

**DRAFT EXECUTIVE SUMMARY FOR
PROPOSED ROUGH STONE AND GRAVEL QUARRY
CATEGORY – B1 – CLUSTER (CLUSTER AREA – 23.44.80Ha)**

(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 : 5,57,310m ³ GRAVEL : 47,816m ³ PEAK PRODUCTION : 1,11,990m ³
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

THIRU.A.ARUNMUTHUKUMAR,
S/O.ARASAPPAN,
NO.133/1, YATHAVAR STREET, PATTARPURAM,
ERAIPPUVARI,
NANGUNERI TALUK,
TIRUNELVELI DISTRICT. PIN CODE-627 108.

ENVIRONMENTAL CONSULTANT	LABORATORY
M/s. GLOBAL MINING SOLUTIONS (NABET Accredited & ISO 9001 Certified Consultant) 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 (NABL Accredited Testing Laboratory) Valid up to: 04.01.2026 #416/15, Dhargas Road, Perungalathur, West Tambaram, Chennai, Tamil Nadu, India.

EXECUTIVE SUMMARY

OVER ALL JUSTIFICATION FOR IMPLEMENTATION OF THE PROJECT

INTRODUCTION

Thiru.A.Arunmuthukumar has obtained Precise Area Communication Letter from District Collector, Department of Geology and Mining, Tirunelveli, vide Rc.No.M2/547/2023, Dated: 17.11.2023 to quarry out 5,57,310 m³ of Rough Stone and 47,816 m³ of Gravel located in 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 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 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

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.

LOCATION

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. 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)

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°.

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.

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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.

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.

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)			

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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

EXPLANATION OF HOW ADVERSE EFFECTS HAVE BEEN MITIGATED
AIR ENVIRONMENT

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

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

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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.

WATER ENVIRONMENT

All the values were found to be within permissible limits

Results of Ground Water sampling Analysis in 6 locations

**IS:10500:
2012**

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	GW1	GW2	GW3	GW4	GW5	GW6	GW7	Desir able	Perm issibl e
Odour	AGREEAB LE	AGREEAB LE	AGREEA BLE	AGREEA BLE	AGREEA BLE	AGREE ABLE	AGREEA BLE	Agree able	Agree able
Turbidity	<1	<1	<1	<1	<1.0	<1	<1	Agree able	Agree able
pH at 25 °C	8.28	7.55	7.53	7.91	7.7	7.22	7.01	6.5 - 8.5	No Relax ation
Electrical Conductivit y	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 CaCO3	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 CaCO3	106	176	148	164	344	272	208	75	200
Magnesium as CaCO3	11.5	145	126	70	132	115	231		
Total alkalinity as CaCO3	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 SO42-	35.6	183	68.9	138	323	35.2	173	45	No Relax ation
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 Relax ation
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 Specif ied	Not Specif ied

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NOISE ENVIRONMENT

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

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		

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							
	ii. Silt							
8	iii. Clay	%	35.44	62.18	60.09	55.59	40.32	61.76
9		%	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

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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 Cabacity	Inches /foot	44	38	40	42	39	44

BIOLOGICAL ENVIRONMENT

FLORA

For measuring the extent of flora present in the study area, the area is divided in to 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.

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:

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

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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

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

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.

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 27m 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

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.

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.

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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

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.

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.

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.

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

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.

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.

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.

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.



ANNEXURE-1



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 Tamil Nadu 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.Aravamuthu 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 Dir. (i/c) Assistant 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 Mineral 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.

17/11/24

Copy to:

The Chairman
State Level Environmental
Impact Assessment Authority,
Chennai.



ANNEXURE-2

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 safety 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.

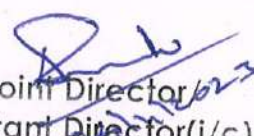
5. In exercise of the powers vested under sub rule (2) and (5) of Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959, I hereby approve the mining plan for a period of five years subject to the following conditions:-

- 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.



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 - 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.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. The Mining Plan submitted by the lessee, Thiru.A.Arunmuthukumar, S/o.Arasamuthu 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.Arasamuthu 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.Esakkiappan, 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