PUBLIC HEARING SUMMARY

OF

DRAFT EIA / EMP REPORT

FOR

ROUGH STONE AND GRAVEL QUARRY

Extent	**4.20.0 Ha**
SF.Nos.	**34/1A,1B,2, 52/2,3 & 60/2**
Location	**Viralipatti Village, Vadipatti Taluk, Madurai District, Tamil Nadu**
Land Type	**Consent Patta Land**
Production	

Year	Rough Stone M^3	Gravel in M^3	Depth
1 to 5	2,42,675	74,060	24
6 to 10	2,16,490	53,194	10
Total	4,59,165	1,27,254	34

- **Terms of Reference issued by SEIAA-TN/F.No.10229/SEAC/ToR-1546/2023 dated 27.09.2023.**
- **Baseline Monitoring Period – Summer Season (March 2023 – May 2023)**

PROJECT PROPONENT

THIRU. S.R. MUTHUPANDI

S/O. SRI. S. RAJENDRAN, 325, MELAKKAL MAIN ROAD, KOCHADAI, ARASARADI, MADURAI SOUTH, MADURAI DISTRICT

CONSULTANT

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Creating Possibilities

S.No 1(a), Category – B1 **DECEMBER- 2023**

SUMMARY

1.1 INTRODUCTION:

Thiru. S.R. Muthupandi proposes to operate a Rough Stone and Gravel Quarry over an area of 4.20.0 Ha in Viralipatti village, Vadipatti Taluk, Madurai District, and Tamil Nadu and has initiated action towards obtaining environmental clearance. Lease period is 10 years. Fresh lease. No mining is carried out in the lease area so far.

It is proposed Production for the first five years is 2,42,675m3 of Rough stone and 74,060 m^3 of gravel for the depth of 24 meter. The Total production for 10 years lease period is 4,59,165 m^3 of Rough Stone and 1,27,254 m^3 of gravel for the depth of 34 meter.

Although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius cluster along with this subject project works out to >5 Ha. Hence, this proposal is considered under Category – B1 and as per MoEF & CC notification necessitates preparation of EIA/EMP report and public hearing.

The impact assessment and mitigative measures is carried out for the peak production of the mine lease period and the entire area of quarry operation and can be construed as applicable for the entire lease period.

1.2 STATUTORY APPROVALS:

1.	Precise Area Communication Letter	Rc.No.1114/Mines/2021 dated 04.03.2023.
2.	Mining Plan Approval	Rc.No.1114/Mines/2021 dated 21.03.2023
3.	Terms of Reference	Received from SEIAA, Tamil Nadu vide their Lr No. SEIAA-TN/F.No.10229/SEAC/ToR-1546/2023 dated 27.09.2023

Based on the conditions of Precise Area Communication letter, a safety distance of 7.5m safety distance has been left for the adjoining patta lands, 10m for the Odai. As per TOR Condition, EIA/EMP report is prepared. Salent details of the report is given below.

2.1 SITE DESCRIPTION:

Table No.1: SITE DETAILS

Particulars	Details
Name of the Project	Rough Stone and Gravel Quarry of Thiru. S.R. Muthupandi.
Location of the project	Viralipatti village, Vadipatti Taluk, Madurai District, Tamil Nadu.
Latitude & Longitude	Latitude: 10^0 06' 27.2" to 10^0 06' 40.1" N Longitude: 77^0 58' 51.5" to 77^0 59' 00.06" E
Mining Lease area	4.20.0 Ha
Type of land	The lease area of 4.20.0 Ha is a patta land.
Mine site topography	Almost Plain Terrain
Accessibility	The applied area can be easily accessible Viralipatti at a distance of 28 Kms from Madurai to Didigal road, and then to the applied area at a distance of 2Km towards northeast of Viralipatti
Nearest Highway	(NH-7) - 2.0 Km– (SW)
Nearest Railway station	Vadipatti – 5 Km- (SW)
Nearest Airport	Madurai- 35km – (SE)
Nearest major water bodies	Kalankaluvi Ar -3.5km–NW, Satti Ar – 9.8km – NE, Vaigai River – 8.6km – SW, Periyar Main Canal – 3.5km – SW.
Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves)	Nil within 10 Km radius
Notified Archaeologically important places, Monuments	Nil within 10m radius
Reserved / Protected Forests	Reserve Forest-0.5 Km-N Kachaikatti RF – 1.4km – NE, Sembatti RF - 8.9km – E, Waguttumalai RF - 3.4km – SE, Sirumalai RF – 6.2km – NE
Seismic Zone	Zone – II (Least Active)

Table No.2: TECHNICAL DESCRIPTION

<table>
<tr><th>Particulars</th><th>Details</th></tr>
<tr><td>Geological reserve</td><td>14,25,569 Cu.m.</td></tr>
<tr><td>Mineable reserve</td><td>5,86,419 Cu.m.</td></tr>
<tr><td>Method of Mining</td><td>Open cast mechanized mining method with drilling, blasting, excavation, loading and transportation of Roughstone to needy buyers.</td></tr>
<tr><td>Production</td><td>
<table>
<tr><th>Year</th><th>GRAVEL(m3)</th><th>ROUGHSTONE (m3)</th></tr>
<tr><td>I</td><td>16100</td><td>42875</td></tr>
<tr><td>II</td><td>14490</td><td>49950</td></tr>
<tr><td>III</td><td>14490</td><td>49950</td></tr>
<tr><td>IV</td><td>14490</td><td>49950</td></tr>
<tr><td>V</td><td>14490</td><td>49950</td></tr>
<tr><td>First 5 Year Total</td><td>74,060</td><td>2,42,675</td></tr>
<tr><td>2nd 5 year Total</td><td>53,194</td><td>2,16,490</td></tr>
<tr><td>10Year Total</td><td>1,27,254</td><td>4,59,165</td></tr>
</table>
</td></tr>
<tr><td>Life of the mine</td><td>10 Years</td></tr>
<tr><td>Waste Generation and Management</td><td>No waste generation anticipated in this quarry operation since the entire excavated material will be utilized.</td></tr>
<tr><td>Ultimate Mine depth</td><td>34m</td></tr>
<tr><td>Manpower</td><td>18 People directly and more than 50 people indirectly</td></tr>
<tr><td>Water Requirement & source</td><td>Total water – 10 KLD
Will be procured from outside agencies initially. Later, water collected in the mine pit will be used to meet the needs.</td></tr>
<tr><td>Power Requirement</td><td>All the equipment will be diesel operated. No electricity is needed for mining operation. The minimum power requirement for office, etc will be met from state grid.</td></tr>
<tr><td>Site services</td><td>Mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.</td></tr>
<tr><td>Project cost</td><td>Rs. 1,85,75,310 /-</td></tr>
<tr><td>CER cost</td><td>Rs.5.0 Lakhs</td></tr>
</table>

3.1 EXISTING ENVIRONMENTAL SCENARIO:

The studies and data collection have been carried out systematically and meticulously as per relevant IS codes, CPCB and MoEF&CC guidelines and as per approved ToR during **Summer Season (March 2023 to May 2023)** For the purpose of this study, the area has been divided into two zones, namely, core and buffer zones. Core zone is considered as the total lease area, while buffer zone encompasses an area of 10 km radius distance from the periphery of core zone. The proposed Roughstone and gravel quarry is located in in Viralipatti Village, Vadipatti Taluk, Madurai District, and Tamil Nadu. The details of the 10Km radius study area has been provided below:

Table No.3: SOCIAL, ECONOMIC AND DEMOGRAPHIC PROFILE OF THE STUDY AREA

Details	Population	Percentage
A. Gender-wise distribution		
Male Population	105207	50.04
Female Population	105040	49.96
Total	**210247**	**100**
B. Caste-wise population distribution		
Scheduled Caste	53765	25.57
Scheduled Tribes	1227	0.58
Other	155255	73.84
Total	**210247**	**100**
C. Literacy Levels		
Total Literate Population	143635	68.32
Others	66612	31.68
Total	**210247**	**100**
D. Occupational structure		
Main workers	84756	40.30
Marginal workers	21582	10.30
Total Workers	**106338**	**50.60**
Total Non-workers	**103909**	**49.40**
Total	**210247**	**100**

3.2.1 EXISTING ENVIRONMENTAL QUALITY:

Table 1: Baseline Data

A) METEOROLOGICAL DATA			
PARAMETERS	**MINIMUM**		**MAXIMUM**
Temperature in ^{o}C	13.7		40.0
Humidity in %	17.0		99.0
Wind speed Km/Hr	<1.8		31.0
Predominant wind direction (From)	13.7		
B) AMBIENT AIR QUALITY	**Monitoring Location –** 5 locations		
PARAMETER	**RESULT (µg/m3)**		***LIMIT (µg/m3)**
Location	**Core Zone**	**Buffer Zone**	
Particulate Matter (Size <10 µm)	40.4-50.4	42.8-64.3	100
Particulate Matter (Size <2.5 µm)	20.6 – 23.8	21.2 – 29.9	60
Sulphur Dioxide (as SO_2)	4.1– 6.4	4.2– 6.9	80
Nitrogen Dioxide (as NO_2)	7.9-10.2	8.2 -12.7	80
Conclusion: The existing Ambient Air Quality levels for PM10, PM2.5, SO2 and NO2, are within the NAAQ standards prescribed CPCB limits of 100 µg/m3, 60 µg/m3, 80 µg/m3 & 80 µg/m3. The CO values in all the locations were found to be below detectable limit. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m3)			
C) WATER QUALITY	**Monitoring Location –** 5 locations		
PARAMETER	**Result**		***LIMIT (µg/m3)**
pH at 25 ˚C	7.59 – 7.98		**6.5-8.5**
Total Dissolved Solids, mg/L	425 – 802		**2000**
Chloride as Cl-, mg/L	118 – 390		**1000**
Total Hardness (as CaCO3), mg/L	227 – 338		**600**
Total Alkalinity (as CaCO3), mg/L	194– 274		**600**
Sulphates as SO42-, mg/L	45.7 – 138		**400**
Iron as Fe, mg/L	0.03 – 0.07		**0.3**
Nitrate as NO3, mg/L	2.68 – 4.56		**45**
Fluoride as F, mg/L	0.36 – 0.55		**1.5**
Conclusion: The water quality of ground water is found to be within the prescribed Permissible limits of IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications.			

D) NOISE LEVELS		**Monitoring Location –** 5 locations	
PARAMETER	**RESULT dB(A)**		***LIMIT (µg/m3)**
	Day Equivalent	**Night Equivalent**	
Core Zone	45.2	40.0	**90**
Buffer Zone	44.0 – 51.1	40.1 – 41.9	**Day Equivalent - 55dB(A), Night Equivalent - 45dB(A)**
*Permissible noise for industrial workers as laid down by CPCB (at 8 hrs Exposure Time). While comparing with the MoEF&CC Norms, the monitored ambient noise levels are generally within the limit values.			
E) SOIL QUALITY		**Monitoring Location –** 3 locations	
PARAMETER		**Range of values**	
pH		6.85 to 7.18	
Electrical Conductivity (µmho/cm)		38.95 – 65.42	
Organic matter (%)		0.72 – 1.32	
Total Nitrogen (mg/kg)		150 - 234	
Phosphorus (mg/kg)		1.44 – 2.09	
Sodium (mg/kg)		345- 420	
Potassium (mg/kg)		645 - 780	
Soil is of Loam type.			

3.2.2 LAND EVIRONMENT:

Landuse pattern study carried out through remote sensing satellite data around the 10km buffer zone shows that 16.84 % of the study area is agriculture land and 7.25 % are fallow land. Land with scrub constitutes 23.21 %, lands without scrub constitute 0.64 %, Scrub forest constitute 33.27 % and waterbodies constitute 0.78 % & others constitute 2.45 %.

3.2.3 BIOLOGICAL ENVIRONMENT:

Flora: The lease area is a non-forest, private land. Major part of lease area is barren fallow land with bushes (Prosopis juliflora) and grasses. The detailed list of plants found in the core zone are given in Table no – 3.24. The Dominated species in the buffer zone are Borassus flabellifer, Acacia nilotica, Acacia auriculiformis, Acacia leucophloea Azadirachta indica, Prosopis juliflora, Albizia lebbeck, etc. The detailed list of plants found in the Bufferzone is given in Table no – 3.25.

Fauna: There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals like Cows, Buffalos, Dogs, Cats etc., are commonly found. The lease and 10 Km buffer zone does not fall in the Western Ghats ESA boundary. No wild mammalian species was directly sighted during the field survey. There is no Schedule I species in the core & buffer zone. The list of fauna within the study area is given in Table No – 3.27.

3.2.4 HYDROLOGICAL STUDY:

In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells. The groundwater has revealed that potential fractures are encountered at deeper levels. The occurrence of groundwater mainly in the porous soil are weathered layers, very negligible amount of groundwater percolated through the poorly fractured layer, after that there is no existence of groundwater. Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected. From the nearby working mines, no such seepage is also observed.

4.1 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This is a proposed project and Mechanized Open Cast mining will be carried out to quarry out Rough Stone, & Gravel. The identified impacts due to this mine during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc.

4.1.1 AIR ENVIRONMENT:

The principal sources of air pollution in general due to mining and allied activities will be Excavation, Drilling, Movement of HEMM such as Excavators, tippers etc., Loading and unloading operation and transportation. In case of this mine, the following measures will be adopted to control impact on the air quality due to mining operations in the lease area:

- Regular wetting of transport road using mobile water tanker.
- Wet drilling / Covering of drill holes with wet clothes
- Proper maintenance of roads.
- Avoiding overloading of tippers & Transportation of material by tarpaulin covered trucks
- Proper maintenance of HEMM to minimize gaseous emission

- Setting up of tyre washing facility in the lease area exit.
- Vehicular emission tests with digital smoke meter.
- Provision green netting around the lease periphery on all sides.
- Development of green belt/ plantation in various areas within the mine lease area etc.

By adoption of all these measures, no adverse impact on air quality is envisaged due to this proposed opencast mining operation.

The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model.

The resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM10 are in the range of 53.2 μg/m3 to 65.3 μg/m3 and with respect to PM2.5 are in the range of 25.5 μg/m3 to 30.9 μg/m3 which are within the statutory limits in each case.

. For preservation of environment in this mine strict enforcement of management schemes will be undertaken for taking corrective actions, as needed. By adopting the effective implementation of all the mitigative measures, no adverse impact on Air quality due to the mining operation in this lease area is expected.

4.1.2 WATER ENVIRONMENT:

The total water requirement for this project will be 10.0 KLD. The water will be sourced initially from outside agencies. Later the rainwater collected in the mine pit sump will be used for this purpose. The domestic effluent to be generated from the project will be collected in septic tank with soak pits arrangements. This being a mining project there will not be any process effluent. The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc. Towards surface runoff management, garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users.

There are seasonal odai located adjacent on the eastern and western side of the lease for which 10m safety distance has been left. Both are first order streams and more of a rainwater

carrying channel. The channel on the western side orginates just near the lease area, where as the small portion of the channel on the south eastern corner drains water from the northern hilly terrain. It remains dry for most of the season. During monsoon season the rainwater drains through these drainage channel confluences with downstream channels and finally confluence with the river. There is no proposal to discharge any effluent into this waterbody. No major impact is envisaged on the nearby water bodies due to project operations.

4.1.3 NOISE ENVIRONMENT:

During mining operation there will be noise generation due to working of excavators, movement of vehicles, etc. However, it will be felt near the active working area only and at away from its source it will get reduced. There will also be attenuation due to vegetation, tin sheet/ green netting to be erected by the proponent all around the lease and as such there will not be any adverse noise propagation outside the lease boundary Due to natural attenuation effects, by proper green belt development, design / maintenance of machines, etc., the impact on noise levels will be negligible and are expected to be well within the prescribed limits.

4.1.4 VIBRATION:

In the proposed mine workings, blasting & vibration effects will be controlled by adopting following measures.

- Carrying out controlled blasting using Nonel delay detonator.
- Optimum design for burden and spacing.
- Reducing explosive charge per delay to minimum.
- Using rock breaker wherever possible
- Proper care and supervision during blasting by a competent and experienced person to be carried out.
- Besides, different blasting time for both the projects is suggested and the timing is to be mentioned in the display board in the mines entrance.

By adoption of above measures, it will be ensured that ground vibrational levels due to blasting will be maintained within the prescribed DGMS conditions of 10 mm/s for the domestic houses/structures.

4.1.5 IMPACT ON LAND ENVIRONMENT:

At the end of the 5 year period, 3.18.0 Ha will be used as mined out area at 24m depth. Subsequently, in the remaining 6th to 10th year there will be only depth ward mining in the same mined out area up to 34 m depth. Ultimately the entire mined out area will be left as water body. 0.08.0 Ha will be the mine roads& infrastructure, 0.72.0 Ha will be covered with vegetation, 0.10.0 ha will be undisturbed area and 0.12.0 will be fencing. Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals. In the post mining stage the rainwater harvested in the mined out void shall be utilized.

4.1.6 BIOLOGICAL ENVIRONMENT:

Necessary mitigative measures like dust suppression, proper maintenance of equipment's, greenbelt and plantation etc., will be carried out to prevent dust generation & any further impact on the vegetation or agricultural activity nearby. Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area.

4.1.7 SOCIO ECONOMIC ENVIRONMENT:

The entire lease area is private patta land. There are no habitations or hutments in the core zone area and no rehabilitation or resettlement problems will arise here.

The mining operations in the proposed mine will provide the following socio-economic benefits:

- Direct Employment for about 18 persons.
- Besides through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise in this area, which will provide raising income levels and standards of living in the area through various service-related activities connected with the project operations.
- Benefit to State and central exchequer by way of royalty, taxes.

Towards the socio-economic development of the surrounding area, the proponent has earmarked an amount of Rs.5.0 Lakhs under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner in the nearby Government school. In consultation with the locals based on the need & priority it will be implemented.By carrying out systematic and scientific mining and implementing all the environmental mitigative measures it will be ensured that there will be no adverse impact on this front.

4.1.8 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:

The material mined out from this lease area will be directly transported to the required customers. During the project operations, there will be 4 trips/hr. The transport route will be properly maintained to absorb this traffic due to this project. The following mitigative measures are suggested for mitigation of adverse impacts on the logistical aspect of the project:

- Water sprinkling on mineral in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- Plantation on either side of the transport road in consultation with the concerned department.
- Proper maintenance of transport road.
- Proper maintenance of transport vehicles.
- Avoiding overloading of material.
- Covering of loaded vehicles with tarpaulins sheet.
- Keeping traffic regulators at vulnerable locations.
- Limiting of speed
- Installation of barriers at vulnerable locations

4.1.9 WASTE MANAGEMENT:

There is no process effluent generation from this mine. Hence no liquid waste is generated. Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

5.1 ENVIRONMENTAL MONITORING PROGRAME:

Regular, systematic and sustained programme schedules for implementation and monitoring of various control measures are devised with clear cut guidelines of various concerned plans for keeping a continuous surveillance on the various environmental quality parameters in the area. The Mines Manager in the mine project site will be directly responsible for various environmental activities in the mine and will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level control, plantation programme, social development schemes, etc in the mine. Towards EMP measures, Rs. 27.38 Lakhs is allocated under capital cost. Besides, Rs. 18.29 Lakhs per annum will be spent under recurring cost. The baseline monitoring carried out for this project reflects the cumulative impact of this existing quarry.

6.1 CUMULATIVE IMPACT STUDY:

Although the individual lease area of this project is less than 5 Ha, the other existing and proposed quarries within the 500m radius along with this subject project works out to >5 Ha. As such cluster situation applicable and this EMP is prepared. The baseline monitoring carried out for this project reflects the cumulative impact of the existing quarry. For the proposed quarries, a cumulative impact study has been carried out:

Combined cumulative computer Air Quality Model simulations carried out show that the resultant added concentrations with baseline figures with respect to PM_{10} is in the range of 55.5μg/m3 to 65.3 μg/m3 and with respect to PM2.5 are in the range of 26.4μg/m3 to 30.9μg/m3 which are within the statutory stipulations in respective case..It is observed that the peak incremental concentration for PM_{10}, $PM_{2.5}$ is occurring very near the source. At away from

the source the values are getting drastically reduced due to dispersion effects no effect is observed. As such no adverse impact on Ambient air quality is envisaged.

Cumulative Noise modeling has been carried out to determine the post project noise levels due to the mining operations of the proposed quarries and it is seen that that the post project concentration in the nearby areas are within the statutory limits of 55dB(A). For other environmental attributes also, by implementing the mitigative measures as suggested in the report continuously and rigorously, no adverse impact on the surround environment is expected on the cumulative basis also.

7.1 CONCLUSION:

By systematic and scientific mining adhering to all the statutory norms and enforcing and strictly implementing the above said mitigation measures mentioned in this report, no adverse impact is envisaged. The proposed mining project will benefit this region in the fields of potential employment opportunities, improved income for local people, improved social welfare facilities in respect of education, medical healthcare systems, etc. in its own way and also revenue to Government through royalty, taxes etc. Besides, it will meet the raw material requirement of the construction industry also.

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