DRAFT EXECUTIVE SUMMARY FOR
PROPOSED ROUGH STONE AND GRAVEL QUARRY
CATEGORY – B1

(Public Hearing Upgraded after Terms of Reference (ToR) as per the provisions of EIA Notification 2006 & amendments thereof)

ToR Identification No. TO24B0108TN5922518N, dated 29.07.2024

PROPOSED QUARRY LEASE DETAILS	
SURVEY NO	22/1
VILLAGE	EZHACHERI
TALUK	VEMBAKKAM
DISTRICT	TIRUVANNAMALAI
EXTENT	0.94.5 HA
PROPOSED PRODUCTION QUANTITY FOR FIVE YEARS	ROUGH STONE : 66,690 m^3 GRAVEL : 13,322 m^3
LAND	PATTA LAND

(Sector No. 1(a) Sector No.1 as per NABET)
Category of the Project: B1 Cluster Mining, Total Cluster Area – 13.15.0 Ha
Baseline Monitoring Period – March 2024 to May 2024

APPLICANT

THIRU.P.SANKAR,

S/O. PONNAPPAN,

NO.1/63, PILLAIYAR KOIL STREET, ERUMAIYUR,
KANCHIPURAM DISTRICT

ORGANIZATION

M/s. GLOBAL MINING SOLUTIONS

(NABET ACCREDITED & ISO 9001 CERTIFIED CONSULTANT)

PLOT NO. 6, SF NO. 13/2, A2, VS CITY, RC CHETTYPATTY,
KOTTAMETTUPATTY, OMALUR, SALEM, TAMIL NADU – 636 455

NABET ACCREDITATION NO – NABET/EIA/2326/IA 0110

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OCTOBER - 2024

EXECUTIVE SUMMARY

OVER ALL JUSTIFICATION FOR IMPLEMENTATION OF THE PROJECT

INTRODUCTION

Thiru.P.Sankar has obtained Precise Area Communication Letter from Joint Director (AC), Department of Geology and Mining, Tiruvannamalai to quarry out 66,690 m^3 of Rough Stone and 13,322 m^3 from an extent of 0.94.5 Ha located in S.F.No. 22/1 over an extent of 0.94.5 in Ezhacheri Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments the proposed "Rough Stone and Gravel Quarry" of Thiru.P.Sankar 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. TO24B0108TN5922518N, dated 29.07.2024. This report has been prepared in line with the approved TOR for production of maximum excavation of 66,690 m^3 of Rough Stone and 13,322 m^3 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	0.94.5 Ha
6.	Proposed depth of Mining	27m BGL
7.	Method of mining	Opencast -mechanized
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years
10.	Proposed production quantity for five years	Rough Stone: 66,690 m^3 Gravel: 13,322 m^3

The Lessee. Thiru.P.Sankar 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

This project site is located in Ezhacheri Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu State with Latitude 12°43'03.24"N to 12°43'06.61"N and Longitude: 79°43'13.56"E to 79°43'17.48"E. with Survey of India Topo Sheet No. 57 P/10. 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. March 2024 to May 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 $N50^0E$ – $S50^0W$ with dipping towards $SE70^0$.

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 27 m below ground level. The geological method is estimated to be 2,36,225 m^3 of Rough Stone and 18,898 m^3 Gravel. The mineable reserve calculated by deducting 7.5 m safety distance and bench loss. The mineable reserves is 66,690 m^3 of Rough Stone and 13,322m^3 of Gravel which will be recovered at the rate of 100% recovery upto a depth of 27m 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.

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 years
6	Life	Rough Stone - 66,690 m^3 Gravel - 13,322 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 6 Nos (1+5).
9	Ultimate pit depth	27 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 4.5 KLD which will be procured from the outside agencies. 1.0 KLD drinking water requirement, green belt development is 2.5 KLD and dust suppression is 1.0 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	Permanent employees – 10, temporary employees – 12
4	Financial requirement	The total project cost as per PFR will be INR 199.23 lakhs including Operational cost, Fixed Asset cost and EMP cost
5	Funds for Socio economic development	INR 5 Lakhs is allocated. In addition, any demand raised by people during public hearing will also be met.

DESCRIPTION OF LEASE AREA

<table>
<tr><th colspan="4">Description of the lease area</th></tr>
<tr><th>S.No.</th><th>Areas</th><th colspan="2">Distance from project site</th></tr>
<tr><td>1</td><td>Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value</td><td colspan="2">Nil within 15km radius</td></tr>
<tr><td>2</td><td colspan="3">Areas which are important or sensitive for ecological reasons</td></tr>
<tr><td>A</td><td>Wetlands, water courses or other water bodies,</td><td colspan="2"><table>
<tr><th>Water bodies</th><th>Distance</th><th>Direction</th></tr>
<tr><td>Odai</td><td>620 m</td><td>SW</td></tr>
<tr><td>Odai</td><td>850 m</td><td>SW</td></tr>
<tr><td>Lake</td><td>1.30km</td><td>S</td></tr>
<tr><td>Sithalampakkam Tank</td><td>2.29km</td><td>SE</td></tr>
<tr><td>Cheyyar River</td><td>2.95km</td><td>SE</td></tr>
<tr><td>Palar River Tributary</td><td>4.27km</td><td>N</td></tr>
<tr><td>Mangal Lake</td><td>4.67km</td><td>W</td></tr>
<tr><td>Kannikulam Lake</td><td>5.50km</td><td>S</td></tr>
<tr><td>Adavapakkam Lake</td><td>5.95km</td><td>SE</td></tr>
<tr><td>Hanumanthandalam River Dam Point</td><td>6.85km</td><td>SW</td></tr>
<tr><td>Mamandur Lake</td><td>7.46km</td><td>NW</td></tr>
<tr><td>Palar River</td><td>7.70km</td><td>NE</td></tr>
<tr><td>Marudham Lake</td><td>7.77km</td><td>SE</td></tr>
<tr><td>Nathakollai Lake</td><td>8.61km</td><td>NW</td></tr>
<tr><td>Elangar Lake</td><td>9.03km</td><td>S</td></tr>
<tr><td>Utthiramerur Lake</td><td>9.14km</td><td>S</td></tr>
<tr><td>Villivalam Eri</td><td>9.40km</td><td>NE</td></tr>
</table></td></tr>
<tr><td>B</td><td>Coastal zone, biospheres,</td><td colspan="2">Nil within 10km radius</td></tr>
<tr><td>C</td><td>Mountains, forests</td><td colspan="2">Marudham R.F – 7.5km (SE)
Karikili Birds Sanctuary (17.85 km - SE) & Vedanthangal Birds Sanctuary (23.78 km - SE)</td></tr>
<tr><td>3</td><td>Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, overwintering, migration</td><td colspan="2">Nil within 15km radius</td></tr>
</table>

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	Bagavandapuram (1.5 km, NW)
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Bagavandapuram (1.5 km, NW)
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 March to May 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	12°43'03.24"N 79°43'13.56"E
2	AAQ 2	Arasanipalai	0.71 km, SE	12°42'31.88"N 79°43'47.64"E
3	AAQ 3	Chithalapakkam	1.17 km, E	12°43'2.37"N 79°44'11.3"E
4	AAQ 4	Ezhacheri	1.27 Km, NW	12°43'10.28"N 79°42'46.22"E
5	AAQ 5	Pavoor	2.36 Km, SW	12°42'3.96"N 79°42'20.85"E
6	AAQ6	Punnai	1.98 Km, S	12°41'45.35"N 79°43'10.68"E

Station ID	Min	Max	Avg.
Particulate matter PM_{10} - (µg/m^3)			
AAQ-1	47.4	69.6	58.50
AAQ-2	39.6	55.6	47.60
AAQ-3	48.7	56.7	52.70
AAQ-4	46.1	58.2	52.15
AAQ-5	44.5	53.7	49.10
AAQ-6	42.5	56.3	49.40
CPCB NAAQS 2009 for PM_{10} - 100 µg/m^3			
Particulate matter $PM_{-2.5}$ (µg/m^3)			
AAQ-1	23.2	34.0	31.30
AAQ-2	18.9	27.8	23.35
AAQ-3	22.9	26.3	24.60
AAQ-4	22.1	27.9	25.00
AAQ-5	21.3	25.8	23.55
AAQ-6	19.3	25.7	22.50
CPCB NAAQS 2009 for $PM_{2.5}$ - 60 µg/m^3			
Sulphur Di-oxide as SO_2 (µg/m^3)			
AAQ-1	3.5	5.2	5.95
AAQ-2	3.1	5.2	4.15
AAQ-3	3.5	5.4	4.45
AAQ-4	3.0	5.0	4.00
AAQ-5	3.1	5.4	4.25
AAQ-6	3.1	4.5	3.80
CPCB NAAQS 2009 for SO_2 – 80 µg/m^3			
Oxide of Nitrogen as NO_2 (µg/m^3)			
AAQ-1	6.9	9.7	10.60
AAQ-2	5.7	9.3	7.50
AAQ-3	6.7	9.3	8.00
AAQ-4	6.3	8.8	7.55
AAQ-5	6.9	9.2	8.05
AAQ-6	6.8	8.9	7.85
CPCB NAAQS 2009 for NO_2 – 80 µg/m^3			

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

WATER ENVIRONMENT

Results of Ground Water sampling Analysis in 6 locations							IS:10500: 2012	
	W1	W2	W3	W4	W5	W6	Desirable	Permissible
Odour	AGREEABLE	AGREEABLE	AGREEABLE	AGREEABLE	Agreeable	AGREEABLE	Agreeable	Agreeable
Turbidity	<1	<1	<1	<1	<1	<1	Agreeable	Agreeable
pH at 25 °C	7.92	7.63	6.98	7.82	7.98	7.56	6.5 - 8.5	No Relaxation
Electrical Conductivity	1225.0	788.2	949.8	681.2	1121	598.3	1	5
Total Dissolved Solids	736	472	570	408	675	358	500	2000
Total hardness as CaCO3	281	202	321	162	408	143	1	15
Calcium as Ca	71.6	39.6	95.0	36.4	127	28.5	200	600
Magnesium as Mg	24.5	24.7	20.0	17.1	21.9	17.1	200	600
Calcium as CaCO3	179	99.0	238	91.1	317	71.3	75	200
Magnesium as CaCO3	102	103	83.2	71.3	91.1	71.3		
Total alkalinity as CaCO3	180	214	256	190	343	174		
Chloride as Cl-	225	136	162	124	175	98.6	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)	30	100
Sulphates as SO42-	164	72.6	96.7	65.5	121	82.2	45	No Relaxation
Iron as Fe	0.06	0.05	0.03	0.02	0.11	0.03	200	400
Nitrate as NO3	2.79	2.75	1.65	1.32	2.75	3.64	1	No Relaxation
Fluoride as F	0.42	0.46	0.46	0.46	0.46	0.46	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)	Not Specified	Not Specified

All the values were found to be within permissible limits

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	Proposed Mine Site	51.7	41.5	75	70
2	Arasanipalai	44.6	41.4		
3	Chithalapakkam	46.4	42.7		
4	Ezacheri	45.8	39.9		
5	Pavoor	50.9	40.2		
6	Punnai	51.1	41.2		

SOIL ENVIRONMENT

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

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 Nitregenous 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 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 (%)	2nd Level Classification	Area in (sq.km)	Percentage (%)
1	Built-up or habitation	40.19	12.44	Residential	35.19	10.89
				Commercial/Industrial	5.0	1.55
2	Agriculture	184.1	57.00	Crop/fallow land	184.1	57.00
3	Water bodies	82.2	25.45	Reservoir/Lake /Pond	59.97	18.57
				River/Stram	22.23	6.88
4	Waste Land	8.63	2.67	Open without scrub	2.43	0.75
				Open with scrub	6.20	1.92
5	Mines	7.01	2.17	Mines	7.01	2.17
6	Forest	0.87	0.27	Forest	0.87	0.27
Total		**323**	**100**	**Total**	**323**	**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 5 villages in the study area namely Arasanipalai, Chithalapakkam, Ezhacheri, Pavoor and Punnai 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 centers and Tiruvannamalai. The following observations were made, 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 Kanchipuram which is about 8.5 km from the lease area. Major schools with higher secondary and senior secondary schools are located in Vembakkam. The major Vembakkam Union located in the area is Vembakkam. Facilities like petrol pump stations, ATM facility are available in Vembakkam.

HYDROGEOLOGY OF THE LEASE AREA

Since, There is Cheyyar River is located at a distance of 2.95 km in South East and Palar River is located at a distance of 7.61 km in North East direction of lease area 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 27 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 0.66.0 Ha of lease area will be left as rain water harvesting pond 0.26.5 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 4.5 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 27 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
Odai	620m	SW
Odai	850m	SW
Lake	1.30km	S
Sithalampakkam Tank	2.29km	SE
Cheyyar River	2.95 km	SE
Palar River Tributary	4.27 km	N
Mangal Lake	4.67 km	W
Kannikulam Lake	5.50 km	S
Adavapakkam Lake	5.95 km	SE
Hanumanthandalam River Dam Point	6.85 km	SW
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Palar River	7.70 km	NE
Marudham Lake	7.77 km	SE
Nathakollai Lake	8.61 km	NW
Elangar Lake	9.03 km	S
Utthiramerur Lake	9.14 km	S
Villivalam Eri	9.40 km	NE

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 PM_{10}, $PM_{2.5}$. Other than these pollutants, gaseous emissions of sulfur dioxide (SO_2) 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 5,00,000 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, Rhematic 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 144.56 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 22 people directly. Local people will be hired for unskilled labour.
- Through CSR, nearby schools, hospitals will be benefitted.
- For CSR, INR 5,00,000 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 144.56 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.

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ANNEXURE-1

ANNEXURE I

ந.க.எண்:128/கனிமம்/2023

உதவி இயக்குநர் அலுவலகம்,
(புவியியல் மற்றும் சுரங்கத்துறை),
திருவண்ணாமலை-4.
நாள்: 19.01.2024.

அறிவிக்கை

பொருள்: கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம் - ஏழாச்சேரி கிராம பட்டா புல எண்.22/1-ல் 0.94.5 ஹெக்டேர் பரப்பில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க - குவாரி குத்தகை உரிமம் வழங்கக்கோரி திரு.P.சங்கர் த./பெ. பொன்னப்பன் என்பவர் விண்ணப்பம் செய்தது - பரிந்துரை அறிக்கை வரப்பெற்றது - சுரங்கத் திட்டம் **(Mining Plan)** தயார் செய்து சமர்ப்பிக்க கோருவது - தொடர்பாக.

பார்வை:

1. திரு.P.சங்கர் த./பெ. பொன்னப்பன், எண்.1/63, பிள்ளையார் கோயில் தெரு, எருமையூர், காஞ்சிபுரம் மாவட்டம் என்பவரின் விண்ணப்பம், நாள்.23.01.2023.
2. இவ்வலுவலக கடிதம் ந.க.எண்.128/கனிமம்/2023, நாள்.23.01.2023.
3. சார் ஆட்சியர் செய்யார் அவர்களின் கடிதம் ந.க.அ5/401/2023 நாள்.07.09.2023.
4. உதவி புவியியலாளர் மற்றும் தனி வருவாய் ஆய்வாளர் புவியியல் மற்றும் சுரங்கத்துறை, திருவண்ணாமலை அவர்களின் புலத்தணிக்கை அறிக்கை நாள்.12.09.2023.
5. அரசாணை (MS).எண்.169 தொழில்துறை (எம்.எம்.சி1) துறை நாள்.04.08.2020.
6. அரசாணை (MS).எண்.208 தொழில்துறை (எம்.எம்.சி1) துறை நாள்.21.09.2020.

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திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், ஏழாச்சேரி கிராம பட்டா புல எண்.22/1-ல் 0.94.5 ஹெக்டேரில் சாதாரணகல் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரி திரு.P.சங்கர் த./பெ. பொன்னப்பன் என்பவர் அளித்த பார்வை (1)-ல் கண்ட விண்ணப்பத்தின் மீது பார்வை 2-ல் காணும் இவ்வலுவலக கடிதம் மூலம் சார் ஆட்சியர் அவர்களை அறிக்கை அனுப்பி வைக்க கோரப்பட்டது.

2. அதனைத்தொடர்ந்து (3)-ல் கண்ட சார் ஆட்சியர் செய்யார் மற்றும் பார்வை 4-ல் காணும் திருவண்ணாமலை மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, துணை இயக்குநர் அலுவலக உதவி புவியியலாளர் மற்றும் தனி வருவாய் ஆய்வாளர் ஆகியோர் அளித்த பரிந்துரை அறிக்கைகள் பரிசீலிக்கப்பட்டது.

3. திரு.P.சங்கர் த./பெ. பொன்னப்பன் என்பவர் சாதாரணக்கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க 10 ஆண்டுகளுக்கு குவாரிக்குத்தகை உரிமம் வழங்கக்கோரி விண்ணப்பித்துள்ள திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், ஏழாச்சேரி கிராம பட்டா புல எண்.22/1-ல் 0.94.5 ஹெக்டேர் நிலப்பரப்பில் எவ்வித தடையும் இன்றி குவாரிப்பணி செய்ய வாய்ப்பு உள்ளதால், மேற்படி விண்ணப்பதாரார் திரு.P.சங்கர் என்பவருக்கு சாதாரணக்கற்கள் மற்றும் கிராவல் மண் வெட்டி எடுக்க

குவாரி குத்தகை உரிமம் வழங்க பரிந்துரை செய்யப்பட்ட **0.94.5** ஹெக்டேர் பரப்பினை கற்குவாரி செய்ய உகந்த புலம் **(Precise Area)** என தீர்மானித்து கீழ்கண்ட நிபந்தனைகளுக்கு உட்பட்டு அறிவிப்பு செய்யப்படுகிறது.

நிபந்தனைகள்

1) அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5மீ பாதுகாப்பு இடைவெளி விடவேண்டும்.
2) பொதுமக்களுக்கும் அருகிலுள்ள நிலங்களுக்கும் எவ்வித பாதிப்பும் ஏற்படுத்தக்கூடாது.
3) குவாரிப்பணி தொடங்குவதற்கு முன்பாக குவாரியை சுற்றி முள் கம்பிவேலி அமைத்து குவாரிப்பணி தொடங்க வேண்டும்.
4) முறைப்படியும், விஞ்ஞானபூர்வமாகவும் குவாரிப்பணி செய்யவேண்டும்.
5) சான்றிதழ் பெறப்பட்ட போர்மேன், வெடிப்பாளர் மற்றும் சுரங்க மேலாளர் மூலம் முறையே குவாரிப்பணி செய்யப்பட வேண்டும்.
6) குவாரிப்பணி தொடங்குவதற்கு முன் சுரங்க பாதுகாப்பு இயக்குநர், சென்னை அவர்களுக்கு தகவல் தெரிவிக்கபட வேண்டும்.
7) பாறைகளைத் தகர்க்க கைத்துளைப்பான்களை கொண்டு பாறைகளை துளையிட்டு குறைவான வெடிபொருட்கள் பயன்படுத்த வேண்டும்.

4. **தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதிகள் 41 மற்றும் 42-ன்படி** கல் மற்றும் இதர சிறு கனிமங்களுக்கு குவாரி குத்தகை உரிமம் வழங்கும் முன்பு ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மை சான்று பெறப்பட வேண்டும் என வரையறுக்கப்பட்டுள்ளது.

5. எனவே, திரு.P.சங்கர் த./பெ. பொன்னப்பன் என்பவர் ஒப்புதல் பெறப்பட்ட சுரங்கத்திட்ட அறிக்கை மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய தடையின்மைச் சான்றினை பெற்று சமர்ப்பிக்கும் பட்சத்தில் திருவண்ணாமலை மாவட்டம், வெம்பாக்கம் வட்டம், ஏழாச்சேரி கிராம பட்டா புல எண்.22/1-ல் 0.94.5 ஹெக்டேர் பரப்பில் கற்குவாரி செய்ய தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி எண்19(1) மற்றும் 20-ன்கீழ் 5 ஆண்டுகளுக்கு குத்தகை உரிமம் வழங்க உரிய நடவடிக்கை மேற்கொள்ளப்படும் என்ற விவரம் தெரிவிக்கப்படுகிறது.

6. மேலும், இவ்வறிவிப்பு கிடைக்கபெற்ற 90 நாட்களுக்குள் மேற்சொன்ன நிபந்தனைகளையும் குறிக்கும் வகையில் வரைவு சுரங்கத்திட்ட அறிக்கை தயார் செய்து இணை இயக்குநர்(கூ.பொ), புவியியல் மற்றும் சுரங்கத்துறை திருவண்ணாமலை அவர்களிடம் ஒப்புதல் பெற சமர்ப்பிக்குமாறு அறிவுறுத்தப்படுகிறது.

இணை இயக்குநர் (கூ.பொ),
உதவி இயக்குநர் அலுவலகம்,
புவியியல் மற்றும் சுரங்கத்துறை,
திருவண்ணாமலை.

பெறுநர்:
திரு.P.சங்கர்
த./பெ. பொன்னப்பன்,
எண்.1/63, பிள்ளையார் கோயில் தெரு,
எருமையூர்,
காஞ்சிபுரம் மாவட்டம்

ANNEXURE-2

From

Thiru.A.Arumuganainar, M.Sc.,
Joint Director, (A/C),
O/o.Assistant Director,
Geology and Mining,
Tiruvannamalai - 4.

To

Thiru.P.Sankar,
S/o. Ponnappan,
No.1/63, Pillaiyar Koil Street,
Erumaiyur,
Kanchipuram District.

Rc.No.128/Kanimam/2023, dated: 11.03.2024.

Sir,

Sub: Quarries and Minerals – Minor Mineral Rough Stone – Tiruvannamalai District – Vembakkam Taluk – Ezhacheri village patta SF.No.22/1 over an extent of 0.94.5 hects., - Application preferred by **Thiru.P.Sankar S/o.Ponnappan,** – Precise area communicated – Submission of Mining Plan for approval - Approved - Regarding.

Ref: 1. Application from Thiru.P.Sankar, S/o. Ponnappan, No.1/63, Pillaiyar Koil Street, Erumaiyur, Kanchipuram District dated.08.02.2023.

2. Precise Area Communication Notice Rc.No.128/Kanimam/2023, dated 18.01.2024.

3. Mining Plan submitted by Thiru.P.Sankar S/o. Ponnappan, dated 08.02.2024.

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In the reference 2nd cited, the Joint Director (A/C), of Geology and Mining Tiruvannamalai has communicated the SF.No.22/1 over an extent 0.94.5 hects., of Ezhacheri village, Vembakkam Taluk, as precise area to the applicant **Thiru.P.Sankar, S/o. Ponnappan**, for grant of quarry lease for quarrying Rough Stone and Gravel for a period of 5 years with a direction to produce an approved mining plan in respect of the precise area as per

Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959 by incorporating the conditions stipulated in the Deputy Director, Geology and Mining Tiruvannamalai letter dated 18.01.2024.

2. In response to the precise area communication letter issued by the Joint Director (A/C), of Geology and Mining Tiruvannamalai the applicant has prepared the draft Mining Plan through the Recognized Qualified Person for approval vide reference 3rd cited.

3. The draft mining plan submitted in respect of the precise area communication has been examined with reference to the provisions of Rule 41 of Tamil Nadu Minor Mineral Concession Rules, 1959 and the followings are observed.

i) The boundary Co-ordinates (GPS readings) for the entire boundary pillars of the area have been incorporated and shown in the mining plan.

ii) All the conditions stipulated in the Joint Director (A/C), of Geology and Mining Tiruvannamalai Letter Rc.No.128/Kanimam/2023 dated:18.01.2024 have been incorporated in the mining plan.

iii) The reserves estimated in the mining plan is

Depth in Mts.	Geological reserves in Cu.m	Mineable Reserves in Cu.m
27m (25m Rough Stone + 2m Gravel)	Rough Stone : 2,36,225 Gravel : 18,898	Rough Stone : 66,690 Gravel : 13,322

4. In the light of the above, in exercise of the powers conferred under Rule 41 (7) of Tamil Nadu Minor Mineral Concession Rules, 1959 the mining plan in respect of Rough Stone quarry of Thiru.P.Sankar, S/o. Ponnappan, is approved subject to the following conditions.

i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such Laws are made by the Central Government, State Government or any other authority.

ii) The approval of the mining plan does not in any way imply the approval of the Government it 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, 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 Rule s, 1959.

iii) The mining Plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.

iv) Quarrying operations and production shall be carried out as per the approved Mining Plan and the applicant shall be liable to pay the cost of mineral if there is any deviation in the quantum indicated in the approved year wise quantum of production and any such cases as on date are to be dealt with as per Court direction.

Encl: 2 Copies of Approved Mining Plan.

Joint Director (A/C),
O/o. Assistant Director,
Geology and Mining,
Tiruvannamalai.

Copy submitted to:

1. The Chairman, SEIAA,
   Tamil Nadu, 3rd Floor, Panagal Maaligai,
   No.1, Jeenis Road, Saidapet, Chennai-15.
2. The Commissioner of Geology and Mining, Chennai-32.
3. The District Collector, Tiruvannamalai.

ANNEXURE-3

From

Thiru.A.Arumuganainar, M.Sc.,
Joint Director, (A/C),
O/o.Assistant Director,
Geology and Mining,
Tiruvannamalai - 4.

To

Thiru.P.Sankar,
S/o. Ponnappan,
No.1/63, Pillaiyar Koil Street,
Erumaiyur,
Kanchipuram District.

Rc.No.128/Kanimam/2023, dated:08.04.2024

Sir,

Sub: Quarries and Minerals – Minor Mineral Rough Stone – Tiruvannamalai District – Vembakkam Taluk – Ezhacheri village patta SF.No.22/1 over an extent of 0.94.5 hects., - Application preferred by **Thiru.P.Sankar S/o.Ponnappan** – Precise area communicated – Mining Plan Approved - Further details called for - furnished - Regarding.

Ref: Thiru.P.Sankar S/o. Ponnappan, Kanchipuram District Letter dated 01.04.2024.

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In the reference cited, applicant Thiru.P.Sankar S/o. Ponnappan, proposed Rough Stone quarry lease in SF.No.22/1 over an extent 0.94.5 hects., of Ezhacheri village, Vembakkam Taluk, Tiruvannamalai District has requested to furnish the details of quarries located within 500 meters radius from his proposed quarry.

In this regard, the followings details are furnished.

i). Existing quarries

Sl. No.	Name of the Owner (Tvl.)	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
1.	Thiru.R.Elumalai, S/o. Rajagopal, No.120, Pillaiyar Kovil Street, Arasanipalai village, Vembakkam Taluk. Tiruvannamalai District.	Ezhacheri 62/1A ,1B ,2C,2D,4 5,6,7,9,10 & 11	1.24.0	02.11.2021 to 01.11.2031	Existing Quarry

2.	Thiru.R.Monishkumar, s/o Rajendiran, No.35/88, Rajaji Street, Chengalpattu.	Ezhacheri & 16/5A, 5B, 19/1B3, 4A1, 4B1, 4C1, 4D1, 5A, 5B1, 21/1C, 1D, 1E, 1F & 22/2B	3.12.5	02.11.2021 to 01.11.2031	
3.	Thiru.P.Sanker S/o. Ponnappan, No.1/63 Pillaiyar koil street, Erumaiyur village, Thirumudivakkam, Chennai	Ezhacheri & 21/2F, 2G, 2H, 2I , 2J & 2K	2.09.5	02.11.2021 to 01.11.2031	Existing Quarry
4	Tvl.Golden Sands, No.15, 4th Street, VGP Lay Out, East coast Road, Chennai-115.	Ezhacheri & 1/2C, 1/2B2B, 1/2D, 1/7, 8,9 & 20/3A	3.74.5	05.11.2018 to 06.11.2023 & (Extension period upto 06.11.2024)	
5	Thiru.D.Arulazhagan, S/o.Dhankshamoorthi, No.40, Ennaikara Theru, Kancheepuram	Ezhacheri & 20/2B,2D,2H,2J, 2J & 2K	2.00.0	14.11.2022 to 13.11.2027	

ii). Abandoned quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.	Lease Period	Remarks
1	Thiru.B.Dheenan , Vembakkam Taluk	Ezhacheri & 25/2	1.00.5	19.03.2010 to 18.03.2015	Expired Quarry
2.	R.Seenuvasan, Road Street, Arasanipalai village, Vembakkam Taluk.	Ezhacheri & 65/4, 5, 7, 8A & 66/4	3.42.0	27.06.2014 to 26.06.2019	
3.	M. R. Azhagiri No.120, S. S. Koil Street, Mangadu, Sriperumpudur Tk, Kanchipuram District	Sithala-pakkam & 9/4 & 9/8	0.57.0	30.05.2013 to 29.05.2018	
4	Thiru.B.Dheenan , Vembakkam Taluk	Ezhacheri & 65/6	0.95.5	20.07.2018 to 01.03.2021	

5	Thiru. M. R. Azhagiri No.120,S.S.Koil Street, Mangadu, Sriperumpudur Taluk, Kanchipuram District	Sithala- pakkam & 8/1A,8/1B 8/1C,8/1D 8/1E,8/1F 8/1G,8/1H 8/1I,8/1J 8/1K,8/1L 8/1M,8/3A & 8/3B	3.87.5	17.10.2018 to 16.10.2023	Expired Quarry

iii). Proposed quarries

Sl. No	Name of the Owner (Tvl)	Village & S.F. Nos.	Extent in Hect.
1.	Thiru.P.Sankar, S/o. Ponnappan, No.1/63, Pillaiyar Koil Street, Erumaiyur, Kanchipuram District.	Ezhacheri & 22/1	0.94.5

Joint Director, (A/C),
O/o. Assistant Director,
Geology and Mining,
Tiruvannamalai.

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