SUMMARY

OF

EIA / EMP REPORT

FOR

ROUGH STONE QUARRY

VILLAGE - PADUR, TALUK– UTHIRAMERUR,

DISTRICT - KANCHIPURAM, STATE - TAMILNADU

PROPONENT	THIRU.L.MUTHURAJ
Lease area	1.40.98Ha
Survey No.	114/1, 114/2, 114/3, 114/4, 114/5, 114/6, 114/7, 114/8, 114/9B and 115

CATEGORY- B1

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JULY 2021

SUMMARY

1.0 GENERAL:

Thiru.L.Muthuraj proposes to operate a **Rough Stone and Gravel Quarry** at Survey No. 114/1, 114/2, 114/3, 114/4, 114/5, 114/6, 114/7, 114/8, 114/9B and 115 over an area of 1.40.98Ha in Padur Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu, for the TOR approved production capacity of 93800m^3 of Rough Stone and 6786m^3 of gravel formation at a depth of 26m for the period of Five years, within an effective mining area of 0.68.0 Ha.

Precise area communication letter was obtained from the District Collector, Kanchipuram District vide letter no. Rc.No.386/Q3/2019dated 14.01.2020. Mining plan for this project was approved vide letter no. Rc.No.386/Q3/2019 dated 26.02.2020..

Although the individual lease area of this project is less than 5 Ha, including the other existing quarries within the 500m radius along with this subject project works out to >5 Ha and as such this proposal is considered **under cluster Category – B1** and public hearing is to be conducted.

ToR for this project has been received from SEIAA, Tamil Nadu vide their letter No. SEIAA-TN/F.No.7696/SEAC/TOR-978/2020 dated 05.07.2021. The EIA/EMP report is prepared based on standard and specific Terms of Reference issued by SEIAA, Tamil Nadu and is in conformance of the generic structure prescribed by MOEF&CC in their notification of September 2006.

2.0 SITE DESCRIPTION:

The salient features of the project are briefly given below.

S.No	Particulars	Details
1.	Name of the Project	Rough Stone and Gravel Quarry of Thiru.L.Muthuraj,
2.	Location of the project	Padur village of Uthiramerur Taluk, Kanchipuram District, Tamil Nadu State
3.	Latitude & Longitude	Latitude: 12°42'46"N to12°42'54"N Longitude: 79°50'27"E to 79°50'32"E.
4.	Mine site topography	Plain
5.	Mining Lease area (ML area)	1.40.98 Ha
6.	Type of land	Patta Land
7.	Temperature °C	Average 20°C & 37°C. Peak summer- 43°C

8.	Average Annual rainfall	1250mm
9.	Nearest Highway	(SH-58) Walajabad -Chengalpattu - 7.0km – NE Majar District Road 789 – (0.6 km) – W
10.	Nearest Railway station	Walajabad – 9.0 km (N)
11.	Nearest Airport	Chennai - Meenambakkam – 46.0 Km (NE)
12.	Nearest major water bodies	Kalthangal Lake - S Cheyyar River - 3.2km – NW Palar River - 5.8km - NE
13.	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 10km radius.
14.	Reserved / Protected Forests	Kavanippakkam R F Idaimichi R F Marudam R F
15.	Nearest Town	Uthiramerur – 13.5km (SW)
16.	Nearest villages	Padur –600m (W)
17.	Seismic Zone	Area falls in Zone – II (Least Active)

2.1 PROJECT DESCRIPTION:

<table>
<tr><th>S.No</th><th>Particulars</th><th>Details</th></tr>
<tr><td>1.</td><td>Geological resources</td><td rowspan="2"><table>
<tr><th>S. No</th><th>Type of reserves</th><th>Rough stone (Cum)</th><th>Gravel (Cum)</th></tr>
<tr><td>1</td><td>Geological reserves</td><td>4,21,860</td><td>14,062</td></tr>
<tr><td>2</td><td>Mineable reserves upto 31m</td><td>96,110</td><td>6,786</td></tr>
<tr><td>3.</td><td>Mineable reserves upto 26m</td><td>93800</td><td>6786</td></tr>
</table></td></tr>
<tr><td>2.</td><td>Mineable reserves</td></tr>
<tr><td>3.</td><td>Five Year Production Capacity</td><td><table>
<tr><th>YEAR</th><th>ROUGHSTONE (m3)</th><th>GRAVEL (m3)</th></tr>
<tr><td>I</td><td>19380</td><td>4002</td></tr>
<tr><td>II</td><td>19320</td><td>2784</td></tr>
<tr><td>III</td><td>19270</td><td>-</td></tr>
<tr><td>IV</td><td>19245</td><td>-</td></tr>
<tr><td>V</td><td>16585</td><td>-</td></tr>
<tr><td>Total</td><td>93800</td><td>6786</td></tr>
</table></td></tr>
<tr><td>4.</td><td>Life of the mine</td><td>5 years</td></tr>
</table>

5.	Total Waste	Since the entire material will be utlised there will be no waste Generation.
6.	Method of mining	Opencast semi mechanized mining using jackhammer drilling, blasting, excavation through excavator & mineral transport through tippers will be carried out.
7.	Bench parameters	Bench height - 5 m, bench widths - 5m
8.	Ultimate mine depth	The quarrying depth has been restricted from mine plan approved depth of 31m to 26 m based on the conditions of the Terms of Reference.
9.	Ore end use	The overburden in the form of Gravel will be loaded into tipper and marketed to needy customers The excavated rough stone will be excavated and loaded into tipper to the needy buyers for producing crusher aggregates, M Sand .
10.	Manpower	The project will Provide employment opportunities to about 12 people.
11.	Water Requirement & source	The total water requirement for this project will be 2.5KLD. The required water will be procured from outside agencies initially. Later rainwater collected in the mine pit will be used.
12.	Power Requirement	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.
13.	Site services	Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.
14.	CER Budget	Rs. 2.5 Lakhs
15.	Project cost	Rs 54,13,920/-

3.0 EXISTING ENVIRONMENTAL SCENARIO:

3.1 GENERAL:

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 2021 to May 2021)** 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.

3.2 SOCIO-ECONOMIC STATUS:

i. Core Zone:

The total mine lease area of 1.40.98 Ha. Entire ML area is a private patta land with no forest or agricultural area involved.

ii. Buffer Zone:

Based on 2011 census data, in the 10km radius there are 92 Rural villages from Four Taluks namely Uthiramerur,Chengalpattu , Maduranthakam ,Kancheepuram and 1 urban area Walajabad (TP) of Kancheepuram Taluk.

The distribution of population is as below:

- Male - 58433 (50.07%)
- Female - 58280 (49.93%)
- Total - 116713
- Scheduled caste - 41.65%
- Scheduled tribes - 2.38%
- Total literacy rate in the area - 65.55% of the people are literate and 34.45% of the people are illiterate.

The occupational structure of the area is as below:

Total main workers	-	43797 (37.50 %)
Total marginal workers	-	12693 (10.90 %)
Total non-workers	-	60223 (51.60%)

3.3 SAMPLE SURVEY:

5 villages were visited for conducting sample Village survey on all socio-economic aspects and requirements of the people. The existing socio-economic scenario is studied and CER activities are also suggested to the proponent. The study details are given in **Para 3.2.4, Chapter – III**.

1. Ambient Air Quality:

The ambient air quality data for PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO studied at 8 locations as per prescribed guidelines/ methods. The AAQ monitored data for all locations for above parameters are shown in below.

Season: Summer Season, March 2021 to May 2021

Values in µg/m^3

S.No	PARAMETERS	Cat.* (R,I,S)	PM_{10}	$PM_{2.5}$	SO_2	NO_2
1	**CORE ZONE** (1 Location)	I	48.2 to 55.4	20.4 to 25.5	4.6 to 7.1	7.5 to 10.8
2	**BUFFER ZONE** (7 Locations)	R	44.8 to 78.2	18.3 to 39.4	4.1 to 10.4	7.1 to 17.8
CPCB LIMITS			**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**NO_2**
2009 Notification			**100**	**60**	**80**	**80**
*** Note: BDL- Below Detectable Limit, DL- Detectable Limit.**						
Conclusion: The existing Ambient Air Quality levels in the monitored locations for PM_{10}, $PM_{2.5}$, SO_2, NO_2 & CO are within the prescribed CPCB limits.						

2. Water Environment:

	No of Samples – 12 samples					Season: Summer Season, March 2021 to May 2021)				
Parameter	**pH**	**EC (µmhos /cm)**	**TDS (mg/L)**	**Chloride (mg/L)**	**Total Hardness (mg/L)**	**Total Alkalinity (mg/L)**	**Sulphate (mg/L)**	**Iron (mg/L)**	**Nitrate (mg/L)**	**Fluoride (mg/L)**
BUFFER ZONE (12 Locations)	6.98 to 8.14	344 to 1125	210 to 686	24 to 156	72 to 302	113 to 334	15 to 81	BDL to 0.14	BDL to 2.35	0.21 to 0.61
Limits* Permissible	**6.5-8.5**	**-**	**2000**	**1000**	**600**	**600**	**400**	**0.3**	**45**	**1.5**
	Conclusion: The water quality of the collected ground water samples were found to be within the prescribed permissible limits of IS: 10500:2012 Norms for Drinking in the absence of an alternative source*.									

3. Noise Environment:

No of locations – 8			Season: Summer Season, March 2021 to May 2021)	
Noise Level In dB(A)	**Core Zone dB(A)** (1 Location)	***Work zone exposure limit dB(A)**	**Buffer Zone dB(A)** (7 Locations)	**MOEF&CC Norms dB(A)**
Day Equivalent	51.2	**90**	51.9 to 54.8	**55**
Night Equivalent	41.2		40.7 to 44.6	**45**
*Permissible noise for industrial workers as laid down by CPCB (at 8 hrs Exposure Time) **Conclusion**: While comparing with the MoEF&CC Norms, the monitored ambient noise levels are within the limit values for Residential areas.				

4. Soil Quality:

Parameter	pH	Electrical Conductivity µmhos/cm	Soil Type	Organic matter content %	Total Nitrogen mg/kg	Phosphorus mg/kg	Sodium mg/kg	Potassium mg/kg
Core Zone	6.86	76.87	Sandy Loam	1.13	136	1.32	595	513
Buffer Zone	6.09 – 7.26	65.98 – 120.4	Sandy Loam	0.48– 1.42	72.1 - 150	0.89 - 1.33	420 - 654	308 - 905

3.4 LAND EVIRONMENT:

For the present study on land use pattern in the study area, remote sensing satellite data have been used. The area estimated of land use categories around the 10km buffer zone is provided below:

S.No	Landuse Feature	Area (Sq.Km)	Percentage
1	Crop Land / Plantation	73.08	23.73
2	Fallow Land	63.81	20.72
3	Scrub Forest	4.59	1.49
4	Land with Scrub	83.2	27.02
5	Land without Scrub	37.35	12.13
6	Water Bodies	37.15	12.06
7	Settlement	5.94	1.93
8	Mining Area	2.84	0.92
	Total	307.96	**100**

From the above table it is seen that 23.73 % of the study area is agriculture land and 20.72 % are fallow land. Land with scrub constitutes 27.02 %, lands without scrub constitute 12.13, Water bodies constitute 12.06% and others constitute 4.34%.

3.5 BIOLOGICAL ENVIRONMENT:

The lease area is a non forest, private land with scrub and thorny bushes. The lease area is dominated Prosopis juliflora, Abutilon indicum ,Calotropis gigantean. The buffer zone is dominated by species like *Acacia catechu, Acacia auriculiformis, Delonix elata, Azadirachta indica, Pongamia pinnata, Morinda tinctoria etc. Patches of Banana and rice cultivation, are also observed in the study area etc.*

No Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals and common birds are observed in the study area.

3.6 HYDROLOGICAL STUDY:

The general trend of depth to water level for uthiramerur block was obtained from the data obtained from India-WRIS, Department of Water Resources, Ministry of Jal Shakti for uthiramerur block, Kanchipuram District, Tamil Nadu.

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. This is evident in the nearby working quarries where no seepage is observed in the mine faces

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:

This is a proposed project and Semi – 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 AIR ENVIRONMENT:

The proposed mining and allied operations may cause deterioration of air quality due to pollution arising from the project operation if prompt care is not taken. The principal sources of air pollution in general due to mining and allied activities will be:

Dust generation in the mine due to:

- Excavation of material
- Movement of HEMM such as Excavators, tippers etc.
- Loading and unloading operation
- 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:

- Deployment of mobile water sprinkler for fugitive dust suppression in haul roads.
- Covering of drill holes with wet sag or use of water jet for dousing the cuttings
- Proper maintenance of roads.
- Avoiding crowding of trucks by properly spacing them to avoid the concentration of dust emission at any time.
- Transportation of material by tarpaulin covered trucks
- Proper maintenance of HEMM to minimize gaseous emission
- Imparting sufficient training to operators on safety and environmental parameters
- 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 developed by Lakes Environmental Software which is based on steady state Gaussian plume dispersion.

The resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM_{10} are in the range of 51.8 μg/m3 to 79.2 μg/m3 and with respect to PM2.5 are in the range of 25.6 μg/m3 to 40.4 μg/m3 which are well within the statutory norms 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.

4.2 WATER ENVIRONMENT:

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.

Kalthangal lake is on southern side of the lease area for which 50m safety distance has been maintained within the lease area as per the conditions of the precise area communication letter from the Government. No working will be carried out in this 50m safety zone, Besdies, earthen bund will be formed within the lease area in the periphery and protected. Good plantation will be carried out in this safety zone area. Peripheral lease area will be properly fenced with barbed wire and it will be ensured no impact is caused on this.

There is no proposal to discharge any effluent into these water bodies. No major impact is envisaged on the nearby water bodies due to project operations.

4.3 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. 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.

4.3.1 VIBRATION:

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

- Carrying out controlled blasting using Nonel millli second delay detonator.

- Optimum design for burden and spacing.
- Reducing explosive charge per delay to minimum.
- Use of suitable initiating sequence and millisecond delay detonators.
- Proper care and supervision during blasting by a competent and experienced person to be carried out.

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.

4.4 IMPACT ON LAND ENVIRONMENT:

In the post mining stage, 0.68.00Ha of mined out area will be left as water body. 0.01.00Ha will be the mine roads and 0.71.98Ha will be covered with vegetation. 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 in the area in consultation with the authorities.

4.5 BIOLOGICAL ENVIRONMENT:

No major clearance of vegetation is involved in this project. Necessary mitigative measures like dust suppression, proper maintenance of equipments etc., will be carried out to prevent dust generation & any further impact on the vegetation. About 0.71.98 ha of lease area comprising safety barrier around the mine periphery, will be developed with Greenbelt / Plantation to enhance the vegetative growth and aesthetic in the safety zone area.

4.6 SOCIO ECONOMIC ENVIRONMENT:

Entire Land is in proponent possession there are no habitations or hutments in the core zone area, no rehabilitation or resettlement problems will arise here. Adequate safety distance inline with the Government order along with concrete wall on the eastern side and bund on the southern side all around fencing will be carried out.

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

- Employment for about 12 persons directly.
- Indirect opportunity to about 50 people through various service related activities connected with the project operations like:

- ✓ Project related logistical operations for transport of Rough Stone & Gravel, etc,
- ✓ Various trading services for consumer goods, spare parts, sundry items, etc.
- ✓ Contractual services connected with the project.
- ✓ Green belt development

- ➢ Improvement in medical care system for the locals.
- ➢ 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. 2.50 Lakhs under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner in the following areas:

- Improvement in nearby school infrastructure and Providing Educational support to needy students.
- Conducting periodical Medical camp in the area.
- Desilting of nearby village ponds
- Providing treated drinking water facilities.

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.

4.7 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:

From this proposed quarry the entire output will be transported to the consumers. Since the productivity is less, there will be hardly about 2 trips per hour. The transport route can easily absorb this negligible 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 transport road and Rough stone in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.
- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet if warranted.

4.8 OCCUPATIONAL HEALTH AND SAFETY ASPECTS:

In order to ensure minimisation of occupational health and safety problems in the project operation, the following preventive remedial measures will be effectively exercised in the project operations, so as to comply with applicable standards.

- Medical examination of workers at pre-entry level stage of workers, etc., by qualified doctors, with periodical examination of all workers/staff at least once a year, as per DGMS circulars.
- Regular awareness campaigns amongst staff and workers
- Staff will be provided with PPE to guard against excess noise levels, Dust generation and inhalation, etc., as per standards prescribed by DGMS.

4.9 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.

5.0 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/Mine Incharge will undertake effective monitoring and implementation of various above said 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. 3.0 lakhs is allocated under capital cost. Besides, Rs.7.5 lakhs per annum will be spent under recurring cost.

7.0 CONCLUSION:

Small scale systematic mining operation in this lease conforming to all the statutory norms and by enforcing and strictly implementing the above said mitigation measures mentioned in this report, is expected to cause no adverse impact on the nearby environment.

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.

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