

**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. TO24B0108TN5964918N(F.No.10951), dated 16.07.2024

<b>PROPOSED QUARRY LEASE DETAILS</b>	
<b>SURVEY NOS</b>	<b>34/1B1, 35/2B, 35/3 AND 35/4</b>
<b>VILLAGE</b>	<b>NALMUKKAL</b>
<b>TALUK</b>	<b>MARAKKANAM</b>
<b>DISTRICT</b>	<b>VILUPPURAM</b>
<b>EXTENT</b>	<b>4.75.00 ha</b>
<b>CLUSTER EXTENT</b>	<b>10.65.0 ha</b>
<b>PROPOSED PRODUCTION QUANTITY FOR FIVE YEARS</b>	<b>ROUGH STONE - 8,89,700 m<sup>3</sup> GRAVEL - 96,210 m<sup>3</sup></b>
<b>LAND</b>	<b>PATTA LAND</b>

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

Category of the Project: B1 Cluster Mining, Total Cluster Area – 10.65.0 Ha  
Baseline Monitoring Period – March 2024 to May 2024

**APPLICANT**

**THIRU.V. NAGARAJAN  
S/O. VARADHARAJ GOUNDER  
NO.65, MARAKKANAM ROAD,  
PERUMUKKAL VILLAGE, MARAKKANAM TALUK,  
VILUPPURAM DISTRICT- PIN CODE- 604301**

**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  
CONTACT: 97502 23535, 94446 54520**

Email: [infoglobalmining@gmail.com](mailto:infoglobalmining@gmail.com), [globalminingsolutionsalem@gmail.com](mailto:globalminingsolutionsalem@gmail.com)

**SEPTEMBER- 2024**



## **EXECUTIVE SUMMARY**

### **1.1 INTRODUCTION**

Thiru.V.Nagarajan S/o. Varadharaj Gounder has obtained Precise Area Communication Letter from Assistant Director, Department of Geology and Mining, Viluppuram to quarry out 8,89,700 m<sup>3</sup> of Rough Stone and 96,210 m<sup>3</sup> of Gravel from an extent of 4.75.00 Ha located in S.F. Nos. 34/1B1, 35/2B, 35/3 and 35/4 at Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu State.

As per EIA notification, 2006 and its subsequent amendments the proposed "Rough Stone and Gravel Quarry of Thiru.V.Nagarajan S/o. Varadharaj Gounder 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. TO24B0108TN5964918N, dated 16.07.2024 This report has been prepared in line with the approved TOR for production of maximum excavation of 8,89,700 m<sup>3</sup> of Rough Stone and 96,210 m<sup>3</sup> of Gravel.

<b>S.No.</b>	<b>Description</b>	<b>Status/Remarks</b>
1.	Sector	1(a), non-coal mining
2.	Category of the project	B1
3.	Proposed mineral	Rough Stone and Gravel
4.	Type of Lease	The applied lease is not fresh, there is a quarry pit exists in the S.F. No. 35/3, which was operated by unknown person.
5.	Extent of the lease	4.75.00 Ha
6.	Proposed depth of Mining	38m BGL
7.	Method of mining	Opencast Mechanized
8.	Proposed lease period	5 Years
9.	Proposed Environmental Clearance	5 Years

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10.	Proposed production quantity for five years	Rough Stone: 8,89,700 m <sup>3</sup> Gravel: 96,210 m <sup>3</sup>
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The Lessee Thiru.V.Nagarajan S/o. Varadharaj Gounder is an individual with sound experience in the identification, quarrying and marketing of Rough Stone and Gravel. The proposed land is a Patta land and attached as **Annexure 6**.

## **1.2 LOCATION**

This project site is located in Nalmukkal Village, Marakkanam Taluk, Viluppuram District, Tamil Nadu State with Latitude 12°13'05.24"N to 12°13'14.52"N and Longitude: 79°46'07.17"E to 79°46'16.18"E. with Survey of India Topo Sheet No.57- P/16. 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)

## **1.3 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 N45°E – S45°W with dipping towards SE80°.

## **1.4 PROJECT DESCRIPTION**

This is a proposed Rough Stone quarry by Opencast Mechanized mining method with drilling and blasting. The quarrying is restricted up to a depth of 38m below ground level. The geological reserves are estimated to be 21,37,500 m<sup>3</sup> of Rough Stone and 1,42,500 m<sup>3</sup> in Gravel. The mineable reserve calculated by deducting 10m safety distance and bench loss. The mineable reserves are 10,15,275m<sup>3</sup> of Rough Stone and 96,210m<sup>3</sup> Gravel which will be recovered at the rate of 100% recovery.

- It is proposed to quarry out rough stone with 5m bench height, 5m width with 45° slope using conventional Open cast Mechanized method. The quarry

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operation involves shallow jack hammer drilling, slurry blasting, excavation, Loading and transportation of Rough Stone.

- There is no overburden anticipated during entire rough stone & Gravel quarrying operation.

S.No.	Type of Detail	Description
1	Sector	1(a) Non coal mining
2	Fresh/Existing project	Existing Quarry
3	Category	B1
4	Nature of mineral	Minor Mineral
5	Production	Rough Stone: 8,89,700 m <sup>3</sup> Gravel: 96,210 m <sup>3</sup>
6	Life	10 years
7	Waste generation and management	There is no overburden anticipated during the quarrying operation. Hence, no waste generation.
8	Bench height and width	Height and Width – 5m
9	Ultimate pit depth	38m (BGL)
10	End use	Rough Stone and Gravel will be loaded into tippers to needy buyers for producing aggregates, M-sand.

### **1.5 PROJECT REQUIREMENTS**

The requirements of the project is given below.7

S.No.	Nature of requirement	Description
1	Water requirement	Total water requirement of 8.0 KLD which will be procured from the outside agencies. Out of 1.5 KLD drinking water requirement, Green belt development is 2.5 KLD and dust suppression is 4.0 KLD.
2	Power requirement	No electricity is needed for mining operations, for office demands, it will be met from the state grid. Total Fuel requirement is 727.795 KL for entire life of the project.

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3	Manpower requirement	Permanent employees - 29, temporary employees - 14
4	Financial requirement	The total project cost as per PFR will be INR 565.95 lakhs including Operational cost, Fixed Asset cost and EMP cost
5	Funds for Socio economic development	INR 8 Lakhs is allocated. In addition, any demand raised by people during public hearing will also be met.

**1.6 DESCRIPTION OF LEASE AREA**

The features in the study area is given below.

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
		Odai	230m	NE
		Odai	300m	N
		Tank	230m	SW
		Brammadesam Lake	2.22 km	S
		Endur Lake	2.53 km	SE
		Kilsevir Lake	3.40 km	NW
		Puthupakkam Lake	3.59 km	SE
		Aalangakuppam Lake	5.03 km	E
		Nolambur Lake	5.42 km	NW
		Puthunagar Lake	8.24 km	S
Nallavur Lake	8.32 km	S		
B	Coastal zone, biospheres,	Nil within 10km radius		

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C	Mountains, forests	Kilsevir R.F. - 4.04 km (NW) Kumalampattu R.F. - 7.17 km (S)
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	Tindivanam – 13.09 km (W)
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Tindivanam – 13.09 km (W)
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 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.

## **1.7 AIR ENVIRONMENT**

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

<b>Details Of Ambient Air Quality Monitoring Locations</b>				
<b>S. No.</b>	<b>Station Code</b>	<b>Locations</b>	<b>Distance &amp; Direction</b>	<b>Coordinates</b>
1	AAQ 1	Project site	Core Zone	12°13'10.17"N 79°46'10.51"E
2	AAQ 2	Nalmukkal	2.13 km, SW	12°12'12.58"N 79°45'32.6"E
3	AAQ 3	Senalur	2.20 km, W	12°12'34.19"N 79°46'57.62"E
4	AAQ 4	Kunnappakkam	1.02 km, NW	12°13'09.47"N 79°45'00.38"E
5	AAQ 5	Endur	1.80 Km, NW	12°13'39.51"N 79°45'58.18"E
6	AAQ6	Tennampundi	1.65 Km, NE	12°13'44.03"N 79°46'54.41"E

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

<b>Station ID</b>	<b>Min</b>	<b>Max</b>	<b>Avg.</b>
<b>Particulate matter PM<sub>2.5</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	41.2	67.3	54.25
AAQ-2	38.1	59.2	48.65
AAQ-3	36.2	51.2	43.70
AAQ-4	36.1	56.7	46.40
AAQ-5	36.3	53.2	44.75
AAQ-6	42.2	53.5	47.85
<b>CPCB NAAQS 2009 for PM<sub>2.5</sub> - 60 µg/m<sup>3</sup></b>			
<b>Particulate matter PM<sub>10</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	19.20	32.3	25.75
AAQ-2	18.2	30.4	24.30
AAQ-3	17.38	25.3	21.34
AAQ-4	16.64	25.1	20.87
AAQ-5	18.10	26.2	22.15
AAQ-6	19.70	25.1	22.40
<b>CPCB NAAQS 2009 for PM<sub>10</sub> - 100 µg/m<sup>3</sup></b>			
<b>Sulphur Di-oxide as SO<sub>2</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	4.4	7.5	5.95
AAQ-2	3.7	7.2	5.45
AAQ-3	4.1	5.8	4.95

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Station ID	Min	Max	Avg.
AAQ-4	3.2	5.4	4.30
AAQ-5	3.7	6.8	5.25
AAQ-6	3.2	5.8	4.50
<b>CPCB NAAQS 2009 for SO<sub>2</sub> – 80 µg/m<sup>3</sup></b>			
<b>Oxide of Nitrogen as NO<sub>2</sub> (µg/m<sup>3</sup>)</b>			
AAQ-1	6.5	9.9	8.20
AAQ-2	6.1	9.1	7.60
AAQ-3	5.5	8.2	6.85
AAQ-4	5.7	7.9	6.80
AAQ-5	5.8	8.9	7.35
AAQ-6	6.2	9.5	7.85
<b>CPCB NAAQS 2009 for NO<sub>2</sub> – 80 µg/m<sup>3</sup></b>			

## 1.8 WATER ENVIRONMENT

Results of Ground Water sampling Analysis in 6 locations							IS:10500: 2012	
	W1	W2	W3	W4	W5	W6	Desir able	Permis sible
Odour	Agreeabl e	Agreeabl e	Agreeabl e	Agreeabl e	Agreeabl e	Agreeabl e	Agree able	Agreea ble
Turbidity	<1	<1	<1	<1	<1	<1	Agree able	Agreea ble
pH at 25 °C	7.17	7.12	7.12	7.48	6.98	6.97	6.5 - 8.5	No Relaxat ion
Electrical Conductivity	949.9	1103	1058	1103	1529	723.7	1	5
Total Dissolved Solids	570	666	640	670	930	440	500	2000
Total hardness as CaCO <sub>3</sub>	372	261	376	253	507	234	1	15
Calcium as Ca	106	82.4	63.4	76.0	109	64.9	200	600
Magnesium as Mg	25.7	13.3	52.3	15.2	56.1	17.1	200	600
Calcium as CaCO <sub>3</sub>	265	206	158	190	273	162	75	200
Magnesium as CaCO <sub>3</sub>	107	55	218	63.4	234	71.3		
Total alkalinity as CaCO <sub>3</sub>	303	311	412	307	416	263		
Chloride as Cl-	139	194	180.0	196	256	102.0	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 SO <sub>4</sub> <sup>2-</sup>	97.0	186	89.2	179.0	220	82.6	45	No Relaxat ion
Iron as Fe	0.05	0.06	0.02	0.05	0.04	0.02	200	400



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Nitrate as NO <sub>3</sub>	2.39	2.14	1.69	3.64	4.85	3.26	1	No Relaxation
Fluoride as F	0.26	0.32	0.44	0.41	0.36	0.42	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

### **1.9 NOISE ENVIRONMENT**

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

<b>Noise monitoring results</b>					
<b>S. No</b>	<b>Location</b>	<b>Day equivalent</b>	<b>Night equivalent</b>	<b>Day equivalent limits by CPCB</b>	<b>Night equivalent limits by CPCB</b>
1	Project site	39.3	38.0	75	70
2	Nalmukkal	50.5	41.8		
3	Senalur	48.3	39.8		
4	Kunnappakkam	50.9	42.2		
5	Endur	46.8	40.8		
6	Tennampundi	45.5	42.0		

### **1.10 SOIL ENVIRONMENT**

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

<b>Results of Soil Sample Analysis</b>								
<b>S. No</b>	<b>Parameter</b>	<b>Unit</b>	<b>S1</b>	<b>S2</b>	<b>S3</b>	<b>S4</b>	<b>S5</b>	<b>S6</b>
1	pH at 25 °C	-	5.94	7.68	7.03	6.99	8.14	8.73
2	Electrical Conductivity	µmhos/cm	70.24	492.7	100.8	150.7	214	509.8
3	Dry matter content	%	91.06	88.49	90.4	85.94	88.09	91.15
4	Water Content	%	8.94	11.51	9.6	14.06	11.91	8.85
5	Organic Matter	%	1.63	2.3	1.71	1.59	0.68	0.8
6	Soil texture	-	SILT LOAM	SILTY CLAY LOAM	SILT LOAM	SILTY CLAY	SILTY CLAY LOAM	SILTY CLAY LOAM
7	Grain Size Distribution	%	36.95	4.89	41.47	6.56	4.27	5.78
	i. Sand							

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8	ii.	Silt	%	53.74	66.25	50.41	43.6	62.07	55.84
9	iii.	Clay	%	9.31	28.86	8.12	49.84	33.66	38.38
10		Phosphorous as P	mg/kg	1.21	0.59	1.03	1.22	0.74	0.82
11		Sodium as Na	mg/kg	845	921	976	732	610	1002
12		Potassium as K	mg/kg	412	652	724	456	795	669
13		Nitrogen and Nitrogenous Compounds	mg/kg	212	260	312	405	168	340
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	%	12.5	13.1	11.9	12.6	13.6	13.2
16		Water Holding Capacity	Inches/foot	42	45.6	44	49	46	48

### **1.11 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.

### **1.12 LAND USE**

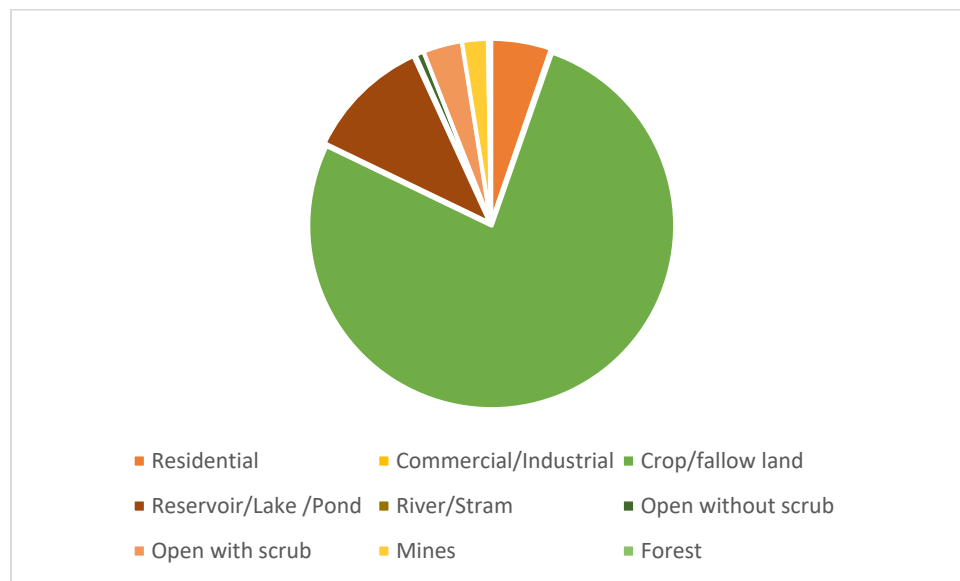
The land use land cover data is found using the LANDSAT – 9 satellite imagery. The number of bands used are 11. The land use pattern is given below:

#### **Major Land Use Units of the Study Area in Percentage**

S.	1st Level	Area in	Percentage	2nd	Level	Area in	Percentage
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No	Classification	(sq.km)	(%)	Classification	(sq.km)	(%)
1	Built-up or habitation	17.23	5.35	Residential	16.94	5.26
				Commercial/Industrial	0.29	0.09
2	Agriculture	247.3	76.80	Crop/fallow land	247.3	76.80
3	Water bodies	35.96	11.17	Reservoir/Lake /Pond	35.45	11.01
				River/Stram	0.51	0.16
4	Waste Land	13.39	4.16	Open without scrub	2.37	0.74
				Open with scrub	11.02	3.42
5	Mines	7.28	2.26	Mines	7.28	2.26
6	Forest	0.85	0.26	Forest	0.85	0.26
<b>Total</b>		<b>322</b>	<b>100</b>		<b>322</b>	<b>100</b>



### **1.13 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 Nalmukkal, Senalur, Kunnappakkam, Endur and Tennampundi 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 Nalmukkal. 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 Nalmukkal which is about 820m from the lease area. Major schools with higher secondary and senior secondary schools are located in Nalmukkal. The major Nalmukkal Union located in the area is Villupuram. Facilities like petrol pump stations, ATM facility are available in Nalmukkal.

#### **1.14 HYDROGEOLOGY OF THE LEASE AREA**

There is Vada Penniyaru River is located at a distance of 10.9 km in Southeast direction of lease area, the hydrological and hydrogeological pattern of the study area is studied in detail using satellite imagery.

There is Vada Penniyaru River is located at a distance of 10.9 km in Southeast direction of lease area. 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.

#### **1.15 GROUND WATER STUDY**

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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 38 m 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

**1.16 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 38 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, 3.86.00 Ha of lease area will be left as rain water harvesting pond. 0.86.00 Ha will be developed with green belt. For this, plants like Pongamia pinnata, Syzigium cumini, Albizia lebeck, Thespesia populnea, Bauhinia racemose, Cassia siamea, Azadirachta

**EXECUTIVE SUMMARY FOR PROPOSED ROUGH STONE AND GRAVEL QUARRY OF THIRU.V. NAGARAJAN S/O. VARADHARAJ GOUNDER OVER AN EXTENT OF 4.75.00 HA LOCATED AT S.F.NOS. 34/1B1, 35/2B, 35/3 and 35/4 OF NALMUKKAL VILLAGE, MARAKKANAM TALUK, VILUPPURAM DISTRICT, TAMILNADU STATE.**

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indica are selected. A total of 2400 trees are planned to be planted. Spacing will be 3m x 3m.

### **1.17 WATER ENVIRONMENT: IMPACT AND MITIGATION MEASURES**

There is no water body present inside the lease area. The entire water requirement for the project is 8.0 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 38m (BGL), there will not be any seepage. However, the rain water percolation and collection of water from seepage shall be less than 300lpm 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.

<b>Water bodies</b>	<b>Distance</b>	<b>Direction</b>
Odai	230m	NE
Odai	300m	N
Tank	230m	SW
Brammadesam Lake	2.22 km	S
Endur Lake	2.53 km	SE
Kilsevir Lake	3.40 km	NW
Puthupakkam Lake	3.59 km	SE
Aalangakuppam Lake	5.03 km	E
Nolambur Lake	5.42 km	NW
Puthunagar Lake	8.24 km	S
Nallavur Lake	8.32 km	S

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

### **1.18 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.

### **1.19 AIR ENVIRONMENT: IMPACT AND MITIGATION MEASURES**

The major air pollutants due to mining operations are fugitive emissions like PM<sub>10</sub>, PM<sub>2.5</sub>. Other than these pollutants, gaseous emissions of sulfur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>) 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 unfavourable 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.

## **1.20 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.

### **1.21 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

### **1.22 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 8,00,000 for CER activities. This amount will be subjected to change after public hearing.

### **1.23 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.

## **1.24 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 433.95 Lakhs is allocated.

## **1.25 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 43 people directly. Local people will be hired for unskilled labour.
- Through CSR, nearby schools, hospitals will be benefitted.
- For CSR, INR 8,00,000 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

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Environmental Management Plan was prepared and 433.95 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**

- 6 MAR 2024

ந.க.எண். அ/பு & சு/96/2021  
நாள்: 02.02.2024

தவி இயக்குநர்,  
புவியியல் மற்றும் சுரங்கத்துறை அலுவலகம்,  
விழுப்புரம்.

**குறிப்பாணை**

**பொருள்:** கனிமங்களும் குவாரிகளும் - சிறுகனிமம் - சாதாரண கற்கள் மற்றும் கிராவல் - விழுப்புரம் மாவட்டம் - மரக்காணம் வட்டம் - நல்முக்கல் கிராமம் - பட்டா புல எண்கள்.34/1B1, 35/2B, 35/3, மற்றும் 35/4 ஆகியவற்றில் 4.75.00 ஹெக்டேர் பரப்பளவில் பத்தாண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குவாரி குத்தகை அனுமதி கோரி திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர் - பெருமுக்கல் கிராமம் என்பவர் விண்ணப்பம் செய்தது - உரிமம் வழங்க பரிந்துரை செய்து அறிக்கை வரப்பெற்றது - தகுதியான நிலப்பரப்பாக கருதி ஏற்பளிக்கப்பட்ட சுரங்க திட்டம் மற்றும் சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணைய இசைவினை பெற்று சமர்ப்பிக்கக் கோருதல் - தொடர்பாக.

- பார்வை:**
1. திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர், எண்.65, மரக்காணம் ரோடு, பெருமுக்கல் கிராமம், மரக்காணம் வட்டம், விழுப்புரம் மாவட்டம் என்பவரின் விண்ணப்பம் நாள்.15.04.2021.
  2. சார் ஆட்சியர், திண்டிவனம் அவர்களின் கடித எண். ந.க. அ3/6969/2021, நாள்: 30.10.2023.
  3. விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை உதவி இயக்குநர் அவர்களின் புலத்தணிக்கை அறிக்கை நாள்: 13.12.2023.

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விழுப்புரம் மாவட்டம், மரக்காணம் வட்டம், பெருமுக்கல் கிராமத்தைச் சேர்ந்த திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர் என்பவர் விழுப்புரம் மாவட்டம், மரக்காணம் வட்டம், நல்முக்கல் கிராமம், பட்டா புல எண்கள். 34/1B1 - 2.43.0 ஏர்ஸ், 35/2B - 0.28.0 ஏர்ஸ், 35/3 - 0.88.0 ஏர்ஸ் மற்றும் 35/4 - 1.16.0 ஏர்ஸ் ஆகியவற்றில் 4.75.00 ஹெக்டேர் பரப்பளவில் உள்ள நிலத்தில் பத்தாண்டுகளுக்கு சாதாரண கற்கள் மற்றும் கிராவல் வெட்டியெடுக்க குவாரி குத்தகை பார்வை 1-ல் காணும் விண்ணப்பத்தினை சமர்ப்பித்துள்ளார்.

மேற்படி விண்ணப்பம் தொடர்பாக, திண்டிவனம் சார்ஆட்சியர் மற்றும் விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் ஆகியோரின் அறிக்கையில் மரக்காணம் வட்டம், நல்முக்கல் கிராமம், பட்டா புல எண்கள். 34/1B1 - 2.43.0 ஏர்ஸ், 35/2B - 0.28.0 ஏர்ஸ், 35/3 - 0.88.0 ஏர்ஸ் மற்றும் 35/4 - 1.16.0 ஏர்ஸ் ஆக மொத்த பரப்பு 4.75.00



ஹெக்டேர் பரப்பளவில் உள்ள பட்டா நிலத்தில் திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர் என்பவருக்கு பத்தாண்டுகளுக்கு சாதாரணக்கல் மற்றும் கிராவல் குவாரி உரிமம் வழங்க கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு அனுமதி வழங்கலாம் என பரிந்துரை செய்துள்ளனர்.

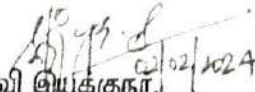
- i. விண்ணப்ப புலன்களின் அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளியும் மற்றும் அரசு புறம்போக்கு நிலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி மேற்கொள்ளப்பட வேண்டும்.
- ii. குவாரிப்பணி மேற்கொள்ளும் போது அருகிலுள்ள அரசு புறம்போக்கு, வாய்க்கால் மற்றும் பட்டா நிலங்களுக்கு எவ்வித இடையூறும் இல்லாமல் குவாரிப்பணி செய்ய வேண்டும்.
- iii. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை DGPS சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்ப்பிக்க வேண்டும்.
- iv. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-41ன்படி தகுதிவாய்ந்த நபரால் சுரங்க திட்டம் தயார் செய்து உதவி இயக்குநர் அவர்களின் ஒப்புதல் பெறவேண்டும்.
- v. தமிழ்நாடு சிறுகனிம சலுகை விதிகள் 1959 விதி-42ன்படி மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்திடமிருந்து சுற்றுச்சூழல் சான்று பெற்று சமர்ப்பிக்கப்படவேண்டும்.

எனவே, திண்டிவனம் சார் ஆட்சியர் மற்றும் விழுப்புரம் மாவட்ட புவியியல் மற்றும் சுரங்கத்துறை, உதவி இயக்குநர் ஆகியோரின் பரிந்துரை அறிக்கையின் அடிப்படையில் மரக்காணம் வட்டம், நல்முக்கல் கிராமம், பட்டா புல எண்கள். 34/1B1 - 2.43.0 ஏர்ஸ், 35/2B - 0.28.0 ஏர்ஸ், 35/3 - 0.88.0 ஏர்ஸ் மற்றும் 35/4 - 1.16.0 ஏர்ஸ் ஆக மொத்த பரப்பு 4.75.00 ஹெக்டேர் பரப்பளவில் 1959-ம் வருட தமிழ்நாடு சிறுகனிம விதிகள், விதி எண்.19-ன்படி மேற்கண்ட நிபந்தனைகளுக்குட்பட்டு 10 (பத்து) வருட காலத்திற்கு திரு.வ.நாகராஜன் த/பெ.வரதராஜ் கவுண்டர் என்பவருக்கு சாதாரணக்கல் மற்றும் கிராவல் குவாரி உரிமம் வழங்குவதற்குரிய தகுதியான நிலப்பரப்பாக கருதப்படுகிறது.

அதன் அடிப்படையில், தமிழ்நாடு சிறு கனிம சலுகை விதிகள் 1959 விதி எண்.41-ன்படி குவாரிப்பணி மேற்கொள்வது தொடர்பாக வரைவு சுரங்க திட்டத்தினை தகுதிவாய்ந்த நபர் (QP) மூலமாக கீழ்க்கண்ட நிபந்தனைகளுக்குட்பட்டு தயாரித்து அதனை 90 தினங்களுக்குள் உதவி இயக்குநர் (புவியியல் மற்றும் சுரங்கத்துறை) அவர்களின் பரிசீலனைக்கு சமர்ப்பிக்குமாறு விண்ணப்பதாரரை கேட்டுக்கொள்ளப்படுகிறது. மேலும் ஏற்பளிக்கப்பட்ட சுரங்கத்திட்டத்தின் தொடர்ச்சியாக 1959ம் வருடத்திய தமிழ்நாடு சிறுகனிம சலுகை விதிகள், விதி எண்.42-ன்படி சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையத்தின் தடையின்மை சான்று பெற்று சமர்ப்பிக்கும் பட்சத்தில் மட்டுமே குவாரி உரிமம் வழங்கப்படும் என இதன் மூலம் தெரிவிக்கப்படுகிறது.



- i. விண்ணப்ப புலன்களின் அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 டீ.அ. பாதுகாப்பு இடைவெளியும் மற்றும் அரசு புறம்போக்கு நிலங்களுக்கு 10 மீட்டர் பாதுகாப்பு இடைவெளியும் விட்டு குவாரிப்பணி மேற்கொள்ளப்பட வேண்டும்.
- ii. குவாரிப்பணி மேற்கொள்ளும் போது அருகிலுள்ள அரசு புறம்போக்கு, வாய்க்கால் மற்றும் பட்டா நிலங்களுக்கு எவ்வித இடையூறும் இல்லாமல் குவாரிப்பணி செய்ய வேண்டும்.
- iii. குவாரி குத்தகை வழங்கும் முன்பு விண்ணப்பித்துள்ள இடத்தினை DGPS சர்வே பணி மேற்கொண்டு அதன் அறிக்கையை சமர்ப்பிக்க வேண்டும்.

  
உதவி இயக்குநர்,  
புவியியல் மற்றும் சுரங்கத்துறை,  
விழுப்புரம்.

பெறுநர்  
திரு.வ.நாகராஜன்,  
த/பெ.வரதராஜ் கவுண்டர்,  
எண்.65, மரக்காணம் ரோடு,  
பெருமுக்கல் கிராமம்,  
மரக்காணம் வட்டம்,  
விழுப்புரம் மாவட்டம்

MS  
212124

நகல்:-

1. மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம், சென்னை.
2. ஆணையர், புவியியல் மற்றும் சுரங்கத்துறை, கிண்டி, சென்னை.





**ANNEXURE-2**

From  
Tmt. S.Safiya, M.Sc.,  
Assistant Director,  
Geology and Mining,  
Viluppuram.

To  
Thiru.V.Nagarajan,  
S/o.Varadaraj Gounder,  
No.65, Marakkanam Road,  
Perumukkal Village,  
Marakkanam Taluk,  
Viluppuram District.

**Rc.No.B/G&M/96/2021 Dated 06.03.2024**

Sub: Mines & Minerals - Minor Mineral - Rough stone and Gravel - Viluppuram District - Marakkanam Taluk - Nalmukkal Village - over an extent of 4.75.00 hectares of patta lands - S.F.Nos. 34/1B1 - 2.43.0, 35/2B - 0.28.0, 35/3 - 0.88.0 and 35/4 - 1.16.0 - Quarry lease application preferred by Thiru.V.Nagarajan, Perumukkal Village - Precise area communicated - Submission of mining plan for approval - Approved - Regarding.

- Ref: 1. Quarry lease application dated 15.04.2021 preferred by Thiru.V.Nagarajan, S/o.Varadaraj Gounder, No.65, Marakkanam Road, Perumukkal Village, Marakkanam Taluk, Viluppuram District.
2. Assistant Director, Geology and Mining, Viluppuram Letter Rc.No. B/G&M/96/2021 Dated 02.02.2024.
3. Mining Plan submitted by Thiru.V.Nagarajan, S/o.Varadaraj Gounder Dated 04.03.2024.
4. G.O.Ms.No.79, Industries (MMC-1) Department dated 06.04.2015.
5. G.O.(Ms).No.169, Ind. (MMC.1) Dept. dated 04.08.2020.

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In response to the precise area communicated vide the reference 2<sup>nd</sup> cited, the applicant viz., Thiru.V.Nagarajan, S/o.Varadaraj Gounder vide reference 3<sup>rd</sup> cited has submitted three copies of mining plan for the area applied seeking grant of quarry lease for Rough stone and Gravel over an extent of 4.75.00 hectares of patta lands in S.F.Nos.34/1B1 - 2.43.0, 35/2B - 0.28.0, 35/3 - 0.88.0 and 35/4 -1.16.0 of Nalmukkal Village, Marakkanam Taluk, Villuppuram District with a request to approve the same.

2. The mining plan so submitted has been verified in detail.

3. As per the guidelines / instructions issued by the Commissioner of Geology and Mining, Chennai vide letter Rc.No.3868/LC/2012, dated 19.11.2012, the mining plan is hereby 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) This approval of the mining plan does not in any way imply the approval of the Government in terms or any other provisions of the Mines and Minerals (Development and Regulation) Amended Act, 2015, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Explosives Act, 1884 (Central Act IV of 1884) and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv) As per the Assistant Director, Geology and Mining, Viluppuram letter Rc.No.B/G&M/96/2021 Dated 02.02.2024, the following conditions have been incorporated in the Mining Plan.
- a. A safety distance of 7.5 meter and 10 meter should be provided to the adjacent patta lands and Government lands.
- (v) Quarrying shall be strictly done as per the approved Mining Plan.

Encl: Two copies of Approved Mining Plan.

  
Assistant Director,  
Dept. of Geology and Mining,  
Viluppuram.

Copy to:

The Commissioner of Geology and Mining, Chennai-32.





**ANNEXURE-3**

From  
Tmt. S.Safiya, M.Sc.,  
Assistant Director,  
Geology and Mining,  
Viluppuram.

To  
Thiru.V.Nagarajan,  
S/o.Varadaraj Gounder,  
No.65, Marakkanam Road,  
Perumukkal Village,  
Marakkanam Taluk,  
Viluppuram District.

**Rc.No.B/G&M/96/2021 Dated 06.03.2024**

Sub: Mines & Minerals - Minor Mineral - Rough stone and Gravel - Viluppuram District - Marakkanam Taluk - Nalmukkal Village - over an extent of 4.75.00 hectares of patta lands - S.F.Nos. 34/1B1 - 2.43.0, 35/2B - 0.28.0, 35/3 - 0.88.0 and 35/4 - 1.16.0 - Quarry lease application preferred by Thiru.V.Nagarajan, Perumukkal Village - Precise area communicated - Details of quarries situated within 500 meter radial distance - furnished - reg.

- Ref: 1. Assistant Director, Geology and Mining, Viluppuram Letter Rc.No. B/G&M/96/2021 Dated 02.02.2024.
2. Representation from Thiru.V.Nagarajan, Perumukkal Village Dated 04.03.2024.

\*\*\*\*\*

With reference to your letter in the reference 2<sup>nd</sup> cited, the details of existing, proposed and abandoned quarries located within 500 mts. radial distance from the periphery of the proposed Rough stone and Gravel quarry over an extent of 4.75.00 hectares of patta lands in S.F.Nos.34/1B1 - 2.43.0, 35/2B - 0.28.0, 35/3 - 0.88.0 and 35/4 -1.16.0 of Nalmukkal Village, Marakkanam Taluk, Villupuram District are as follows.

**1. Existing quarries:**

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Lease period	Remarks
1.	N.Gopinath, S/o.Natarajan, No.19, Nattamaikarar Street, Polambakkam Village, Cheyyur Village, Kanchipuram District.	Rough stone & Gravel	Marakkanam, Nalmukkal	33/5 37/3 37/4 37/5 37/6 37/7	0.54.5 1.14.0 0.68.5 0.40.0 0.31.0 <u>0.27.0</u> <b>3.35.0</b>	21.03.2022 to 20.03.2027	-


2.	D.Durai, S/o.Dhanapal Gounder, Keelarungunam Village, Perumukkal Post, Marakkanam Taluk, Viluppuram District.	Rough stone & Gravel	Marakkanam Nalmukkal	27/6 27/7 27/8	0.40.5 0.39.0 <u>0.40.5</u> <u>1.20.0</u>	06.12.2022 to 05.12.2027	-
3.	V.Ravichandiran, S/o.Varatharaj Gounder, No.63/19, Perumukkal Village and Post, Marakkanam Taluk, Viluppuram District	Rough stone & Gravel	Marakkanam Nalmukkal	26/1B1 27/3A 27/3B	0.77.0 0.14.5 <u>0.43.5</u> <u>1.35.0</u>	29.12.2022 to 28.12.2027	-

## II. Proposed Area :

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Remarks
1.	Thiru.V.Nagarajan, S/o.Varadaraj Gounder, No.65, Marakkanam Road, Perumukkal Village, Marakkanam Taluk, Viluppuram District.	Rough stone & Gravel	Marakkanam, Nalmukkal	34/1B1 35/2B 35/3 35/4	2.43.0 0.28.0 0.88.0 <u>1.16.0</u> <u>4.75.0</u>	-

## III. Abandoned quarries :

Sl. No.	Name of the lessee / permit holder	Name of the Mineral	Taluk & Village	S.F. Nos.	Extent (in hecets)	Lease period	Remarks
NIL							

  
 Assistant Director,  
 Geology and Mining,  
 Viluppuram.

13  
 6/3/24

