

SUMMARY
OF
CUMULATIVE EIA / EMP REPORT
FOR
ROUGHSTONE QUARRY

VILLAGE - SIRUTHAMUR, TALUK- UTHIRAMERUR,
DISTRICT - KANCHIPURAM, STATE - TAMILNADU

| | | |
|-------------------|-------------------------|------------------------|
| PROPONENT | 1. K. PRABAKARAN | 2. D. ARUNKUMAR |
| Extent | 2.15.30Ha | 4.95.0Ha |
| Survey No. | 320/5 | 338/1(Part- 1) |

CATEGORY- B1

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ROUGHSTONE QUARRY OF THIRU. K.PRABAKARAN & THIRU.D.ARUNKUMAR IN SIRUTHAMUR VILLAGE, UTHIRAMERUR TALUK, KANCHIPURAM DISTRICT, TAMIL NADU.

SUMMARY

1.0 GENERAL:

Thiru.K.Prabakaran & Thiru.D.Arunkumar separately proposes to operate **Rough Stone Quarry** in Siruthamur Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu.

Although the individual lease area of each project is less than 5 Ha, the other existing quarries and proposed 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 as per MoEF & CC notification necessitates preparation of EIA / EMP report and public hearing. As such Common EIA for the projects falling in the cluster with cumulative assessment of impacts and EMP for individuals mines is carried out.

Salient details of the EIA/EMP report are as follows:

2.0 SITE DESCRIPTION:

The salient features of the project are briefly given below.

| S.No | Particulars | 1. K.Prabakaran Quarry | 2. D.Arunkumar Quarry |
|-------------|-----------------------------|---|---|
| 1. | Name of the Project | Rough Stone Quarry of Thiru K.Prabakaran | Rough Stone Quarry of Thiru D.Arunkumar |
| 2. | Mining Lease area (ML area) | 2.15.30Ha | 4.95.0 Ha |
| 3. | Survey No. | 320/5 | 338/1(Part-1) |
| 4. | Location of the project | Siruthamur Village, Uthiramerur Taluk, Kanchipuram District, Tamil Nadu | |
| 5. | Precise area Letter | Rc.No.583/Q3/2019 dated 07.01.2020. | Rc.No.584/Q3/2019 dated 07.01.2020 |
| 6. | Mine plan | Rc.No.583/Q3/2019, dated 03.04.2020. | Rc.No.584/Q3/2019, dated 03.04.2020. |
| 7. | TOR Letter | SEIAA-TN/F.No.8278/SEAC/ToR-948/2021 dated 30.04.2021 | SEIAA-TN/F.No.8275/SEAC/ToR-952/2021 dated 30.04.2021 |
| 8. | Type of land | Government land. | |

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| | | | |
|-----|---|---|---|
| 9. | Latitude: Longitude: | 12°43'08.55"N to 12°43'14.57"N 79°51'00.64"E to 79°51'07.08"E | 12°42'55.07"N to 12°43'07.84"N 79°50'56.27"E to 79°51'08.58"E |
| 10. | Topography | 53m above AMSL | |
| 11. | Temperature °C (Minimum & Maximum) | 20°C & 37°C. Peak summer- 43°C | |
| 12. | Average Annual rainfall | 1250mm | |
| 13. | Nearest Highway | (SH-58) Chengalpattu - Walajabad - 5.7km - N, Majar District Road 789 - (1.1km) - W | (SH-58) Chengalpattu - Walajabad - 6.0km - N, Majar District Road 789 - (1.1km) - W |
| 14. | Nearest Railway station | Walajabad - 9.1 km (NW) | |
| 15. | Nearest Airport | Chennai - Meenambakkam - 45.0 Km (NE) | |
| 16. | Nearest Major water bodies | Periya Eri - 64m - E Cheyyar River - 3.3km - NW Palar River - 4.8km - N | Periya Eri - 62m - E Cheyyar River - 3.3km - NW Palar River - 4.8km - N |
| 17. | Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972 | Nil within 10km radius. | |
| 18. | Reserved / Protected Forests | Kavanippakkam R F Idaimichi R F Marudam R F | |
| 19. | Nearest Town | Walajabad - 8.5km (NW) | Walajabad - 8.8 km (NW) |
| 20. | Seismic Zone | Area falls in Zone - II (Least Active) | |

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2.1 PROJECT DESCRIPTION:

| S.No | Particulars | 1. K.Prabakaran Quarry | | | 2. D.Arunkumar Quarry | | |
|------|----------------------|---|-------------------|---------------|--------------------------------------|-------------------|---------------|
| | | Type of reserves | Rough stone (Cum) | Topsoil (Cum) | Type of reserves | Rough stone (Cum) | Topsoil (Cum) |
| 1. | Geological resources | | | | | | |
| 2. | Mineable reserves | Geological reserves | 8,45,784 | 43,376 | Geological reserves | 27,70,376 | 49,471 |
| | | Mineable reserves (upto 20m) | 2,37,284 | 34,176 | Mineable reserves (upto 57m) | 7,49,746 | 16,724 |
| | | Mineable reserves (upto 45m) | 3,79,434 | 34,176 | Mineable reserves (upto 47m) | 5,87,051 | 16,724 |
| 3. | Lease period | 10 years | | | 5 years | | |
| 4. | Production Capacity | YEAR | ROUGHSTONE (m3) | Top Soil (m3) | YEAR | ROUGHSTONE (m3) | TOPSOIL (m3) |
| | | I | 51,264 | 34176 | I | 1,15,283 | 16,724 |
| | | II | 42,800 | - | II | 1,15,570 | - |
| | | III | 44,865 | - | III | 1,15,976 | - |
| | | IV | 47,240 | - | IV | 1,15,779 | - |
| | | V | 51,115 | - | V | 1,24,443 | - |
| | | Sub total (1 to 5) | 2,37,284 | 34,176 | Total | 5,87,051 | 16,724 |
| | | 6 to 10 | 1,42,150 | - | | | |
| | | Total | 3,79,434 | 34,176 | | | |
| 5. | Total Waste | There is no waste generation anticipated in this quarry operation since the entire excavated material will be utilized. | | | | | |
| 6. | Method of mining | Quarry operations involve jack hammer drilling, blasting, excavation, loading and transportation of Roughstone to needy buyers. | | | | | |
| 7. | | | | | | | |
| 8. | Bench parameters | Bench height - 5 m, bench width - 5m | | | Bench height - 7 m, bench width - 7m | | |

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| | | | |
|-----|---------------------|--|--|
| 9. | Ultimate mine depth | 20m initial 5 years and 45m end of 10 years lease period | 47m end of 5 years lease period |
| 10. | Ore end use | The excavated rough stone will be excavated and loaded into tipper to the needy buyers. | |
| 11. | Manpower | 30 persons | 29 persons |
| 12. | Water Requirement | Total - 3.0KLD | Total – 7.5 KLD |
| 13. | source | The required water will be procured from outside agencies initially. Later, water collected in the mine pit will be used to meet the needs. | |
| 14. | 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. | |
| 15. | Site services | This is a proposed project. Site services like mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures. | |
| 16. | CER Budget | Rs.15.0 Lakhs | Rs.15.0 Lakhs |
| 17. | Project cost | Rs. 5,41,45,000/- (Operational + Fixed asset + EMP cost) | Rs. 6,95,80,000/- (Operational + Fixed asset + EMP cost) |

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 cluster lease area.

3.2 SOCIO-ECONOMIC STATUS:

Based on 2011 census data, in the 10km radius there are 98 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 - 69932 (49.90%)
- Female - 70213(50.10%).

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- Total - 140145
- Scheduled caste - 40.10%
- Scheduled tribes - 02.15%
- Total literacy rate in the area - 66.48% of the people are literate and 33.52% of the people are illiterate.

The occupational structure of the area is as below:

- Total main workers - 51976 (37.09%)
- Total marginal workers - 15407 (10.99%)
- Total non-workers - 72762 (51.92%)

3.3 EXISTING ENVIRONMENTAL QUALITY:

1. Ambient Air Quality:

The ambient air quality data for PM₁₀, PM_{2.5}, SO₂, NO₂, 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/m³

| S.No | PARAMETERS | Cat.* (R,I,S) | PM ₁₀ | PM _{2.5} | SO ₂ | NO ₂ |
|--|-------------------------------------|------------------|------------------------|-------------------------|-----------------------|-----------------------|
| 1 | CORE ZONE (1 Location) | I | 51.6 to 61.3 | 24.4 to 30.3 | 5.2 to 8.4 | 8.1 to 12.4 |
| 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 | | | PM₁₀ | PM_{2.5} | SO₂ | NO₂ |
| 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. | | | | | | |

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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) (4 Locations) | MOEF&CC Norms dB(A) |
| Day Equivalent | 53.0 | 90 | 51.9 to 54.8 | 55 |
| Night Equivalent | 43.8 | | 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 | 7.14 | 58.97 | Sandy Loam | 1.52 | 122 | 1.24 | 585 | 910 |
| 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 ENVIRONMENT:

Landuse pattern carried out through remote sensing satellite data show that 24.30 % of the study area is agriculture land and 19.82 % are fallow land. Land with scrub constitutes 27.40 % followed by land without scrub is 11.95%, water bodies constitutes 12.35 % and remaining constitutes 4.18 %.

3.5 BIOLOGICAL ENVIRONMENT:

The lease area is a non forest, Government land with scrub and bushes. 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. 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:

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:

The identified impacts during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc. The impact assessment is done for the peak production of the mine lease period & the entire area of quarry operation and can be construed as applicable for the entire lease period.

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

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.
- Proper maintenance of roads.
- 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.

Combined cumulative computer Air Quality Model simulations carried out show that the resultant added concentrations with baseline figures with respect to PM₁₀ is in the range of 51.8 µg/m³ to 79.2 µg/m³ and with respect to PM_{2.5} is in the range of 25.6 µg/m³ to 40.4µg/m³ which are within the statutory stipulations in respective case..

It is observed that the peak incremental concentration for PM₁₀, 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.

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 these lease areas 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.

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There is one drainage channel passing on the eastern side of **Thiru.K.Prabakaran** lease area for which a safety distance of 10m has been left. It is proposed to desilt the channel and further carry out stone pitching on either side near the lease area . Besides, on the north east side of the lease area, a concrete compound wall will also be constructed, to ensure that no impact is caused on this drainage course.

Peria Eri is on the eastern side of the lease area of **Thiru.K.Prabakaran** at a distance of 64m. and 62 m from lease area of **Thiru K. Arunkumar**The bunds around this Eri will be additionally strengthened and periodical desilting activities under CER activities will be carried out to augment the storage capacity of the tank. There is no proposal to discharge any effluent into these water bodies and it will be ensured no impact is caused on this drainage course.

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 suitable initiating sequence and millisecond delay detonators.
- 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.

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:

Both the lease areas are Government land. In case of Thiru.K.Prabakaran lease in the initial 5 years lease period 1.68.50 ha will be used for quarrying purpose. From 6th to 10 th year of lease period, there will be only depth ward movement and no additional land will be utilized for mining.

In case of Thiru.D.Arunkumar lease 4.09.0Ha will be used for mining.

Entire mined out area of bore the projects will be properly fenced to prevent in advertant 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. The safety zone area will be developed with vegetation.

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. safety barrier around the mine periphery will be developed with Greenbelt / Plantation to enhance the vegetative growth and aesthetic in the area.

4.6 SOCIO ECONOMIC ENVIRONMENT:

Entire Land is Government land. No land acquisition or rehabilitation or resettlement problems are involved..

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

- Employment oppurtunity.
- Indirect employment opportunity through various service related activities connected with the project operations like:
 - ✓ Project related logistical operations for transport of material
 - ✓ Various trading services for consumer goods, spare parts, sundry items, etc.
 - ✓ Contractual services connected with the project.
 - ✓ Green belt development
- Improvement in educational & medical care system for the locals.
- Benefit to State and central exchequer by way of royalty, taxes.

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Towards the socio economic development of the surrounding area, Totally Rs 30 lakhs (Rs. 15 lakhs by each proponent) is earmarked under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner in the following areas:

- Improvement of facilities in nearby schools.
- Maintenance / Improvement in road facility.
- Desilting of village ponds.
- Assistance in conducting regular health camp, eye camp.

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 these proposed quarries the entire output will be transported to the consumers. There will be totally about 9 trips per hour. The transport route can absorb this additional 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.
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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 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/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, financial provision under capital cost & recurring cost is made.

6.0 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, it shall be ensured that the future environmental quality in the area will be maintained within statutory limits. The environmental management strategy as explained above will prove that industrial growth, if properly planned with all environmental concerns and appropriate remedial measures can go a long way to improve life pattern of the local community around the project in additional to meeting the construction material requirement.

Considering that the lease period of the existing quarries will be coming to an end shortly and in some existing leases the reserves are getting depleted, the proposed quarries of Thiru K.Prabakaran and Thiru D.Arunkumar will serve more as a replacement for the existing quarries to ensure meeting the present roughstone demands, continuation of additional employment opportunities without causing substantial additional effect.

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