதி ஏதும் இல்லை. கோயில்கள் வழிபாட்டு ஸ்தலங்கள் எதுவும் இல்லை 50 மீட்டர் சுற்றளவிற்குள் அரசு புறம்போக்கு நீர்நிலைகள் மற்றும் இடுகாடு ஏதும் இல்லை. என தெரிவிக்கப்படுகிறது.

14/8/2024
கிராம நிர்வாக அலுவலர்
25, இருக்கன்துறை பகுதி II
இராதாபுரம் வட்டம்



ANNEXURE-6

ANNEXURE

11

: Tirunelveli

: Radhapuram

illage : Irukkanthurai Part-2 [252]



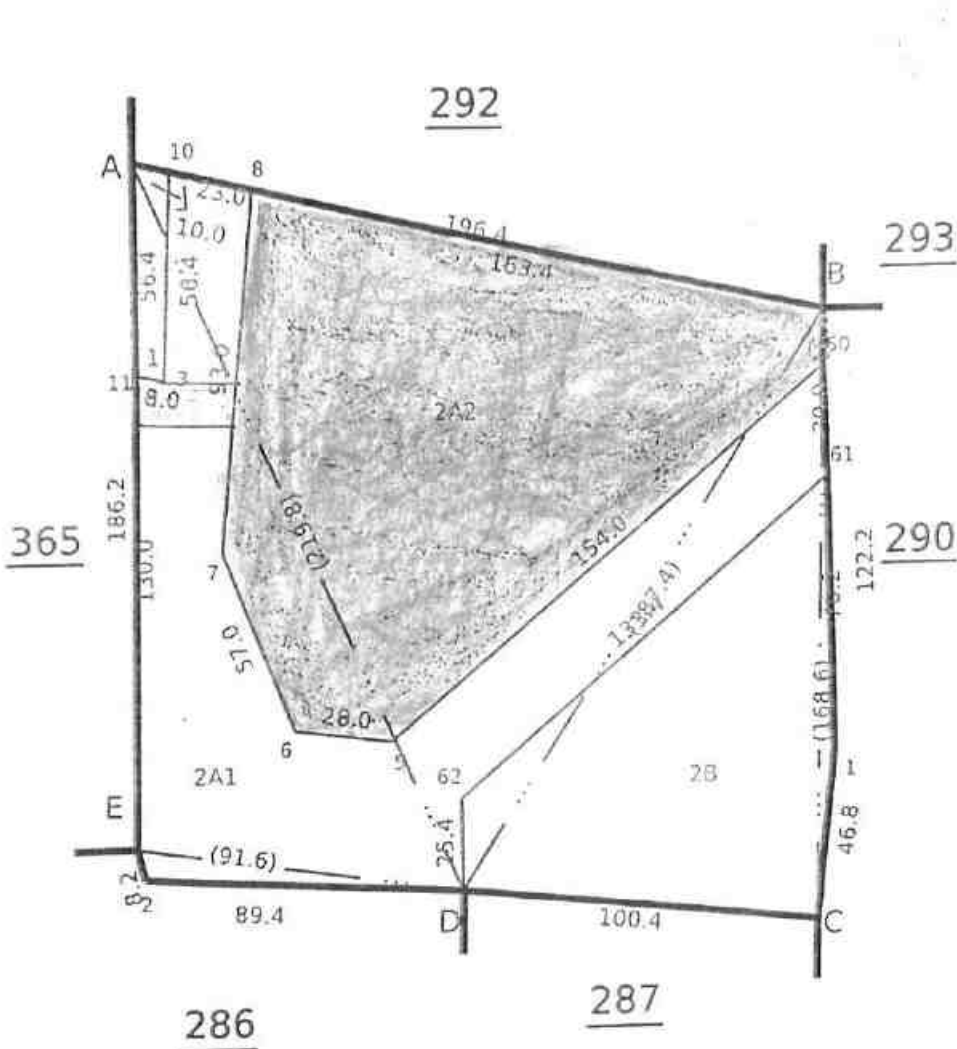
Survey No. 11

Area : Hect

Scale : 1 : 2000



291/2A2 - 1.54.00 - Hect.



சாதாரண கற்கள் எடுக்க
அனுமதி கோரும் பகுதி

கனிமம் எடுத்துச்
செல்ல பாதை வசதி

LEASE APPLIED AREA

O. S. S. S. S.
21/7/23

வட்டாட்சியர்
இராதாபுரம்.
25/7/23

சார் ஆய்வுகள்
இராதாபுரம் வட்டம்

Date of Issue: 05-10-2023 19:51:56

260 iv.2

Survey and Settlement Department, Government of TamilNadu

327



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Tirunelveli

Radhapuram

Page : Irukkanthurai Part-2 [252]



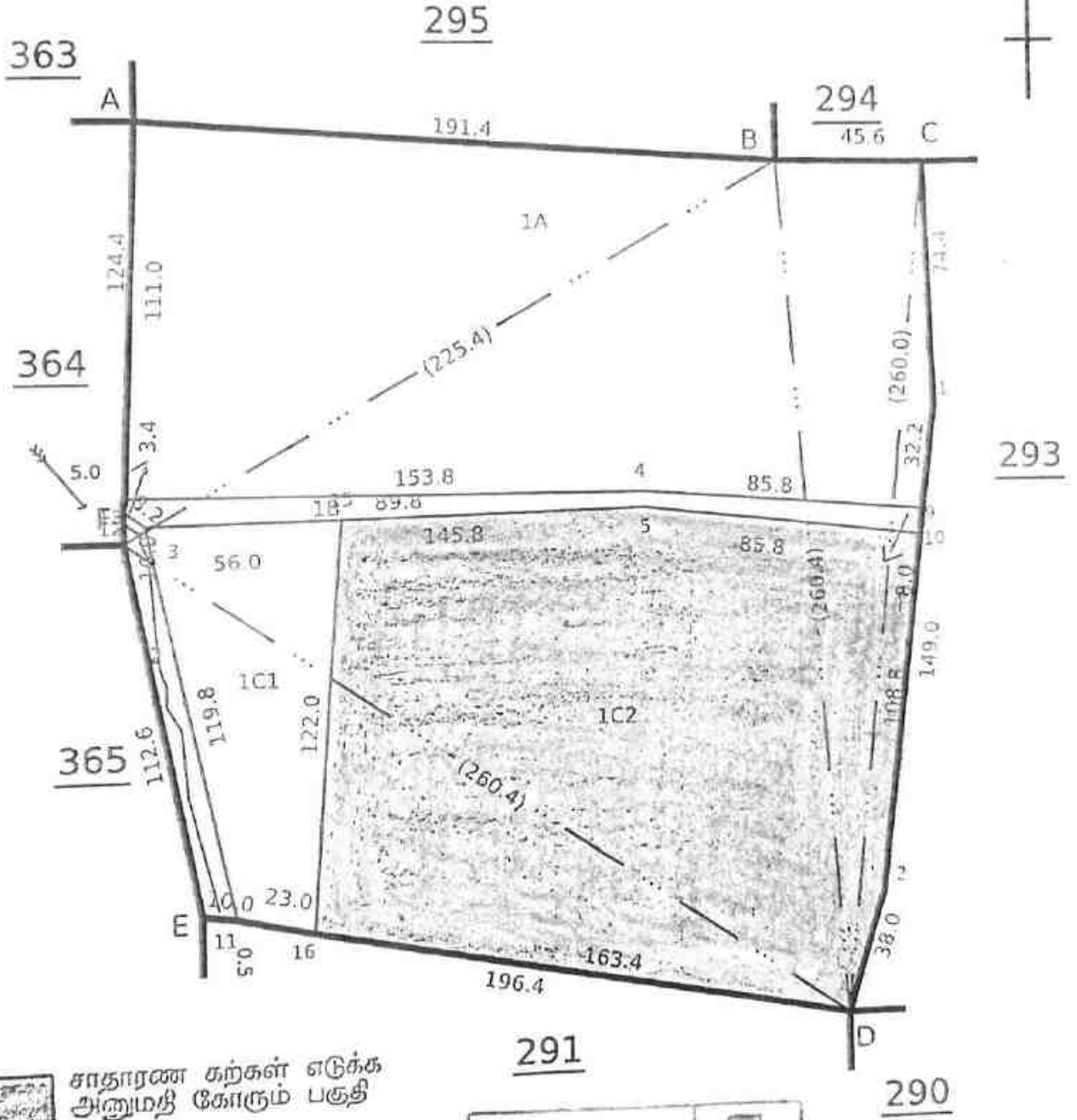
Survey

Area : Hectares 71.50

Scale : 1 : 2000



292/102 - 2,35.00 Hec.



சாதாரண கற்கள் எடுக்க அனுமதி கோரும் பகுதி

LEASE APPLIED AREA

வட்டாட்சியர்
இராதாபுரம்.
21/9/23

வ.வெ.வெ.வெ.
21/9/23

சார் ஆய்வாளர்
இராதாபுரம் வட்டாட்சியர்

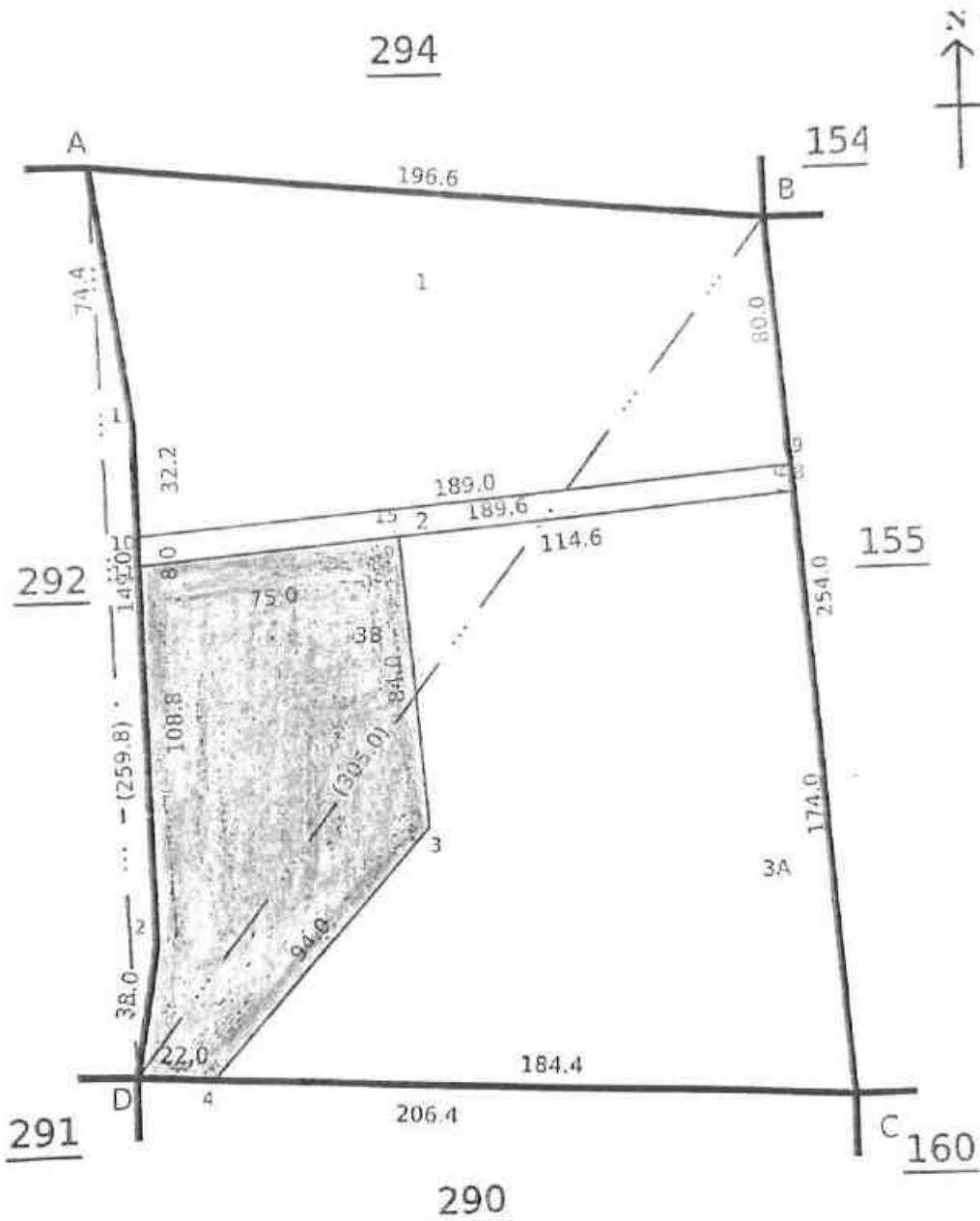
Radhapuram



Scale : 1 : 2000



293/3B-0.98, 80-Hfr.



 சாதாரண சற்கள் எடுக்க
அனுமதி கோரும் பகுதி

LEASE APPLIED AREA

வட்டிபட்டியல்
இராதாபுரம்.
26/09/22

சார் ஆய்வாளர்
இராதாபுரம் வட்டம்

Date of Issue: 05-10-2023 19:54:39

260 fv.2

Survey and Settlement Department, Government of TamilNadu

138

ANNEXURE 111



LEASE APPLIED AREA



தமிழக அரசு

வருவாய்த் துறை

ANNEXURE IV



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

வட்டம் : இராதாபுரம்

பட்டா எண் : 2522

மாவட்டம் : திருநெல்வேலி

வருவாய் கிராமம் : இருக்கன்துறை பகுதி-2

உரிமையாளர்கள் பெயர்

1 - மற்றவை

எஸ் ஏ வி புனாமெட்டில்ஸ் பிரைவேட் லிமிடெட்

புல எண்	உட்பிரிவு	புன்செய்		நன்மெய்		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	ஹெக்டர் - ஏர்	ரூ - பை	
291	2A2	1 - 54.00	1.00	--	--	--	--	2019/0105 /29/080744--2019 /29/09/000130SD -- 21-09-2019
292	1C2	2 - 35.00	1.50	--	--	--	--	2019/0105 /29/080744--2019 /29/09/000130SD -- 21-09-2019
293	3B	0 - 98.80	0.70	--	--	--	--	2019/0105 /29/080744--2019 /29/09/000130SD -- 21-09-2019
		4 - 87.80	3.20					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாய்கள் <https://eservices.tn.gov.in> என்று இணைய தளத்தில் 29/09/252/02522/40211 என்ற குறிப்பு எண்ணை உள்ளீடு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 08-12-2022 அன்று 02:01:27 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படிப்பான் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்.



நி. எண். 25. எடுக்கப்படுகின்ற பகுதி II

2	3	4	5	6	7	8	9	10	11
287	ர	பு	...	8-5	7	0 62	2 97.0	2 72	929 க. பஸ்கோ கோனார் மற்றும் குண்டு பொருள்கள்.
288-1	ர	பு	...	8-5	7	0 62	0 39 0	0 81	606 க. வள்ளி யாழ்வார்.
-2	ர	பு	...	8-5	7	0 62	2 42.0	1 54	822 க. மாரகா கோனார் (1). க. பெரிய கோனார் (2). க. தங்க கோனார் (3).
							3 38 0	2 35	
289-1	ர	பு	...	8-5	7	0 62	2 07 0	1 89	698 க. பஸ்கோ கோனார் (1). க. கோனார் கோனார் (2).
-2	ர	பு	...	8-5	7	0 62	2 18 5	2 00	699 க. சங்கர முத்திரை (1). க. மாரகா கோனார் (2).
							4 25 5	3 89	
290-1	ர	பு	...	8-5	7	0 62	1 75 5	1 61	619 க. வெள்ளாறு நாடார்.
-2	ர	பு	...	8-5	7	0 62	2 24.5	2 05	698 க. பஸ்கோ கோனார் (1). க. கோனார் கோனார் (2).
							4 00.0	3 66	
291-1	அ	பு	...	...	...	...	0 03.5	...	...
-2	ர	பு	...	8-5	7	0 62	3 46.0	2 14	590 க. வெள்ளாறு முத்திரை.
							3 51.5	2 14	

பெரிய
பெரிய
கோனார்.

நி. எண். 25. எடுக்கப்படுகின்ற பகுதி II

2-வது பக்கம்

21/9/12
25. எடுக்கப்படுகின்ற பகுதி II

21/9/12
இராஜபுரம்.



	1	2	3	4	5	6	7	8	9	10	
								கு. கனம்.	(கி.மீ. அல்லது மீ.)	கு. கனம்.	
292	1A	292-1A	ர	14	...	8-5	7	0 62	2 56.5	1 59	590 க. செக்டர் முதலியம்.
	1B	-1B	அ	140	...	...	...	...	0 16.0	...	..
	1C	-1C	ர	14	...	8-5	7	0 62	2 86.5	1 78	590 ம. செக்டர் முதலியம்.
	2	-2	அ	140	...	...	...	...	0 10.5	...	...
									5 71.5	3 37	
293	1	293-1	ர	14	...	8-5	7	0 62	1 77.5	1 10	752 பெர். பவியர் முத்தி நாடா (1) க. செக்டர் நாடா (2)
	2	-2	அ	140	...	...	...	...	0 15.0	...	..
	3	-3	ர	14	...	8-5	7	0 62	3 07.0	1 90	752 பெர். பவியர் முத்தி நாடா (1) க. செக்டர் நாடா (2)
									4 99.5	3 00	
294	...	294	ர	14	...	8-5	7	0 62	3 38.5	2 09	481 பெர். பவியர்
295	1A	295-1A	ர	14	...	8-5	7	0 62	1 21.5	0 75	304 பெர். செக்டர் நாடா
	1B	-1B	ர	14	...	8-5	7	0 62	1 03.0	0 64	181 அ. செக்டர் தேயர்
	2	-2	ர	14	...	8-5	7	0 62	2 56.5	1 58	700 க. செக்டர் முதலியம் ச. எலக்ட்ரிக் நாடா முதலியம்
									4 81.0	2 97	

2-வது பகுதி

14/10/2023
 கிராம நிர்வாக அலுவலர்
 25, இருக்கங்குறை பகுதி II
 இரத்தாபுரம் வட்டம்

வெட்டிச்சிபர் 25/09/23
 இரத்தாபுரம்.

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ANNEXURE
WINNING PLAN APPROVED
By
13894008 G/2/122(Vc)
Assistant Engineer
of Geology & Mining
Tirunelveli Dist

भारत INDIA

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தமிழ்நாடு தமிழ்நாடு TAMILNADU

க. இராஜசேகரன்
இந்தியா, 1995/71
மார்ச் : 08.12.2002.

சிறுமணி டிசைஸ் குடும்பம்
விருதுநகரம்.

சூத்தகை பக்திரம்

2022 இரண்டாயிரத்து இருபத்து இரண்டாம் வருடம் டிசம்பர் மாதம் 8 எட்டாம் தேதி திருநெல்வேலி மாவட்டம், இராதாபுரம் வட்டம், பெருங்குடி கிராமம், வடக்கன்குளம் அஞ்சல் கி. 627 114, காவல்கிணறு ரோடு, கதவு எண் 12-725-B7 என்ற முகவரியில் இயங்கும் S.A.V.BLUE METALS PRIVATE LIMITED (PAN - AAZCS2462G) என்ற நிறுவனத்திற்காக அதன் டைரக்டர்களில் ஒருவரும் மேற்படி வடக்கன்குளம் ஊரில் இராதாபுரம் மெயின் ரோடு, கதவு எண் 886 என்ற முகவரியில் வசிக்கும் M.அரவிந்த் அவர்கள் குமாரகுமாரிய A.அஜேஷ்வால் (ஆதார் அட்டை எண்- 9653 4508 6948) (அலைபேசி எண்- 99949 47723) அவர்கள் குத்தகை கொடுப்பவராகவும்

S.A.V. Blyemetais Pvt.Ltd.

A. L. L. L.
Managing Director

(சுத்தகை கொடுப்பவர்)

(சூத்தனாக பெறுபவர்)

..புத்தகம் 2022 ம் வருடத்தீய... 6594 ம் ஆவணம்

.....18. தாங்கள் கொண்டது

.....வநு தாள்

பதிவு அலுவலர்

336

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தமிழ்நாடு தமில்நாடு TAMILNADU

CK 560688

சு. இராஜசேகரன்
முத்திரத்தாள் நிறுவனத்தின்
கிராமத்தார்.
ஆர்.டி. 19956/71
நாள்: 06.12.2022.

சுருதி இத்திரி
இறைப்புவாரி.

மேற்படி திருநெல்வேலி மாவட்டம் நாங்குநேரி வட்டம் இறைப்புவாரி, பட்டப்பூரம்,
மாதவன் தெரு, சுதவு எண் 133/1 என்ற முகவரியில் வசிக்கும் அரசப்பன் அவர்கள் குமாரர்
அருண் முத்து குமார் (ஆதார் அட்டை எண் - 4468 4971 0030) (அலைபேசி எண்- 97901
48692) குத்தகை பெறுபவராகவும் சேர்ந்து எழுதிக் கொண்ட குத்தகை பத்திரம்.

S.A.V. Bluemetals Pvt.Ltd.

[Signature]
Managing Director

(குத்தகை கொடுப்பவர்)

புத்தகம் 2022 ம் வருடத்திய-6544	ஆவணம்
தாள்கள் கொண்டது	
வது தாள்	
337 பதிவு அலுவலர்	

(குத்தகை பெறுபவர்)



[Signature] 146



தமிழ்நாடு தமிழ்நாடு TAMILNADU

CK 560689

சு. இராஜசேகரன்
முத்திரத்தான் விற்பனையாளர்
இராதாபுரம்.
சு.ம. 19956/71
நாள்: 08-12-2022.

சிமன்ட் இலாகா
இலாபகாரி.

இதனடியில் கண்ட சொத்துக்கள் குத்தகை கொடுப்பவருக்கு M/s Sarjan Realities Private Limited -க்காக ஜெனரல் பவர் ஏஜென்ட் நிலமையில் N.ஐயாக்குட்டி அவர்களால் இராதாபுரம் சார் பதிவாளர் அலுவலக 1930/2019 நம்பராக பதிவு செய்து எழுதிக் கொடுக்கப்பட்ட கிரையப் பத்திரம் மூலமாய் பாத்தியப்பட்டும் குத்தகை கொடுப்பவரின் பெயரால் 2522 நம்பர் கணினி பட்டா பெற்றும் குத்தகை கொடுப்பவரின் அனுபோகத்திலும் ஆளுகையிலும் இருந்து வருபவைகளை குத்தகை பெறுபவர் குத்தகைக்கு கேட்டு குத்தகை

S.A.V. Bluemetals Pvt.Ltd.

Managing Director

(குத்தகை கொடுப்பவர்)

(குத்தகை பெறுபவர்)

புத்தகம் 2022 ம் வருடத்திய 6544 ம் சுவஸம்
தாள்கள் கொண்டது
3 வது தாள்
பதிவு அலுவலர்



கொடுப்பவரும் குத்தகை பெறுபவரும் சம்மதித்து குத்தகைக்கு பேரி நாம் இருவரும் கீழ்க்கண்ட நிபந்தனைகளுக்கு உட்பட்டு நாம் இருவரும் சேர்ந்து இந்த குத்தகை ஒப்பந்த பத்திரம் எழுதிக்கொண்டோம். ஆகையால் அந்தப்படி நாம் இருவரும் நடந்து கொள்ள வேண்டியது.

நிபந்தனைகள் :

கீழ்க்கண்ட நிபந்தனைகளுக்கு நாம் கட்டுப்பட சம்மதிக்கிறோம்.

இதன்படி,

1. இந்த குத்தகையானது இன்றிலிருந்து 10 வருடங்கள் அமுலில் இருக்கும்.
2. இந்த குத்தகைக்கு முன் பணம் கொடுக்கவோ, வாங்கவோ இல்லை.
3. குத்தகை பெறுவர் வருடம் ஒன்றுக்கு மொத்த நிலத்துக்கும் ரூ.7,000/- வீதம் குத்தகை கொடுக்கும் கம்பெனிக்கு கொடுத்து இரசீது பெற்றுக்கொள்ள வேண்டியது.
4. இந்த குத்தகையானது 09.12.2022 தேதிமுதல் 08.12.2032 தேதி வரை உள்ள 10 ஆண்டு காலத்திற்கு தபசில் கண்ட சொத்துக்களை குத்தகை பெறுவர் கைவசம் வைத்து பயன்படுத்திக் கொள்ள வேண்டியது. குத்தகை பெறுவருக்கு தேவைப்படும் எல்லா வசதிகளையும் குத்தகை பெறுவர் அவரது செலவில் செய்து கொள்ள வேண்டியது.
5. மேற்படி உரிமம் நடைமுறையில் உள்ள காலத்தில் ஏற்படும் அனைத்து வரிகளையும் குத்தகை எடுத்தவரே செலுத்த வேண்டும்.
6. குத்தகை கொடுப்பவர் குத்தகை எடுப்பவருக்கு இன்றே குத்தகை சொத்தினை ஒப்படைத்து விடவேண்டும்.
7. கனிமவள உபயோகத்திற்கும் மற்றும் கல்குவாரி உரிமம் பெற மற்றும் இன்ன பிற சகலபாத்தியங்களையும் அனுபவித்துக் கொள்ளலாம்.
8. இந்த குத்தகையானது மேலே குறிப்பிட்ட காலக்கெடு முடிவடைந்ததும் தானாகவே ரத்தாகிவிடும். இருவரும் விரும்பினால் குத்தகைகாலத்தை அப்போதைய தேவைக்கேற்ப நீட்டித்துக்கொள்ளலாம்.

S.A.V. Bluemetals Pvt.Ltd.

S. A. V. Bluemetals Pvt. Ltd.
Managing Director

(குத்தகை கொடுப்பவர்)

...முத்தகம் 2022 ம் வருடத்திய 6594...	...மலனம்
...தாங்கள் கொண்டது	
...64...வது தாள்	
339	பதிய அலுவலர்

(குத்தகை பெறுபவர்)



142



சொத்து விபரம்

திருநெல்வேலி பதிவு மாவட்டம் இராதாபுரம் சார் பதிவு மாவட்டம் வண்டியூர் ஊராட்சி ஒன்றியம் இருக்ககந்துறை ஊராட்சி இருக்ககந்துறை கிராமம் பகுதி - II அயன் புஞ்சை சர்வே நம்பர் 291(2A2) ஹெக்.1.54.00 (ஏக்கர் 3 செண்டு 80) பூராவும்.

மேற்படி நிலம் ரீசர்வேக்கு முன் சர்வே 291(2)ல் இருந்தது.

2) சர்வே நம்பர் 292(1C2) ஹெக்.2.35.00 (ஏக்கர் 5 செண்டு 80) பூராவும்.

மேற்படி நிலம் ரீசர்வேக்கு முன் சர்வே 292(1C)ல் இருந்தது.

3) சர்வே நம்பர் 293(3B) ஹெக்.0.98.80 (ஏக்கர் 2 செண்டு 44) பூராவும்.

மேற்படி நிலம் ரீசர்வேக்கு முன் சர்வே 293(3)ல் இருந்தது.

ஆக மொத்தம் ஹெக்.4.87.80 (ஏக்கர் 12 செண்டு 4) ஆகிறது.

4) இத்துடன் இணைக்கப்பட்டுள்ள வரைபடங்களில் குறிப்பிட்டுள்ள எழுதிக்கொடுக்கும் கம்பெனிக்கு சொந்தமான பாதைகளில் மாமூலாக பாதை புழங்கிக்கொள்ளும் பாதை பாத்தியமும் சரி.

S.A.V. Bluemetals Pvt.Ltd.

(Signature)
Managing Director

(குத்தகை கொடுப்பவர்)

சாட்சிகள் :

1. *(Signature)*

(ராஜநாயகம் S/o.செல்வநாயகம், கதவு எண் 15/18ஜ், செளந்தரி நகர், வடக்கன்குளம்)
(ஆதார் அட்டை எண் - 7933 9026 6639) (அலைபேசி எண் - 99421 71248)

2. *(Signature)*

(சுதன் S/o. ராஜ், கதவு எண் 10-92, வடக்கு ராஜா தெரு, வடக்கன்குளம்) (ஆதார் அட்டை எண் - 9853 9822 4636) (அலைபேசி எண்- 97903 53683)

இந்த ஆவணம் அசல் வரைவு செய்தவர் *(Signature)*



க. சேதுமுருகன்,
189/6 கீழரத வீதி,
இராதாபுரம் 627111,
திருநெல்வேலி மாவட்டம்,
கைபேசி எண் 98437 25123,
மாவட்ட உரிமம் எண் பி878/திலி/93 நாள் 21.01.2019

புத்தகம் 2022 ம் வருடத்திய-6594	ஆவணம்
தாங்கள் கொண்டுவர	
வது தாள்	
பதிவு அலுவலர்	



(Signature) 149

R/ராதாபுரம்/புத்தகம்-1/6594/2022



ஆண்டு டிசம்பர் மாதம் 08ம் தேதி பி.ப. 03:49 மணியளவில் ராதாபுரம் சார்பதிவாளர் அலுவலகத்தில் தாக்கல் செய்யப்பட்டனம் ரூ 1,030/- செலுத்தியவர்.

பெருவிரல்  	 கூடுதல் விவரங்கள் ஆவண வாசகத்தில் உள்ளபடி	
எழுதிக் கொடுத்ததாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	S.A.V. Bluemetals Pvt.Ltd.  Managing Director "சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற வழி இந்த நபரின் அடையாளம் விரல் ரேகை மூலம் ஆதார் ஆணையத்துடன் சரிபார்க்கப்பட்டது. ஒப்பீட்டு எண் : UKC:950704a9c693027d64d6a99632da0393e6b5f (Details from UIDAI : Ajesh Lal Aravind S/O: Aravind, 27-03-1993, xxxxxxxx6948)	
எழுதி வாங்கியதாக ஒப்புக் கொண்டவர் இடது பெருவிரல்  	 "சம்மதத்துடன் கூடிய ஆதார் அங்கீகாரம்" என்ற வழி இந்த நபரின் அடையாளம் விரல் ரேகை மூலம் ஆதார் ஆணையத்துடன் சரிபார்க்கப்பட்டது. ஒப்பீட்டு எண் : UKC:02579644eca1e7c9141eca78086d8aab4eaaa (Details from UIDAI : Arun Muthu Kumar S/O: Arasappan, 29-08-1992, xxxxxxxx0630)	

2022 ஆம் ஆண்டு டிசம்பர் மாதம் 8ம் நாள்

சார்பதிவாளர்
ராதாபுரம்

புத்தகம் 2022 ம் வருடத்திய... 6594... ஆவணம்
 ...தாள்கள் கொண்டது
 ...வது தாள்

பதிவு ஆவணம்



தமிழக அரசு

வருவாய்த் துறை



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

வட்டம் : இராசாபுரம்

பட்டா எண் : 2522

மாவட்டம் : திருநெல்வேலி

வருவாய் கிராமம் : இருக்கன்துறை பகுதி-2

உரிமையாளர்கள் பெயர்

1. - மற்றவை

எஸ் ஏ வி புலுமெட்டல்ஸ் பிரைவேட் லிமிடெட்

புல எண்	உட்பிரிவு	புன்செய்		நன்மை		மற்றவை		குறிப்புகள்
		பரப்பு	தீர்வை	பரப்பு	தீர்வை	பரப்பு	தீர்வை	
		தெற்கு - ஏர்	சூ - பை	தெற்கு - ஏர்	சூ - பை	தெற்கு - ஏர்	சூ - பை	
291	2A2	1 - 54.00	1.00	--	--	--	--	2019/0105 /29/080744--2019 /29/09/00013050 -- 21-09-2019
292	1C2	2 - 35.00	1.50	--	--	--	--	2019/0105 /29/080744--2019 /29/09/00013050 -- 21-09-2019
293	3B	0 - 98.80	0.70	--	--	--	--	2019/0105 /29/080744--2019 /29/09/00013050 -- 21-09-2019
		4 - 87.80	3.20					

குறிப்பு 2 :



1. மேற்கண்ட தகவல் / சான்றிதழ் நகல் விவரங்கள் மின் பதிவேட்டிலிருந்து பெறப்பட்டவை. இவற்றை தாங்கள் <https://eservices.tn.gov.in> என்ற இணைய தளத்தில் 29/09/252/02522/40211 என்ற குறிப்பு எண்ணை உள்ளிட்டு செய்து உறுதி செய்துகொள்ளவும்.
2. இத் தகவல்கள் 08-12-2022 அன்று 02:01:27 PM நேரத்தில் அச்சடிக்கப்பட்டது.
3. கைப்பேசி கேமராவின் 2D barcode படப்பாள் மூலம் படித்து 3G/GPRS வழி இணையதளத்தில் சரிபார்க்கவும்

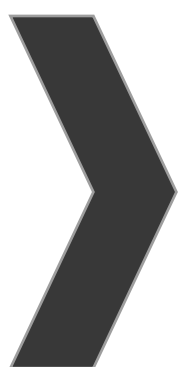
S.A.V. Bluemetals Pvt.Ltd.

S. S. S. S. S.

Managing Director

புத்தகம் 2022 ம் வருடத்திய 6546 ம் ஆவணம்
18... தாள்கள் கொண்டது
... வருடம்
பதிவு செய்யப்பட்டது





ANNEXURE-7

DISTRICT SURVEY REPORT FOR ROUGH STONE TIRUNELVELI DISTRICT



TIRUNELVELI DISTRICT

2019

1. INTRODUCTION

In conjunction to the Ministry of Environment, Forest and Climate Change, the Government of India Notification No.SO 3611 (E) dated 25.07.2018 and SO 190 (E) dated 20.01.2016 the District Level Environment Impact Assessment Authority (DEIAA) and District Environment Appraisal Committee (DEAC) were constituted in Tirunelveli District for the grant of Environmental Clearance for category “B2” projects for quarrying of Minor Minerals.

The main purpose of preparation of District Survey Report is to identify the mineral resources and develop the mining activities along with relevant current geological data of the District. The DEAC will scrutinize and screen scope of the category “B2” projects and the DEIAA will grant Environmental Clearance based on the recommendations of the DEAC for the Minor Minerals on the basis of District Survey Report. This District Mineral Survey Report is prepared on the basis of field work carried out in Tirunelveli district by the official from Geological Survey of India and Directorate of Geology and Mining, (Tirunelveli District), Govt. of Tamilnadu.

Tirunelveli district was formed in the year 1790 and is one of the oldest districts in the state, with effect from 20.10.1986 the district was bifurcated and new district Thothukudi was formed carving it. Tirunelveli district has geographical area of 6759 sq.km and lies in the south eastern part of Tamilnadu state. The district is bounded by the coordinates 08°05' to 09°30' N and 77°05' to 78°25' E and shares boundary with Virudunagar district in north, Thothukudi district in east, Kanniyakumari district in south and with Kerala state in the West.

District Abstract			
1.	Area	:	6823 Sq.Kms
2.	No.of Revenue Divisions	:	3 - Tirunelveli, Cheranmadevi and Tenkasi
3.	No.of Taluks	:	16
4.	No.of Revenue Villages	:	559
5.	No.of Panchayat Unions	:	19
6.	No.of Village Panchayats	:	425
7.	No.of Town Panchayats	:	36
8.	No.of Municipalities	:	7
9.	No.of Corporation	:	1 - Tirunelveli

The perennial river Tamiraparani flows almost in the central part of the district and feeds the entire district population. Tirunelveli district has fifteen taluks (Alangulam, Ambasamudram, Nanguneri, Palayamkottai, Radhapuram, Sankarankoil, Shenkottai,

Sivagiri, Tenkasi, Tirunelveli, Thisaiyanvilai, Veerakeralamputhur, Cheranmahadevi, Kadayanallur, Manur and Thiruvencatam) with total population of 33, 22, 644 (as per 2011



census).

Fig. 1. Tirunelveli district map showing important towns and road connectivity.

2. OVERVIEW OF MINING ACTIVITY IN TIRUNELVELI DISTRICT.

Crystalline Limestone, Multi color dimension stone, rough stonr/gravel, garnet and ilmenite sand are notable economic importance minerals of found in Tirunelveli District. Minor occurrences of graphite, mica and gemstone are also reported in the district. Mining activities based on rough stone (mostly charnockite) are majorly concentrated in Alangulam, Radhapuram, Nanguneri, Manur and Sankarankovil Taluks in the district under operation for production of construction materials and earth fill as gravel.

The multi color dimension stones occurring at Kaladaikurichi (Ambai White), Poongudiyarkulam, Mannarkovil, Adachani in Ambasamudram Taluk, Kasthurirangapuram, Kannanallur in Radhapuram Taluk and Singikulam, Melacheval in Cheranmahadevi Taluk are recorded in the district which once actively mined by M/s TAMIN Ltd (Govt of Taminadu) and other private miners.

Crystalline Limestone occurring as bands in Talayuttu and Ramaayyanpatti extends over strike length of 2.5 km with average width of 120 m were extensively mined by M/s India Cements Ltd, M/s South India Mines and Minerals Industries Ltd, M/s Krishna Mines etc in recent years. Crystalline limestone intercalated with calc granulite occurring in Padmaneri, Pottasutti, Singikulam, Pandapulli, Terku Seliyanur and Marandai areas were also mined in 1980's by M/s TAMIN Ltd (Govt of Taminadu) and other private agencies.

Rich deposits of garnet and ilmenite sand occurs along the coast part of Radhapuram Taluk, in Tirunelveli district. Red garnet sand occurs along Nambiar River. Vijayapatti, Kuttankuzhi and Idindakarai areas show notable garnet and ilmenite sands occurrences which were exploited economically in recent times.

The Deputy Director, Geology and Mining, Tirunelveli district functioning under the control of District Collector, Tirunelveli manages and administrates the minerals and mining activity in the district.

3. GENERAL PROFILE OF TIRUNELVELI DISTRICT.

Tirunelveli district has its climate, physiography and culture almost similar to Tamil Nadu State, and as a whole it described as the microcosm of the State. The erstwhile single district which is ancient in history and culture, was divided into two districts, namely Tirunelveli - the western half of the former district, and Thoothukudi district - the eastern half of the former district - through the State Government's Notification G.O.Ms.No.1314, dt.27.09.1986. The erstwhile district, which covered an area of 11,433 sqkms, has been limited to 6,283sqkms, after bifurcation. Tirunelveli is derived from three Tamil words *tiru* (holy), *nel* (paddy), and *veil* (fence), which meant for *Sacred Paddy Hedge* referring to a legend that the God Shiva protected a devotee's rice crop there. Later the city was one amongst the commercial centre under the Pandya Dynasty who ruled Tamil Nadu during medieval period.

The population of this District was 2723988 as per 2001 Census and 30, 72,880 as per 2011 census. The Density of Population per sq.km. was 399 as per 2001 census and 455 persons as per 2011 census. Tirunelveli, Tenkasi and Ambasamudram are the most densely populated Taluks in the District as per 2001 census. The Sex ratio is 1024 females for every 1000 males in the District as per 2011 census. The Literacy rate is 76.09% in the District as per 2001 census. Out of the total population, males are 1333939 and females 1390049 as per 2001 census. Out of the total population, males are 1518595 and females 1554285 as per 2011 census. The district having Schedule caste population of 481052 which represents 17.66% to total population as per 2001 census. Schedule Tribes are found to be very small in numbers 358 which is 0.31% of the Total population. 4.36% of State population lives in Tirunelveli district, 1415742 live in Rural area and 1308246 live in urban area forming 52% and 48% respectively as per 2001.

There are 25 medium and major industries such as cement, cotton yarn, calcium carbide, sugar, cotton seed oil, printing papers and flour mill etc. Among the other industries in the district pin, clip, matches, beedi, vessels making and engineering industries are important. The important Village industries functioning in the district are handloom, poultry farming, brick making, jaggery (Palm) production. The Handloom products Lungi, Sarees etc are marketed in north India. So also the fine Korai mats one from Pathamadi has world fame. Kallidaikurichi pappads, Karukurichi mud pots, also Tirunelveli "Halva" are specialities which earned many laurels to the District.

Courtallam is situated at the Western Ghats in Tenkasi Taluk. The famous waterfalls on rocks and tiny droplets are sprinkled in the air. The water falls of Courtalam have medicinal value as they run through forest and herbs before their decent. Pappanasam Agasthiar falls also attracts tourist and pilgrims. There is a Wild life sanctuary at Mundanthurai and Kalakadu. Spotted deers, Liontailed monkeys, Elephants and Tigers are plenty.

The Nellaiappar temple at Tirunelveli, Sankaranainar temple at Sankarankoil, Kasiviswanathar temple at Tenkasi and Vanamamalai Temple at Nanguneri are the land marks of the District signifying the Hindu Culture. Palayamkottai has many Christian missions and Athankaraipallivasal & Pottalpudur Darga have considered being important sacred places for Islam.

4. GEOLOGY OF THE DISTRICT

4.1 An Over view of Geology of Tamilnadu

Crystalline rocks of Archaean to late Proterozoic age occupy over 80% of the area of the state of Tamilnadu, while the rest is covered by Phanerozoic sedimentary rocks mainly along the coastal belt and in a few inland River valleys. The hard rock terrain comprises predominantly of Charnockite and Khondalite groups and their migmatitic derivatives, supracrustal sequences of Sathyamangalam and Kolar groups and Peninsular Gneissic Complex (Bhavani Group), intruded by ultramafic-mafic complexes, basic dykes, granites and syenites. The sedimentary rocks of the coastal belt include fluviatile, fluvio-marine and marine sequences, such as Gondwana Supergroup (Carboniferous to Permian and Upper Jurassic to Lower Cretaceous), marine sediments of Cauvery basin (Lower Cretaceous to Paleogene), Cuddalore /Pannambarai Formation (Mio-Pliocene) and sediments of Quaternary and Recent age.

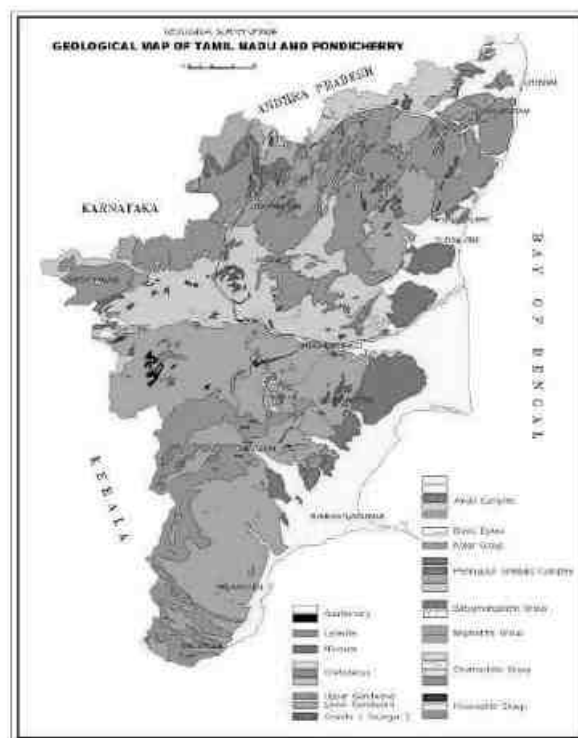


Fig 2. Geological Map of Tamilnadu (Source: Miscellaneous Publication, GSI, SU: TN&P, Chennai)

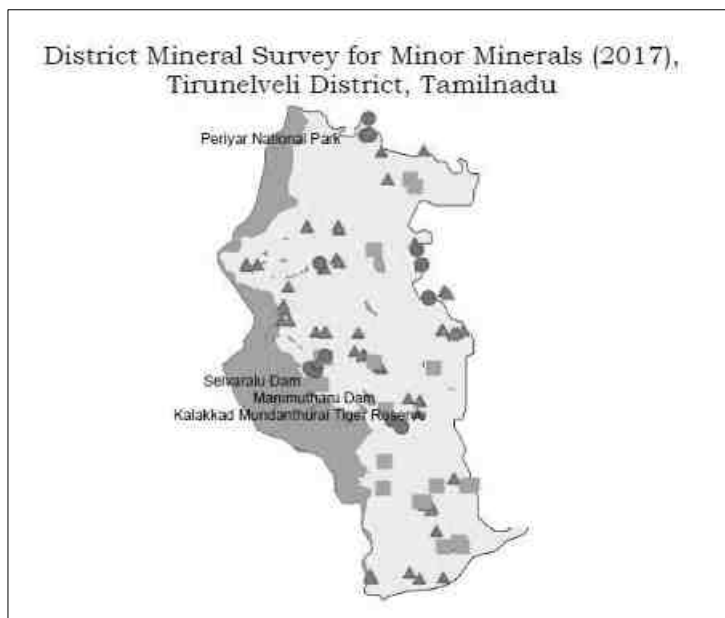
4.2 General Geology of Tirunelveli district:

Southern Granulite Terrain (SGT) of Tamil Nadu lying south of Palaghat-Cauvery shear zone has been divided into two major tectonic blocks by the Madurai block and Nagercoil-Trivandrum Block in the south. It is separated by WNW-ESE trending Achankovil-Tambaraparani Lineament. Tirunelveli and Thothukudi are significantly the only districts in the state to witness the geology and structure of both the blocks.

Tirunelveli district represents a well-developed lithopackage of meta-sedimentary sequence inter banded with charnockite Group of rocks. The rock types exposed are of quartzite, calc-granulite, garnet-biotite-sillimanite gneiss, garnet quartzo-feldspathic gneiss and garnet-biotite-cordierite gneiss belonging to Khondalite Group of rock. Charnockite and pyroxene granulite are the Charnockite Group. Hornblende-biotite gneiss belongs to Migmatitic Complex. Besides, basic intrusive (pyroxenite) and acid intrusive (granite) are noticed. The younger intrusive are represented by pegmatite and quartz veins. Evidence of development of incipient / patchy charnockite along the shear plane is noticed in the district along the Western Ghat high hills.

	Recent-Sub recent	Soil and alluvium, calcrete
		Quartz and pegmatite vein
		Incipient charnockite
700-550 Ma	Younger intrusive	Acidic intrusive – Granite
		Basic intrusive (Pyroxenite, Ultramafic/mafic rocks)
2200-2550 Ma	Migmatite Group	Hornblende-biotite gneiss
2600 Ma	Charnockite Group	Meta gabbro (older Intrusive)
		Charnockite
		Pyroxene granulite
	Khondalite Group	Garnet-biotite-quartzofeldspathic gneiss
		Garnet-biotite gneiss
		Garnet –biotite –Sillimanite gneiss ± cordierite gneiss
		Crystalline limestone, Calc granulite
		Quartzite
		Basement Unknown

Table 7.1 General tectono-stratigraphy of Tirunelveli District



Index	
	Dimension Stone
	Limestone
	Rough Stone

After independence mineral survey and exploration work in the country took momentum by Geological Survey of India and other govt agencies. Kanishkan (1981-82) carried out mineral investigation for tungsten and associated ores in Tirunelveli and Madurai district and reported the major band of crystalline limestone with lenses of calc-gneiss and calc-ganulite associated with gneisses and quartzite bands to the north of Talaiyuttu around Seliyanur-Nellaitiruttu in Tirunelveli district. Tungsten upto 600 ppm have been recorded in crystalline limestone from the area. Jayaprakash (1986-87) from GSI carried out investigation for calc tufa occurrences in the areas of Uttumalai and Reddiarpatti shows 35% of CaO and is restricted to a few patches with total areal extent of 2.85 sq.km.

In Tirunelveli district, bulk of crystalline limestone for cement industry comes from Ramayyanpatti, Talaiyuttu and Pandapalli areas. The total reserves are about 20-30 million tonnes with average CaO 45%, MgO 6% and SiO₂ 8%. Tuffaceous limestone and kankar of about 23-24 million tonnes occurs near Vijayapatti in the district. Gypsum associated with kankar is reported from a few localities in the salt pans, located along the east coast between Veppalodai and Ayyanapuram in the district. Minor graphite occurrences are located in Kurinjankulam in Tirunelveli District with a reserve of about 19,000 tonnes on Palakottai Hill. Rough stone (mostly charnockite and Hbl-bt gneiss) are majorly concentrated in Alangulam, Radhapuram, Nanguneri, Manur and Sankarankovil Taluks in the district.

Multi color dimension stones occurrences significantly visited during the field work at Kaladaikurichi (Ambai White), Poongudiyarkulam, Mannarkovil, Adachani in Ambasamudram Taluk, Kasthurirangapuram, Kannanallur in Radhapuram Taluk and Singikulam, Melacheval in Cheranmahadevi Taluk of Tirunelveli District. Rich deposits of garnet and ilmenite sand occurs along the coast part of Radhapuram Taluk, in Tirunelveli district. Vijayapatti, Kuttankuzhi and Idindakarai areas show notable garnet and ilmenite sands occurrences. Red garnet sand occurs significantly along Nambiar river. The main sources of the heavy minerals are found to garnetiferous quartzo-feldspathic gneiss and garnet biotite sillimanite gneiss of Khondalite Group of rocks.

Occurrences of Limekankar are identified in Kasthurirengapuram village of Radhapuram Taluk. Where the lime kankar deposit is about 2 to 3 meters thickness with minimum soil cover. Limekankar having CaO from 35% to 40%, it may be used for cement manufacturing.

Occurrences of Clay is identified in Pallikottai village of Manur Taluk. In this area clay deposit thickness varies from 1 to 2 meters and contains Al₂O₃ 13% to 18%.

5. DRAINAGE OF IRRIGATION PATTERN

Irrigation is the artificial application of water to soil for the purpose of crop cultivation. As the timing and amount of rainfall are not adequate to meet the moisture requirement of cultivation, irrigation is essential to raise crops and meet the need for food and fiber. In areas where the rainfall is plentiful and well distributed over the year there will be year round production. Indeed, rainfall in certain areas will be very scanty as well as uncertain. This is so in Tirunelveli district. The irrigation system in Tirunelveli district consists of rivers like Tamirabarani, Manimuttaru, Pachaiyaru, Nambiyaru, and Chittaru which originating from Western Ghats and running across the gentle slopes of the mid lands and confluence in Bay of Bengal. The River Tamirabarani is the main source of irrigation which also provides drinking water facilities to a number of places in the district, as well. Pabanasam, Manimuttar and Chervalar are the major reservoirs in the district. Gadana Nathi, Ramanathi, Karuppanathi, Gundaru, Adavi Nainar Koil, Vadakku Pachaiyaru, Kodumudiyaru, and Nambiyaru are the minor reservoirs in the district. Besides these rivers and reservoirs the other different sources of irrigation prevailing in the district are canal, tank and well.

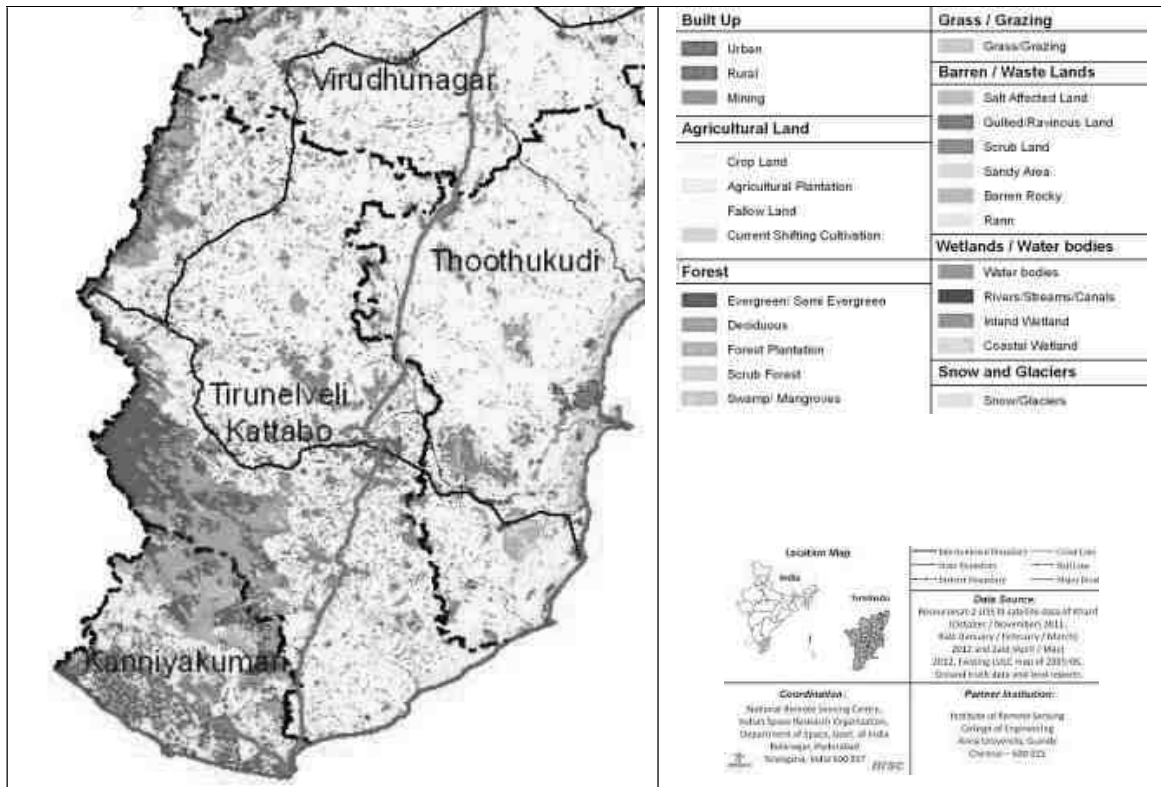
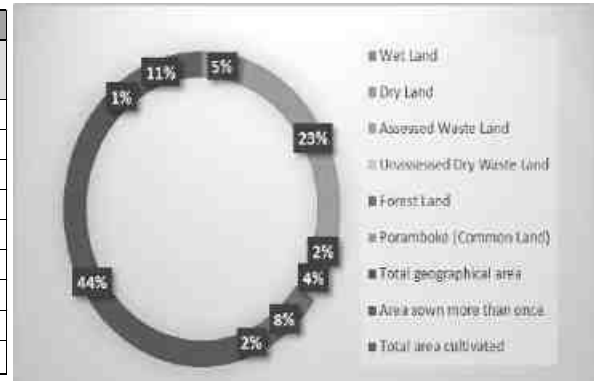
6. LAND UTILISATION PROFILE OF THE DISTRICT

Of the total of 6,82,300 hectares area in Tirunelveli district, about 79,668 (11.7%) hectares are wet lands well suited for the cultivation of paddy and other crops which need adequate water supply, while others are not useful for agricultural purposes. Nearly 3,58,151 (52.5%) hectares is dry land with no irrigation facilities for agriculture, although soil condition is moderate for growing crops, so that it may be used to grow drought resistant plants which offer firewood.

A block of waste lands which about 39,274 (5.7%) hectares is proclaimed to be not useful for growing crops, because of lack of enough water, poor soil, and undesired topographic conditions. Approximately 57,676 (8.5%) hectares is unassessed wasteland where soil condition is fair while water supply scarcity prevails for several months, so that it is used for agriculture only when rainfall is high. Yet, another 1, 22,055 (17.8%) hectares is occupied by forests which are declared to be reserves as forest resources for liontailed monkeys, rich in deciduous and evergreen plants. Poromboke - common lands, covers about 25,456 (3.8%) hectares, which may be used to create social forests although water is scarce. Fig 4.1 Land use land cover map of Tirunelveli District (after National Natural Resource Management system, ISRO, 2014).

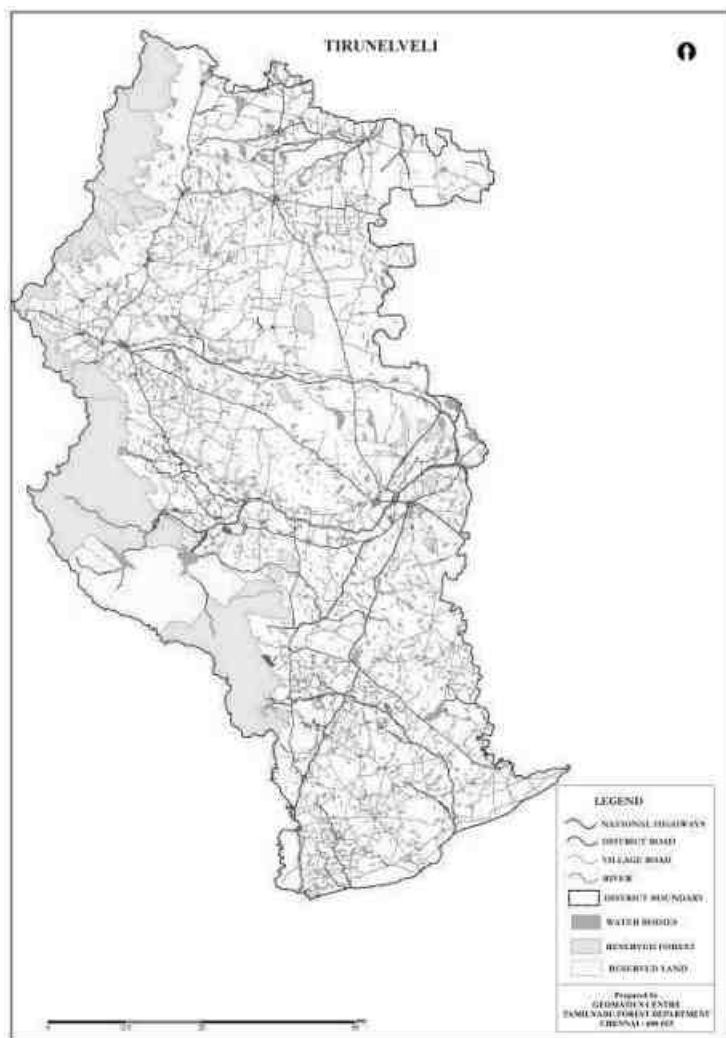
In 2002 as per NRSA data (Bhuvan, Govt. of India), shows that 29% of the total area of urban centers used for residential purposes while in rural centers only 14% of areas used for this purposes. The area of agricultural lands and open spaces gets reduced every year in the district owing to the rapid conversion in these areas for residential purposes. The land use pattern in the district is shown in the Table No.5.1.

Land Use Pattern in Tirunelveli District		
Land Category	Area (in Hectares)	Percentage
Wet Land	79,668	11.7
Dry Land	3,58,151	52.5
Assessed Waste Land	39,274	5.7
Unassessed Dry Waste Land	57,696	8.5
Forest Land	1,22,055	17.8
Poramboke (Common Land)	25,456	3.8
Total geographical area	6,82,300	100
Area sown more than once	30,163	1.50
Total area cultivated	1,61,976	23.74



FOREST:

The total area of the forest of the district is 1,22,055 ha of which 81700 ha is set apart for Tiger reserves of Mundanthurai and Kalakadu. The entire forest of the district stretches along the Western ghats. Various types of forests from luxuriant tropical wet evergreen forests to southern thorn scrub forests occur in the district. Owing to its diverse geographical factors, the forests in the district are technically classified as southern hill top tropical evergreen forests, west coast tropical



evergreen forests, southern moist mixed deciduous forests, ochlandra reed forests, carnatic umbrella thorn forests, southern Euphorbia scrub and southern thorn scrub.

The forest areas in the district are mostly in the ghat region on the western part of the district. The ghat regions are under the influence of the southwest monsoon and have thick forest. The forest is of light dry deciduous forest growth in the lower slopes and dense masses of short trees from an elevation of 1000 to 4000 feet height. At high peak region of the ghats, evergreen forest with very tall trees are found. Teakwood, blackwood, rosewood etc are the most important among them. Honey, wax, mango, cashew, palmyrah, cane, pepper, tamarind, bamboo etc are the important

forest products in the district.

Tiger Reserve Forest with an extent of 817 sq.kms in Ambasamudram Taluk is established which is known as 'Kalakad-Mudanthurai Tiger Reserve'. This Tiger Reserve Forest is extremely rich and diverse in nature, ranging from wet evergreen forest, mixed deciduous forest, dry teak forests to forests and thorny bushes in many places. The animals found in this Reserve forests are Tiger, Leopard, Jungle Cat, Civet, Hyena, Jackal, Elephant, Guar, Sambar, Mouse, Deer, Nilgris Talir the lion-tailed monkeys etc.

AGRICULTURE

The major crop cultivated in the district is paddy. Other crops like cumbu, cholam, kuthiraivali and ragi are cultivated as dry land crops in the district. Cotton is cultivated in Sankarankoil. Sugarcane is being raised in Sivagiri and Tenkasi taluks. Banana and vegetables are grown in the river belt areas of Ambasamudram, Tenkasi and Tirunelveli taluks. Manimuthar main canal and Papanasam reservoir are the irrigation source for the cultivation of different crops. There is a Farmers Training centre at Palayankottai run with the aid of Danish International Development Agency. Rice Research Station in Urkad near Ambasamudram and a parasite breeding centre for coconut at Tenkasi play a crucial role for the development of the farmers in the district.

SOIL:

The soil condition of the district may be grouped into two main varieties namely red loam soil and black soil. The black soil is of a higher value compared to the red loam soil and the black soil of the Tamirabarani River Valley overlies a stiff yellow colour. The red loam found in Tenkasi, Shenkottai, Sivagiri, and Radhapuram Taluks. The black soil is found in Sankarankoil, Palayamkottai, and Tirunelveli Taluks. The other soils like lateritic, sandy coastal alluvial soil and red-sand soil are not found much in the district. In the south-east coast, the soil is deep, loose and red loam surfaced by sand with its depth varying from a few inches to 20 feet.

Soil Types found in Tirunelveli District	
Soil Type	Places in Tirunelveli District
Red Loam	Alangulam, Tenkasi, Shenkottai, Sivagiri, Veerakeralam Puthur and Radhapuram Taluks
Lateritic	Nil.
Black Soil	Sankarankoil, Thiruvengadam, Kuruvikulam, Palayamkottai, Manur, and Tirunelveli.
Sandy Coastal Alluvium and Red Sandy Soil	In coastal areas of Tirunelveli district

HORTICULTURE:

Major horticulture crops cultivated in this district are fruits crops like mango, banana, lime and aonla, vegetables like bhendi, tomato, brinjal, onion, spices and condiments like chillies and tamarind and flower crops like jasmine and rose.

MINERALS AND MINING

Khondolites and the Charnockites with Pyroxene granulites and the associated migmatitic/rocks are the two major groups of rocks found in the district. Limestones occur within the genesis and are found around Tirunelveli and Ambasamudram. Pink coloured granites, pegmatites and quartz veins are

also found to occur within the above mentioned rocks. Tertiary formations consisting of calcareous sand stones and limestones are also exposed all along the coastal area overlying the Charnockites and gneissic rocks particularly around Koondankulam Rocks probably connected with the Deccan trap activity occur as thin veins and dykes within the gneissic rocks around Koondankulam. The crystalline limestone deposit located around Tirunelveli is the main mineral supplied to M/s. India Cements at Thalaiyuthu with a capacity of 3000 tonnes per day. Large reserves of limestones of the crystalline, sedimentary and taluccous types amounting to 59 million tonnes are found in Nanguneri, Ambasamudram, Sankarankoil and Tenkasi taluks. Limonite and associated minerals occur in Nanguneri taluk and garnet sands occur widely in Radhapuram taluk.

7. SURFACE WATER AND GROUND WATER SCENARIO OF THE DISTRICT

SURFACE WATER

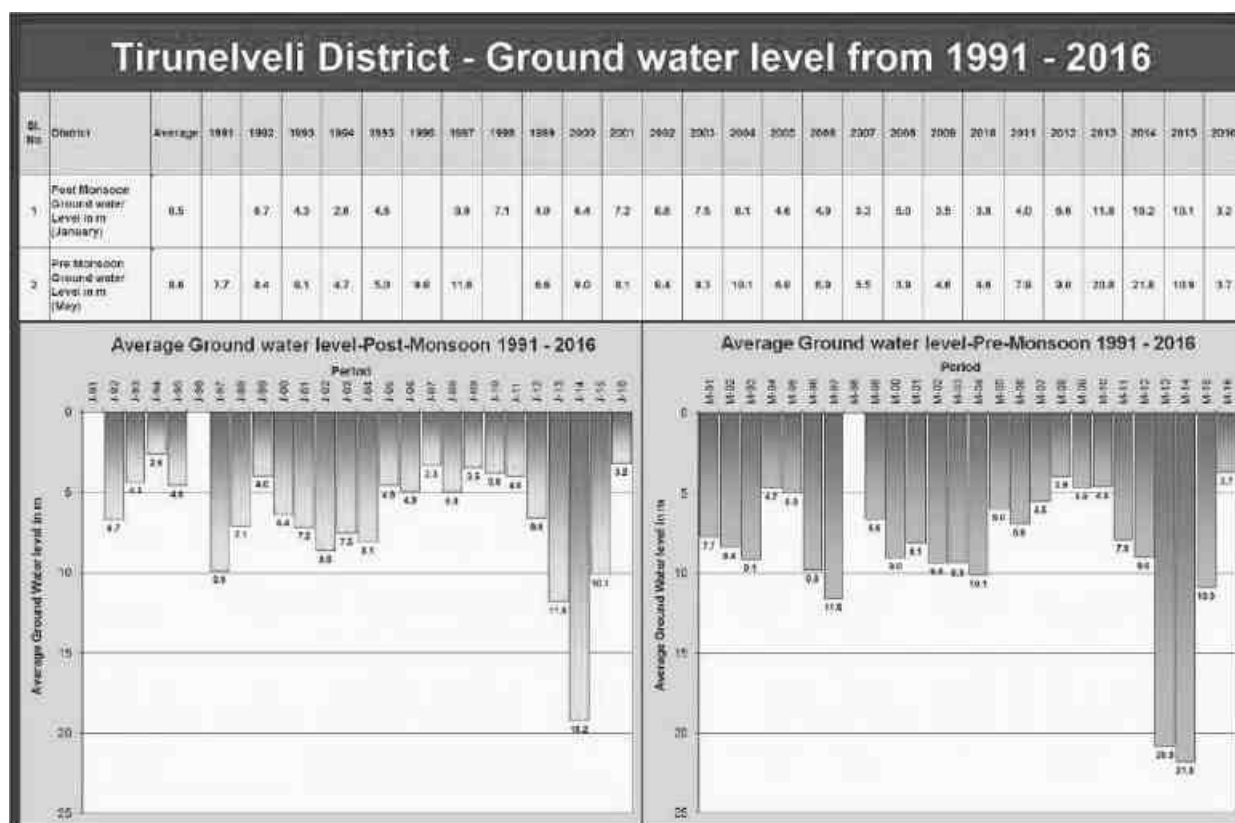
Tirunelveli district enjoys the benefit of the early showers of south west monsoon and of the later rains of the north-east monsoon. The district is chiefly irrigated by rivers rising in Western ghats. The dams and anicuts constructed on Tamiraparani and Manimuthar rivers serve both agriculture and power generation. The total rain fall, though is light, averaging about 814.8 mm per annum, is generally well distributed. The Tamiraparani river affords perennial irrigation to a fairly large area on which two crops are normally raised. Several tanks and wells form part of the other sources of irrigation.

The Tamiraparani is a symbol of Tamil culture and civilization and an identity of the far south of India. In Tamil and Sanskrit literature of earlier times, the Pandyas were referred to as the rulers of the land where the Tamiraparani flowed. Tamiraparani is the chief river of the district which has a large network of tributaries which include the Peyar, Ullar, Karaiyar, Servalar, Pampar, Manimuthar, Varahanathi, Ramanathi, Jambunathi, Gadanathi, Kallar, Karunaiyar, Pachaiyar, Chittar, Gundar, Aintharuvai, Hanumanathi, Karuppanathi and Aluthakanniar. The two rivers of the district which are not linked with Tamiraparani are the Nambiar and the Hanumanathi of Nanguneri taluk.

GROUND WATER SCENARIO

The district is underlain by both porous and fissured formations. The important aquifer systems in the district are constituted by i) Weathered and fractured hard rock formations of Archaean age. ii) Porous sedimentary formations ranging in age from Tertiary and Recent. The porous formations are found as small patch in the southeastern part of the district and include sandstones, Limestones, Laterite and Clays from Tertiary to Quaternary. Isolated occurrence of calcareous sandstone and fossiliferous limestone are seen in coastal area on the southeastern side. The fossiliferous limestone is

found south west of Kudankulam covering an area of 3 sq.km. Laterites are exposed as patches along Radhapuram-Edakkadu, Vijayanarayanam-Kumarapuram, Ittamoli, Nanguneri and Uramozi area. Beach sand occurs as a patch along the coast with a width varying from 50-250m in Idindakarai-Ovari Belt. The river alluvium is found along the river courses and the thickness of alluvium is restricted to 5-6m. The exploration in sedimentary tract has revealed that the depth to basement occurs at a depth of 120m bgl and granular zones are encountered between the depths of 20 to 92 m bgl. The aquifer at the shallow depth is under unconfined condition and aquifer at depth is under semi-confined to confined condition. The shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The groundwater exploration in the district down to a depth of 200m bgl has revealed that in the western part of the district potential fractures are encountered beyond 100m bgl while in the rest of the area, potential fractures are restricted to 100m bgl. The yield of the wells varies from 1 to 3.6 lps. In general, the wells drilled by various State agencies mainly for domestic purposes have yield in the range of 63 to 270 lpm. (Source :CGWB).



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

Fig.No. District level ground water level

8. RAINFALL OF THE DISTRICT AND CLIMATIC CONDITIONS

Rainfall: Main rainy season is from October to the middle of January. During this southwest monsoon season the rainfall is more in the western parts of the district. November is generally the rainiest month. The heaviest rainfall in 24 hours recorded in the district was 371.5 mm at Sivagiri on 29/10/1929. The average rain fall in the district is 814.8 mm per annum.

Month	Normal	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
January	50.2	80.16	6.40	0.58	36.57	4.92	54.49	24.80	9.28	8.89	37.16
February	30.2	26.54	75.83	104.25	16.62	27.50	1.80	3.52	83.3	NIL	0.08
March	41.3	9.53	29.30	100.72	5.82	68.17	124.23	7.44	377.19	31.63	40.48
April	59.8	118.79	91.00	0.78	91.15	180.49	25.51	131.64	103.4	72.01	36.91
May	38.0	26.73	82.91	29.55	135.02	25.46	35.95	10.97	4.94	24.07	39.4
June	29.6	24.43	4.12	20.18	59.16	20.28	28.60	87.78	10.32	21.38	29.67
July	26.4	29.58	5.14	19.19	9.53	80.50	26.80	46.49	35.22	59.94	60.56
August	23.3	10.80	35.68	15.48	26.12	19.91	25.38	33.11	72.00	25.97	18.43
September	30.2	22.03	13.66	10.34	101.48	32.77	63.04	79.70	20.63	30.56	77.53
October	166.0	141.32	213.12	185.84	220.09	84.68	361.28	187.03	345.6	126.59	107.56
November	208.2	195.97	241.82	256.57	260.55	248.45	287.23	181.90	183.1	431.59	293.38
December	111.6	79.52	17.85	56.89	32.37	178.36	19.31	126.16	94.78	153.29	168.53
Total Rainfall	814.8	765.40	816.83	900.37	994.48	971.49	1179.66	920.54	1339.76	985.93	873.6

6.1. Table Comparative Statement of monthly Rainfall data in Tirunelveli district in mm
(Source: <http://www.nellai.tn.nic.in>)

Month	Normal	2011	2012	2013	2014	2015	2016	2017
January	50.2	25.26	40.54	2.19	57.20	4.75	4.85	38.56
February	30.2	46.37	29.03	98.50	9.24	13.48	6.31	3.44
March	41.3	40	35.95	142.14	60.30	71.80	10.62	40.29
April	59.8	65	65.12	24.94	36.28	133.36	14.26	19.63
May	38.0	4.25	9.82	25.72	206.55	93.09	80.23	61.75
June	29.6	63.31	2.31	103.92	7.88	56.32	71.72	50.1
July	26.4	22.08	15.68	46.58	12.98	13.15	24.23	5.3
August	23.3	23.43	12.66	28.35	52.52	10.55	1.15	40.9

September	30.2	14.93	8.35	41.05	38.45	71.62	0.38	116.3
October	166.0	311.84	304.41	57.01	391.66	234.59	47.22	83.6
November	208.2	275.7	144.8	256.66	316.91	448.89	103.26	344
December	111.6	79.52	100.2	86.80	150.89	269.47	33.22	273.9
Total Rainfall	814.8	971.69	768.87	913.86	1340.86	1421.07	396.95	1077.77

6.1. (contd) Table Comparative Statement of monthly Rainfall data in Tirunelveli district in mm (Source: <http://www.nellai.tn.nic.in>)

CLIMATE:

The district, in general experiences tropical climate with minor changes. The normal temperature varies between 24.4°C and 27.1°C at mean minimum, whereas the hottest climate experiences from March to May with mercury reaching 38.5°C at the highest. The climate is comparatively cool during the months from November to February. The average rainfall during 2005-06 is 917.86 mm and the number of rainy days varies from 98 to 110 in a year. The relative humidity, in general around the year is between 55 and 65% in most parts of the district, except during the north-east monsoon season when it is over 65%. However, the coastal areas will be comparatively more humid.

9. DETAILS OF MINING LEASES IN THE DISTRICT IN THE DISTRICT

Table No.

Mineral:Roiugh Stone

Sl. No	Name of the mineral	Name of the lessee	Address & Contact No. of lessee	Mining lease grant order No. and date	Area of mining lease (Ha)	Period of mining lease (Initial)		Period of mining lease (1 st & 2 nd renewal)		Date of commencement of Mining Operation	Status (Wor-king / Non-Wor-king / Temp. Wor-king for dispatch etc.)	Captive / Non-Captive	Obtain-ed Enviro-nmen- tal Clear-ance (Yes / No)	Location of the Mining Lease (Latitude & Longitude)	Method of Mining (Open cast / Under ground)
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1	Rough Stone	Tmt.Lakshmi Rajam,	W/o. Babu Aravinth, Ramana Bhavan, 36, South, Melagaram, Tenkasi	M1/33629/2015, 14.06.2016	2.59.0	14.06.2016	13.06.2021	-	-	14.06.2016	working	Non-captive	Yes	08°49'04" N to 08°49'10" N & 77°26'06" E to 77°26'15" E	Open-cast
2.	Rough Stone	Thiru.B.Thangammal,	W/o. R.Balamurugan, 8/105, Mariammankovil Street, Lakshmiyoor, Koviloothu post, Alangulam	M1/13785/2016, dated: 24.12.2016	2.47.0	20.03.2017	19.03.2022			20.03.2017	working	Non-captive	Yes	08°49'12.14"N to 08°49'06.26"N & 77°26'26.08"E to 77°26'17.85"E	Open-cast
3.	Rough Stone	G.Karuppasamy,	S/o. Gurusamy, 271A,	M1/6395/2014 Dt: 04.01.2016	3.76.0	08.01.2016	07.01.2021			08.01.2016	working	Non-captive	Yes	08°49'7" N to	Open-cast

			Kannimaran Amman Kovil St, Tenkasi											08°49'14. 8"N & 77°31'21. 5"E to 77°31'29. 6"E	
4	Rough Stone	Tmt. R.Minnalkodi,	W/o. S.S.Ramasubb u, No.72/V, Ambasamudra m Road, Alangulam	M1/40481/2013 Dt: 16.12.2016	2.76.5	08.03. 2017	07.03. 2022			08.03.2017	working	Non- captive	Yes	08°48'56" N to 08°49'05" N & 77°31'16" E to 77°31'26" E	Open-cast
5	Rough Stone	Thiru.S.Ajimo n	307, Parampilvila Veedu, Kampaladi Porvali Post, Quilon	M1/36063/13, Dt: 24.03.2015	4.81.0	24.03. 2015	23.03. 2020			24.03.2015	working	Non- captive	Yes	08°49'16" N to 08°49'21" N & 77°24'48" N to 77°24'51" N	Open-cast
6	Rough Stone	Thiru K.Selvakumar,	136/46, LRS, Palayam, Tenkasi	M1/11147/2013, dt: 10.06.2014	2.00.0	10.06. 2014	09.06. 2019			10.06.2014	working	Non- captive	Yes	08°51'07"N to 77°19'35"E	Open-cast
7	Rough Stone	Thiru.Sadacha ravel,	S/o. Muthusamy, 8-23-J-7, Sivabhavan, Melamathapur am, Mathapuram Post, Ambasamudra m Taluk	M1/23938/201 4, Dt: 24.04.2015	0.24.0	03.05. 2015	02.05. 2020			03.05.2015	working	Non- captive	Yes		Open-cast

8	Rough Stone	P.Arun Gopinath,	4/136, Sidar Street, Mettur, Ambai	M1/16644/12, dt: 19.5.12	1.85.0	11.06.2012	10.06.2022			11.06.2012	working	Non-captive	Yes	08°50'59" N to 08°51'03" N & 77°21'22" E to 77°21'30" E	Open-cast
9	Rough Stone	M.K.Kuperasu ndar,	6/67B, Kottai st, Athalanallur, Ambai	M1/16635/12, dt: 20.05.2012	2.06.5	30.06.2012	29.06.2022			30.06.2012	working	Non-captive	Yes	08°45'32" N to 08°45'40" N & 77°31'58" E to 77°32'04" E	Open-cast
10	Rough Stone	Tmt.Hedwig Raj,	W/o. Joseph Antony, 9/250, Ilanthaikulam Road, Singamparai	M1/2827/2012 dt: 08.09.2014	1.00.0	08.09.2014	07.09.2019			08.09.2014	working	Non-captive	Yes	08°45'44" N to 08°45'39" N & 77°32'04" E to 77°32'09" E	Open-cast
11	Rough Stone	Thiru. S.Arunachalam	S/o. A.Subbiah Chettiar,295, Main Road,Krishnapuram,Kadayanallur Taluk, Tirunelveli District	M3/67787/2004DATED. 19.01.2016	2.00.0	08.02.2016	07.02.2021			08.02.2016	working	Non-captive	Yes	9°5'39" & 77°23'30"	Open-cast
12	Rough Stone	Thiru.S.Arunchalam,	S/o. A.Subbiah Chettiar,295, Main	M3/67787/2004DATED. 19.01.2016	3.00.0	08.02.2016	07.02.2021			08.02.2016	working	Non-captive	Yes	9°5'39.52" &	Open-cast

			Road,Krishnapuram,Kadayanallur Taluk, Tirunelveli District											77°26'31.14"	
13	Rough Stone	Thiru M. Murugaiah,	S/O. Muthiayah Thevar, 32-B1 Kattabomman Street, Kayathar	M1/5539/2013 dt:14.06.2014	2.26.0	14.06.2014	13.06.2019			14.06.2014	working	Non-captive	Yes	08°55'35.01"N to 08°55'30.36"N & 77°44'34.85"E to 77°44'31.02"E	Open-cast
14	Rough Stone	Thiru.S.Vellapandi,	Mainroad, Kayathar,	M1/25662/2016, Dt. 05.03.2016	1.92.0	14.06.2016	13.06.2021			14.06.2016	working	Non-captive	Yes	08°55'04"N to 08°55'10"N & 77°45'06"E to 77°45'12"E	Open-cast
15	Rough Stone	Thiru.V.Karup pasamy,	S/o. Velayutha Thevar, 3/4A, Sannathi Pudhukudi, Blcok No. 1, Rajaputukudi Post, Kovilpatti,	M1/36935/202, dated. 10.12.2016	1.16.0	07.03.2017	06.03.2022			07.03.2017	working	Non-captive	Yes	08°53'27"N to 08°53'32"N & 77°45'37"E to 77°45'40"E	Open-cast
16	Rough Stone	Thiru. M.Maridurai,	S/o. Maruthappapandian, 3/189, A.Maruthappapuram, Nettur Post,	M1/43605/2014, dt. 24.08.2016	1..29.0	24.08.2016	23.08.2021			24.08.2016	working	Non-captive	Yes	08°53'30"N to 08°53'35"N & 77°38'21"	Open-cast

			Alankulam,											E to 77°38'25" E	
17	Rough Stone	Thiru. B. Pransivam,	S/o Esakkiappan, 749A/2, Main Road, NellaiThiruthu	M1/25864/201 3 dt: 22.06.2014	1.58.5	22.06. 2014	21.06. 2019			22.06.2014	working	Non- captive	Yes	08°53'18" & 77°38'27"	Open-cast
18	Rough Stone	Thiru. Y.Arulraj,	S/O.Yesaiah, Kanarpatti Village, Therku Theru, Manur	M1/27276/201 3 dt: 29.09.2014	2.68.0	29.09. 2014	28.09. 2019			29.09.2014	working	Non- captive	Yes	08°53'24" N to 08°53'30" N & 77°38'27" E to 77°38'35" E	Open-cast
19	Rough Stone	Thiru.A.Kanag araj,	Palayamkottai	M1/20703/201 6, 16.02.2016	1.42.0	10.06. 2016	09.06. 2021			10.06.2016	working	Non- captive	Yes	08°53'31" N to 08°53'35" N & 77°38'27" E to 77°38'37" E	Open-cast
20	Rough Stone	Thiru N.Ganesa Raja,	Tirunelveli	M2/76818/200 8, dt:12.06.2002	4.08.5	12.06. 2012	11.06. 2022			12.06.2012	working	Non- captive	Yes		Open-cast
21	Rough Stone	Thiru.S.Backiy araj,	S/o. Santhos Nadar, 298/2, Church Street, Parappadi - 627110	M1/48829/201 3, dt. 10.10.2015	1.22.0	16.10. 2015	15.10. 2020			16.10.2015	working	Non- captive	Yes		Open-cast
22	Rough Stone	Thiru.S.Backiy araj,	S/o. Santhos Nadar, 298/2, Church Street, Parappadi -	M1/48829/201 3-1, dt. 24.11.2015	0.47.0	28.11. 2015	27.11. 2020			28.11.2015	working	Non- captive	Yes	08°26'41" N to 08°26'37"	Open-cast

			627110											N & 77°46'12" E to 77°46'09" E	
23	Rough Stone	Thiru.A.Kirup anithi,	S/o. Arumuga Nadar, 8-180, Tiruchendur Main Road, K.Uvari Village, Radhapuram Taluk	M1/7014/2014, Dated: 01.04.2015	1.92.0	15.04. 2015	14.04. 2020			15.04.2015	working	Non- captive	Yes	08°11'15" N to 08°11'20" N & 77°40'44" E to 77°40'49" E	Open-cast
24	Rough Stone	Thiru.A.K.A.Ra jan,	S/o. Kirupanithi, 8-180, Tiruchendur Main Road, K.Uvari Village, Radhapuram Taluk	M1/7012/2014, dated: 01.04.2015	0.96.0	15.04. 2015	14.04. 2020			15.04.2015	working	Non- captive	Yes	08°11'11" N to 08°11'15" N & 77°40'44" E to 77°40'48" E	Open-cast
25	Rough Stone	Thiru.M.Selvar aj,	S/o.Mariya Nadar, 25/33A, Muthunagar, Thovalai	M1/27274/201 3, dated:22.01.201 6	0.61.0	08.02. 2016	07.02. 2021			08.02.2016	working	Non- captive	Yes	08°12'11" N to 08°12'13" N & 77°39'11" E to 77°39'15" E	Open-cast
26	Rough Stone	Thiru. D. Esakiappan,	12/51, Odai theru, Vadakkankula m	M1/62128/201 0, dated : 22.09.2010	2.50.0	01.11. 2010	31.10. 2020			01.11.2010	working	Non- captive	Yes	08°11'08" N to 08°11'16" N &	Open-cast

														77°33'11" E to 77°33'16" E	
27	Rough Stone	Thiru. K. Dinesh,	Avaraikulam, Radhapuram Taluk	M1/74015/201 0, Dt: 22.11.2010	2.50.0	15.11. 2010	14.11. 2020			15.11.2010	working	Non- captive	Yes	08°11'08" N to 08°11'17" N & 77°33'16" E to 77°33'21" E	Open-cast
28	Rough Stone	Thiru.Sakthip eriyakumaran,	Koodankulam, Radhapuram	M1/5944/2012, Dt. 21.06.2016	4.16.5	21.06. 2016	20.06. 2021			21.06.2016	working	Non- captive	Yes	08°11'14" N to 08°11'23" N & 77°44'23" E to 77°44'31" E	Open-cast
29	Rough Stone	Tmt. Sakunthala,,	W/o. S.T.Dhanapal, Sankarankovil	M1/18548/201 3, Dt: 24.08.2016,	1.41.0	20.09. 2016	19.09. 2021			20.09.2016	working	Non- captive	Yes	09°12'59" N to 09°13'2.4 "N & 77°30'22" E to 77°30'27" N	Open-cast
30	Rough Stone	Thiru S. Kasipandiyan,	S/o. Sundariyah Thevar, Pillaiyarkovil Street, Naduvakurichi	M1/33384/201 3 dt: 23.06.2014	1.79.5	23.06. 2014	22.06. 2019			23.06.2019	working	Non- captive	Yes	09°05'10" N & 77°28'20" E	Open-cast

			Major, Sankarankovil												
31	Rough Stone	Thiru S. Kasipandiyan,	S/o. Sundariyah Thevar, 1-7- 160, Pillaiyarkovil Street, Naduvakurichi Major, Sankarankovil	M1/33382/201 3 Dated: 17.07.2015	2.03.5	26.07. 2015	25.07. 2020			26.07.2015	working	Non- captive	Yes		Open-cast
32	Rough Stone	Thiru P.Paulraj,	S/o. Pilliyar, 2/174 Malayadipatti, Karichathan.	M1/59706/201 0 dt: 04.07.2014	0.79.5	04.07. 2014	03.07. 2019			04.07.2014	working	Non- captive	Yes	09°17'15" E to 09°17'11" E & 77°34'55" E to 77°34'59" E	Open-cast
33	Rough Stone	Thiru.T.Komb aiah,	S/o. Thangapandia n, 10-33A, Main Road, Panavadalicha thiram Village, Sankarankovil	M1/1114/2014, dated: 04.04.2015.	4.57.5	07.04. 2015	06.04. 2020			07.04.2015	working	Non- captive	Yes	09°02'56" N to 09°03'03" N & 77°40'02" E to 77°40'12" E	Open-cast
34	Rough Stone	K.Karuppasam y, Street, Visvanathapur am, Senkottai.	48/445, E.K. Thevar	M1/6637/12, dt: 20.05.12	0.86.0	30.06. 2012	29.03. 2022			30.06.2012	working	Non- captive	Yes	08°59'44" N to 08°59'48" N & 77°14'08" E to 77°14'14" E	Open-cast

35	Rough Stone	K.J.Ajaidulasidaran	S/o. K.A.Jeyadevaraja, State bank colony, melagaram, tenkasi	M1/64857/2015, Dt: 24.08.2016	3.98.5	23.09.2016	22.09.2021			23.09.2016	working	Non-captive	Yes	08°56'14" N to 08°56'23" N & 77°20'33" N to 77°20'41" N	Open-cast
36	Rough Stone	Thiru.C.Azhayakoothan,	66, North Street, Rajavallipuram, Tirunelveli	M1/18823/2013, dt. 16.12.2015	3.37.0 hec.	19.12.2015	18.12.2020			19.12.2015	working	Non-captive	Yes	08°49'27" N & 77°45'56" E	Open-cast
37	Rough Stone	Thiru.David,	S/o. M.Gnanasundaram, 11-E, Blessing Cottage, (Behind) Shanmuga Theatre, Ettayapuram Road, Kovilpatti	M1/37378/2013, dated. 10.12.2016	1.61.0	14.03.2017	13.03.2022			14.03.2017	working	Non-captive	Yes	08°49'30" N to 08°49'34" N & 77°44'10" E to 77°44'17" E	Open-cast
38	Rough Stone	M.Abdul Ali,	Vadakari	M1/19230/2015, dt:20.02.2016	4.00.0	10.06.2016	09.06.2021			10.06.2016	working	Non-captive	Yes	08°59'58" N to 09°00'05" N & 77°28'26" E to 77°28'36" E	Open-cast
39	Rough Stone	Thiru V.Chandhran,	Sambavar Vadakarai	M1/15990/2016, dt:05.03.2016	0.98.0	10.06.2016	09.06.2021			10.06.2016	working	Non-captive	Yes	09°00'02" N to 08°59'57" N &	Open-cast

														77°25'28" E to 77°25'33" E	
40	Rough Stone	Thiru S.Palani Nadar,	S/o. Subbiah, 1-7-65, Nadar Therkku Street, Surandai.	M1/30208/201 4, dt:04.08.2014	0.98.5	12.07. 2016	11.07. 2021			12.07.2016	working	Non- captive	Yes	08°59'58" N to 09°00'02" N & 77°25'35" E to 77°25'39" E	Open-cast
41	Rough Stone	Thiru P.Rajendran,	S/o. Ponnusamy Nadar, 18-7- 23, Kamaraj Nagar, Surandai.	M1/30206/201 4, dt:20.06.2016	0.85.0	12.07. 2016	11.07. 2021			12.07.2016	working	Non- captive	Yes	08°59'58" N to 09°00'01" N & 77°25'39" E to 77°25'42" E	Open-cast
42	Rough Stone	Thiru.A.Ayyal usamy,	S/o. Ayyasamy, 1/5, Chithirampatti , Kovilpatti Taluk, Tirunelveli District.	M1/18824/201 3, dated. 08.08.2017	1.37.0	22.08. 2017	21.08. 2022			22.08.2017	working	Non- captive	Yes	08°51'05" N to 08°51'08" N & 77°45'05" E to 77°45'10" E	Open-cast
43	Rough Stone	Thiru.K.Ganes an,	S/o. Kathappathev ar, 2/3, Pathu Veetu Street, Rastha, Mathavakuric	M1/70340/201 0, dated. 08.08.2018	1.74.0	22.08. 2017	21.08. 2022			22.08.2017	working	Non- captive	Yes	08°48'28" N & 77°38'56" E	Open-cast

			hi Post, Tirunelveli District.												
44	Rough Stone	Tmt. D.Mercy Mary,	W/o. G.Jebarajan, 54, Sivan Mela Ratha Veethi, Palayamkottai Taluk, Tirunelveli District	M1/54558/201 4, dated. 16.10.2017	2.51.5	25.10. 2017	24.10. 2022		25.10.2017	working	Non- captive	Yes	08°38'16" N to 08°38'22" N & 77°41'15 E to 77°41'23 E”	Open-cast	
45	Rough Stone	Tvl. Success Granites Pvt Ltd, Prop: Pasil Joseph,	Padanilath House, Thuthiyur Kara, Valakkala Village, Ernakulam Taluk, Kerala State	M1/22451/201 4, dated. 11.09.2017	1.92.5	25.10. 2017	24.10. 2022		25.10.2017	working	Non- captive	Yes	09°07'30" N to 09°07'36" N & 77°28'56" E to 77°29'02" E	Open-cast	
46	Rough Stone	Thiru.N.Esakki appan,	S/o. Narayanan, Vattarakathan Kovil Street, Ambalavanap uram, Palavoor Village, Radhapuram Taluk, Tirunelveli District	M1/48377/201 5, dated. 19.02.2018	2.41.0	28.02. 2018	27.02. 2023		28.02.2018	working	Non- captive	Yes	08°12'05” N to 08°12'11” N & 77°39'52” E to 77°39'59” E	Open-cast	
47	Rough Stone	Thiru.M.sunda ravel,	S/o. Muthusekarap andian, 19/2, Seethapal, Poothapandi Post, Thovalai	M1/48376/201 5, dated. 19.02.2018	2.70.0	28.02. 2018	27.02. 2023		28.02.2018	working	Non- captive	Yes	08°18'15” N to 08°18'21” N & 77°42'02”	Open-cast	

			Taluk, Kanniyakuma ri District											E to 77°42'10" E	
48	Rough Stone	Thiru.S.Syed Ibrahim,	S/o. Sahool Hameethu, 95, Malampatti Road Street, Krishnapuram Village, Kadayanallur Taluk	M1/22269/201 6, dated. 27.02.2018	4.95.5	13.03. 2018	12.03. 2023			13.03.2018	working	Non- captive	Yes	08°51'40" N to 08°51'50" E & 77°27'01" E to 77°27'12" E	Open-cast
49	Rough Stone	Thiru.H.Moha med Kadar Meeran Mohideen,	S/o. Hanifa, 31, Pavalar Street, Kayathar, Thothukudi District	M1/30791/201 6, dated. 02.03.2018	1.90.0	13.03. 2018	12.03. 2023			13.03.2018	working	Non- captive	Yes	08°55'08" N to 08°55'13" N & 77°44'03" E to 77°44'08" E	Open-cast
50	Rough Stone	Tvl. Hi-Tech Rock Products Agreegates ltd,	Mount Poonamalle Road, Manapakkam Post Box 979, Chennai - 600 089	M1/36278/201 7, dated. 21.03.2018	4.96.5	04.04. 2018	03.04. 2023			04.04.2018	working	Non- captive	Yes	08°11'44" N to 08°11'56" N & 77°38'12" E to 77°38'20" E	Open-cast
51	Rough Stone	Thiru.S.Somas undaram,	s/o. K.Subbiah, Akka Salai, Pillaiyar Kovil Street, Valliur, Radhapuram	M1/41046/201 7, dated. 20.03.2018	4.90.5	04.04. 2018	03.04. 2023			04.04.2018	working	Non- captive	Yes	08°15'57" N to 08°16'09" N & 77°37'18" E to	Open-cast

			Taluk, Tirunelveli District											77°37'25" E	
52	Rough Stone	G.Inbarajan,	S/o. Grurusamy, 4/21-C, Sri Ram Nagar, Ponnagaram, Rajapalayam - 626 108, Virudhunagar District	M1/5931/2013, dated. 21.03.2018	2.03.05	16.04. 2018	15.04. 2023			16.04.2018	working	Non- captive	Yes	09°11'35. 47"N to 09°11'43. 60"N & 77°30'41. 63"E to 77°30'45. 86"E	Open-cast
53	Rough Stone	Thiru.V.Chand rasekaran	S/o. Velu, 4/119-C, Achampatti Road, Vadakkupudu r Village, Sankarankovil Taluk, Tirunelveli district	M1/4509/2014, dated. 18.03.2018	2.00.0	16.04. 2018	15.04. 2023			16.04.2018	working	Non- captive	Yes	09°13'02. 01"N to 09°13'07" N & 77°30'42. 66"E to 77°30'46. 82"E	Open-cast
54	Rough Stone	Thiru.M.Vaira van,	S/o. Muthu, Old No. 2/22, New No. 1/410, Vaithiyar Street, Thirisoolam, Chennai - 43	M1/31993/201 2, dated. 21.03.2018	2.98.5	16.04. 2018	15.04. 2023			16.04.2018	working	Non- captive	Yes	09°12'57. 90"N to 09°13'06. 38"N & 77°30'31. 97"E to 77°30'39. 72"E	Open-cast
55	Rough Stone	Thiru.N.Abdul Gani,	S/o.S.M.Nagoo r Meeran, No.2, Kulathur Ayyanar Kovil Street, Tenkasi Taluk, Tirunelveli District	M1/25661/201 4, DATED: 22.03.2018.	1.05.65	16.04. 2018	15.04. 2023			16.04.2018	working	Non- captive	Yes	08°58'12. 11"N to 08°58'16. 02"N & 77°21'5.0 0"E to	Open-cast

														77°21'9.1 7"E	
56	Rough Stone	Thiru.N.Moha med Mahaboob,	S/o. Nagoor Pitchai, No. 8/143, Main Road, Pottalpudur Village kasp, Ambasamudra m Taluk, Tirunelveli District	M1/44736/201 6, DATED: 20.03.2018.	3.74.5	16.04. 2018	15.04. 2023			16.04.2018	working	Non- captive	Yes	08°48'01" N to 08°48'09" N & 77°26'16" E to 77°26'29" E	Open-cast
57	Rough Stone	Tmt.C.Mahe swari,	W/o. M.Jesurajan , No:14/1/2 3, Anna Nagar, Surandai, Veerakerala mpudur Taluk, Tirunelveli District	M1/22319/2 016, DATED: 21.03.2018.	1.81.5	17.04. 2018	16.04. 2023			17.04.2018	working	Non- captive	Yes	09°00'35" N to 09°00'40" N & 77°27'54" E to 77°28'02" E	Open-cast
58	Rough Stone	Thiru.R.P.Aru nachala Pandian,	S/o. R.Ponnusamy Nadar, No.4/37, Madianoor, Avudaiyanoor, Tenkasi Taluk, Tirunelveli District	M1/40906/201 6, DATED: 22.03.2018.	1.89.0	17.04. 2018	16.04. 2023			17.04.2018	working	Non- captive	Yes	08°51'27" N to 08°51'32" N & 77°24'49" E to 77°24'55" E	Open-cast
59	Rough Stone	Thiru.K.Sasiku mar,	S/o. Kalangiam, Door No.	M1/34173/201 6, DATED: 20.03.2018.	1.99.0	17.04. 2018	16.04. 2023			17.04.2018	working	Non- captive	Yes	08°47'59" N to 08°48'05"	Open-cast

			203/1, New No. 321/9, Nainar Kovil Street, Ariyappapuram Vellappanaiyeripatti, Thippanampatti Village, Tenkasi Taluk, Tirunelveli District											N & 77°26'29" E to 77°26'35" E	
60	Rough Stone	Thiru.S.Shankar,	S/o. R.Subramaniam, residing at 131/1, A.P.T.Road, Erode – 638 003	M1/43375/2015, DATED: 31.03.2018.	1.60.0	17.04.2018	16.04.2023			17.04.2018	working	Non-captive	Yes	08°38'43” N to 08°38'48” N & 77°40'44” E to 77°40'49” E	Open-cast
61	Rough Stone	Thiru.P.Marimuthu,	S/o. Petchi Thevar, residing at 1/3-A, Kasba Melbagam, Ponnakudi Village, Palayamkottai Taluk Tirunelveli District	M1/36802/2014, DATED: 22.03.2018.	4.73.5	19.04.2018	18.04.2023			19.04.2018	working	Non-captive	Yes	08°38'43" N to 08°38'52" N & 77°40'49" E to 77°40'58" E	Open-cast
62	Rough Stone	Thiru.N.Maria Robin,	S/o. Nasaren Martin, No:48, Xavier Colony, Melapalayam Post, Palayamcottai Taluk.	M1/47664/2016, DATED: 20.03.2018.	2.00.0	19.04.2018	18.04.2023			19.04.2018	working	Non-captive	Yes	08°11'01" N to 08°11'05" N & 77°40'16"	Open-cast

			Tirunelveli District										E to 77°40'22" E	
63	Rough Stone	Thiru.S.Rajendran,	S/o. Sreedharan, residing at D.No. 13-43A, Preetha Bavan, Pathittavilai, Chitharal Post, Kanniyakumari District,	M1/12755/2016, DATED: 04.04.2018.	2.45.48	17.04.2018	16.04.2023		17.04.2018	working	Non-captive	Yes	08°16'18" N to 08°16'24" N & 77°46'59"E to 77°47'04" E	Open-cast
64	Rough Stone	Thiru.C.Sugu,	S/o. Chellappan, residing at No. 12-1B, Vellancode, Chitharal Post, Kanniyakumari District	M1/12757/2016, DATED: 04.04.2018.	1.26.25	17.04.2018	16.04.2023		17.04.2018	working	Non-captive	Yes	08°16'09"N to 08°16'17" N & 77°46'46" E to 77°46'49" E	Open-cast
65	Rough Stone	Tvl. Hi-Tech Rock Products & Aggregates Limited,	Registered Office: Mount Poonamalle Road, Manapakkam P.B. No. 979, Chennai – 600 089.	M1/36279/2017, dated. 05.06.2018	3.18.0	22.06.2018	21.06.2020		22.06.2018	working	Non-captive	Yes		Open-cast
66	Rough Stone	Thiru.J.Shaboor Bathusha,	S/o. Jabhar Sha, 1, Geethanjali House, Courtallam, Tenkasi	M1/11473/2014, dated. 09.07.2018	1.40.50	06.07.2018	05.07.2023		06.07.2018	working	Non-captive	Yes	08°57'57.95"N to 08°58'01.60"N & 77°20'32.25"E to 77°20'36.	Open-cast

														90"E	
67	Rough Stone	Thiru.A.Sankaranarayanan @ Sankaran,	S/o. Arunachalam, 24-B, Pillamar Street, Tisaiyanvilai, Radhapuram, Tirunelveli District- 627 657	M1/27262/2016, dated. 13.07.2018	2.36.5	17.07.2018	16.07.2023			17.07.2018	working	Non-captive	Yes	08°38'15"N to 08°38'21"N & 77°41'22"E to 77°41'28"E	Open-cast
68	Rough Stone	Tmt. D.Mercy Mary,	W/o. G.Jebarajan, No. 54-Sivan West Car Street, Palayamkottai, Tirunelveli District	M1/3939/2017, dated. 13.07.2018	1.62.5	17.07.2018	16.07.2023			17.07.2018	working	Non-captive	Yes	08°38'10"N to 08°38'15"N & 77°41'20"E to 77°41'25"E	Open-cast
69	Rough Stone	Thiru.S.Subbiah,	S/o. Sornathevar, 760, Pazhar Street, Seevalaperi, Palayamkottai Taluk, Tirunelveli District.	M1/3390/2017, dated. 18.07.2018	1.38.5	24.07.2018	23.07.2023			24.07.2018	working	Non-captive	Yes	08°49'04"N to 08°49'10"N & 77°26'06"E to 77°26'15"E	Open-cast
70	Rough Stone	Thiru.K.S.R.J.Rajkumar,	S/o. K.S.R.Jeyakumar, residing at K.S.R.Illam, Peruratchi Theru, Kambam Puthupatti Village,	M1/18028/2016, DATED: 07.09.2018	2.02.5	15.11.2018	14.11.2023			15.11.2018	working	Non-captive	Yes	08°49'12.14"N to 08°49'06.26"N & 77°26'26.08"E to 77°26'17.85"E	Open-cast

			Uthamapalaya m Taluk, Theni District												
71	Rough Stone	Thiru.N.K.S.An bazhagan,	S/o. (late) Subramania Nadar, residing at No. 96, North Car Street, Aladipatti, Nallur Post, Sivalarkulam Village, Alangulam Taluk, Tirunelveli District	M1/2464/2016, dated. 31.03.2018	1.42.5	17.04. 2018	16.04. 2023			17.04.2018	working	Non- captive	Yes	08°49'7" N to 08°49'14. 8"N & 77°31'21. 5"E to 77°31'29. 6"E	Open-cast
72	Rough Stone	Tvl.V.V.Minera l,	Keeraikaranth attu, Tisaiyanvilai	M1/54004/201 0, Dated: 11.07.2011	3.72.5	09.08. 2018	08.08. 2023			09.08.2018	working	Non- captive	Yes	08°48'56" N to 08°49'05" N & 77°31'16" E to 77°31'26" E	Open-cast

10. DETAILS OF ROYALTY/SEINIORAGE FEE RELEASED IN THE LAST THREE YEARS.

Sl. No.	Name of the mineral	Royalty/Seiniorage fee collected (In Rupees)		
		2015-16	2016-17	2017-18
1.	Rough Stone	99688026	127126612	171150277

11. DETAILS OF PRODUCTION OF MINOR MINERALS IN LAST THREE YEARS.

Sl. No.	Name of the mineral	Quantity produced (Cubic meter)		
		2015-16	2016-17	2017-18
3	Rough Stone	2125138	2825205	3470931

DISTRICT SURVEY REPORT-TIRUNELVELI



13.0 LIST OF LETTER OF INTENT (LOI) HOLDER IN THE DISTRICT ALONG WITH ITS VALIDITY

Sl. No	Name of the Mineral	Name of the Lessee	Address & Contact No. of Letter of Intent Holder	Letter of Intent Grant Order No. & date	Area of Mining lease to be allotted	Extent	Valid ity of LoI	Use (Capt ive/N on-Capti ve)	Location of the Mining lease (Latitude & Longitude)
1	Rough Stone	S.Sundaramahalingam	S.Sundaramahalingam, S/o.Subbiah, 465A, Bazar Road, Mavadikkal, Kadayanallur Taluk, Tirunelveli.	M1/25687/2017 , dt.22.05.2018	Kambaneri Pudukudi Part - II Village, Kadayanallur Taluk in SF.No. 1061/1(P), 1061/2(P), 1061/3(P) & 1062/1(P)	5.00.0	-	Non - Capti ve	09°02'53"N to 09°03'03"N & 77°22'00"E to 77°22'07"E
2	Rough Stone	S.Sundaramahalingam	S.Sundaramahalingam, S/o.Subbiah, 465A, Bazar Road, Mavadikkal, Kadayanallur Taluk, Tirunelveli.	M1/28404/2017 , dt.22.05.2018	Idaigal Part - I village, Ambasamudram Taluk in SF.No. 361/1	4.99.0	-	Non - Capti ve	08°47'52"N to 08°48'01"N & 77°27'45"E to 77°27'56"E
3	Rough Stone	C.Ramesh	C.Ramesh, S/o.Chokkalinga Thevar, Perumal Kovil Street, Palamadai Village, Tirunelveli Taluk, Tirunelveli District.	M1/41429/2016 , dt.09.07.2017	Palamadai Village, Tirunelveli Taluk in SF.No. 375	4.89.5	-	Non - Capti ve	08°48'17"N to 08°48'26"N & 77°45'41"E to 77°45'48"E

4	Rough Stone	A.Kothar Mydeen	A.Kothar Mydeen, S/o.Ahamed Ravoothar, 18, Nallammalpuram, Thenkulam Village, Tirunelveli Taluk & District.	M1/31268/2016, dt.09.07.2017	Gangaikondan Part - II village, Tirunelveli Taluk in SF.No. 1660/4	1.62.0	-	Non - Captive	08°48'38"N to 08°48'48"N & 77°45'17"E to 77°45'20"E
5	Rough Stone	M.Marutharaj	M.Marutharaj, S/o.Murugaiah, 32, B1, Kattapomman Street, kayathar, Kovilpatti Taluk, Tuticorin District.	M1/18647/2017, dt.27.02.2018	Pranjeri Village, Manur Taluk in SF.No. 720	1.99.5	-	Non - Captive	08°55'35"N to 08°55'38"N & 77°44'27"E to 77°44'31"E
6	Multi Colour Granite	Tvl.Winner Minerals Exim India Private Limited	Tvl.Winner Minerals Exim India Private Limited, 2/4, Second Floor, 1st Cross Street, Indira Nagar, Adayar, Chennai.		Urumankulam Village, Radhapuram Taluk in SF.No. 712/3	4.00.0	-	Captive	08°19'09.79"N to 08°19'19.95"N & 77°49'06.65"E to 77°49'14.76"E
7	Rough Stone	D.Arunachalasamy	D.Arunachalasamy, S/o.Dharmaraja, 777, NGO Colony, Kalappakulam, Sankarankovil Taluk, Tirunelveli Distirct.	M1/5315/2015, dt.15.12.2016	Vadikottai Village, Sankarankovil Taluk in SF.Nos. 44/10, 11, 12 & 13	0.72.0	-	Non - Captive	09°12'59"N to 09°13'02"N & 77°30'50"E to 77°30'54"E
8	Rough Stone	A.Mumthaj	A.Mumthaj, W/o.Azad, 10B, Periya Kothithupu, Pallivasal Vadakku Keela Puthu Theru, Malapalayam Village, Palayamkottai Taluk, Tirunelveli District.	M1/27624/2014, dt.11.01.2018	Melaseval Part - I village, Ambasamudram Taluk in SF.Nos. 419/1B & 419/2	1.78.5	-	Non - Captive	08°39'08"N to 08°39'17"N & 77°37'21"E to 77°37'26"E
DISTRICT SURVEY REPORT-TIRUNELVELI 39									

9	Rough Stone	T.Balasubramanian	T.Balasubramanian, S/o.Thangamuthu Pandian, 214/1, Poonathotta Street, Chathiramkudiyiruppu, Sankar Nagar, Tirunelveli District.	M1/39664/2016 , dt.09.07.2017	Alangaraperi Village, Tirunelveli Taluk in SF.Nos. 37/1 & 37/2	1.59.0	-	Non - Capti ve	08°48'45"N to 08°48'50"N & 77°46'24"E to 77°46'27"E
10	Rough Stone	I.Ananth	I.Ananth, S/o.Iyappan, 3/853, East Street, Sounthiralingapuram, Avaraikulam Post, Radhapuram Taluk, Tirunelveli District.	M1/28487/2017 , dt.21.12.2017	Panagudi Part - I Village, Radhapuram Taluk in SF.Nos. 281 & 282	1.54.0	-	Non - Capti ve	08°19'54"N to 08°19'58"N & 77°32'26"E to 77°32'32"E
11	Rough Stone	M.Murugaiah	M.Murugaiah, S/o.Muthiah, 1/36A, Mela Theru, Thirumalaikolunthupuram Village, Palayamkottai Taluk, Tirunelveli District.	M1/50561/2017 , dt.19.02.2018	Melathidiyur Village, Palayamkottai Taluk in SF.No. 27/7B1A	1.27.5	-	Non - Capti ve	08°38'10"N to 08°38'18"N & 77°39'06"E to 77°39'10"E
12	Rough Stone	T.Lakshmi	T.Lakshmi, W/o.Thirumalaisamy, 83-B, North Street, Dharmathoorani Village, Pattadaikatti Panchayat, Sankarankovil Taluk, Tirunelveli District.	M1/10042/2015 , dt.21.06.2018	South Sankarankovil Village, Sankarankovil Taluk in SF.No. 163/1	1.64.0	-	Non - Capti ve	09°06'38"N to 09°06'41"N & 77°30'49"E to 77°30'59"E

13	Rough Stone	HI TECH ROCK PRODUCTS & AGGREGATES LIMITED	Tvl.Hi Tech Rock Products & Aggregates Limited, Mount Poonamalee Road, Manapakkam, P.B.No.979, Chennai - 600 089.	M1/39681/2017, dt.14.11.2018	Irukkandurai Part - II Village, Radhapuram Taluk in SF.No.		-	Non - Captive	8 10'40.40" to 8 10'50.20" & 77 39'23.90" to 77 39'34.50"
17	Rough Stone	G.Karuppasamy	G.Karuppasamy, S/o.Gurusamy, 249, Sivanthinagar, Kuthukkal Valasai, Tenkasi Taluk, Tirunelveli District.	M1/24418/2017, dt.06.09.2018	Maruthamputhur Part - I village, Alangulam Taluk in SF.Nos. 35/4A, 4B, 4C, 4D, 4E, 4F, 4G, 4H & 4I	3.99.0	-	Non - Captive	08°49'11"N to 08°49'19"N & 77°31'22"E to 77°31'31"E
21	Rough Stone	A.Kirubanidhi	A.Kirubanidhi, S/o.Arumuga Nadar, 8/180, Tiruchendur Main Road, K.uvari village, Radhapuram Taluk, Tirunelveli District.	M1/7014/2014, dt.25.06.2014	Irukkandurai Part - II Village, Radhapuram Taluk in SF.No. 181/2A2	1.92.0	-	Non - Captive	08°11'14"N to 08°11'19"N & 77°40'44"E to 77°40'49"E
23	Rough Stone	A.K.A.Rajan	A.K.A.Rajan, S/o.Kirubanidhi, 8/180, Tiruchendur Main Road, K.Uvari Village, Radhapuram Taluk, Tirunelveli District.	M1/7012/2014, dt.25.06.2014	Irukkandurai Part - II Village, Radhapuram Taluk in SF.No. 181/2B	0.96.0	-	Non - Captive	08°11'11"N to 08°11'14"N & 77°40'43"E to 77°40'48"E
24	Rough Stone	M.Chinnathambi	M.Chinnathambi, S/o.Muthusamy, 67-A, Samba Street, Tenkasi Taluk, Tirunelveli District.	M1/1570/2015, dt.23.06.2018	Thippanampatti Village, Tenkasi Taluk in SF.Nos. 1377/1C, 1F, 1G, 2I, 2B, 2F, 2H & 1137/2E,	1.81.0	-	Non - Captive	08°53'03"N to 08°53'10"N & 77°20'09"E to 77°20'17"E

25	Rough Stone	C.Sugu	C.Sugu, S/o.Chellappan, 12-1B, Vellancode, Chitharal Post, Kanniyakumari District.	M1/12757/2016, dt.29.12.2017	Kasthuriengapuram Part - II village, Radhapuram Taluk in SF.No. 193(P)	1.42.0	-	Non - Captive	08°16'09"N to 08°16'17"N & 77°46'46"E to 77°46'49"E
26	Rough Stone	S.Rajendran	S.Rajendran, S/o.Sridharan, 13-43-A, Preetha Bavan, Vellancode, Chitharal Post, Kanniyakumari District.	M1/12755/2016, dt.29.12.2017	Kasthuriengapuram Part - II village, Radhapuram Taluk in SF.No. 181/1A(P)	2.45.48	-	Non - Captive	08°16'18"N to 08°16'24"N & 77°46'59"E to 77°47'04"E
28	Rough Stone	Tvl. Triveni Real Estate & Developers (P) Ltd	Tvl.Triveni Real Estate & Developers Pvt Ltd, Prop.Sajan K.Thomas, 11/312, Kulangaramuriy, Valakagam, Chirakadavu Post, Cheruwally village, Kanjirapalli Taluk, Kottayam District, Kerala	M1/6165/2012, dt.31.08.2017	Therkku Madathur Village, Ambasamudram Taluk in SF.No. 102(P)	2.16.0	-	Non - Captive	08°49'48"N to 08°49'55"N & 77°23'44"E to 77°23'46"E
29	Rough Stone	V.Maripandi	V.Maripandi, S/o.Velusamy Thevar, 4/66, Pillaiyar Kovil Main Road, Sundaresapuram Post, Kadayanallur Taluk, Tirunelveli District.	M1/61043/2009, dt.11.05.2017	Kambaneri Pudukudi Part - I Village, Kadayanallur Taluk in SF.Nos. 155/3, 8B, 11, 13, 14, 15 & 16	2.23.0	-	Non - Captive	09°05'32"N to 09°05'38"N & 77°23'03"E to 77°23'11"E
32	Rough Stone	P.K.S.Ahamad Meeran	P.K.S.Ahamed Meeran, 18, Puthu Amman Kovil Street, Sindhupundhurai, Tirunelveli Taluk & District.	M1/30717/2016, dt.09.07.2017	Gangaikondan Part - II village, Tirunelveli Taluk in SF.Nos. 1665/1B	2.10.5	-	Non - Captive	08°48'24"N to 08°48'39"N & 77°45'11"E to 77°45'13"E

33	Rough Stone	K.Sasikumar	K.Sasikumar, S/o.Kalaigiam, 9/303, Nainar Kovil Street, Vellapanaiyaneripatti, Thippanampatti village, Tenkasi Taluk, Tirunelveli District.	M1/34173/2016 , dt.09.07.2017	A.P.Nadanoor village, Alangulam Taluk in SF.Nos. 433/1 and 433/2	1.99.0	-	Non - Capti ve	08°47'59"N to 08°48'05"N & 77°26'29"E to 77°26'35"E

14. TOTAL MINERAL RESERVE AVAILABLE IN THE DISTRICT

The District Collector has vested with powers for the grant of licence for minor minerals like, Rough Stone, as per Rule 19 of TNMMCR 1959. The minor minerals noticed in poromboke lands are leased out through tender cum auction system. With regard to major minerals, in patta lands powers vested with Commissioner of Geology and Mining for the grant of mining leases. In poromboke lands power is vested with Government. Apart from major minerals, the minor minerals like Rough stone are noticed.

Sl.No.	Name of the Mineral	Classification of Land	No.of Existing leases
1	Rough Stone	Patta Land	75
		Government Land	09

15. QUALITY /GRADE OF MINERAL AVAILABLE IN THE DISTRICT.

The Charnockite includes felsic and rich in quartz and microcline, others mafic and full of pyroxene and olivine, a special feature, recurring in many members of the group, is the presence of a strongly pleochroic, reddish or green orthopyroxene (formerly known as hypersthene).

Rocks of the Charnockite series may be named by adding orthopyroxene to the normal igneous nomenclature. Chemical composition of the charnockite available in the district is given below.

Chemical composition	Ranges in %
SiO ₂	46-49
Al ₂ O ₃	1-3
Fe ₂ O ₃	1.16
FeO	21-33
MgO	12-20
MnO	0.3-0.8
CaO	0.04-2.0
Na ₂ O	0.02-0.50
K ₂ O	0.02-0.30

Gneiss is a high grade metamorphic rock. This means that gneiss has been subjected to more heat and pressure than schist. This banding has alternating layers that are composed of different minerals.

Chemical composition	Ranges in %
SiO ₂	55
Al ₂ O ₃	15-18
Fe ₂ O ₃	2-3
MgO	2.5-3.5
CaO	1.5-2
Na ₂ O	0.50-1
K ₂ O	3.5-4.0
Specific Gravity	1.5 gm/cc
Bulk Density	2.7 gm/cc

16. USE OF MINERAL

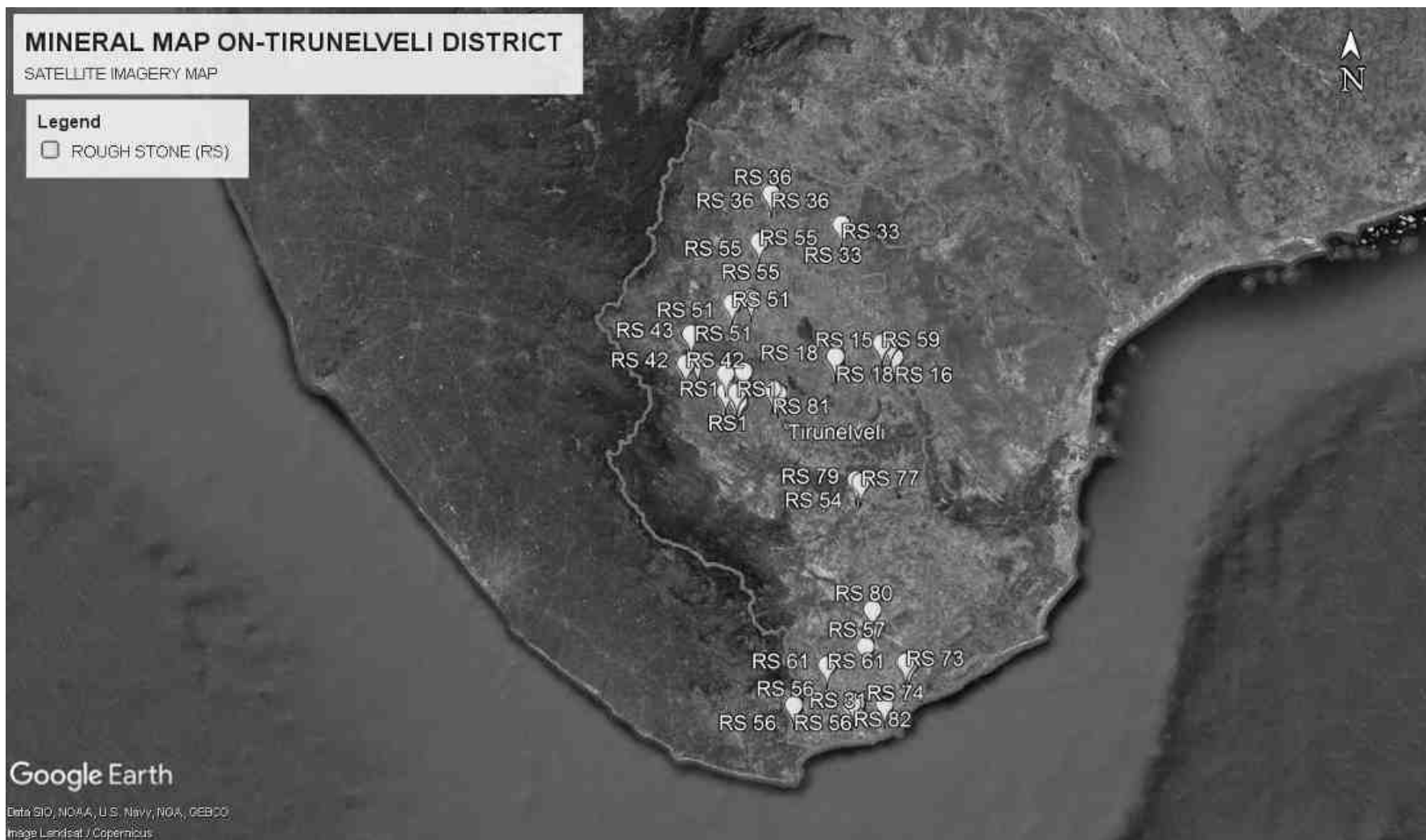
Charnockite and granitic gneisses are extensively quarried as rough stone which is used as aggregates for construction of building, laying of roads and for preparation of value added products like hollow blocks, pillar stones, M-sand etc.

17. DEMAND AND SUPPLY OF THE MINERALS IN THE LAST THREE YEARS.

Sl. No.	Name of the mineral	Demand	Supply	Demand	Supply	Demand	Supply
		2015-16	2015-16	2016-17	2016-17	2017-18	2017-18
1	Rough Stone	2125138	2125138	2825205	2825205	3470931	3470931

18.0 MINING LEASE MARKED ON THE MAP OF THE DISTRICT





19.0 Details of the area where there is a cluster of mining leases viz., number of mining leases, location (latitude & longitude)

As per the Ministry of Environment, Forest and Climate Change Notification No. S.O. 3933(E) dated 18.12.2017, the quarries situated in the following villages are in cluster situation and to follow the conditions stipulated in the Government of India Notification.

S. No	Taluk	Village
1.	Alangulam	Vengatampatti - II
		Maruthampudur - I
		A.P. Nadanoor
2.	Kadayanallur	Ariyanayagipuram
3.	Manur	Pirancheri
		Vagaikulam
		Kanarpatti
4.	Palayamkottai	Tharuvai
5.	Radhapuram	Irukkandurai
		Therkku Karunkulam
		Kasthuriengapuram Part - II
6.	Tirunelveli	Kodaganallur
		Gangaikondan Part - I & II
7.	V.K.Pudur	Surandai - I

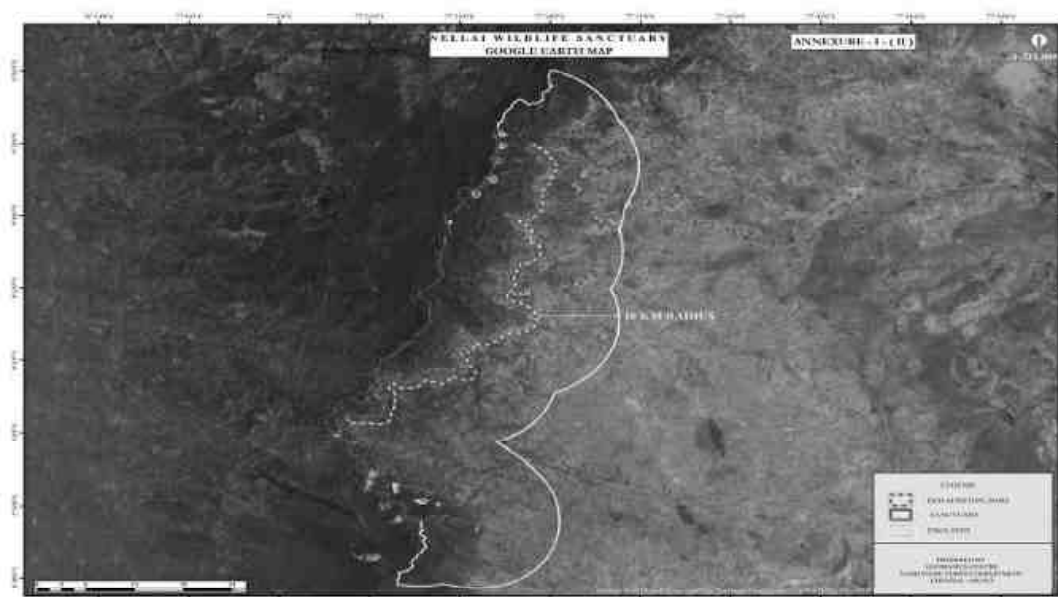
20. DETAILS OF ECO-SENSITIVE AREA.

The Indian board for Wildlife in its 'Wildlife Conservation Strategy-2002' envisaged 'lands falling within 10 km of the boundaries of National parks and sanctuaries should be notified as eco-fragile zones under section 3 (v) of the Environment (Protection) Act and Rule 5 Sub rule (vii) & (x) of the Environment (Protection) Rules'. With concerns over applicability of the 10 km range, the National Board for Wildlife decided that 'delineation of eco-sensitive zones would have to be site specific and relate to regulation, rather than prohibition, of specific activities'.

The purpose of declaring Eco-sensitive zones around National Parks and sanctuaries is to create some kind of '**Shock Absorber**' for the protected areas and they would also act as a transition zone from areas of high protection to areas involving lesser protection.

20.1 Nellai Wildlife Sanctuary

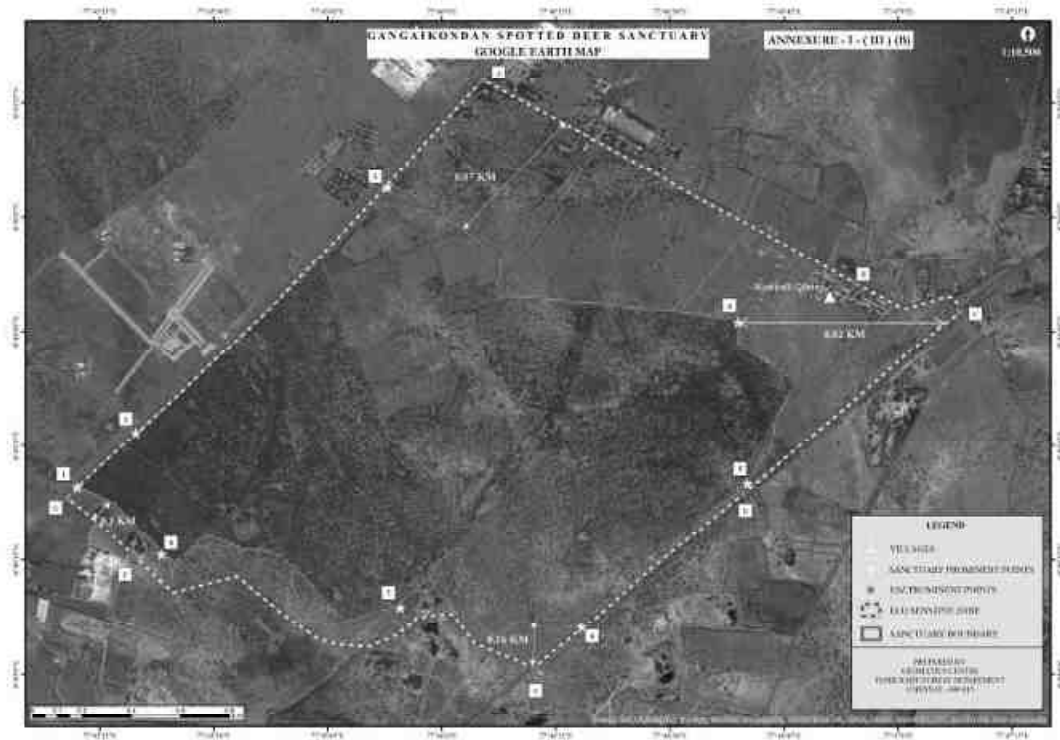
Nellai Wildlife Sanctuary spread over an area of 35,673.33 ha comes under Tenkasi, Shenkottai, Kadayanallur, and sivagiri taluk of Tirunelveli District in Tamilnadu.



(Eco Sensitive Zones are showed in Red and Yellow dotted lines in this figure)

20.2 Gangaikondan spotted Deer Sanctuary

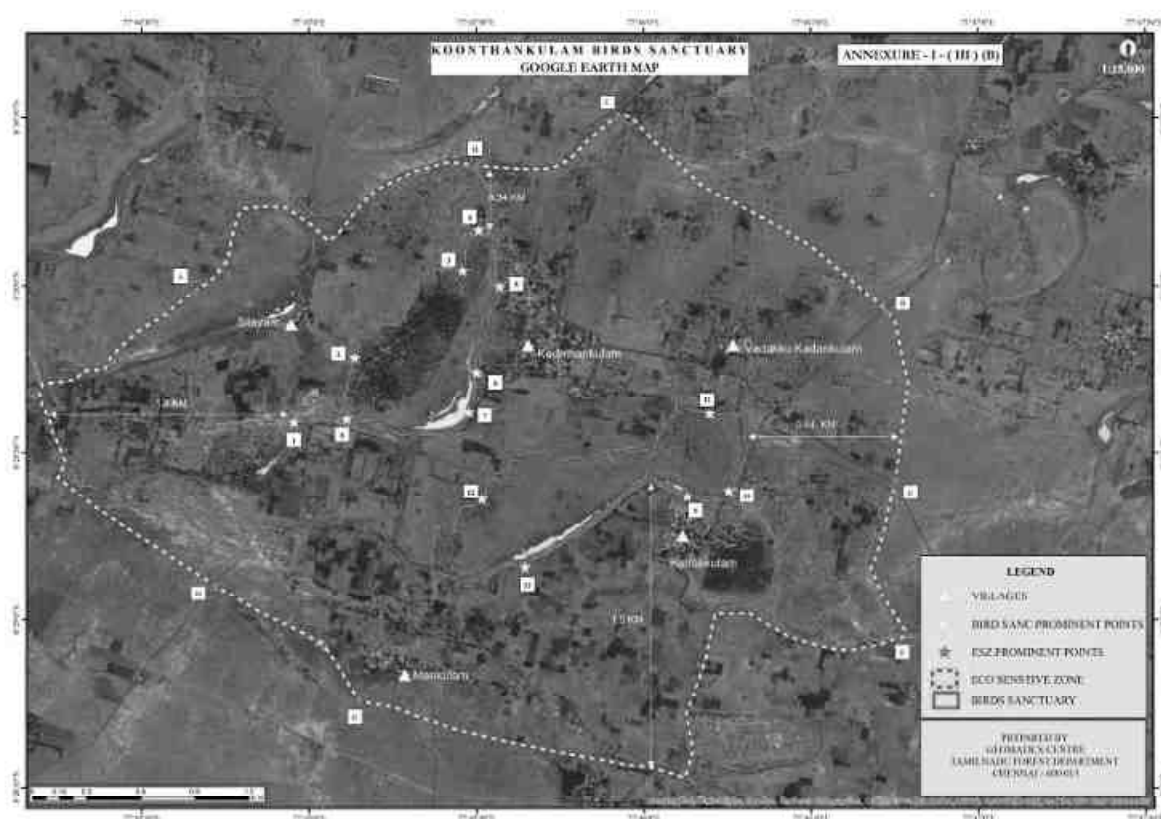
Gangaikondan spotted Deer Sanctuary spread over an area of 288.40 ha comes under Tirunelveli taluk of Tirunelveli District in Tamilnadu. It is located at on the N.H.7 towards Kanyakumari to Madurai.



(Eco Sensitive Zones are showed in Red and Yellow dotted lines in this figure)

20.3 Koonthankulam Bird Sanctuary

Koonthankulam Bird Sanctuary spread over an area of 129.33 ha comes under Nanguneri taluk of Tirunelveli District in Tamil Nadu and comprises of two fresh water wetlands, namely Koonthankulam and Kadankulam. It is located at Koonthankulam village, about 15 km west of Nanguneri and 35 km from Tirunelveli city. The approach road from Tirunelveli is through Moolakaraipatti, which is 6kms away from the sanctuary.



(Eco Sensitive Zones are showed in Red and Yellow dotted lines in this figure)

21. IMPACT ON THE ENVIRONMENT (AIR, WATER, NOISE, SOIL, FLORA & FAUNA, LAND USE, AGRICULTURE, FOREST ETC.) DUE TO MINING ACTIVITY

Mining and allied operations may affect the existing environmental setup in the area unless proper mitigation measures are not taken. Hence it is essential to assess the impacts of mining on various environmental parameters so that abatement measures could be planned in advance for systematic, sustainable and eco-friendly mining in the area.

21.1 Air Environment

The mining and allied operations may cause deterioration of air quality due to pollution if prompt care is not taken. The principal sources of air pollution in general due to mining and allied activities will be the dust generation in the mine due to:

- Excavation of Minerals and overburden.
- Movement of HEMM such as Excavators, tippers etc.
- Loading and unloading operation
- Overburden & Mineral transportation

Besides the above mentioned fugitive dust emissions, atmospheric pollution can occur as a result of emission of SO₂, NO_x, CO etc., from diesel driven mining equipment, compressors, generator sets, etc. Larger suspended particles are generally filtered in the nose and throat and do not cause problems.

Particulate matter smaller than 10 microns, referred to as PM₁₀, can settle in the bronchi and lungs and cause health problems like Bronchitis, Emphysema, Bronchial Asthma, Irritation of mucus membranes of eyes, etc. Particles smaller than 2.5 micrometers (PM_{2.5}), tend to penetrate into the lungs and very small particles (<100 nanometers) may pass through the lungs to affect other organs.

21.2 Water Environment

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

- Generation of industrial effluent water from workshop, service building.
- Disturbance to drainage course or water bodies in the project area, if any.
- Washouts from waste dumps / embankment, if any.
- Domestic effluent
- Mine discharge water pumped out from opencast mines, if any and effect on ground water table.

Direct impact on human beings due to poor water quality consequent to mining operation can lead to various water borne diseases like diarrhea, jaundice, dysentery, typhoid, etc. Besides, the polluted water may not be useful for animal or human consumption, vegetation and may affect aquatic life, if effluents are not properly treated to remove the harmful pollutants.

21.3 Noise & Vibration

The impact prediction and control measure for noise environment due to mining and allied activities are described below:

Noise is one of the inevitable causes of pollution in mining operations, largely due to the extensive mechanization adopted. Since the Limekankar/Clay (others) in the District is in friable form, no drilling and blasting is required for the excavation. Hence the major source of noise will be from the equipment's, such as, Excavation, loading & unloading & movement of vehicles, etc. will produce noise of considerable magnitude in mining operations. Prolonged exposure to a high noise level is harmful to the human auditory system and can create mental fatigue, rebellious attitude, annoyance and carelessness, which may lead to neglect of work and also result in accidents.

The Limekankar/Clay (others) in this region is in friable form and can be excavated directly by using hydraulic excavator and there will not be any drilling and blasting involved in the mining operation. Hence, vibration due to blasting is not envisaged.

21.4 Impact on Land Environment

Due to mining and its allied activities there will some changes to the pre mining land status due to the following activities:

- Excavation of Ore and Waste / Overburden.
- Temporary side casting / Backfilling of Waste / Overburden.
- Construction of infrastructure facilities such as, office, road. Site services, etc.

21.5 Impact on Biological Environment

The major possible impact on biological environment due to mining are given below

- Clearance of vegetation due to mining and allied activities

- Retardation of tree growth, tip burning, etc., due to deposition of dust and the Particulate matter generated from the mining operation.
- Presence of Schedule-I fauna in the mining area
- Proposed impact on surface water quality that also provides water to wildlife
- Risk of fall/slip or cause death to wild animals due to project activities
- The project releases effluents into water bodies that also supplies water to wildlife
- Diversion of Agricultural lands for mining
- Diversion of Forest Lands for mining

22. REMEDIAL MEASURES TO MITIGATE THE IMPACT OF MINING ON THE ENVIRONMENT

The following remedial measures to be taken during mining

22.1. Remedial Measures to mitigate Air Pollution

- Water sprinkling on mineral transport road from the mines to the main road
- Black topping of the main transportation roads to the possible extent
- Avoiding crowding of trucks by properly spacing them to avoid the concentration of dust emission at any time
- Covering the trucks by tarpaulin sheets during ore transportation
- Proper maintenance of HEMM to minimize gaseous emission
- Imparting sufficient training to operators on safety and environmental parameters
- Proper maintenance of haul road and other roads
- Development of green belt/ plantation around mine, along the roads, backfilled area, in various undisturbed areas within the mine lease areas etc.

22.2. Remedial Measures to mitigate Water Pollution

- Industrial effluent treatment systems wherever necessary to be introduced and maintained properly.
- Safety barriers to be provided for all water bodies and no mining activities should be carried out in the safety barrier area
- Mitigative measures like construction of garland drains formation of earth bunds to be followed in the waste dumping areas to avoid wash off.
- Domestic effluents to be treated in scientific manner.
- Required statutory clearances to be obtained and all precautionary measures to be adopted wherever punping of ground water is involved.

22.3 Remedial Measures to reduce Noise & Vibration

- Planting rows of native trees around mine, along the roads, other noise generating centres to act as acoustic barriers.
- Sound proof operator's cabin for equipment like Excavators, tippers etc.
- Proper and regular maintenance of equipment may lead to less noise generation.
- Air silencers of suitable type that can modulate the noise of the engines of machinery to be utilized and will be maintained effectively.

- Providing in-built mechanism for reducing sound emissions.
- Providing earmuffs to workers exposed to higher noise level and to those persons operating or working close to any machine.
- Conducting regular health check-up of workers including Audiometric test for the workers engaged in noise prone area.

22.4 Remedial Measures to reduce Impact on Land Environment

Scientific reclamation measures to be adopted to reduce the impact of land environment due to mining. Limekankar/Clay(Others) being shallow deposit backfilling of mined out voids may be practiced to avoid land degradation.

22.5 Remedial Measures to reduce Impact on Biological Environment

- The mineral bearing areas in the District is mostly of dry areas, afforestation to be carried out in the mining areas.
- Necessary mitigative measures like dust suppression, proper maintenance of equipments, black topping of roads etc., to be carried out to prevent dust generation & any further impact on the vegetation
- Conservation plan for schedule-I species if any to be prepared in consultation with Forest Department and the proposals given in the conservation plan to be strictly implemented.
- Effluents generated in the mining areas to be treated properly.

23. RECLAMATION OF MINED OUT AREA (BEST PRACTICE ALREADY IMPLEMENTED IN THE DISTRICT, REQUIREMENT AS PER RULES AND REGULATION, PROPOSED RECLAMATION PLAN)

In the post mining period, the mined out pit it will be used for Rain Water Harvesting. Waste dumps will be reclaimed with suitable type of plantation with necessary garland drain system.

24. RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

Risk Assessment and Disaster Management Plan in connection with mining and allied operations should be spelt out in detail to cover possible dangers /risks/explosions/accidents, etc. likely to arise from the project operations, including onsite and off-site emergency plans to meet the disastrous situations if any.

The mine management should be able to deal with the situation efficiently to reduce confusion keeping in view of the likely sources of danger in the project.

1) Outline of Disaster Management Plan :-

The purpose of disaster management plan is to restore the normalcy for early resumption of mining operation due to an unexpected, sudden occurrence resulting to an abnormality in the course of mining activity leading to a serious danger to workers or any machinery or the environment.

2) System of Communication:-

An internal communication system should be provided. Telephone nos and addresses of adjoining mines, rescue station, police station, fire service station, local hospital, electricity supply agency and standing consultative committee members should be properly updated and displayed.

3) Consultative Committee:-

A standing consultative committee should be formed under the Head of Mines. The members consists of Mines Manager / Safety Officer / Medical Officer / Public Relation Officer/ Foreman/ and Environmental Engineer.

4) Facilities & Accommodation:-

Accommodation and facilities for medical centre, rescue room and for various working groups should be provided. Regular checking of these facilities shall be undertaken.

5) First Aid & Medical Facilities:-

The mine management should be having first aid / medical centre for use in emergency situation. All casualties should be registered and should be given first aid. The centre should have facilities for first aid & minor treatment, resuscitation, ambulance and transport. Proper telephone / wireless set should be provided for quick communication with hospitals where the complicated cases are to be referred. Regular checking of these facilities shall be under taken by the doctor and the in-charge of the first aid room.

6) Stores and Equipment :-

A detailed list of equipment available, its type and capacity and items reserved for emergency should be maintained.

7) Transport Services:-

A well-defined transport control system should be provided to deal with the situation.

8) Functions of Public Relations Group:-

Liaison with representatives of the mine workers is required to ameliorate the situation of panic, tension, sentiments, grievances and misgivings created by any disaster. Management is required to ameliorate the injured, survivors and family members of affected persons by providing material, finance, moral support and establishing contact with relatives of victims.

The consultative committee formed, especially the nominated public relation officer shall look into these aspects.

9) Security:-

Manning of security posts is very essential during the disaster management.

10) Catering & Refreshment: -

Arrangement will be made for the victims, rescue teams and others.

25.Details of occupational health issue in the district (last five -year data of number of patients of silicosis & tuberculosis is also needs to be submitted)

Sl.No.	Year	Number of patients treated for silicosis	Number of patients treated for Tuberculosis
1	2015	Nil	Nil
2	2016	Nil	Nil
3	2017	Nil	Nil
4	2018	Nil	Nil
5	2019	Nil	Nil

26.Plantation and green belt development in respect of leases already granted in the district

It is necessary to develop Green belt in and around the polluted site with suitable species to reduce the air pollution effectively. Implementation of afforestation program is of paramount importance. In addition to augmenting existing vegetation, it also checks soil erosion, make the ecosystem more complex and functionally more stable and make the climate more conductive.

Simultaneous backfilling method will be followed in most of the mining areas. During the operations, the plantation will be proposed and will be carried out on the safety barrier areas and also on the mined out and backfilling areas.

27. Any other Information

Kudankulam Nuclear Power Project situated in Kudankulam village, Radhapuram Taluk, Tirunelveli District as per AERB guidelines No Quarries can be started within 5 kilo meters radius and will be scrutinised by Kudankulam Local Committee.

SITE PHOTOS

ROUGH STONE

Village ; Kovankulam

Latitude ; 08° 22' 44"N

Longitude ; 77° 42' 53"E



ROUGH STONE

Village ; Thiippanampatti

Latitude ; 08° 53' 08"N

Longitude ; 77° 20' 09"E



ROUGH STONE

Village ; Tharuvai

Latitude ; 08°38'28"N

Longitude ; 77°40'53"E



ROUGH STONE

Village ; Therkkumadathur

Latitude ; 08°49'48"N

Longitude ; 77°23'44"E



ROUGH STONE

Village ; Irukkandurai Part-2

Latitude ; 08° 11' 14"N

Longitude ; 77° 40' 44"E



ROUGH STONE

Village ; Idaigal Part-I

Latitude ; 08° 47' 58"N

Longitude ; 77° 27' 46"E



ROUGH STONE

Village ; Poigai

Latitude ; 09°07'30"N

Longitude ; 77°28'57"E



ROUGH STONE

Village ; Venkadampatti Part-1

Latitude ; 08° 51' 27"N

Longitude ; 77° 24' 49"E



Conclusion and Recommendations

This District Survey Report has been prepared by doing field work in a short span of ten working days. The details related to the occurrence of mineral resources and other data of the district are subject to updation of district mineral inventory from time to time. It may be periodically done every five (05) years with the help of GSI and other govt/non-govt geoscience exploration organisations.

Considerable amount of crystalline limestone deposit is the Tirunelveli District is occurs in Talaiyuttu-Nanjakulam-Terkuseiyanur areas are known from previous histories. Around Usilangulam, Ottavidu and Tadiyampatti areas, linear band of crystalline limestone is exposed with quartzite and Charnockite. This area may be taken up for geological survey in view of future mining prospects. Crystalline limestone occurrences south of Tirunelveli around Padmaneri-Devanallur-Pottaisutti areas may be reappraised and to be developed for cement grade deposits.

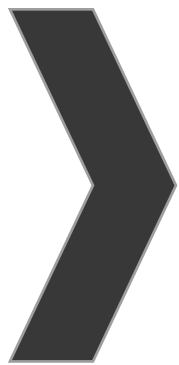
Charnockite rock the raw material for the production of building/construction aggregates, road metal and M-sand is more concentrated spatially. With respect to the need for public utility is it locally quarried/mined in the entire district proportionately and to be continued in the same manner.

The entire Tirunelveli district has high hills of quartzite exposed in Talaiyuttu, Marandai Malai, Reddiarpatti hill, Krishnapuram-Nochikulam and Uttumalai hills but due to its high metamorphic nature and its impurities it attracts very less importance. The River Sand in the Chittar and Tamarabarani River is very small in quantity which cannot be exploited for public purpose. The gemstone reported in Kalakadu and Manimuthar Dam area may be explored in collaboration with GSI or any govt organisations.

The introduction of e-permit system and serious implementation of Mineral Dealers Rule and the despatch slips / transit permits with tampered proof security features will enhance sustainable mining activity in the district.

GPS/Auto Tags installed tracking of mined out mineral vehicles will fetch more revenue to the state exchequer and over exploitation.

An appreciable work carried out by Deputy Director (Mines)/ Tirunelveli District and his office in considering all parameters related to ground geology and environmental issues before granting of any quarrying lease is highly commendable and to be continued.



ANNEXURE-8



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TEST REPORT

Report No.	SARL/24/4302	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4302	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	08.10.2024	Test Completed on	19.10.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	63.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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TEST REPORT

Report No.	SARL/24/4303	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4303	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	08.10.2024	Test Completed on	19.10.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4304	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4304	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	08.10.2024	Test Completed on	19.10.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4305	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4305	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	09.10.2024	Test Completed on	19.10.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	67.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	32.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4306	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4306	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	09.10.2024	Test Completed on	19.10.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4307	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4307	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	09.10.2024	Test Completed on	19.10.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	58.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4308	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4308	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	10.10.2024	Test Completed on	19.10.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4309	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4309	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	10.10.2024	Test Completed on	19.10.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4310	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4310	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	11.10.2024	Test Completed on	19.10.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4311	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4311	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	11.10.2024	Test Completed on	19.10.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4312	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4312	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	12.10.2024	Test Completed on	19.10.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4313	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4313	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	12.10.2024	Test Completed on	19.10.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4314	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4314	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	13.10.2024	Test Completed on	19.10.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4315	Report Date.	19.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4315	Sample Received on	14.10.2024
Sample Collected by	LABORATORY	Test Commenced on	14.10.2024
Sample Collected on	13.10.2024	Test Completed on	19.10.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	44.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4362	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5- Karvazhi Villages
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4362	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	15.10.2024	Test Completed on	26.10.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4363	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6- Thukkachi Villages
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4363	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	15.10.2024	Test Completed on	26.10.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

S. Paul
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J. Gnanaprasam
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4364	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4364	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	16.10.2024	Test Completed on	26.10.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	46.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4365	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4365	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	16.10.2024	Test Completed on	26.10.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	44.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	21.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4366	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4366	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	17.10.2024	Test Completed on	26.10.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	61.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4367	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4367	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	17.10.2024	Test Completed on	26.10.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4368	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4368	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	18.10.2024	Test Completed on	26.10.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	64.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

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TEST REPORT

Report No.	SARL/24/4369	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4369	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	18.10.2024	Test Completed on	26.10.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4370	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4370	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	19.10.2024	Test Completed on	26.10.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	65.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	31.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4371	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4371	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	19.10.2024	Test Completed on	26.10.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	62.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul
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END OF THE REPORT

J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

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Phone Number +91 82208 36377 Email: - info@shrientanalytical.com
www.shrientanalytical.com

TEST REPORT

Report No.	SARL/24/4372	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4372	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	19.10.2024	Test Completed on	26.10.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. K.
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4373	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4373	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	20.10.2024	Test Completed on	26.10.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	59.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4374	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4374	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	20.10.2024	Test Completed on	26.10.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd


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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4375	Report Date.	26.10.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4375	Sample Received on	21.10.2024
Sample Collected by	LABORATORY	Test Commenced on	21.10.2024
Sample Collected on	20.10.2024	Test Completed on	26.10.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4398	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4398	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	22.10.2024	Test Completed on	02.11.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	58.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4399	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4399	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	22.10.2024	Test Completed on	02.11.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4400	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4400	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	22.10.2024	Test Completed on	02.11.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd


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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4401

Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4401	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	23.10.2024	Test Completed on	02.11.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4402	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4402	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	23.10.2024	Test Completed on	02.11.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4403	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4403	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	23.10.2024	Test Completed on	02.11.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4404	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4404	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	24.10.2024	Test Completed on	02.11.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	68.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	32.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4405	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4405	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	24.10.2024	Test Completed on	02.11.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4406	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4406	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	25.10.2024	Test Completed on	02.11.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	62.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. K.
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4407	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4407	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	25.10.2024	Test Completed on	02.11.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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END OF THE REPORT

J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4408	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4408	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	26.10.2024	Test Completed on	02.11.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4409	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4409	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	26.10.2024	Test Completed on	02.11.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	46.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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END OF THE REPORT

J. 4
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4410	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4410	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	27.10.2024	Test Completed on	02.11.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4411	Report Date.	02.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4411	Sample Received on	28.10.2024
Sample Collected by	LABORATORY	Test Commenced on	28.10.2024
Sample Collected on	27.10.2024	Test Completed on	02.11.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
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J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4362	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4362	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	29.10.2024	Test Completed on	09.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4363	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4363	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	29.10.2024	Test Completed on	09.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4364	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4364	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	30.10.2024	Test Completed on	09.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4365	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4365	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	30.10.2024	Test Completed on	09.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	45.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4366	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4366	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	31.10.2024	Test Completed on	09.11.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4367	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4367	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	31.10.2024	Test Completed on	09.11.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4368	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4368	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	01.11.2024	Test Completed on	09.11.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4369	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4369	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	01.11.2024	Test Completed on	09.11.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4370	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4370	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	02.11.2024	Test Completed on	09.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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END OF THE REPORT

J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4371	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4371	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	02.11.2024	Test Completed on	09.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	58.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4372	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4372	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	02.11.2024	Test Completed on	09.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. K
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4373

Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4373	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	03.11.2024	Test Completed on	09.11.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4374	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4374	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	03.11.2024	Test Completed on	09.11.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4375	Report Date.	09.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4375	Sample Received on	04.11.2024
Sample Collected by	LABORATORY	Test Commenced on	04.11.2024
Sample Collected on	03.11.2024	Test Completed on	09.11.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4398	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4398	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	05.11.2024	Test Completed on	16.11.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
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J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4399	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4399	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	05.11.2024	Test Completed on	16.11.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

S. Paul
Verified



END OF THE REPORT

J. Gnanaprasam
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / **GST No :** 33AAYCS7325R1ZA / **PAN No:** AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4400	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4400	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	05.11.2024	Test Completed on	16.11.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	60.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd


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END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4401	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4401	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	06.11.2024	Test Completed on	16.11.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
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TEST REPORT

Report No.	SARL/24/4402	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4402	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	06.11.2024	Test Completed on	16.11.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4403	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4403	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	06.11.2024	Test Completed on	16.11.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Pat
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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4404	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4404	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	07.11.2024	Test Completed on	16.11.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul
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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4405	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4405	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	07.11.2024	Test Completed on	16.11.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul
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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4406	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4406	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	08.11.2024	Test Completed on	16.11.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	58.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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END OF THE REPORT

J. K.
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4407	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4407	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	08.11.2024	Test Completed on	16.11.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4408	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4408	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	09.11.2024	Test Completed on	16.11.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4409	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4409	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	09.11.2024	Test Completed on	16.11.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul
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END OF THE REPORT

J. K.
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

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TEST REPORT

Report No.	SARL/24/4410	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4410	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	10.11.2024	Test Completed on	16.11.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4411	Report Date.	16.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4411	Sample Received on	11.11.2024
Sample Collected by	LABORATORY	Test Commenced on	11.11.2024
Sample Collected on	10.11.2024	Test Completed on	16.11.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4362	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4362	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	12.11.2024	Test Completed on	23.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4363	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4363	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	12.11.2024	Test Completed on	23.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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CIN : U74999TN2017PTC116807 / **GST No :** 33AAYCS7325R1ZA / **PAN No:** AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4364	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4364	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	13.11.2024	Test Completed on	23.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4365	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4365	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	13.11.2024	Test Completed on	23.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	45.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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END OF THE REPORT

J. K.
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4366	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4366	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	14.11.2024	Test Completed on	23.11.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	68.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	32.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4367	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4367	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	14.11.2024	Test Completed on	23.11.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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Phone Number +91 82208 36377 Email: - info@shrientanalytical.com
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TEST REPORT

Report No.	SARL/24/4368	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4368	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	15.11.2024	Test Completed on	23.11.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	65.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	31.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul
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END OF THE REPORT

J. K.
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4369	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4369	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	15.11.2024	Test Completed on	23.11.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4370	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4370	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	16.11.2024	Test Completed on	23.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	68.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	32.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4371	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4371	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	16.11.2024	Test Completed on	23.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4372	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4372	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	16.11.2024	Test Completed on	23.11.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4373	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4373	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	17.11.2024	Test Completed on	23.11.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	64.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
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J. GNANAPRAKASAM
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TEST REPORT

Report No.	SARL/24/4374	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4374	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	17.11.2024	Test Completed on	23.11.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4375	Report Date.	23.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4375	Sample Received on	18.11.2024
Sample Collected by	LABORATORY	Test Commenced on	18.11.2024
Sample Collected on	17.11.2024	Test Completed on	23.11.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4542	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4542	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	19.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4543	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4543	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	19.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4544	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4544	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	19.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4545	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4545	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	20.11.2024	Test Completed on	30.11.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4546	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4546	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	20.11.2024	Test Completed on	30.11.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	59.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4547

Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4547	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	21.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4548	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4548	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	21.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4549	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4549	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	21.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4550	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4550	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	21.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4551	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4551	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	22.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4552	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4552	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	22.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4553	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4553	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	23.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4554	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4554	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	23.11.2024	Test Completed on	30.11.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4555	Report Date.	30.11.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4555	Sample Received on	25.11.2024
Sample Collected by	LABORATORY	Test Commenced on	25.11.2024
Sample Collected on	24.11.2024	Test Completed on	30.11.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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J. K.
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4578	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4578	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	26.11.2024	Test Completed on	07.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	59.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4579	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4579	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	26.11.2024	Test Completed on	07.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. Gnanaprasam
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TEST REPORT

Report No.	SARL/24/4580	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4580	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	27.11.2024	Test Completed on	07.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4581	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4581	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	27.11.2024	Test Completed on	07.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4582	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4582	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	28.11.2024	Test Completed on	07.12.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	64.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	8.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4583	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4583	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	28.11.2024	Test Completed on	07.12.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4584	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4584	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	29.11.2024	Test Completed on	07.12.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	66.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	31.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4585	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4585	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	29.11.2024	Test Completed on	07.12.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4586	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4586	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	30.11.2024	Test Completed on	07.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4587	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4587	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	30.11.2024	Test Completed on	07.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	62.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	8.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

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TEST REPORT

Report No.	SARL/24/4588	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4588	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	30.11.2024	Test Completed on	07.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4589	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4589	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	01.12.2024	Test Completed on	07.12.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4590	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4590	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	01.12.2024	Test Completed on	07.12.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	58.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

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J. GNANAPRAKASAM
Technical Manager

Please Contact:

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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Phone Number +91 82208 36377 Email: - info@shrientanalytical.com
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TEST REPORT

Report No.	SARL/24/4591	Report Date.	07.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4591	Sample Received on	02.12.2024
Sample Collected by	LABORATORY	Test Commenced on	02.12.2024
Sample Collected on	01.12.2024	Test Completed on	07.12.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4614	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4614	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	03.12.2024	Test Completed on	14.12.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	66.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	32.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4615	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4615	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	03.12.2024	Test Completed on	14.12.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

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TEST REPORT

Report No.	SARL/24/4616	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4616	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	03.12.2024	Test Completed on	14.12.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4617	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4617	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	04.12.2024	Test Completed on	14.12.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	62.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4618	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4618	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	04.12.2024	Test Completed on	14.12.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

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TEST REPORT

Report No.	SARL/24/4619	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4619	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	04.12.2024	Test Completed on	14.12.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4620	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4620	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	05.12.2024	Test Completed on	14.12.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4621	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4621	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	05.12.2024	Test Completed on	14.12.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4622	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4622	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	06.12.2024	Test Completed on	14.12.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4623	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4623	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	06.12.2024	Test Completed on	14.12.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4624	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4624	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	07.12.2024	Test Completed on	14.12.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4625	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4625	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	07.12.2024	Test Completed on	14.12.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	46.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	4.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	6.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4626	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4626	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	08.12.2024	Test Completed on	14.12.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4627	Report Date.	14.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4627	Sample Received on	09.12.2024
Sample Collected by	LABORATORY	Test Commenced on	09.12.2024
Sample Collected on	08.12.2024	Test Completed on	14.12.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4650	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4650	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	10.12.2024	Test Completed on	21.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4651	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4651	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	10.12.2024	Test Completed on	21.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4652	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4652	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	11.12.2024	Test Completed on	21.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4653	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4653	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	11.12.2024	Test Completed on	21.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.6	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4654	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4654	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	12.12.2024	Test Completed on	21.12.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	63.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4655	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4655	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	12.12.2024	Test Completed on	21.12.2024
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4656	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4656	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	13.12.2024	Test Completed on	21.12.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	59.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

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TEST REPORT

Report No.	SARL/24/4657	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4657	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	13.12.2024	Test Completed on	21.12.2024
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	47.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	22.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. K.
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4658	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4658	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	14.12.2024	Test Completed on	21.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	69.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	33.3	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	8.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	12.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4659	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4659	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	14.12.2024	Test Completed on	21.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	64.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	31.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	8.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4660	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4660	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	14.12.2024	Test Completed on	21.12.2024
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	60.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	8.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4661	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4661	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	15.12.2024	Test Completed on	21.12.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	66.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	31.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4662	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4662	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	15.12.2024	Test Completed on	21.12.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	60.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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LAB SERVICES FOR:- Food, Water, Milk, Environment, Academic & Industrial Segment.

CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4663	Report Date.	21.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4663	Sample Received on	16.12.2024
Sample Collected by	LABORATORY	Test Commenced on	16.12.2024
Sample Collected on	15.12.2024	Test Completed on	21.12.2024
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	58.8	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd


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J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4686	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4686	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	17.12.2024	Test Completed on	29.12.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	61.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4687	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4687	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	17.12.2024	Test Completed on	29.12.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	53.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / **GST No :** 33AAYCS7325R1ZA / **PAN No:** AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4688	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4688	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	17.12.2024	Test Completed on	29.12.2024
Temperature	36°C	Relative Humidity	25%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	59.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.7	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4689	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4689	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	18.12.2024	Test Completed on	29.12.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	60.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.0	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4690	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4690	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	18.12.2024	Test Completed on	29.12.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	49.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4691	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4691	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	18.12.2024	Test Completed on	29.12.2024
Temperature	34°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	56.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd


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END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4692	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4692	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	19.12.2024	Test Completed on	29.12.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	62.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4693	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4693	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	19.12.2024	Test Completed on	29.12.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	58.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.5	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4694	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4694	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	20.12.2024	Test Completed on	29.12.2024
Temperature	36°C	Relative Humidity	27%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	65.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	8.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4695	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4695	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	20.12.2024	Test Completed on	29.12.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.7	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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TEST REPORT

Report No.	SARL/24/4696	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4696	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	21.12.2024	Test Completed on	29.12.2024
Temperature	36°C	Relative Humidity	26%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

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J. GNANAPRAKASAM
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TEST REPORT

Report No.	SARL/24/4697	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4697	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	21.12.2024	Test Completed on	29.12.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.6	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4698	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4698	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	22.12.2024	Test Completed on	29.12.2024
Temperature	36°C	Relative Humidity	28%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	51.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.4	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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TEST REPORT

Report No.	SARL/24/4699x	Report Date.	29.12.2024

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4699	Sample Received on	23.12.2024
Sample Collected by	LABORATORY	Test Commenced on	23.12.2024
Sample Collected on	22.12.2024	Test Completed on	29.12.2024
Temperature	35°C	Relative Humidity	32%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	48.9	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	23.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.2	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd



S. Paul
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J. K.
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J. GNANAPRAKASAM
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CIN : U74999TN2017PTC116807 / **GST No :** 33AAYCS7325R1ZA / **PAN No:** AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4252	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4752	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	24.12.2024	Test Completed on	11.01.2025
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4253	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4753	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	24.12.2024	Test Completed on	11.01.2025
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	54.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

S. Paul
Verified



END OF THE REPORT

J. Gnanaprakasam
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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CIN : U74999TN2017PTC116807 / **GST No :** 33AAYCS7325R1ZA / **PAN No:** AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4754	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A6-SANGANERI VILLAGE
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4754	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	25.12.2024	Test Completed on	11.01.2025
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	25.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.3	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul
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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4755	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A7-NAKKANERI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4755	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	25.12.2024	Test Completed on	11.01.2025
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	50.2	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	7.4	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul
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J. K.
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4756	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4756	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	26.12.2024	Test Completed on	11.01.2025
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	69.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	32.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	8.7	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	12.0	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4757	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4757	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	26.12.2024	Test Completed on	11.01.2025
Temperature	37°C	Relative Humidity	21%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	55.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	26.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	6.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	9.6	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
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TEST REPORT

Report No.	SARL/24/4758	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A4-ERUKKANDURAI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4758	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	27.12.2024	Test Completed on	11.01.2025
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	67.4	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.8	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.5	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4759	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A5-PONNARKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4759	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	27.12.2024	Test Completed on	11.01.2025
Temperature	37°C	Relative Humidity	23%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	52.0	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	24.7	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	5.9	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	8.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul
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END OF THE REPORT

J. 4
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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4760	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4760	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	28.12.2024	Test Completed on	11.01.2025
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	65.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	31.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

8 Paul
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J. 4
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J. GNANAPRAKASAM
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TEST REPORT

Report No.	SARL/24/4761	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4761	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	28.12.2024	Test Completed on	11.01.2025
Temperature	36°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	63.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	30.5	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	8.3	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	11.1	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

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Phone Number +91 82208 36377 Email: - info@shrientanalytical.com
www.shrientanalytical.com

TEST REPORT

Report No.	SARL/24/4762	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4762	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	28.12.2024	Test Completed on	11.01.2025
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	57.1	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	27.2	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.1	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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END OF THE REPORT

J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4763	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A1-PROPOSED MINE LEASE AREA
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4763	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	69.3	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	33.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	8.4	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	12.2	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL – Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4764	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A2-URALVAIMOZHI
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4764	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	60.5	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	29.1	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	7.8	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.8	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4765	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	AMBIENT AIR QUALITY
Sampling Procedure	IS – 5182 (Part – 14: 2000 & Part – V: Reaffirmed - 2003), CPCB Guide lines

Sample Location	A3-KUDANKULAM
Positioned height of Sampler	1.5 M above Ground Level

Customer Reference	By Mail	Sampling Duration	24 hrs
Sample Reference No	SARL/A/CHE-4765	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Temperature	35°C	Relative Humidity	30%
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results	*Limits
1	Particulate Matter less than 10micron size (PM ₁₀)	IS:5182: Part 23:2006	µg/m ³	60.6	100
2	Particulate Matter less than 2.5micron size (PM _{2.5})	IS 5182 (Part 24):2019	µg/m ³	28.9	60
3	Sulphur dioxide (SO ₂)	IS:5182: Part 02:2001	µg/m ³	8.0	80
4	Nitrogen Dioxide (NO ₂)	IS:5182: Part 06:2006	µg/m ³	10.9	80
5	Carbon monoxide (CO)	SARL/IOP/013 (Issue No:01, Issue Date – 01.03.2023)	mg/m ³	BDL (D.L – 1.1)	-

Remarks: Limits: *National Ambient air quality standards from CPCB. BDL- Below detectable limit. DL –Detectable limit

For Shrient Analytical and Research Labs Pvt. Ltd

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J. 4
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4780	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu		
Sample Description	NOISE LEVEL DATA		

Customer Reference	As per work order	Sampling Method	SARL/IOP/023
Sample Reference No	SARL/NO/CHE-4780	Date of Monitoring	28.12.2024/ 29.12.2024
Sample Collected by	LABORATORY		

Time in hrs	N1	N2	N3	N4	N5	N6	N7
06.00	42.8	41.9	41.2	43.7	41.8	44.0	40.1
07.00	44.7	45.8	43.8	49.5	44.7	47.8	42.6
08.00	43.8	50.7	42.2	51.0	41.2	48.9	40.9
09.00	46.7	50.2	45.8	50.3	44.4	50.8	44.6
10.00	48.8	50.8	47.9	52.9	46.3	47.9	46.7
11.00	56.8	47.9	50.7	49.5	48.8	46.8	49.5
12.00	54.7	49.8	51.9	48.4	46.7	49.0	50.7
13.00	53.8	47.1	48.2	50.1	50.8	50.7	47.0
14.00	56.0	51.0	45.8	50.7	47.8	48.1	44.6
15.00	51.8	49.3	43.7	50.4	48.7	45.9	42.5
16.00	51.2	49.8	47.8	51.7	47.4	47.7	46.6
17.00	48.8	46.8	46.8	51.5	49.8	46.9	45.6
18.00	45.7	45.8	44.8	43.8	46.8	48.8	43.6
19.00	43.8	44.3	45.1	46.2	45.8	46.7	43.9
20.00	42.1	44.9	42.9	41.9	41.7	44.8	41.7
21.00	41.0	42.2	41.2	43.4	42.8	42.8	40.1
22.00	41.9	43.8	41.8	40.7	41.2	43.8	40.6
23.00	40.2	41.2	40.1	43.7	43.8	42.2	38.9
24.00	40.9	39.3	39.2	41.2	42.2	44.8	37.9
01.00	39.0	40.1	40.7	38.9	40.1	42.7	39.5
02.00	39.7	41.2	39.4	40.7	40.8	41.2	38.2
03.00	41.9	38.8	40.0	38.1	39.1	43.2	38.8
04.00	40.1	39.2	39.7	39.3	41.8	41.8	38.5
05.00	41.8	40.7	39.3	40.1	39.8	43.9	38.1

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TEST REPORT

Report No.	SARL/24/4780

Report Date.	11.01.2025

	N1	N2	N3	N4	N5	N6	N7
DAY EQUIVALENT	51.1	48.3	46.7	49.5	46.9	47.8	45.5
NIGHT EQUIVALENT	40.8	40.8	40.1	40.7	41.3	43.1	38.9
DAY & NIGHT EQUIVALENT	49.5	46.9	45.4	48.0	45.7	46.8	44.2

Remarks:

LOCATIONS:

N1- MINE LEASE AREA

N2-URALVAIMOZHI

N3-KUDANKULAM

N4-ERUKKANDURAI

N5-PONNARKULAM

N6-SANGANERI VILLAGE

N7-NAKKANERI

For Shrient Analytical and Research Labs Pvt. Ltd


Verified



END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4773	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu		
Sample Description	SOIL		
Sample Mark	S1-PROPOSED MINE LEASE AREA		

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-4773	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.24
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	38.12
3	Dry matter content	IS 15106: 2002	%	98.21
4	Water Content	IS 15106: 2002	%	1.79
5	Organic Matter	IS 2720: Part 22: 1972	%	0.61
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	102
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	35.75
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	33.93
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	1.68
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	0.89
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	452
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	784
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	22.4
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	4.1

BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd


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Technical Manager

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TEST REPORT

Report No.	SARL/24/4774	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	SOIL
Sample Mark	S2-URALVAIMOZHI

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-4774	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.52
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	44.32
3	Dry matter content	IS 15106: 2002	%	96.58
4	Water Content	IS 15106: 2002	%	3.42
5	Organic Matter	IS 2720: Part 22: 1972	%	1.24
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	155
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	30.26
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	39.96
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	29.78
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	2.21
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	470
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	802
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	23.4
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.7

BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd


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J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4775	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	SOIL
Sample Mark	S3-KUDANKULAM

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-4775	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.68
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	76.59
3	Dry matter content	IS 15106: 2002	%	95.27
4	Water Content	IS 15106: 2002	%	4.73
5	Organic Matter	IS 2720: Part 22: 1972	%	0.78
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	94.5
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	21.32
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	52.65
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	26.03
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	1.55
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	358
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	652
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	20.4
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	4.4

BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd


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Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

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TEST REPORT

Report No.	SARL/24/4776	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	SOIL
Sample Mark	S4-ERUKKANDURAI

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-4776	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.36
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	42.58
3	Dry matter content	IS 15106: 2002	%	98.59
4	Water Content	IS 15106: 2002	%	1.41
5	Organic Matter	IS 2720: Part 22: 1972	%	0.72
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	120
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	31.65
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	36.98
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	31.37
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	1.82
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	472
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	798
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	21.8
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	4.1

BDL – Below Detectable limit (DL - Detectable limit).

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4777	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	SOIL
Sample Mark	S5-PONNARKULAM

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-4777	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.75
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	55.27
3	Dry matter content	IS 15106: 2002	%	97.85
4	Water Content	IS 15106: 2002	%	2.15
5	Organic Matter	IS 2720: Part 22: 1972	%	0.36
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	176
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	32.45
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	40.47
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	27.08
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	2.36
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	490
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	820
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	21.3
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	3.9

BDL – Below Detectable limit (DL - Detectable limit).

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Technical Manager

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TEST REPORT

Report No.	SARL/24/4778	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu		
Sample Description	SOIL		
Sample Mark	S6-SANGANERI		

Customer Reference	By Mail	Sampling Procedure	-
Sample Reference No	SARL/SO/CHE-4778	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

S. No.	Parameters	Protocol	Unit	Results
1	pH at 25 °C	IS 2720: Part 26: 1987	-	7.84
2	Electrical Conductivity	IS 14767: 2000	µmhos/cm	90.17
3	Dry matter content	IS 15106: 2002	%	96.76
4	Water Content	IS 15106: 2002	%	3.24
5	Organic Matter	IS 2720: Part 22: 1972	%	0.92
6	Nitrogen and Nitrogenous compounds	IS 14684: 1999	mg/kg	106
7	Soil Texture	Methods Manual - Soil testing in India - P. No-67: 2011	%	LOAM
8	<u>Grain Size Distribution</u>	Methods Manual - Soil testing in India - P. No-67: 2011	%	23.12
	i. Sand	Methods Manual - Soil testing in India - P. No-67: 2011	%	53.47
	ii. Silt	Methods Manual - Soil testing in India - P. No-67: 2011	%	23.41
	iii. Clay	Methods Manual - Soil testing in India - P. No-67: 2011	%	BDL (D.L.0.02)
9	Phosphorus as P	IS 10158: 1982	mg/kg	1.78
10	Sodium as Na	USEPA 3050 B: 1996	mg/kg	376
11	Potassium as K	USEPA 3050 B: 1996	mg/kg	672
12	Total soluble sulphates	IS 2720: Part 27: 1977	%	BDL (D.L.0.02)
13	Porosity	SARL/SOP/SO/001 (Issue No:01, Issue Date – 01.03.2023): 2023	%	25.5
14	Water holding capacity	Methods Manual - Soil testing in India - P. No-76: 2011	Inches/foot	4.3

BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd

S. Paul
Verified



J. K.
Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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TEST REPORT

Report No.	SARL/24/4766	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	WATER
Sample Mark	W1-PROPOSED MINE LEASE AREA

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-4766	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	8.28	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	690.4	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	415	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	117	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	42.6	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	2.4	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	106	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	11.5	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	272	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	125	1000



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TEST REPORT

Report No.	SARL/24/4766

Report Date.	11.01.2025

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissibl e
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24th Edition 4500 SO ₄ ²⁻ E: 2023	mg/L	35.6	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.11	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	2.55	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.32	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: *Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd


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END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4768

Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	WATER
Sample Mark	W2-URALVAIMOZHI

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-4768	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.55	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	976.4	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	580	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	321	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	70.6	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	34.8	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	176	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	145	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	286	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	76.3	1000



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TEST REPORT

Report No.	SARL/24/4768

Report Date.	11.01.2025

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissible
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24th Edition 4500 SO ₄ ²⁻ E: 2023	mg/L	183	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.08	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	7.13	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.53	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: *Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

X

For Shrient Analytical and Research Labs Pvt. Ltd


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END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4769	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	WATER
Sample Mark	W3-KUDANKULAM

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-4769	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.53	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	783.1	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	472	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	274	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	59.2	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	30.2	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	148	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	126	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	164	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	152	1000



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TEST REPORT

Report No.	SARL/24/4769

Report Date.	11.01.2025

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissible
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24th Edition 4500 SO ₄ ²⁻ E: 2023	mg/L	68.9	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.04	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	2.35	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.42	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: *Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

X

For Shrient Analytical and Research Labs Pvt. Ltd


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END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

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TEST REPORT

Report No.	SARL/24/4770

Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	WATER
Sample Mark	W4-ERUKKANDURAI

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-4770	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.91	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	865.3	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	520	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	234	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	65.6	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	16.8	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	164	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	70	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	153	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	147	1000



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416/15, Dhargas Road, West Tambaram, Chennai- 600045

Phone Number +91 82208 36377 Email: - info@shrientanalytical.com

www.shrientanalytical.com

TEST REPORT

Report No.	SARL/24/4770

Report Date.	11.01.2025

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissibl e
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO42-)	APHA 24th Edition 4500 SO42- E: 2023	mg/L	138	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.04	0.3
16	Nitrate (as NO3)	IS 3025 (Part 34): 1988	mg/L	2.56	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.46	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: *Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

For Shrient Analytical and Research Labs Pvt. Ltd


Verified



END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4771

Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	WATER
Sample Mark	W5-PONNARKULAM

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-4771	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.7	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	2006	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	1204	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	476	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	137.6	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	31.8	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	344	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	132	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	241	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	478	1000



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TEST REPORT

Report No.	SARL/24/4771

Report Date.	11.01.2025

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissible
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24th Edition 4500 SO ₄ ²⁻ E: 2023	mg/L	323	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.08	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	4.34	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.58	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: *Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

X

For Shrient Analytical and Research Labs Pvt. Ltd


Verified



END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4772

Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	WATER
Sample Mark	W6-SANGANERI

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-4772	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.22	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	1005	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	606	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	387	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	109	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	27.6	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	272	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	115	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	360	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	165	1000



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TEST REPORT

Report No.	SARL/24/4772

Report Date.	11.01.2025

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissible
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24th Edition 4500 SO ₄ ²⁻ E: 2023	mg/L	35.2	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.06	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	1.97	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.35	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: *Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

X

For Shrient Analytical and Research Labs Pvt. Ltd


Verified



END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

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For any Technical Issues & Complaints: vimalnath@shrientanalytical.com

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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



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TEST REPORT

Report No.	SARL/24/4773	Report Date.	11.01.2025

Customer Name & Address	Rough Stone and gravel Quarry of Thiru.A.Arunmuthukumar, extent of 4.87.80Ha, f Irukkandurai Part-II Village, Radhapuram Taluk, Tirunelveli District, Tamil Nadu
Sample Description	WATER
Sample Mark	W7-NAKKANERI

Customer Reference	By Mail	Sampling Procedure	IS 17614: Part 14: 2021
Sample Reference No	SARL/W/CHE-4773	Sample Received on	30.12.2024
Sample Collected by	LABORATORY	Test Commenced on	30.12.2024
Sample Collected on	29.12.2024	Test Completed on	11.01.2025
Sample Condition	Fit for Analysis		

Sl. No.	Parameters	Protocol	Unit	Result	*Limits
					Permissible
A.	Physical parameters				
1	Odour	IS 3025 (Part 5): 2018	-	Agreeable	Agreeable
2	Turbidity	APHA 24 th Edition 2130 B: 2023	NTU	<1.0	5.0
3	pH at 25 °C	APHA 24 th Edition 4500 – H+ B: 2023	-	7.01	6.50-8.50
4	Electrical Conductivity	APHA 24 th Edition 2510 B: 2023	(µS/cm)	858.9	-
B.	Chemical parameters				
5	Total Dissolved Solids	APHA 24th Edition 2540-C: 2023	mg/L	560	2000
6	Total hardness (as CaCO3)	APHA 24th Edition 2340 C: 2023	mg/L	439	600
7	Calcium (as Ca)	IS 3025 (Part 40): 1991	mg/L	83.1	200
8	Magnesium (as Mg)	IS 3025 (Part 46): 1994	mg/L	55.5	100
9	Calcium Hardness (as CaCO3)	APHA 24th Edition 3500 Ca B: 2023	mg/L	208	-
10	Magnesium Hardness (as CaCO3)	APHA 24th Edition 3500 Mg B: 2023	mg/L	231	-
11	Total alkalinity (as CaCO3)	APHA 24th Edition 2320 B: 2023	mg/L	314	600
12	Chloride (as Cl)	APHA 24th Edition 4500 Cl- B: 2023	mg/L	56.7	1000



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TEST REPORT

Report No.	SARL/24/4773

Report Date.	11.01.2025

Sl. No	Parameters	Protocol	Unit	Result	*Limits
					Permissible
13	Free Residual chlorine	APHA 24th Edition 4500 Cl- B: 2023	mg/L	BDL (D.L - 0.2)	1.0
14	Sulphate as (SO ₄ ²⁻)	APHA 24th Edition 4500 SO ₄ ²⁻ E: 2023	mg/L	173	400
15	Iron (as Fe)	APHA 24th Edition 3500 Fe B: 2023	mg/L	0.14	0.3
16	Nitrate (as NO ₃)	IS 3025 (Part 34): 1988	mg/L	2.25	45
17	Fluoride (as F)	APHA 24th Edition 4500 F- D: 2023	mg/L	0.66	1.5
18	Manganese (as Mn)	APHA 24th Edition 3500 Mn B: 2023	mg/L	BDL (D.L - 0.05)	0.3

Remarks: *Drinking Water Specifications as per IS – 10500:2012. BDL – Below Detectable limit (DL - Detectable limit).

X

For Shrient Analytical and Research Labs Pvt. Ltd


Verified



END OF THE REPORT


Authorized Signatory
J. GNANAPRAKASAM
Technical Manager

Please Contact:

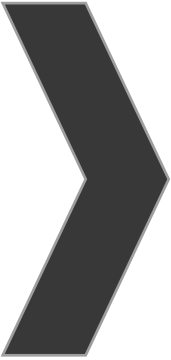
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CIN : U74999TN2017PTC116807 / GST No : 33AAYCS7325R1ZA / PAN No: AAYCS7325R



ANNEXURE-9



National Accreditation Board for
Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

**SHRIENT ANALYTICAL & RESEARCH LABS PRIVATE
LIMITED**

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

**"General Requirements for the Competence of Testing &
Calibration Laboratories"**

for its facilities at

416/15, DHARGAS ROAD, PERUNGALATHUR, WEST TAMBARAM, CHENNAI, KANCHIPURAM, TAMIL
NADU, INDIA

in the field of

TESTING

Certificate Number: TC-12339

Issue Date: 30/09/2023

Valid Until: 29/09/2025

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued
satisfactory compliance to the above standard & the relevant requirements of NABL.

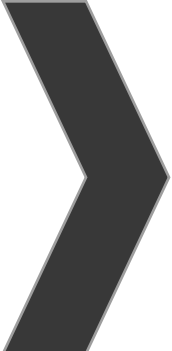
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: SHRIENT ANALYTICAL AND RESEARCH LABS PRIVATE LIMITED

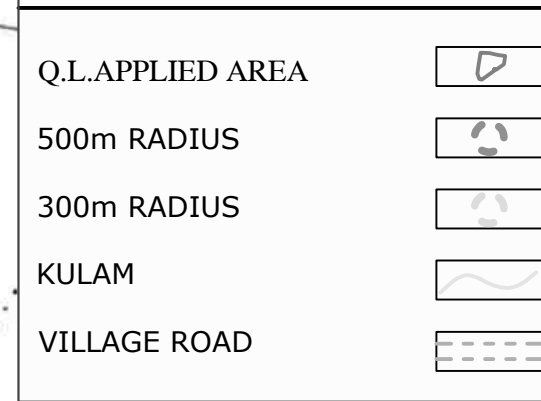
Signed for and on behalf of NABL

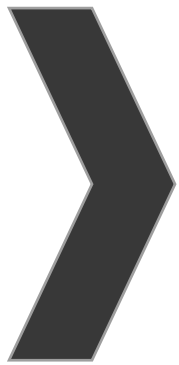


N. Venkateswaran
Chief Executive Officer



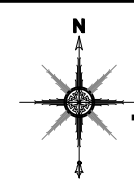
ANNEXURE-10





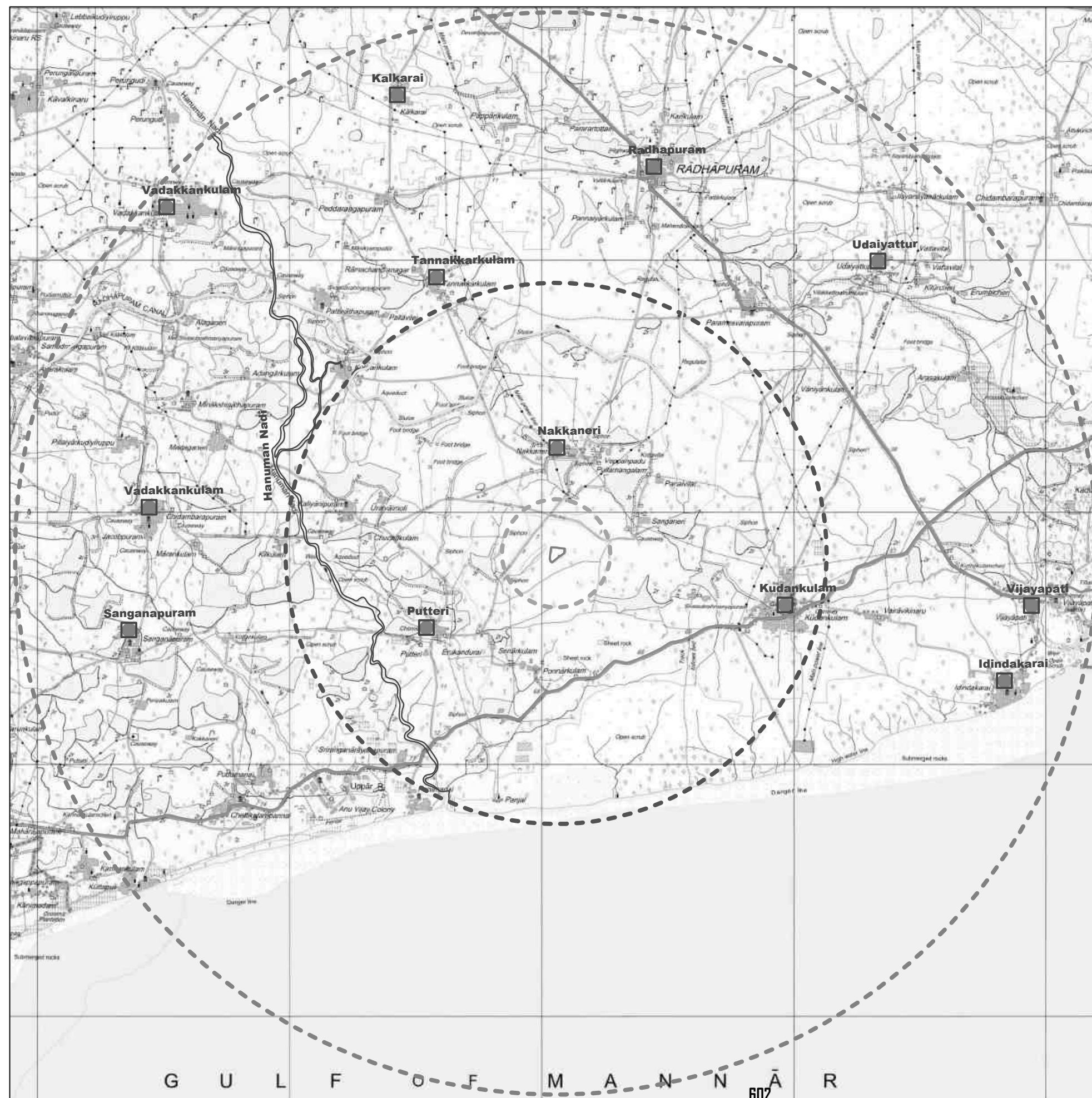
ANNEXURE-11

PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.A.ARUNMUTHUKUMAR OVER AN EXTENT 4.87.80HA LOCATED AT S.F.NO.s. 291/2A2, 292/1C2, & 293/3B OF IRUKKANDURAI PART-II VILLAGE, RADHAPURAM TALUK, TIRUNELVELI DISTRICT, TAMIL NADU STATE



INDEX

TOPO SHEET NO: 58 H /11, 12 & 16



CONVENTIONAL SYMBOLS	
Express highway: with toll; with bridge; with distance stone	
Roads: metalled; according to importance	
Roads: double cartage-way: according to importance	
Unmetalled road: Cart-track: Peck-track with pees: Foot-path	
Streams: with track in bed; undeformed: Canal	
Dams: masonry or rock-fall; earthwork: Well	
River: dry with water channel; with island & rocks: Tidal river	
Submerged rocks: Shoal: Swamp: Roads	
Wells: lined; unfired: Tube-well: Spring: Tanks: perennial; dry	
Embankments: road or rail: tank: Broken ground	
Railways: broad gauge: double; single with station; under constr.	
Railways: other gauges: double; single with distance stone; do.	
Mineral line or tramway: Kin. Cutting with tunnel	
Contours with sub-features: Rocky slopes: Cliffs	
Sand features: (1) flat: (2) sand-hill (permanent): (3) dune (shifting)	
Towns or Villages: inhabited; deserted: Fort	
Hills: permanent; temporary: Tower: Antiquities	
Temple: Chhatra: Church: Mosque: Idgah: Tomb: Graves	
Lighthouse: Lightship: Buoy: lighted; unlighted: Anchorage	
Mine: Yarn on trees: Grass: Scrub	
Palms: palmyra; other: Plantain: Conifer: Bamboo: Other trees	
Areas: cultivated; wooded: Surveyed tree	
Boundary: international	
state: demarcated; undemarcated	
district: subdivision; taluk or Muz. Forest	
Boundary pillars: surveyed; unlocated	
Height: triangulated: station; point; approximate	
Benchmark: geodetic; tertiary; canal	
Post office: Telegraph office: Overhead tank	
Rest house or inspection bungalow: Circuit house: Police station	
Camping ground: Forest: reserved; protected	
Spaced names: administrative: locality or tribal	
Hospital: Dispensary: Veterinary: Hospital: Dispensary	
Airport: Helipad: Transit site	
Power line: with pylons surveyed; with poles unsurveyed	

Q.L.APPLIED AREA



10km RADIUS



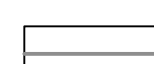
5.0km RADIUS



1.0km RADIUS



STATE HIGHWAY



HABITATION

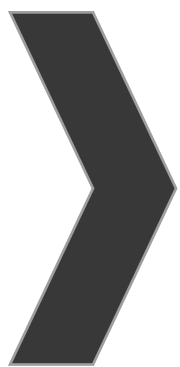


RIVER



CANAL





ANNEXURE-12

2. My proposal for Corporate Environment Responsibility (CER) activities is given as follows;

PROPOSED CER ACTIVITIES	PROJECT COST (INR)	CER COST 2.0% OF PROJECT COST (INR)
To implement various social development activities for the nearby Government school	1,23,46,800/-	2,46,936/-
Revised CER budget allotted	5,00,000/-	

I assure you that, I will complete the above proposed Corporate Environment Responsibility (CER) activities before the commencement of the quarrying operations.

3. Details of quarries located within a 500m radius from the applied mine lease area:

S.No	Name of the Quarry Owner	S.F. Nos, Village & Extent (Ha)	Lease Period	Remarks
a. Abandoned Quarry				
Nil				
b. Expired Quarry				
1	N.Esakkiappan, S/o.Narayanan, Vettarakathan Kovil Street Ambalavanapuram, Palavoor Village, Radhapuram Taluk, Tirunelveli District	Irukkandurai Part-II Village S.F.No: 364/1A (P) & 366/1 (P) 1.56.0 Ha	Proceedings No.M1/48377/2015 dated 19.02.2018 for a period of 5 years, 28.02.2018 to 27.02.2023	Expired
c. Existing Quarry				
1.	K.Bagavathiyappan, S/o. Kumaresan, 8/42, Radhapuram Road, Kavalkinaru, Perungudi Village, Tirunelveli District	Irukkandurai Part-II Village S.F.No: 297/2 3.65.5 Ha	Proceedings No.M1/10777/2018 dated 31.10.2020 for a period of 5 years, 07.11.2020 to 06.11.2025	Existing



2	Tvl. S.A.V Manilal Blue Metals, Prop.M.Sudeshlal, No.10-166, Vadakku Bazar Street, Perungudi Village, Tirunelveli District	Irukkandurai Part-II Village S.F.No: 292/1A (P) & 295/2B (P) 1.24.0 Ha	Proceedings No.M2/25155/2019 dated 26.02.2021 for a period of 5 years, 26.02.2021 to 25.02.2026	Existing
3	Tvl. S.A.V Manilal Blue Metals, Prop.A.Ajeshlal, No.12-725-B7, Kavalkinaru Road, Vadakkankulam, Perungudi Village, Tirunelveli District	Irukkandurai Part-II Village S.F.No: 155/2 (P) 1.24.0 Ha	Proceedings No.M1/40129/2018 dated 26.02.2021 for a period of 5 years, 26.02.2021 to 25.02.2026	Existing
d. Proposed Quarry				
1	A.Arunmuthukumar S/o.Arasappan, No.133/1, Yathavar Street, Pattarpuram, Eraippuvari, Nanguneri Taluk, Tirunelveli District. Pin code-638001	Irukkandurai Part-II Village S.F.No.291/2A2, 292/1C2 and 293/3B, 4.87.80 Ha	-	Proposed

The total lease within the 500m radius (Proposed + Existing) (1no + 3nos) works out to 11.01.30ha including this lease area.

4. There will be no hindrance/disturbance due to the proposed quarrying activities to the people living nearby my proposed quarry site.
5. There are no approved habitations within a 300m radius from the periphery of my proposed quarry lease.
6. I assure you that the greenbelt will be developed and maintained before commencing the quarrying operations as proposed in the EC application.
7. I assure you that the required life insurance policy for the employees engaged in the quarrying operations will be taken without fail.



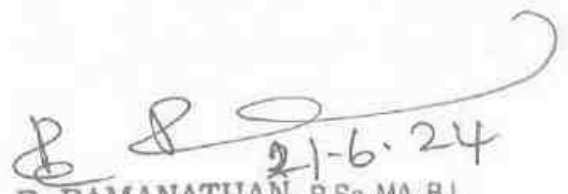
8. The existing main road connecting the quarry road will be maintained in good condition and it will be utilized for the mineral transportation.
9. I assure you that I will not engage any child for labor in the quarrying operations and I am aware that engaging child labor is punishable under the law.
10. Personnel Protective Equipment (PPE) will be provided to all the employees engaged in the quarrying operations.
11. No permanent structures, such as temples, etc., are located within a 300 meter radius of the periphery of our quarry.
12. I will erect the wire fence with barbed wires all around the periphery of the quarry lease before the commencement of mining activities.
13. The mining operations will be carried out in a systematic and scientific manner by employing a qualified statutory person as per the requirement of the Mines Act, Mines Rules, and other Guidelines issued by Govt.
14. I will inform DGMS before the commencement of mining activities.
15. To the best of our knowledge, I ensure to do the social and environmental commitments as mentioned in the mining plan.

Notary Sign & Seal



Lessee Sign & Sea

A.Arunmuthukumar


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ADVOCATE & NOTARY
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