

EXECUTIVE SUMMARY

For

**KASTHURIENGAPURAM PART-II ROUGH STONE,
JELLY & GRAVEL QUARRY OVER AN EXTENT OF
4.98.56 Ha.**

Cost of the Project: Rs. 99, 04,240/-

At

Survey No: 191/1(P) and 194/1(P) (New-194/1B (P))

Villages: Kasthuriengapuram Part-II

Taluk: Thisayanvilai

District: Tirunelveli

State: Tamil Nadu

By

**Thiru. S. Rajendran,
S/o. Sridharan,
No. 13-85/43, Pathitta Villai,
Chitharal Post,
Kanyakumari District.
Pincode – 629 151**

(Project termed under Schedule of 1(a) Mining of Minor Minerals 'B1' category as per EIA Notification 2006 and its Amendments thereafter and as per the O.M issued vide F. No. L-11011/175/2018-IA-II (M), dated: 12.12.2018)

EIA Consultant

HUBERT ENVIRO CARE SYSTEMS PRIVATE LIMITED, CHENNAI

NOVEMBER 2020

EXECUTIVE SUMMARY

1. Project Description

The total extent area of the quarry is 4.98.56Ha, situated at S.F. No. 191/1(P) and 194/1(P) (New-194/1B (P)), Kasthuriengapuram Part-II village, Thisayanvilai Taluk, Tirunelveli District, TamilNadu State.

This is an existing quarry. Earlier the EC was obtained by Thiru. S. Rajendran vide Letter No. SEIAA. TN/F.No.628/EC/1 (a)/208/2012, dated: 10.04.2013 for a period of 5 years. The approved production capacity was 6,96,274m³ of Rough stone and 82,080m³ of Topsoil at a depth of 22m Below ground level

The District Collector of Tirunelveli had issued the precise area communication letter to produce the approved Mining Plan within a period 90 days as per Rule 8-C (3b) of Tamil Nadu Minor Mineral Concession Rules, 1959 vide Rc. No. M1/27169/2018, dated 08.04.2019.

Subsequently, Thiru. S. Rajendran submitted the Mining Plan for the subject area and the same was approved by directorate of Geology and mining, Tirunelveli vide Rc. No. M1/27169/2018, dated 13.05.2019.

The Project termed under Schedule of 1(a) Mining of Minor Minerals 'B1' category as per EIA Notification 2006 and its Amendments thereafter and as per the O.M issued vide F.No. L-11011/175/2018-IA-II (M), dated: 12.12.2018.

The EC application was submitted to TN SEIAA vide File No. 6976/2019. The proposal was appraised during 135th SEAC meeting held on 06.09.2020 and 387th SEIAA meeting held on 05.08.2020 & 06.08.2020 and ToR was issued vide Letter No. SEIAA-TN/F.No.6976/SEAC/ToR-736/2020, dated: 06.08.2020 for the preparation of EIA/EMP report.

The Draft EIA/EMP report will be submitted for Public Hearing (PH). After completion of Public Hearing, the minutes issued will be incorporated in the EIA report along with proponent action plan. Final EIA report will be submitted to TNSEAC for further appraisal of the project and obtaining Environmental Clearance.

2. Management Commitment

Project Proponent will firmly address all the EC and its requirements and will execute the Environmental Management Plan.

3. Environmental Sensitive Areas

As seen in **Table-I** below, there are no notified ecologically sensitive areas, State and National boundary within 15km from Project Boundary. Thus the project does not attract the special conditions and general conditions as per EIA Notification.

Table-1 Environmental Sensitive areas within 15km of the project

S. No.	Areas	Distance & Direction from project boundary																																
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Nil																																
2	Areas which are important or sensitive for ecological reasons – Wetlands, Watercourses or other water bodies, coastal zone, biospheres, mountains, forests	<p>Water Bodies:</p> <table border="1"> <thead> <tr> <th>S. No</th> <th>Places</th> <th>Distance (~Km)</th> <th>Direction</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Odai from Nambiyar R</td> <td>0.57</td> <td>ENE</td> </tr> <tr> <td>2</td> <td>Nambiyar R</td> <td>1.81</td> <td>E</td> </tr> <tr> <td>3</td> <td>Bay of Bengal</td> <td>4.19</td> <td>SSE</td> </tr> <tr> <td>4</td> <td>Canal near Sökkalingapuram</td> <td>6.21</td> <td>ENE</td> </tr> <tr> <td>5</td> <td>Radhapuram Canal</td> <td>10.39</td> <td>WSW</td> </tr> <tr> <td>6</td> <td>Nambiar Dam</td> <td>11.63</td> <td>NNW</td> </tr> <tr> <td>7</td> <td>Kallankal Odai</td> <td>12.42</td> <td>NNW</td> </tr> </tbody> </table> <p>Reserve Forest: Sattankulam RF \approx 14.71km (NE)</p>	S. No	Places	Distance (~Km)	Direction	1	Odai from Nambiyar R	0.57	ENE	2	Nambiyar R	1.81	E	3	Bay of Bengal	4.19	SSE	4	Canal near Sökkalingapuram	6.21	ENE	5	Radhapuram Canal	10.39	WSW	6	Nambiar Dam	11.63	NNW	7	Kallankal Odai	12.42	NNW
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3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Nil																																
4	Inland, coastal, marine or underground waters	<p>Water Bodies:</p> <table border="1"> <thead> <tr> <th>S. No</th> <th>Places</th> <th>Distance (~Km)</th> <th>Direction</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Odai from Nambiyar R</td> <td>0.57</td> <td>ENE</td> </tr> <tr> <td>2</td> <td>Nambiyar R</td> <td>1.81</td> <td>E</td> </tr> <tr> <td>3</td> <td>Bay of Bengal</td> <td>4.19</td> <td>SSE</td> </tr> <tr> <td>4</td> <td>Canal near Sökkalingapuram</td> <td>6.21</td> <td>ENE</td> </tr> <tr> <td>5</td> <td>Radhapuram Canal</td> <td>10.39</td> <td>WSW</td> </tr> <tr> <td>6</td> <td>Nambiar Dam</td> <td>11.63</td> <td>NNW</td> </tr> <tr> <td>7</td> <td>Kallankal Odai</td> <td>12.42</td> <td>NNW</td> </tr> </tbody> </table>	S. No	Places	Distance (~Km)	Direction	1	Odai from Nambiyar R	0.57	ENE	2	Nambiyar R	1.81	E	3	Bay of Bengal	4.19	SSE	4	Canal near Sökkalingapuram	6.21	ENE	5	Radhapuram Canal	10.39	WSW	6	Nambiar Dam	11.63	NNW	7	Kallankal Odai	12.42	NNW
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5	State, National boundaries	Nil																																
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	<ul style="list-style-type: none"> ➤ (SH-176) Tuticorin – Kanniyakumari \approx 3.5km (S) ➤ (NH-7) Salem – Kanniyakumari \approx 23.5km (W) 																																
7	Defence installations	Indian Naval Base Kattabomman \approx 10.81km (NNW)																																
8	Densely populated or built-up area (Nearest Town, City, District)	Nearest Town : Thisayanvilai \approx 10.5km Nearest City : Tirunelveli \approx 51.0km																																

9	Areas containing important, high quality or scarce resources, (groundwater resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	Water Bodies:			
		S. No	Places	Distance (~Km)	Direction
		1	Odai from Nambiyar R	0.57	ENE
		2	Nambiyar R	1.81	E
		3	Bay of Bengal	4.19	SSE
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		Reserve Forest: Sattankulam RF ~ 14.71km (NE)			
10	Areas already subjected to pollution or environmental damage (those where existing legal environmental standards are exceeded)	Nil			
11	Areas susceptible to natural hazard which could cause the project to present environmental problems, (earthquakes, subsidence, landslides, erosion or extreme or adverse climatic conditions)	The project site comes under Zone-II (Low risk zone)			



Figure-2 Google image for Environmental Sensitive areas demarcated within 15km radius of the project site

4. Rough Stone & Gravel Quarry Reserves

- The estimated Geological Reserves of Rough stone & Gravel estimated based on the Geological cross sections was 30,53,490m³ of Rough stone, 1,99,224m³ of Weathered Rock and 49,806m³ of Gravel formation.
- The Mineable Reserves have been arrived as 12, 29,205m³ of Rough Stone, 56,336m³ of Weathered Rock and 15,270m³ of Gravel formation.
- The Proposed production capacity is 12, 29,205m³ of Rough Stone, 56,336m³ of Weathered Rock and 15,270m³ of Gravel formation for five years.

5. Summary of the Magnitude of Operation

- The Rough stone, Jelly & Gravel quarrying operation is proposed to carry out by opencast semi mechanized method by formation of benches. Benches are proposed with a height of 5m & 5m width. Major machineries are Compressor, Jack hammer, and excavator is used in proposed quarry. Tippers and dumpers will be used for transportation.
- Proposed Production Capacity is 30,53,490m³ of Rough stone, 1,99,224m³ of Weathered Rock and 49,806m³ of Gravel formation for 5 years.
- The mineable reserves have been computed as 12, 29,205m³ of Rough Stone, 56,336m³ of Weathered Rock and 15,270m³ of Gravel formation.
- The effective geological reserves and mineable have been worked out as 12, 29,205m³ of Rough Stone, 56,336m³ of Weathered Rock and 15,270m³ of Gravel formation for 5 years.

6. Project Requirements

I. Land requirement:

- The Rough stone, Jelly & Gravel mine is over an extent of 4.98.56 Ha.
- Lease area located at S.F. No. 191/1(P) and 194/1(P) (New-194/1B(P)), Kasthuriengapuram Part-II village, Thisayanvilai Taluk, Tirunelveli District, TamilNadu State, lies in the latitude of 08°16'19"N to 08°16'25"N and longitude of 77°46'47"E to 77°46'58"E.
- The lease area topography is plain terrain; site elevation is 115m (max) AMSL. The area is marked in the survey of India Topo sheet No. 58 H/11, 58H/12, 58H/15, 58H/16.

Land Use Pattern of the lease area:

S. No	Description	Present Area (Ha.)	Area to be required at the present Mining Plan Period (Ha.)
1	Quarrying Pit	2.80.06	4.28.40
2	Infrastructure	Nil	0.01.00
3	Roads	0.01.00	0.02.00
4	Green Belt	Nil	0.30.00
5	Unutilized	2.17.50	0.37.16
Total		4.98.56	4.98.56

II. Water Requirement

- The total water requirement is 4.5KLD (Drinking & Domestic purpose - 1.0KLD, Dust suppression - 2.5 KLD & for Greenbelt - 1.0KLD). The total water requirement will be met from Road tankers.
- The rough stone, jelly & gravel quarry will not produce toxic effluent in the form of solid, liquid or gas.
- No wastewater will be discharged by quarry operation. Domestic wastewater will be disposed to Septic Tank followed by soak pit.

III. Power & Fuel Requirement

- No power is required during mining operations. Working is restricted on day time only between 9AM to 5PM with 1PM to 2PM as lunch break.
- 6, 45,323 liters of HSD for the entire project life will be brought from nearby diesel pumps.

IV. Manpower

- Manpower requirement for the proposed project is 24 Nos.

V. Solid Waste Generation & Management

- Municipal solid waste (10.8 kg/day) will be segregated as Organic will dispose through local municipal bins and inorganic waste (6.4 kg/day) will be disposed through TNPCB authorized recyclers.
- Waste diesel Oil will be collected in leak proof containers and disposed to TNPCB Authorized Agencies for Reprocessing/Recycling.

7. Project Cost

- The total capital investment on the project is Rs. 99, 04,240/- including EMP cost is 5, 10,000/-.

8. Description of Environment

Project Influence Area (PIA)/Study Area:

An area covering 10 km radius from Kasthuriengapuram Part-II Rough stone, Jelly & Gravel quarry boundary has been earmarked as study area for baseline studies.

Study Period:

The baseline environmental surveys were carried out during (Jan 2020 to March 2020) within the study area.

Summary of Baseline Studies:

- Site has an undulating terrain with level 115m Above MSL.
- The project site falls under Zone- II (Low Risk Zone) as per IS 1893 (Part- I).
- The predominant wind direction is East during study period.
- Max Temperature: 32.8°C ; Min Temperature: 23.4°C & Avg Temperature: 27.8°C
- Average Relative Humidity: 74.5 %
- Average Wind Speed : 16.2 m/s

Ambient Air Quality Monitoring

The ambient air quality has been monitored at 8 locations for 12 parameters as per NAAQS, 2009 within the study area. Maximum concentrations of all the parameters are well within the National Ambient Air Quality Standards (CPCB, NAAQS, 2009):

- PM₁₀ ranged between 50.18 µg/m³ to 53.87 µg/m³ (NAAQ standard 100 µg/m³)
- PM_{2.5} values varied from 24.71 µg/m³ to 27.54 µg/m³. (NAAQ standard 60 µg/m³)
- SO₂ levels varied from 8.72 µg/m³ to 10.42 µg/m³. (NAAQ standard is 80 µg/m³)
- NO_x ranged between 22.12 µg/m³ to 26.74 µg/m³. (NAAQ standard is 80 µg/m³)

Noise Environment

- In industrial area day time noise levels was about 59.4 dB (A) and 48.3 dB(A) during night time, which is within the prescribed limit by CPCB (75 dB (A) Day time & 70 dB (A) Night time).
- In residential area day time noise levels varied from 49.3 dB (A) to 52.3 dB (A) and night time noise levels varied from 40.1 dB (A) to 43.7 dB (A) across the sampling stations. The field observations during the study period indicate that the ambient noise levels in Residential area is within the limit prescribed by CPCB (55 dB (A) Day time & 45 dB (A) Night time).

Ground Water Quality

- The average pH ranges from 6.82 and 8.1.
- TDS value varied from varied from 490 mg/l – 829 mg/l.
- The chloride concentration ranged from 77.53 mg/l – 187.36 mg/l.
- The Total hardness ranges is between 207 mg/l – 482 mg/l.
- The sulphate content of the ground water of the study area is varied between 39.75 mg/l – 90.64 mg/l meeting the acceptable limit of the IS 10500: 2012.
- It is observed that all the collected ground water samples meets the drinking water standards (IS 10500:2012) and can be used for drinking.

Surface Water Quality

- pH ranges from 7.27 – 8.33.
- Total Dissolved Solids range from 413 mg/l to 1009 mg/l and for marine water sample is 40507 mg/l.
- The sulphate content in the surface water of the study area varies between 44.2 mg/l – 237 mg/l and for sea water sample is 2107.27 mg/l.
- Total hardness ranges between 121.6 mg/l – 1476 mg/l and for sea water sample is 8102.8 mg/l.
- The concentration of heavy metals like As, Cd, Cr, Pb, Mn, Hg, Ni and Se are within the limits of IS 2296:1992.

Soil Quality

- The pH of the soil samples ranged from 6.6 to 7.86.
- Conductivity of the soil samples ranged from 109 to 314 μ mhos/cm.
- Nitrogen content ranged from 142 mg/kg to 238 mg/kg.
- Phosphorous ranged from 9 mg/kg to 372 mg/kg.
- Potassium content ranges from 94 mg/kg to 468 mg/kg

Biological Environment

- None of the plant species and fauna recorded in the core area belongs to the Rare/Endangered/Endemic/Threatened category. Except Least Concern, -Vulnerable and none classified species are found.
- There is no Rare/Endangered/Endemic/Threatened category species were found in study area.

Socio-economic Conditions:

- The project is located at Kasthuriengapuram Part-II village, Thisayanvilai Taluk,

Tirunelveli District; TamilNadu State. The total population of Tirunelveli district is 30,77,233 which comprises of 15,20,912 Males and 15,56,321 Females. Rural population in Tirunelveli district is 15,57,004 and Urban population is 15,20,229. Sankarankoil Taluk has the highest number of the inhabited villages with 83 while shenkottai Taluk has the lowest number with 9 such villages. Total number of households in the Tirunelveli district is 8,15,528 which comprises of 8,13,866 Normal households, 1270 Institutional and 392 Houseless.

9. Anticipated Environmental Impacts with Mitigation Measures

Anticipated impacts on the environmental and social attributes, which are likely to arise due to quarry operations have been identified, predicted and evaluated.

- Thiru. S. Rajendran has been applied for quarrying Rough stone, Jelly & Gravel, over extent of 4.98.56Ha, of Patta land for Rough stone & Gravel mining at Kasthuriengapuram Part-II village, Thisayanvilai Taluk, Tirunelveli District; TamilNadu State. There are no R&R issues.
- The lease area topography is plain terrain with site elevation is 115m AMSL. M/s. The applicant will be provided with self-sufficient infrastructure like office, Toilets, to minimize impact/strain on the existing infrastructure.
- All the necessary Air pollution control measures will be adopted to control the fugitive emissions, particulates, SO₂ and NO_x.
- The impact on air environment was studied through air quality modeling studies. The 1st highest 24hour average concentrations of NO_x, PM₁₀, PM_{2.5} and SO₂ at all receptor locations are found to be well within the National Ambient Air Quality Standards (NAAQS), 2009. The maximum concentration observed due to proposed mining for TSPM, PM₁₀, PM_{2.5}, SO₂ and NO_x are 196 µg/m³, 39 µg/m³, 23 µg/m³, 0.26 µg/m³ and 9 µg/m³ respectively. So it can be concluded that even after operation of quarry the impact envisaged is moderate.
- Baseline study showed that the noise levels in both Industrial area and in Residential area are observed that the day equivalent and night equivalent noise levels at all locations are within the prescribed CPCB standards. The designed equipment with noise levels not exceeding beyond the requirements of Occupational Health and Safety Administration Standard will be employed.
- The water demand for the project will be met from private tankers. Proper garlands will be provided around the quarry. Domestic sewage will be disposed to septic tank followed by soak pit. Septic Tank will be cleaned periodically. There is no effluent generation due to mining activities.

- The solid waste generated may impact soil quality, water quality and public health if not regulated properly. Municipal Solid Wastes including food waste are disposed to municipal bin. Waste Diesel oil will be properly disposed through authorized recycler as per the Hazardous and Other wastes (Management and Transboundary Movement) Rules 1989 and subsequent amendment in 2016. Top soil will be stored and used for afforestation within lease area.
- To reduce the adverse effects on flora/fauna status that are found in project area due to deposition of dust generating from mining operations, water sprinkling and water spraying systems will be ensured in all dust prone areas to arrest dust generation.

10. Greenbelt Development

An area of 0.30.0Ha hectare land was allotted for greenbelt development during first 5 years of mining plan. Thiru. S. Rajendran proposed to 40 plants per year and Rs. 40,000/- per year will spend for proposed greenbelt development and maintenance.

11. Analysis of Alternatives

The mineral deposits are site specific in nature; hence question of seeking alternate site does not arise. No R&R, no Sensitive area etc., making the site suitable for the mining of Rough stone, Jelly & gravel. The site meets the requirement of all critical factors that are important for success of mining in the state and could be a pre-eminent location.

12. Environment Monitoring Programme

Environmental monitoring programme has been formulated for the environmental attributes (Air, Water, Noise, and Soil) and the same will be implemented as per CPCB guidelines. The effective implementation and close supervision of the environmental management to mitigate the environmental impacts due to mining activities.

13. Disaster Management Plan

The salient features of Disaster Management Plan include

- Emergency shutdown procedure
- Fire protection system
- Emergency safety equipment & Reporting and response to emergency
- Emergency Help from nearby industries and tie up with nearby industries

14. Corporate Environmental Responsibility

- The site has no Relocation and Rehabilitation.
- Most villages have benefitted mutually at Kasthuriengapuram where the mining industry has provided indirect jobs for labor and villages provide accommodation for

the labor and staff.

- Supportive industries like food supply and essential shops are economic growth in the villages.
- 2 % (1.98 Lakhs) on total cost will be allocated for CER activities as per MoEF&CC Office memorandum dated 1st May, 2018.

15. Benefits of the Proposed Project

- The quarrying activities in this belt will benefit to the local people 24 Nos.
- Improvement in Per Capita Income.
- The socio - Economic conditions of the village and distance will enhance due to the project, hence the project should be allowed after considering all the parameters.
- It can thus be concluded that the project is environmentally compatible, financially viable and would be in the interest of construction industry thereby indirectly benefiting the masses.
