

# **EXECUTIVE SUMMARY**

For

## **MEENAKSHIPURAM ROUGH STONE & GRAVEL QUARRY**

**Over an extent of 8.39.0Ha.**

At

**Survey No: 212/7, 240/1A, 240/1B, 240/2, 207/3C, 241/1, 243/1, 243/2  
and 243/3**

**Villages: Meenakshipuram**

**Taluk: Ettayapuram**

**District: Thoothukudi**

**State: Tamil Nadu**

By

**M/s. Ezhil Blue Metals Private Limited**

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**S/o.Shri.M.Venkat Raman,**

**No. 3/3, Arihant Raj Bhavan,**

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**Royapettai, Chennai-600 014**

**(Project termed under Schedule of 1(a) Mining of Minor Minerals 'B1' category  
as per EIA Notification 2006 and its Amendments thereafter and 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**

**SEPTEMBER 2020**

## EXECUTIVE SUMMARY

### 1. Project Description

The total extent area of the quarry is 8.39.0Ha, situated at S.F. No. 212/7, 240/1A, 240/1B, 240/2, 207/3C, 241/1, 243/1, 243/2 and 243/3, Meenakshipuram village, Ettayapuram Taluk, Thoothukudi District, TamilNadu State.

The District Collector of Thoothukudi 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. G.M.1-46/2015, dated 10.01.2019.

Subsequently, M/s. Ezhil Blue Metals Pvt Ltd submitted the Mining Plan for the subject area and the same was approved by directorate of Geology and mining, Thoothkudi vide Rc.No.G.M.1-46/2015, dated 08.03.2019

The project falls under B1 Category, Schedule 1(a) Mining of Minerals as per EIA Notification dated 14<sup>th</sup> September 2006 and its subsequent amendments. The EC application was submitted under category B1, schedule 1(a) to TN SEIAA vide File No. 7223/2019.

The proposal was appraised during 146<sup>th</sup> SEAC meeting held on 29.02.2020 and 375<sup>th</sup> SEIAA meeting held on 18.05.2020 and ToR was issued vide Letter No. SEIAA-TN/F.No.7223/SEAC/ToR-698/2020, dated: 18.05.2020 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 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.

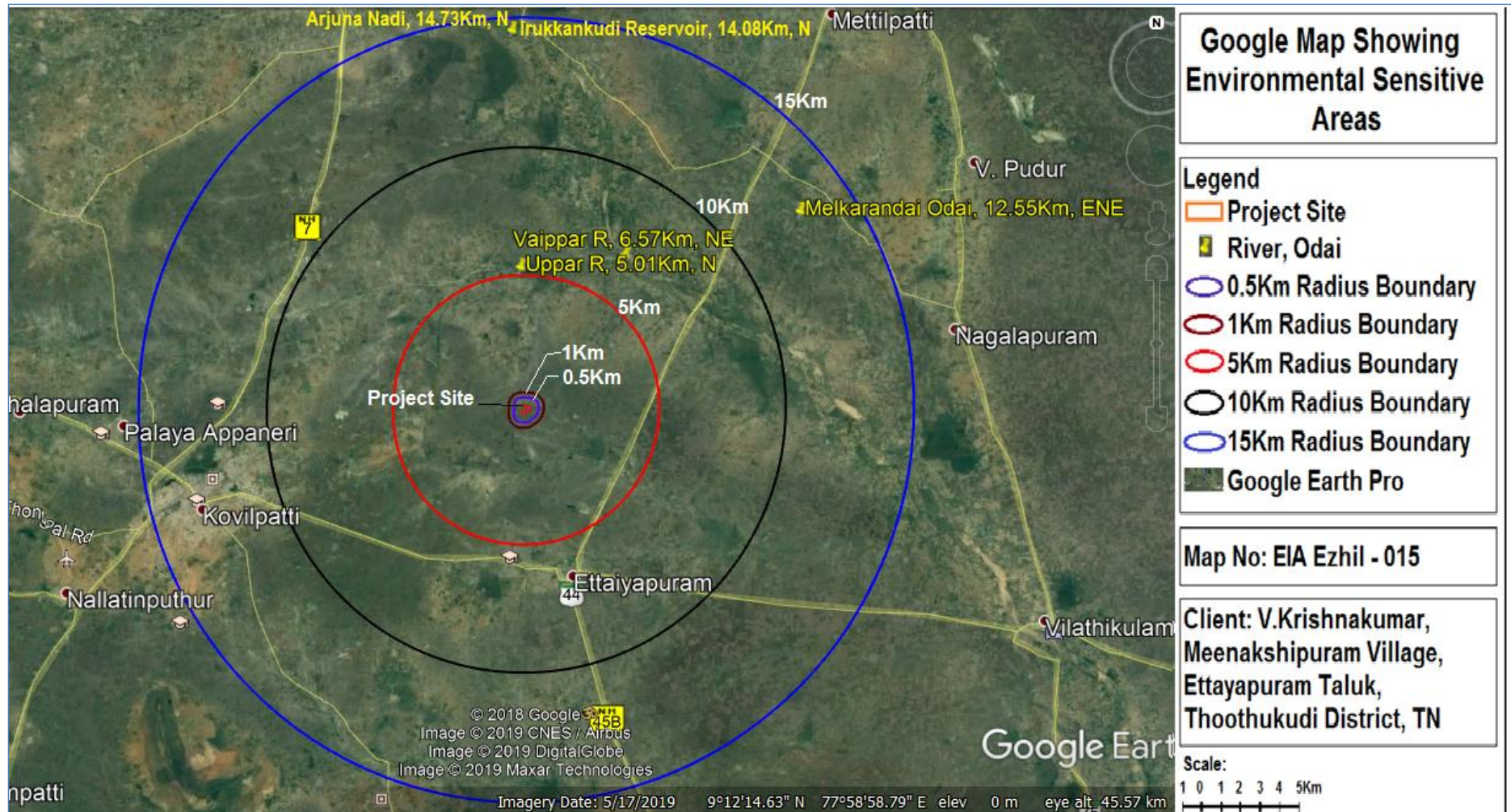
### 3. Environmental Sensitive Areas

As seen in **Table-I** below, there 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			
		S. No	Places	Distance (~Km)	Direction
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	1	Ettaiyapuram Palace	6.16	SSE
		2	Kathiresan Hill Tiger Cave	14.40	WSW
		3	Kathiresan Temple	14.21	WSW
		4	Mahakavi Subramaniya Bharathiyar Museum	6.25	SSE
2	Areas which are important or sensitive for ecological reasons – Wetlands, Watercourses or other water bodies, coastal zone, biospheres, mountains, forests	S. No	Places	Distance (~Km)	Direction
		1	Uppar R	5.01	N
		2	Vaippar R	6.57	NE
		3	Melkarandai Odai	12.55	ENE
		4	Irukkangudi Reservoir	14.08	N
5	Arjuna Nadi	14.73	N		
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	S. No	Places	Distance (~Km)	Direction
		1	Uppar R	5.01	N
		2	Vaippar R	6.57	NE
		3	Melkarandai Odai	12.55	ENE
		4	Irukkangudi Reservoir	14.08	N
5	Arjuna Nadi	14.73	N		
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"> <li>➤ SH-44 ~ 5.5km (SSW)</li> <li>➤ NH-45b1 ~ 4.27km (ESE)</li> </ul>			
7	Defence installations	Nil			
8	Densely populated or built-up area (Nearest Town, City, District)	S. No	Name of the villages	Distance (~km) & Direction	Population (Census 2011)
		1	Meenakshipuram	2.07km (NNW)	1135
		2	Urulaikudi	3.32 km (NW)	1535
		3	Kadalaipur	3.75 km (W)	3857
		4	Veerapatti	4.00 km (NE)	877
5	Karuppur	4.4 KM (NNE)	801		
9	Areas containing important, high quality or scarce resources, (groundwater resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	S. No	Places	Distance (~Km)	Direction
		1	Uppar R	5.01	N
		2	Vaippar R	6.57	NE
		3	Melkarandai Odai	12.55	ENE
		4	Irukkangudi Reservoir	14.08	N
5	Arjuna Nadi	14.73	N		
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 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 23, 54,040m<sup>3</sup> of Rough stone and 3, 92,340m<sup>3</sup> of Topsoil with Gravel.
- The Mineable Reserves have been arrived as 9, 83,005m<sup>3</sup> of Rough Stone and 3, 13,460m<sup>3</sup> of Topsoil with Gravel.
- The Proposed production capacity is 9, 83,005m<sup>3</sup> of Rough Stone and 3, 13,460m<sup>3</sup> of Topsoil with 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 9, 83,005m<sup>3</sup> of Rough Stone and 3, 13,460m<sup>3</sup> of Topsoil with Gravel for 5 years.
- The mineable reserves have been computed as 9, 83,005m<sup>3</sup> of Rough Stone and 3, 13,460m<sup>3</sup> of Topsoil with Gravel.
- The effective geological reserves and mineable have been worked out as 23, 54,040m<sup>3</sup> of Rough stone and 3, 92,340m<sup>3</sup> of Topsoil with Gravel

#### 6. Project Requirements

##### I. Land requirement:

- The Rough stone & Gravel mine is over an extent of 8.39.0 Ha..
- Lease area located at S. F. No. 212/7, 240/1A, 240/1B, 240/2, 207/3C, 241/1, 243/1, 243/2 and 243/3 located at Meenakshipuram village, Ettayapuram Taluk, Thoothukudi District, lies in the latitude of 09°12'09.86" N to 09°12'21.80" N and longitude 77°58'53.00" E to 77°59'05.77" E.
- The lease area topography is plain terrain; site elevation is 66m (max) AMSL. The area is marked in the survey of India Topo sheet No. 58 K/3, K/4, G/15 & G/16.

##### Quarry Lease area breakup:

S. No	Description	Area to be required at the present Mining Plan Period (Ha.)
1	Mining/Excavation	0.00.0Ha
2	Future Mining	6.42.6Ha
3	Stocking & Mineral Dressing Yard	0.00.0
4	Future Infrastructure	0.01.0
5	Mine Road	0.03.0

6	Green Belt/ Mine safety	1.92.4
<b>Total</b>		<b>8.39.0</b>

## II. Water Requirement

- The total water requirement is 3.0KLD (Drinking & Domestic purpose-1.0KLD, Dust suppression -1.0 KLD & for Greenbelt-1.0KLD). 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.
- 5, 43,740 liters of HSD for the entire project life will be brought from nearby diesel pumps.

## IV. Manpower

- Manpower requirement for the proposed project is 20 Nos.

## V. Solid Waste Generation & Management

- Municipal solid waste (9 kg/day) will be segregated as Organic will dispose through local municipal bins and inorganic waste (5 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. 4,94,30,400/- including EMP cost is 5,22,500/-.

## 8. Description of Environment

### Project Influence Area (PIA)/Study Area:

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

### Study Period:

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

### **Summary of Baseline Studies:**

- Site has an undulating terrain with level 66m Above MSL.
- The project site falls under Zone- II (Low Risk Zone) as per IS 1893 (Part- I).
- The predominant wind direction is North West during study period.
- Max Temperature: 41°C Min Temperature: 23°C & Avg Temperature: 31.6°C
- Average Relative Humidity: 61.17 %
- Average Wind Speed: 2.79 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):

- PM<sub>10</sub> ranged between 51.30 µg/m<sup>3</sup> to 59.72 µg/m<sup>3</sup> (NAAQ standard 100 µg/m<sup>3</sup>)
- PM<sub>2.5</sub> values varied from 26.65 µg/m<sup>3</sup> to 30.86 µg/m<sup>3</sup>. (NAAQ standard 60 µg/m<sup>3</sup>)
- SO<sub>2</sub> levels varied from 9.19 µg/m<sup>3</sup> to 13.87 µg/m<sup>3</sup>. (NAAQ standard is 80 µg/m<sup>3</sup>)
- NO<sub>x</sub> ranged between 17.37 µg/m<sup>3</sup> to 26.80 µg/m<sup>3</sup>. (NAAQ standard is 80 µg/m<sup>3</sup>)

### **Noise Environment**

- In industrial area day time noise levels was about 51.6 dB(A) and 41.2 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 52.2 dB(A) to 54.8 dB(A) and night time noise levels varied from 41.7 dB(A) to 44.7 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 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 7.34 and 8.32.
- TDS value varied from 479 mg/l – 920 mg/l.
- The chloride concentration ranged from 102.4 mg/l – 276.4 mg/l.
- Sodium range from 49.4 mg/l to 136.4 mg/l.
- Potassium concentration range from 5.3 to 8.1 mg/l.



- Magnesium ranges from 21.5 to 46.4 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 43.8 mg/l – 98.2 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 6.83 to 8.15
- Total Dissolved Solids range from 259 mg/l to 824 mg/l.
- Chloride ranges from 61.2 mg/l to 253.9 mg/l.
- The sulphate content in the surface water of the study area varies between 13.73 mg/l – 77.6 mg/l.
- Total hardness ranges between 107.5 mg/l to 384 mg/l.
- The BOD value ranges from 2.2 mg/l to 8.1 mg/l.
- COD value 8.6 to 27.1 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 7.72 to 8.31
- Conductivity of the soil samples ranged from 137 to 426 µmhos/cm.
- Nitrogen content ranged from 56.2 mg/kg to 172 mg/kg
- Phosphorous ranged from 5.9 mg/kg to 23.7 mg/kg.
- Potassium content ranges from 199.5 mg/kg to 1203.2 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 total population of Thoothukkudi district was 1750176 and it is ranked 20<sup>th</sup> place in terms of the highest population in Tamil Nadu. The population density of Thoothukkudi district was 369 persons per sq.km which is less than the state average of 555 persons per sq.km.
- The project is located at Meenakshipuram Village, Ettayapuram taluk of Thoothukudi District, and Tamil Nadu. There are 47 villages around the study area (10Km) radius, the population around the area accounts to 105612. The average literacy rate of the study area is 72.76 % which is less than the district literacy rate of 86.16 %. They have sufficient educational infrastructures and the people in the study area are well connected to the educational infrastructures. However, there should be development in the education facilities which can be done through CSR activities. The people in the study area are well connected to Government primary health centres and Primary health sub-centres.
- The total workers constituted 42.7% to the total population of the district. The main workers constituted 87.9%. The marginal workers constituted 12.1% in which female marginal workers constituted 19.2%.

### **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.

- M/s. Ezhil Blue Metals Pvt Ltd has been granted a fresh lease for 10 years, over extent of 8.39.0Ha, of Patta land for Rough stone & Gravel mining at Meenakshipuram village, Ettayapuram Taluk, Thoothukudi District, Tamil Nadu. There are no R&R issues.
- The lease area topography is plain terrain with site elevation is 66m AMSL. M/s. Ezhil Blue Metals Pvt Ltd 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, SO<sub>2</sub> and NO<sub>x</sub>.
- The impact on air environment was studied through air quality modeling studies. The 1<sup>st</sup> highest 24hour average concentrations of NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub> and SO<sub>2</sub> 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, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> are 335 µg/m<sup>3</sup>, 66.84 µg/m<sup>3</sup>, 40.10 µg/m<sup>3</sup>, 3.33

$\mu\text{g}/\text{m}^3$  and  $58.42 \mu\text{g}/\text{m}^3$  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 1.92.4Ha hectare land was allotted for greenbelt development during first 5 years of mining plan. M/s Ezhil Blue Metals proposed to plant 125 No's of trees per year and Rs. 1,40,000/- 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 & 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 meenakshipuram 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 % ( 9.88 Lakhs) on total cost will be allocated for CER activities as per MoEF&CC Office memorandum dated 1<sup>st</sup> May, 2018.

### **15. Benefits of the Proposed Project**

- The quarrying activities in this belt will benefit to the local people 20 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.

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