SUMMARY

OF

DRAFT EIA / EMP REPORT

FOR

ROUGSHTONE AND GRAVEL QUARRY

Extent	**2.09.5 Ha**
Land Type	**Consent patta land**
Production for 5 years	**Roughstone – 2,58,055 m3 Gravel – 19,992 m3**
Depth	**42m bgl**
Lease Period	**5 years**
Category	**B1**

SURVEY NO -179/1, 179/2, 179/3, 180/3F, 180/3G, 180/4A, 180/5A, 180/4B, 180/4C, 180/4D, 180/4E AND 180/4F,

VILLAGE – KUNDIYANTHANDALAM, TALUK – VEMBAKKAM,

DISTRICT – TIRUVANNAMALAI,STATE – TAMILNADU.

- **Terms of Reference issued by SEIAA, Tamil Nadu vide Lr.No.SEIAA-TN/F.No-9410/ToR-1281/2022 Dated: 08.10.2022.**
- **Baseline Monitoring Period – Summer Season (March 2022 to May 2022)**

PROJECT PROPONENT

THIRU.T.BHARATH

S/O.THIYAGARAJAN, NO.1/79, JAIN STREET, AARPAKKAM VILLAGE, KANCHIPURAM DISTRICT. PIN CODE:631603.

CONSULTANT

CREATIVE ENGINEERS & CONSULTANTS

NABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

9B/4, Bharathwajar Street, East Tambaram, Chennai-600059.

Ph: 044-22395170, Cell: 09444133619 Email : cecgiri@yahoo.com,

DECEMBER - 2022

SUMMARY

1.1 INTRODUCTION:

Thiru.T.Bharath proposes to operate a **Rough Stone and Gravel Quarry** at Survey Nos.179/1, 179/2, 179/3, 180/3F, 180/3G, 180/4A, 180/5A, 180/4B, 180/4C, 180/4D, 180/4E and 180/4F over 2.09.5Hectares In Kundiyanthandalam Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu and has initiated action towards obtaining environmental clearance. This proposal involves production capacity of 2,58,055m3 of Rough Stone and 19,992m^3 of Gravel formation at a restricted depth of 42m for the period of 5 years

Although the individual lease area of this project is less than 5 Ha, the other existing 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. As such Common EIA for Rough Stone and Gravel Quarry of Thiru.T.Bharath, Roughstone and Gravel Quarry of Thiru.N.Nagarajan falling in the cluster along with separate assessment of impacts and EMP for each project is carried out. This draft EIA/EMP report is prepared for the Rough Stone and Gravel Quarry of Thiru.T.Bharath.

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:

Table 1:Statutory Approvals

1.	Precise Area Communication Letter	Rc.No.84/Kanimam/2018dated 08.04.2022
2.	Mining Plan Approval	Rc.No.84/Kanimam/2018dated 06.05.2022
3.	Terms of Reference	Letter No. SEIAA-TN/F.No.9410/ToR-1281/2022 Dated: 08.10.2022.

Based on the conditions of Precise Area Communication letter, a safety distance of 10m safety distance has been left for the Government land in the northern side and 7.5m safety distance has been left for the adjoining patta lands.

2.1 SITE DESCRIPTION:

Table 2: Site Details

S.No	Particulars	Details
1.	Name of the Project	Rough Stone and Gravel Quarry of Thiru.T.Bharath,
2.	Location of the project	Kundiyanthandalam Village, Vembakkam Taluk, Tiruvannamalai District
3.	Survey No.	Survey nos: 179/1, 179/2, 179/3, 180/3F, 180/3G, 180/4A, 180/5A, 180/4B, 180/4C, 180/4D, 180/4E and 180/4F
4.	Proposed production	Roughstone – 2,58,055m3 Gravel – 19,992m3
5.	Latitude & Longitude	**Latitude:** 12°44'00.11"N to 12°44'06.15"N **Longitude:** 79°43'13.25"E to 79°43'19.88"E
6.	Mining Lease area	2.09.5 Ha
7.	Type of land	Private Patta land
8.	Mine site topography	The area applied for mining lease is a gentle plain terrain. Part of the lease area has already been mined out
9.	Accessibility	The lease area can be approached road from existing road from Poonaithangal - Arapakkam road and also through Perumanallur - Seniyanallur Road which is connected to SH-118A-Kanchipuram- Uthiramerur -3.2Km E
10.	Nearest Highway	(SH-118A) Kanchipuram- Uthiramerur –3.2km - E
11.	Nearest major Railway station	Kanchipuram R S – 12.5km - N
12.	Nearest Airport	Chennai – 56.0km – NE
13.	Nearest major water bodies	Tank - 550m (NE), Tank - 410m (NW), Canal - 2.4km - (N), Cheyyar River – 3.8km - (SE), Palar R- 5.7Km -(NE), Mamandur Tank- 6.6km-(W), Vegavati River- 8.7km-(NE)
14.	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
15.	Local Places of Historical and Tourism Interest	Mamandur Pallava Cave temple-6.0Km-W Kanchi Kamatchiamman Temple 11.8km- N
16.	Reserved / Protected Forests	Marudam R F – 8.5km - SE
17.	Seismic Zone	Zone – II (Least Active)

Table 3: Technical Description

<table>
<tr><th>S.No</th><th>Particulars</th><th>Details</th></tr>
<tr><td>1.</td><td>Geological reserve</td><td>Roughstone – 9,40,905cum , Gravel- 41,818cum</td></tr>
<tr><td>2.</td><td>Mineable reserve</td><td>Roughstone – 2,58,055cum , Gravel – 19,992cum for 42m depth</td></tr>
<tr><td>3.</td><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>4.</td><td>Production</td><td>
<table>
<tr><th>YEAR</th><th>RoughStone m^3</th><th>Gravel in m^3</th></tr>
<tr><td>1</td><td>52100</td><td>19992</td></tr>
<tr><td>2</td><td>53000</td><td>-</td></tr>
<tr><td>3</td><td>53205</td><td>-</td></tr>
<tr><td>4</td><td>52625</td><td>-</td></tr>
<tr><td>5</td><td>47125</td><td>-</td></tr>
<tr><td>Total 1 to 5</td><td>2,58,055</td><td>19,992</td></tr>
</table>
</td></tr>
<tr><td>5.</td><td>Lease Period</td><td>5 Years</td></tr>
<tr><td>6.</td><td>Waste Generation and Management</td><td>Since the entire material will be used there will be no waste generation</td></tr>
<tr><td>7.</td><td>Ultimate Mine depth</td><td>42m</td></tr>
<tr><td>8.</td><td>Manpower</td><td>Direct – 13, Indirect – 12</td></tr>
<tr><td>9.</td><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>10.</td><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>11.</td><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>12.</td><td>Project cost</td><td>Rs.81,77,000/-</td></tr>
<tr><td>13.</td><td>CER cost</td><td>Rs.5.0 Lakhs</td></tr>
</table>

Quarrying in part of the lease area was earlier carried out by Thiru.T.Bharath during the earlier lease period. To mine the balance available mineable reserves , proponent has applied now.

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 2022 to May 2022)** For the purposes of this study, the area has been divided

into two zones, namely, core and buffer zones. The entire lease area is considered to be the core zone while the buffer zone encompasses a 10km radius from the periphery of the core zone. Based on 2011 census data, in the 10km radius there are 94 Rural Villages and 6 urban areas from Three Taluks namely Cheyyar, Kancheepuram, Polur belonging to Kancheepuram and Tiruvannamalai District.

Table 4: Social, Economic & Demographic Profile of The Study Area

Details	Population	Percentage
A. Gender-wise distribution		
Male Population	193931	50.09
Female Population	193961	49.91
Total	**387192**	**100**
B. Caste-wise population distribution		
Scheduled Caste	58072	15.00
Scheduled Tribes	2894	0.75
Other	326226	84.25
Total	**387192**	**100**
C. Literacy Levels		
Total Literate Population	282679	73.01
Others Population	104513	26.99
Total	**387192**	**100**
D. Occupational structure		
Main workers	145033	37.50
Marginal workers	23866	6.20
Total Workers	**168899**	**43.70**
Total Non-workers	**218293**	**56.40**
Total	**387192**	**100**

3.2.1 EXISTING ENVIRONMENTAL QUALITY:

The details of the same are provided below:

Table 5: Baseline Data

A) AMBIENT AIR QUALITY	**Monitoring Location –** 8 locations		
PARAMETER	**RESULT (µg/m3)**		***LIMIT (µg/m3)**
Location	**Core Zone**	**Buffer Zone**	
Particulate Matter (Size <10 µm)	53.5 – 68.6	48.2-81.5	100
Particulate Matter (Size <2.5 µm)	24.6 - 31.6	21.7-38.3	60

Sulphur Dioxide (as SO_2)	5.4 -6.5	4.3-7.2	80
Nitrogen Dioxide (as NO_2)	7.4 -12.4	6.5-14.6	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.			

B) WATER QUALITY	**Monitoring Location –** 9 locations	
PARAMETER	**Result**	***LIMIT (µg/m3)**
pH at 25 ˚C	7.34 – 7.84	**6.5-8.5**
Total Dissolved Solids, mg/L	514 – 1258	**2000**
Chloride as Cl-, mg/L	80.20 – 395	**1000**
Total Hardness (as CaCO3), mg/L	251 – 517	**600**
Total Alkalinity (as CaCO3), mg/L	194– 442	**600**
Sulphates as SO42-, mg/L	61.80 – 323	**400**
Iron as Fe, mg/L	BDL – 0.06	**0.3**
Nitrate as NO3, mg/L	1.64 – 3.89	**45**
Fluoride as F, mg/L	0.15 – 0.47	**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.		

C) NOISE LEVELS	**Monitoring Location –**8 locations		
PARAMETER	**RESULT dB(A)**		***LIMIT (µg/m3)**
	Day Equivalent	**Night Equivalent**	
Core Zone	49.8	39.4	**90**
Buffer Zone	45.0-50.8	39.4 - 44.8	**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.			

D) SOIL QUALITY	**Monitoring Location –** 4 locations
PARAMETER	**Range of values**
pH	6.59-7.58
Electrical Conductivity (µmho/cm)	68.57-90.7
Organic matter (%)	0.42-0.96
Total Nitrogen (mg/kg)	160-201
Phosphorus (mg/kg)	1.25-1.78
Sodium (mg/kg)	542-664
Potassium (mg/kg)	310 – 470
Soil is of loam and clay loam type.	

3.2.2 LAND EVIRONMENT:

Land use pattern study carried out through remote sensing satellite data around the 10km buffer zone shows that 28.12 % of the study area is agriculture land and 31.25 % are fallow land. Land without scrub constitutes 7.08 % and waterbodies constitute 13.77%, Settlement constitutes 11.66 % and remaining constitute 8.11%.

3.2.3 BIOLOGICAL ENVIRONMENT:

Flora: The lease area is a non-forest, private land. Part of lease area contain mined out void and the remaining land is of grasses & few bushes (Prosopis juliflora). The buffer zone is dominated by species like Prosopis juliflora, Acacia auriculiformis, Acacia nilotica, Albizia lebbeck, Azadirachta indica, Borassus flabellifer, Acacia leucophloea etc.

Fauna: There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals are commonly found. There is no Schedule I species in the core & buffer zone.

3.2.4 HYDROLOGICAL STUDY:

To know the hydrological pattern field investigation comprising observation of wells and Geophysical investigations are carried out. From the study the following are observed:

- In the study area, the shallow aquifer is developed through dug wells and deeper aquifer through tube wells.
- The study has revealed that potential fractures are encountered at deeper levels. The water in the wells are available mainly after post monsoon and it reduces during summer necessitating only dry crops cultivation.
- Based on the available information and the geophysical investigations it is concluded that the project area is considered to poor groundwater potential up to 55 to 60m.
- Besides, the mining area consists of hard compact rock, no major water seepage within the mine is expected. There is no water seepage noticed in to the already quarried pits situated nearby the proposed quarry area. Hence, the quarrying rough stone up to the proposed depth may not have any adverse impact in the area over ground water conditions.

4.1 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.

4.1.1 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 of green netting around the lease periphery
- 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 impact on air quality due to the proposed project estimated using computer dispersion model (AERMOD) show that the resultant added concentrations with baseline figures even at worst scenario, the values of ambient air quality with respect to PM_{10} are in the range of 58.4μg/m3 to 82.5μg/m3 and with respect to PM2.5 are in the range of 26.8 μg/m3 to 39.3μg/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. Since the entire material from the quarry face will be directly dispatched to the consumers, there will not be any stockpiles. There are no waste dumps in this quarry. As such there will not be any wash out due to stock pile or waste dumps.

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.

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 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 and following the SOP, 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:

In the post mining stage, 1.61.0Ha of mined out area will be left as water body. 0.02.0Ha will be the mine roads and 0.46.5Ha 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.

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 25 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 3 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 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.

4.1.9 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. 23.40 lakhs is allocated under capital cost. Besides, Rs.18.16 per annum is allocated as recurring cost.

6.1 CUMULATIVE IMPACT STUDY:

The baseline monitoring carried out for this project reflects the cumulative impact of the existing quarries and other activities. For proposed quarries, the cumulative impact of these proposed quarry operations on the environment is studied.

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 58.4 $\mu g/m^3$ to 82.5 $\mu g/m^3$ and with respect to $PM_{2.5}$ are in the range of 26.8 $\mu g/m^3$ to 39.3 $\mu g/m^3$ 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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