

EXECUTIVE SUMMARY

For

ERAIYUR ROUGH STONE & GRAVEL QUARRY

Over an extent of 1.77.0Ha.

At

Survey No: 102/1A, 102/1B2 & 102/1BH3

Villages: Eraiyur

Taluk: Vanur

District: Viluppuram

State: Tamil Nadu

By

THIRU.A. Aridass,

School Street, Kadagampattu Village,

Vanur Taluk,

Villupuram District

Pin: 605 502

(Project termed under Schedule of 1(a) Mining of Minor Minerals 'B2' 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 considering the cluster the project is termed under Schedule 1(a) Mining of Minor Minerals 'B1' Category)

EIA Consultant

HUBERT ENVIRO CARE SYSTEMS PRIVATE LIMITED, CHENNAI

OCTOBER 2020

EXECUTIVE SUMMARY

1. Project Description

The total extent area of the quarry is 1.77.0Ha, situated at S.F. No. 102/1A, 102/1B2, 102/1BH3, Eraiyur village, Vanur Taluk, Villupuram District, TamilNadu State.

The District Collector of Villupuram had issued the precise area communication letter vide RC No. A/G&M/337/2018, dated 30.01.2019 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.

Subsequently, submitted the Mining Plan for the subject area and the same was approved by directorate of Geology and mining, Villupuram vide Rc. No. A/G&M/337/2018 dated 04.03.2019.

Project termed under Schedule of 1(a) Mining of Minor Minerals 'B2' 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 considering the cluster the project is termed under Schedule 1(a) Mining of Minor Minerals 'B1' Category, TN SEIAA vide File No. 6977/2019.

The proposal was appraised during 137th SEAC meeting held on 18.10.2019 and 361th SEIAA meeting held on 21.11.2019 and ToR was issued vide Letter No. SEIAA-TN/F.No.6977/SEAC/ToR-671/2019, dated: 19.11.2019 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 action plan by the proponent. Final EIA will be submitted to TNSEAC for further appraisal of the project and obtaining Environment 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 is Ossudu Lake Birds Sanctuary ESZ ~ 14.01km SE & TN-PY State boundary ~ 3.98 Km SSW 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	<p>Monuments :</p> <p>1. Megalithic Stone circles, Tiruvakkarai ~ 3.30 Km, SSE</p> <p>2. Urn burial Site Kadagambattu ~ 4.97 Km, SSE</p> <p>3. Megalithic carins & stine sengamedu Megalithi ~ 6.10 Km, SE</p> <p>Reserve Forest:</p> <p>Melkondai RF ~ 10.20 km, W</p> <p>Wild life Sanctuary :</p> <p>Ossudu Lake Birds Sanctuary ESZ ~ 14.01 km, SE</p>																																								
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>Vidur Branch Canal</td> <td>0.43km</td> <td>ESE</td> </tr> <tr> <td>2</td> <td>Vidur Dam</td> <td>4.98km</td> <td>W</td> </tr> <tr> <td>3</td> <td>Varaha Nadi/Sankaraparani R/Gingee R</td> <td>4.07km</td> <td>S</td> </tr> <tr> <td>4</td> <td>Suttukanni Vaykkal</td> <td>7.34km</td> <td>SSE</td> </tr> <tr> <td>5</td> <td>Kondamur/Nallavur Ar</td> <td>9.59km</td> <td>NE</td> </tr> <tr> <td>6</td> <td>Tondi Ar</td> <td>6.34km</td> <td>VNW</td> </tr> <tr> <td>7</td> <td>Varaha Nadi</td> <td>6.67km</td> <td>SW</td> </tr> <tr> <td>8</td> <td>Pambai Ar</td> <td>12.15km</td> <td>SSW</td> </tr> <tr> <td>9</td> <td>Usteri/Usudu Tank</td> <td>14.68km</td> <td>SE</td> </tr> </tbody> </table> <p>Reserve Forest:</p> <p>Melkondai RF ~ 10.20 km, W</p> <p>Wild life Sanctuary :</p> <p>Ossudu Lake Birds Sanctuary ESZ ~ 14.01 km, SE</p>	S. No	Places	Distance (~Km)	Direction	1	Vidur Branch Canal	0.43km	ESE	2	Vidur Dam	4.98km	W	3	Varaha Nadi/Sankaraparani R/Gingee R	4.07km	S	4	Suttukanni Vaykkal	7.34km	SSE	5	Kondamur/Nallavur Ar	9.59km	NE	6	Tondi Ar	6.34km	VNW	7	Varaha Nadi	6.67km	SW	8	Pambai Ar	12.15km	SSW	9	Usteri/Usudu Tank	14.68km	SE
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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	<p>Reserve Forest:</p> <p>Melkondai RF ~ 10.20 km, W</p> <p>Wild life Sanctuary :</p> <p>Ossudu Lake Birds Sanctuary ESZ ~ 14.01 km, SE</p>																																								

4	Inland, coastal, marine or underground waters	Water Bodies :				
		S. No	Places	Distance (~Km)	Direction	
		1	Vidur Branch Canal	0.43km	ESE	
		2	Vidur Dam	4.98km	W	
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5	State, National boundaries	Interstate Boundary : TN-PY State Boundary ~ 3.89, SSW				
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	<ul style="list-style-type: none"> ➤ SH-136 ~ 1.90 km (NNE) ➤ NH- 132 ~ 8.47 km (NW) 				
7	Defence installations	Nil				
8	Densely populated or built-up area (Nearest Town, City, District)	S. No	Places	Distance (~Km)	Direction	Population as per Census 2011
		1	Nemali	1.30	SE	987
		2	Eraiyyur	1.78	ESE	3257
		3	Konamangalam	2.78	WNW	1265
		4	Karasanur	1.78	ENE	2862
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	Vidur Branch Canal	0.43km	ESE	
		2	Vidur Dam	4.98km	W	
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10	Areas already subjected to	Nil				

	pollution or environmental damage (those where existing legal environmental standards are exceeded)	
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 area under study falls in Zone-II (Low risk zone) according to Earthquake Hazard map of India)

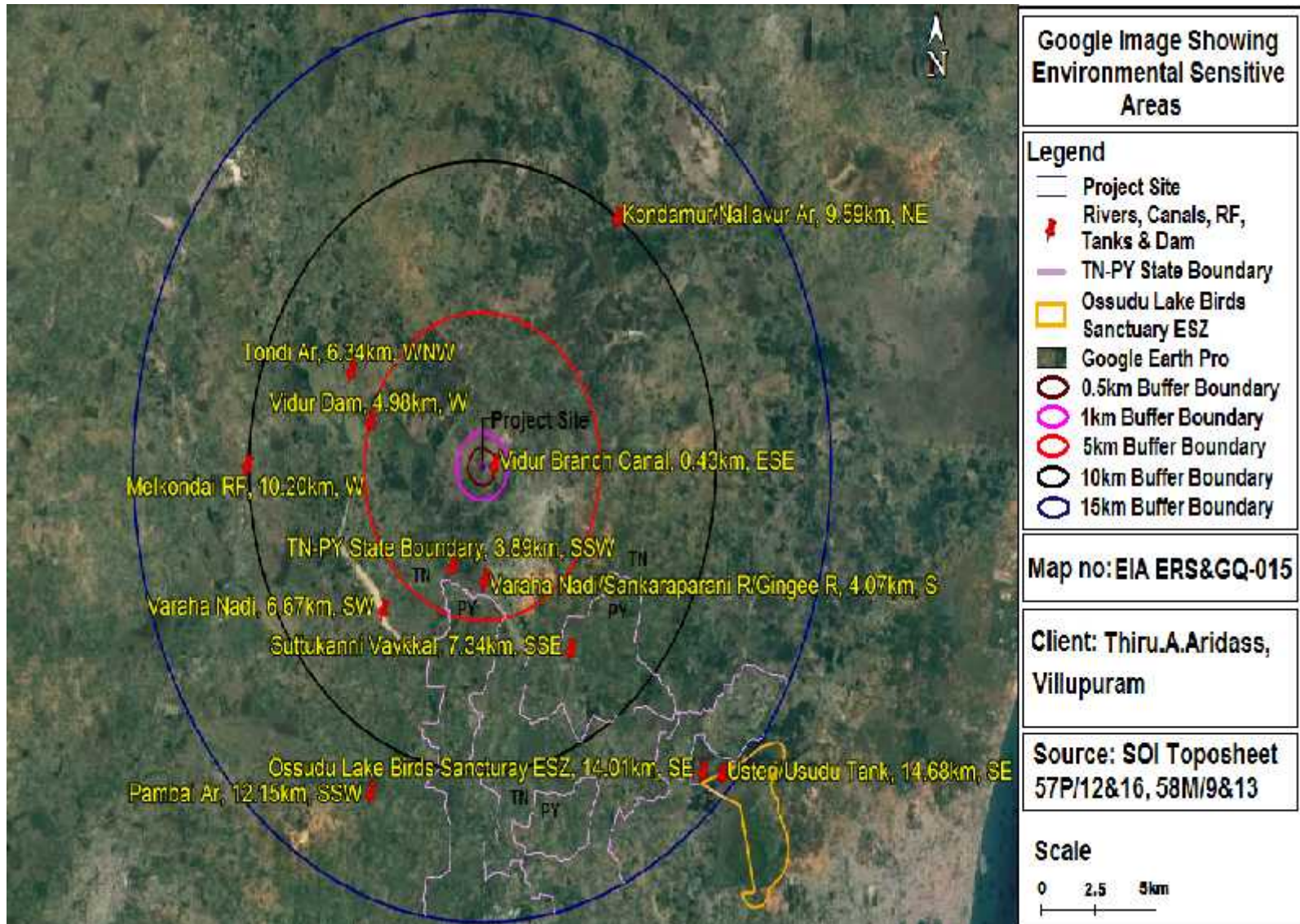


Figure-2 Google image for Environmental Sensitive areas demarcated within 15km radius of the project site

4. Rough Stone & Gravel Quarry Reserves

- The estimated Geological Reserves of Rough stone & Gravel estimated based on the Geological cross sections was 11, 80,270 m³ of Rough stone and 33,722 m³ of Gravel.
- The Mineable Reserves have been arrived as 1, 60,630 m³ of Rough Stone and 23,404 m³ of Gravel.
- The Proposed production capacity is 1,60,630 m³ of Rough Stone and 23,404 m³ of Gravel for five years.

5. Summary of the Magnitude of Operation

- The Rough stone & 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 1,60,630 m³ of Rough Stone and 23,404 m³ of Gravel for five years for 5 years.
- The mineable reserves have been computed 1,60,630 m³ of Rough Stone and 23,404 m³ of Gravel for five years.
- The effective geological reserves and mineable have been worked out as 11, 80,270 m³ of Rough stone and 33,722 m³ of Gravel.

6. Project Requirements

I. Land requirement:

- The Rough stone & Gravel mine is over an extent of 1.77.0 Ha..
- Lease area located at S. F. No. 102/1A, 102/1B2, 102/1BH3, Eraiyur village, Vanur Taluk, Villupuram District, Tamil Nadu State, lies in the latitude of 12°03'55.01" N to 12°04'01.91" N and 79°38'24.85" E to 79°38'32.27" E.
- The lease area topography is plain terrain; site elevation is 48 m (max) AMSL. The area is marked in the survey of India Topo sheet No. 57 P/12.

Quarry Lease area breakup:

S. No	Description	Area to be required at the present Mining Plan Period (Ha.)
1	Quarrying pit	1.19.0
2	Infrastructure	0.01.00
3	Roads	0.01.00
4	Green Belt	0.10.00
5	Unutilized	0.46.00
Total		1.77.0

II. Water Requirement

- The total water requirement is 4.5 KLD (Drinking & Domestic purpose-1.0KLD, Dust suppression -2.0 KLD & for Greenbelt- 1.5KLD). The total water requirement will be met from Road tankers.
- The rough stone & 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.
- 1, 32,396 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 kg/day) will be segregated as Organic (6 Kg/day) will dispose through local municipal bins and inorganic waste (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. 37, 16,000/- including EMP cost is 8, 60,000/-.

8. Description of Environment

Project Influence Area (PIA)/Study Area:

An area covering 10 km radius from Erayur Rough stone & gravel quarry boundary has been earmarked as study area for baseline studies.

Study Period:

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

Summary of Baseline Studies:

- Site has an undulating terrain with level 48m Above MSL.
- The project site falls under Zone- II (Low Risk Zone) as per IS 1893 (Part- I).
- The predominant wind direction is South East during study period.
- Max Temperature: 33⁰C Min Temperature: 21⁰C & Avg. Temperature: 28.74⁰C
- Average Relative Humidity: 69.09 %
- Average Wind Speed: 1.62 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 52.97 µg/m³ to 56.21 µg/m³ (NAAQ standard 100 µg/m³)
- PM_{2.5} values varied from 24.74 µg/m³ to 28.98 µg/m³. (NAAQ standard 60 µg/ µg/m³)
- SO₂ levels varied from 8.92 µg/m³ to 10.90 µg/m³. (NAAQ standard is 80 µg/m³)
- NO_x ranged between 22.10 µg/m³ to 28.42 µg/m³. (NAAQ standard is 80 µg/m³)

Noise Environment

- In industrial area day time noise levels was about 53.9 dB(A) and 41.5 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 49.6 dB(A) to 51.3 dB(A) and night time noise levels varied from 39.0 dB(A) to 40.9 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 prevailing status of water quality at 8 locations for ground water has been assessed during the study period. Groundwater samples are within the permissible limits specified for drinking water quality standards as per IS: 10500 (2012).
- The average pH ranges from 6.74 and 7.39
- TDS value varied from varied from 510 mg/l – 1261 mg/l.
- The chloride concentration ranged from 66.9 mg/l – 338.12 mg/l.
- Sodium range from 32 mg/l to 156 mg/l.
- Potassium concentration range from 3 to 9 mg/l.

- Magnesium ranges from 13.1 to 51.6 mg/l within the permissible limit of the IS 10500: 2012.
- The sulphate content of the ground water of the study area is varied between 55.9 mg/l – 183.71 mg/l meeting the acceptable limit of the IS 10500: 2012.

Surface Water Quality

- Surface water sample are within the limits as per ISI-IS2296-1982 Class C (Drinking water source with conventional treatment followed by disinfection).
- pH ranges from 7.27 to 8.33
- Total Dissolved Solids range from 413 mg/l to 1009 mg/l.
- Chloride ranges from 95.2 mg/l to 251 mg/l.
- The sulphate content in the surface water of the study area varies between 44.2 mg/l – 127.6 mg/l.
- Total hardness ranges between 121.6 mg/l to 403.9 mg/l.
- The BOD value ranges from 1.3 mg/l to 5.8 mg/l.
- COD value 4 to 72.5 mg/l.
- The concentration of heavy metals like As, Cd, Cr, Pb, Mn, Hg, Ni and Se at all locations are within the limits of IS 2296:1992(Class-C: Drinking water with conventional treatment followed by disinfection.)

Soil Quality

- Soil sampling was carried out at eight (08) locations in the study area. It is observed that, Soil types are Sandy Clay Loam, Loam, Loam sand, and clay and the soil samples are slightly alkaline in nature.
- The pH of the soil samples ranged from 6.29 to 7.86
- Conductivity of the soil samples ranged from 105 to 314 $\mu\text{mhos/cm}$.
- Nitrogen content ranged from 143 mg/kg to 237 mg/kg
- Phosphorous ranged from 35 mg/kg to 262 mg/kg.
- Potassium content ranges from 89 mg/kg to 351 mg/kg.

Biological Environment

- The rough stone & gravel quarry is located at Eraiyr village. Therefore, no management plan is required. The proposed project will not have any impact of terrestrial ecology of the area. Quarry area can be developed with greenbelt by planting native species to maintain the good environment.
- There is no National Park, Wildlife Sanctuary, Biosphere Reserve, Wildlife corridors and Tiger/Elephant Reserve found within 10 km radius of the project site. There is

Ossudu Bird Sanctuary found in 14.01km from the project site and the details provided in table.

Socio-economic Conditions:

- The total population of Villupuram district was 3,458,873 and it is ranked 6th place in terms of the highest population in Tamil Nadu. The population density of Villupuram district has 481 persons per sq.km which is less than the state average of 555 persons per sq.km.
- The 2011 Census states that, the Villupuram district has 15 % urban population and 31.54 % rural population.
- As per the 2011 Census, sex ratio of the district is good at 987 lower than the State Sex ratio of 996. The district has recorded the literacy rate of 71.9 %.

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.

- Eraiur Rough stone & Gravel is a patta land, over extent of 1.77.0Ha, at Eraiur village, Vanur Taluk, Villupuram District, Tamil Nadu. There are no R&R issues.
- The lease area topography is plain terrain with site elevation is 48m AMSL. Eraiur Rough stone & Gravel 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 is 192.3 µg/m³, PM10 is 72.76 µg/m³, PM2.5 is 38.54 µg/m³, SO₂ is 11.11 µg/m³ and NO_x is 31.07 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 0.10.0 Ha hectare land was allotted for greenbelt development during first 5 years of mining plan. Thiru. A. Aridass proposed to plant 300 No's of trees for 5 years and Rs. 60,000/- 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 & 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 Eraiyur 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 % (Rs.92,900) 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.
