

SUMMARY
OF
DRAFT EIA / EMP REPORT
FOR
ROUGHSTONE AND GRAVEL QUARRY

Extent	1.700 Ha
Land Type	Consent Registered Patta Land
Production for 5 years	Roughstone – 1,82,675 m ³ Gravel – 23,916 m ³
Depth	32m bgl
Lease Period	10 years

SURVEY NO -91/4A, 92/3F, 92/3G, 92/3H, 92/3I1, 92/3I2, 92/3J, 92/3K1, 92/3L1 and 91/4B

VILLAGE – GIRIJAPURAM, TALUK – VEMBAKKAM, DISTRICT – TIRUVANNAMALAI, STATE – TAMILNADU.

Terms of Reference issued by SEIAA, Tamil Nadu vide SEIAA-TN/F.No.9111/SEAC/TOR-1187/2022 dated 06.07.2022

Baseline Monitoring Period – Summer Season (March to May 2022)

PROJECT PROPONENT

**TVL. SRI ELUMALAIYAN BLUE METALS
THIRU D.RAJI (PROPREITOR)**

No.168/3, Keinaickanpalayam, Vembakkam Taluk, Tirunvannamalai-631702.

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ROUGH STONE AND GRAVEL QUARRY OF TVL.SRI ELUMALAIYAN BLUE METALS (PROPRIETOR, THIRU.D.RAJI) AT SURVEY NOS.91/4A, 92/3F, 92/3G, 92/3H, 92/3I1, 92/3I2, 92/3J, 92/3K1, 92/3L1 AND 91/4B OVER AN AREA OF 1.70 HA IN GIRIJAPURAM VILLAGE, VEMBAKKAM TALUK, TIRUVANNAMALAI DISTRICT, TAMIL NADU.

SUMMARY

1.1 INTRODUCTION:

Tvl.Sri Elumalaiyan Blue Metals (Proprietor Thiru.D.Raji) proposes to operate a **Rough Stone and Gravel Quarry** at Survey Nos.91/4A, 92/3F, 92/3G, 92/3H, 92/3I1, 92/3I2, 92/3J, 92/3K1, 92/3L1 and 91/4B over 1.70.0Hectares In Girijapuram Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu and has initiated action towards obtaining environmental clearance. The lease period is ten years. It is proposed to mine 1,82,675m³ of Roughstone and 23,916m³ of Gravel for a period of five years upto a depth of 32m. Since the mineable quantity available is less, towards economic viability of the project it is proposed to mine the entire available mineable material in the initial 5 years itself. Balance reserves if any will be mined out in the remaining five year period.

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.

1.2 STATUTORY APPROVALS:

Table 1:Statutory Approvals

1.	Precise Area Communication Letter	Rc.No.974/Kanimam/2021dated 25.01.2022
2.	Mining Plan Approval	Rc.No.974/Kanimam/2021dated 03.03.2022
3.	Terms of Reference	Letter No. SEIAA-TN/F.No.9111/SEAC/ToR-1187/2022 Dated: 06.07.2022.

Based on the conditions of Precise Area Communication letter, a safety distance of 10m is provided for the cart track passing in the eastern side and 7.5m safety distance has been left for the adjoining patta lands.

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2.1 SITE DESCRIPTION:

Table 2: Site Details

S.No	Particulars	Details
1.	Name of the Project	Rough Stone and Gravel Quarry of Tvl.Sri Elumalaiyan Blue Metals (Proprietor Thiru.D.Raji)
2.	Location of the project	Girijapuram Village, Vembakkam Taluk, Tiruvannamalai District, Tamil Nadu
3.	Survey No.	91/4A, 92/3F, 92/3G, 92/3H, 92/3I1, 92/3I2, 92/3J, 92/3K1, 92/3L1 and 91/4B
4.	Proposed production	Roughstone – 1,84,625m ³ Gravel – 23,916m ³
5.	Latitude & Longitude	Latitude: 12°44'13.83"N to 12°44'21.13"N Longitude: 79°42'07.35"E to 79°42'12.57"E
6.	Mining Lease area	1.70 Ha
7.	Type of land	Private Patta land
8.	Mine site topography	Plain terrain, dry lands with scarce vegetation.
9.	Accessibility	The lease area can be approached road from Girijapuram – Bagavandapuram village road on eastern side of the area which is connected to SH-116 Kanchipuram – Vandavasi – 3.0km - W Side of the area
10.	Nearest Highway	(SH-116) Kanchipuram- Vandavasi –3.0km -W
11.	Nearest major Railway station	Kanchipuram RS – 11.0km - N
12.	Nearest Airport	Chennai – 57Km – NE
13.	Nearest major water bodies	Odai - 160m (N), Canal - 2.0km - (N), Cheyyar River – 5.7km - (SE), Palar R- 5.7Km -(N), Mamandur Tank- 4.4km-(W), Vegavati River- 9.4km-(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-4.0Km-W Kanchi Kamatchiamman Temple 11.3km- N
16.	Reserved / Protected Forests	Nil within 10 Km radius
17.	Seismic Zone	Zone – II (Least Active)

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Table 3: Technical Description

S.No	Particulars	Details			
1.	Geological reserve	Roughstone – 5,94,615cum , Gravel- 133,978cum			
2.	Mineable reserve	Roughstone – 1,84,625cum , Gravel - 23,916cum			
3.	Method of Mining	Open cast mechanized mining method with drilling, blasting, excavation, loading and transportation of Roughstone to needy buyers.			
4.	Production		YEAR	RoughStone m³	Gravel in m³
			1	36725	15276
			2	36080	8640
			3	37125	-
			4	36980	-
			5	35765	-
			Total 1 to 5	182675	23916
			Total 6 to 10	-	-
	Total 1 to 10	182675	23916		
5.	Lease Period	10 Years			
6.	Waste Generation and Management	Since the entire material will be used there will be no waste generation			
7.	Ultimate Mine depth	32m			
8.	Manpower	Direct – 13, Indirect – 50			
9.	Water Requirement & source	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.			
10.	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.			
11.	Site services	Mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.			
12.	Project cost	Rs.65,90,000/-			
13.	CER cost	Rs.5.0 Lakhs			

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

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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 86 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	185915	50.10%
Female Population	185172	49.90%
Total	371087	100
B. Caste-wise population distribution		
Scheduled Caste	55383	14.92%
Scheduled Tribes	2542	0.69%
Other	313162	84.39%
Total	371087	100
C. Literacy Levels		
Total Literate Population	272252	73.37%
Others Population	98835	26.63%
Total	371087	100
D. Occupational structure		
Main workers	138735	37.40%
Marginal workers	22676	6.10%
Total Workers	161411	43.50%
Total Non-workers	209676	56.50%
Total	371087	100

3.2.1 EXISTING ENVIRONMENTAL QUALITY:

Baseline monitoring was carried out during **Summer Season (March 2022 to May 2022)** 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)	56.6-74.4	48.2-81.5	100
Particulate Matter (Size <2.5 µm)	24.9-32.7	21.7-38.3	60

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Sulphur Dioxide (as SO ₂)	5.1-6.9	4.3-7.2	80
Nitrogen Dioxide (as NO ₂)	7.9-14.1	6.5-14.6	80
Conclusion: The existing Ambient Air Quality levels for PM10, PM2.5, SO ₂ and NO ₂ , are within the NAAQ standards prescribed CPCB limits of 100 µg/m ³ , 60 µg/m ³ , 80 µg/m ³ & 80 µg/m ³ . 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 CaCO ₃), mg/L	251 – 517	600	
Total Alkalinity (as CaCO ₃), mg/L	194– 442	600	
Sulphates as SO ₄ ²⁻ , mg/L	61.80 – 323	400	
Iron as Fe, mg/L	BDL – 0.06	0.3	
Nitrate as NO ₃ , 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 – 6 locations	
PARAMETER	RESULT dB(A)		*LIMIT (µg/m³)
	Day Equivalent	Night Equivalent	
Core Zone	45.5	45.0-50.8	90
Buffer Zone	40.3	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	6.9-7.58		
Electrical Conductivity (µmho/cm)	68.57-124.5		
Organic matter (%)	0.42-0.96		
Total Nitrogen (mg/kg)	156-201		
Phosphorus (mg/kg)	1.25-1.87		
Sodium (mg/kg)	445-664		
Potassium (mg/kg)	290-470		
Soil is of clay loam and sandy clay loam type.			

3.2.2 LAND ENVIRONMENT:

Land use pattern study carried out through remote sensing satellite data around the 10km buffer zone shows that 30.12 % of the study area is agriculture land and 30.72 % are fallow land. Land without scrub constitutes 6.08 % and waterbodies constitute 13.40%, Settlement constitutes 11.54 % and remaining constitute 6.32 %.

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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 few bushes (Prosopis juliflora) and grasses. 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 70m.
- 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.

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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 PM₁₀ are in the range of 58.4µg/m³ to 82.5µg/m³ and with respect to PM_{2.5} 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.

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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.

4.1.3 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

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- 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:

In the post mining stage, entire 1.22.2Ha will be used as mined out area at 32m depth. The entire mined out area will be left as water body. 0.01.0Ha will be the mine roads and 0.46.8Ha will be covered with vegetation. Since the mineable quantity available is less, towards economic viability of the project it is proposed to mine the entire available mineable material in the initial 5 years itself. Balance reserves if any will be mined out in the remaining five year period. 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 13 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.

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- 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 PROGRAMME:

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

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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. 16.91 lakhs is allocated under capital cost. Besides, Rs.15.78 per annum is allocated as recurring cost.

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 quarries. Considering that the lease period of the existing quarries will be coming to an end shortly, this proposed quarry will serve more as a replacement for the existing quarries to ensure meeting the present roughstone demands.

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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