

# EXECUTIVE SUMMARY

of

## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PLAN REPORT

(Submitted for Public Hearing as per the provisions of  
EIA Notification 2006 & amendments thereof)

### PROJECT PROPONENT

Sl. No.	Name	S.F. Nos.	Extent of Mining Applied
1	Tvl. VST Blue Metals	1197/1 (P), 1197/5, 1197/ 1197/7	2.58.0 Ha

**PUNNAM ROUGH STONE & GRAVEL QUARRY - CLUSTER**  
**"B1" CATEGORY - MINOR MINERAL - CLUSTER - NON-FOREST LAND**

**CLUSTER EXTENT = 12.08.50 Ha**

At

**PUNNAM VILLAGE, PUGALUR TALUK,  
KARUR DISTRICT, TAMIL NADU**

Complied as per ToR obtained from SEIAA, TN

Letter No SEIAA/TN/F.No.8413/SEAC/ToR-985/2021 Dated: 05.07.2021

**Environmental Consultant**



**ENVIRO RESOURCES**

**(NABET Certificate No: NABET/EIA/1922/SA0133  
valid up to 30th March, 2022)**

**Reg. Add. 1904 Roopnagar CHS, S V Road, Kandivali West,  
Mumbai 400067, Maharashtra**

**E-mail: info@enviroresources.in, Telephone: +91 8087985556**

**January 2022**

Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

## ***Executive Summary***

### **1. INTRODUCTION**

Rough Stone & Gravel is the major requirements for construction industry. This EIA report is prepared by considering Cumulative load of all proposed & existing quarries of Punnam Rough Stone & Gravel Quarries Cluster Consisting of 1 Proposed and 3 Existing Quarry with total extent of Cluster of 12.08.50 Ha in Punnam Village, Pugalur Taluk, Karur District and Tamil Nadu State, cluster area calculated as per MoEF & CC Notification S.O. 2269(E), Dated 1<sup>st</sup> July 2016.

This EIA Report is prepared in compliance with ToR obtained vide - Letter No SEIAA/TN/F.No.8413/SEAC/ToR-986/2021 Dated: 05.07.2021; The Baseline Monitoring study has been carried out during the period of October - December 2021 and this EIA and EMP report is prepared for considering cumulative impacts arising out of these projects, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) individually to minimize those adverse impacts.

#### **"Draft EIA report prepared on the basis of ToR Issued for carrying out Public Hearing for the Grant of Environmental Clearance from SEIAA, - Tamil Nadu"**

##### **1.1 DETAILS OF PROJECT PROPONENT -**

Name of the Project	Tvl. VST Blue Metals Rough stone and Gravel quarry
S.F. No.	1197/1 (P), 1197/5, 1197/6 & 1197/7
Extent	2.58.0 ha
Land Type	Patta Land
Village Taluk and District	Punnam Village, Pugalur Taluk, Karur District

##### **1.2 QUARRY DETAILS WITHIN 500 M RADIUS**

S.No	Name of the lessee	S. F. Nos	Extent Area (Ha)	Period of lease
<b>Existing</b>				
1.	Tvl. VST Blue Metals	1196/1A, 1196/1B(P), 1197/12A(P)	3.61.0	23.10.2017 to 22.10.2022
2.	Tmt.P.Suganya	1199/2 part, 11199/23 Part, etc.,	3.89.0	14.10.2016 to 13.10.2021
3.	Thiru.K.M.Gurusamy	1232/11(Part) etc.,	2.00.50	03.12.2018 to 02.12.2023
<b>Proposed</b>				
1.	Tvl. VST Blue Metals	1197/1 (P), 1197/5, 1197/6 & 1197/7	2.58.0	-
<b>Total Extent</b>			<b>12.08.50</b>	

Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

## *Executive Summary*

### 1.3 SALIENT FEATURES OF THE PROPOSAL

S. No.	Particulars	Details	
1	Type of Project	Rough Stone and Gravel Quarry	
2	Quarry area applied	2.58.0 Ha	
3	Project Location	Survey Nos. 1197/1 (P), 1197/5, 1197/6 & 1197/7 of Punnam Village, Pugalur Taluk, Karur District, Tamil Nadu.	
4	Quarry Location on WGS 1984 datum	<b>Latitude</b>	<b>Longitude</b>
		10°59'00.58"N to 10°59'06.76"N	77°58'44.89"E to 77°58'52.38"E
5	Topo sheet Number	58 F/13	
6	Geological Reserves	<b>Rough stone</b>	<b>Gravel</b>
		9,39,610 m <sup>3</sup>	47,763 m <sup>3</sup>
7	Mineable Reserves & Year-wise Production	<b>Rough stone</b>	<b>Gravel</b>
		1,89,875 m <sup>3</sup>	22,365 m <sup>3</sup>
8	Lease period	5 years	
9	Site elevation above Mean Sea Level	175m AMSL	
10	Land use at the proposed project site	Patta Land	
		Land Cover: Barren Land which is not fit for vegetation/cultivation	
11	Site Topography	Sloping Towards North-eastern	
12	Ultimate depth of Mining	38m below ground level (3m Gravel + 35m Rough Stone) below ground level	
13	Existing Pit Dimension	75m (L) x 51m (W) x 13m (D)	
14	Ultimate Pit Dimension	182m (L) x 80m (W) x 38m (D) (BGL)	
15	Climatic Conditions	IMD Data, Karur (1971-2000)	
		<ul style="list-style-type: none"> <li>• Avg. Ambient air temp – 40° C to 22° C</li> <li>Annual rainfall - 655 mm</li> </ul>	
16	Seismic zone	Seismically, this area is categorized under Zone-III as per IS-1893 (Part-1)-2002. Hence, seismically the site is High Damage Risk Zone. With MSK scale of VII.	
17	Nearest road	Punnam road is present at a distance of 1.1 Km, East from Project Site	
18	Nearest State/National Highway	NH- 81: Coimbatore to Chidambaram 2.86 Km, S	
		SH- 84 - Erode to Karur – 3 km – NE	
19	Nearest Railway Station	Karur Railway station – 12km – SE	
20	Nearest Air Port	Trichy Airport – 83.34 km – SE	
21	Nearest village/major town	Village: Punnam – 1.58 km – NE	
		Town: K.Paramathi – 8.29 km – SW	

Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

**Executive Summary**

S. No.	Particulars	Details																		
22	Nearest Town, city, District Headquarters along with distance in kms.	Town: K.Paramathi – 8.29 km – SW Karur: 10.77 Km, SE Direction																		
23	Ecologically sensitive zone	No wildlife sanctuary, national park or biosphere reserve within 10m radius of Quarry lease area.																		
24	Reserved/Protected forests	No Reserved Forest and no protected forest is present within 10km from project site																		
25	Historical/tourist places	None within 300m radius of Quarry lease area																		
26	Nearest Hill	Molapalayam Hills: 6.18 Km, SW																		
27	Nearest water bodies	<table border="1"> <thead> <tr> <th>Water bodies</th> <th>Distance (Km)</th> <th>Direction</th> </tr> </thead> <tbody> <tr> <td><u>Odai</u></td> <td>4.97</td> <td>SE</td> </tr> <tr> <td><u>Thathampalayam Lake</u></td> <td>5.69</td> <td>SE</td> </tr> <tr> <td>Amaravathi River</td> <td>6.51</td> <td>SE</td> </tr> <tr> <td>Kaveri River</td> <td>9.43</td> <td>NW</td> </tr> <tr> <td>Noyyal River</td> <td>9.64</td> <td>NW</td> </tr> </tbody> </table>	Water bodies	Distance (Km)	Direction	<u>Odai</u>	4.97	SE	<u>Thathampalayam Lake</u>	5.69	SE	Amaravathi River	6.51	SE	Kaveri River	9.43	NW	Noyyal River	9.64	NW
Water bodies	Distance (Km)	Direction																		
<u>Odai</u>	4.97	SE																		
<u>Thathampalayam Lake</u>	5.69	SE																		
Amaravathi River	6.51	SE																		
Kaveri River	9.43	NW																		
Noyyal River	9.64	NW																		
28	Nearest Hospital	Punnam: 1.24 Km, NE Direction																		
29	Details of other quarries for a radius of 500m around the quarry site	<p>There are following quarries located within the radius of 500m from the proposed project site.</p> <p>Details:</p> <p>Abandoned quarry – 1 No (1.26.5 Ha) Existing quarry – 3Nos (9.50.5 Ha) Proposed quarry – 1No (2.58.0Ha)</p> <p>The total extent of the Existing and proposed quarry within the radius of 500m is <b>12.08.50 Ha</b>. The project falls under the cluster situation.</p>																		
30	Man power	Total Employees proposed for the quarry operation is <b>24 Nos.</b>																		
31	Water requirement & source	Total water requirement for 3.82 <b>KLD</b> from water vendors & nearby Bore well.																		
32	Overburden /Waste	The overburden in the form of Gravel formation																		
33	Cost of the project	<p><b>The Project Cost:</b></p> <p>A. Project cost = Rs. 43,82,000/- B. EMP cost = Rs. 3,80,000/- Total Project Cost (A+B) = Rs. 47,62,000/- CER Cost (2.0%) = Rs. 96,000/- <b>Total cost = Rs. 48,58,000/-</b></p>																		

Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

## *Executive Summary*

### 1.4 STATUTORY DETAILS

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 27.09.2019.
- Precise Area Communication Letter was issued by the Assistant Director, Department of Geology and Mining Rc.No.582/Mines/2019, Dated: 28.08.2020
- The Mining Plan was prepared by Recognized Qualified Person and approved by Assistant Director, Geology and Mining, Karur District, vide Rc.No. 582/Mines/2019, Dated: 23.09.2020
- The proposed project falls under “B1” Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide. online Proposal No. SEIAA/TN/F.No.8413/SEAC/ToR-986/2021, Date:05.07.2021
- Previously the applied area was under 2 spells of quarrying lease as 1. Rc. No. D.124/2001 Dated 11.02.2002 - Lease Period: 17.10.2002 to 16.10.2007 – 5 Years and 2. Rc. No. 71/Mines/2013 Dated 14.11.2013 - Lease Period: 14.11.2013 to 13.11.2018 – 5 Years - Operated by V.Subramaniam over an extent of 4.81.0 Ha EC Obtained for the 2nd Lease Granted - Lr.No.SEIAA-TN/F.No.1485/EC/1(a)/809/2013 dated: 17.10.2013.

## 2. PROJECT DESCRIPTION

The proposed project is site specific and there is no additional area required for this project. There is no effluent generation/discharge from the proposed quarry. Rough Stone is proposed to be excavated by opencast mechanized method involving splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers and rock breakers to avoid secondary blasting.

### 2.1 SITE CONNECTIVITY TO THE PROJECT AREA

Nearest Roadway	NH- 81: Coimbatore to Chidambaram 2.86 Km, S SH- 84 - Erode to Karur - 3 km - NE
Nearest Village	Punnam - 1.58 km - NE
Nearest Town	K. Paramathi - 8.29 km - SW
Nearest Railway	Karur Railway station - 12km - SE
Nearest Airport	Trichy Airport - 83.34 km - SE
Seaport	Kochi- 218 km - SW

### 2.2 LAND USE PATTERN OF THE LEASE APPLIED AREA

DESCRIPTION	PRESENT AREA IN (HA)	AREA AT THE END OF LIFE OF QUARRY (HA)
Area under quarry	0.32.7	1.30.0
Infrastructure	Nil	0.01.0
Roads	0.02.0	0.02.0
Green Belt	Nil	0.17.0
Un - utilized area	2.23.3	1.08.0
<b>TOTAL</b>	<b>2.58.0</b>	<b>2.58.0</b>

Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

### *Executive Summary*

#### 2.3 OPERATIONAL DETAILS OF LEASE APPLIED AREA

PARTICULARS	DETAILS	
	Rough Stone (5Year Plan period)	Gravel (3 Years Plan period)
Geological Resources in m <sup>3</sup>	9,39,610 m <sup>3</sup>	47,763 m <sup>3</sup>
Mineable Reserves in m <sup>3</sup>	1,89,875 m <sup>3</sup>	22,365 m <sup>3</sup>
Mining Plan Period	5 Years	
Number of Working Days	300 Days	
Production per day in m <sup>3</sup>	126	25
No of Lorry loads (6m <sup>3</sup> per load)	21	4
Total Depth of Mining	38m below ground level (3m Gravel + 35m Rough stone)	

#### 2.4 YEAR-WISE PRODUCTION PLAN

Year	Rough Stone (m <sup>3</sup> )	Gravel (m <sup>3</sup> )
I	38850	7920
II	38375	6942
III	38765	7503
IV	38885	-
V	35000	-
<b>TOTAL</b>	<b>189875</b>	<b>22365</b>

#### 2.5 METHOD OF MINING

The method of mining is Opencast Mechanized Mining Method is being proposed by formation of 5.0-meter height bench with a bench width not less than the bench height. The Rough Stone is a batholith formation and the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling and Slurry Explosives will be used for blasting. Hydraulic Excavators attached with Rock Breakers unit will be deployed for breaking large boulders to required fragmented sizes to avoid secondary blasting and hydraulic excavators attached with bucket unit will be deployed for loading the Rough Stone into the tippers and then the stone is transported from pithead to the nearby crushers.



Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

***Executive Summary***



**FIGURE - 1: GOOGLE IMAGE SHOWING APPLIED QUARRY LEASE AREA**





Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

## *Executive Summary*

### 2.6 PROPOSED MACHINERY DEPLOYMENT

S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	5	1.2m to 2.0m	Compressed air
2	Compressor	1	400psi	Diesel Drive
3	Excavator with Bucket / Rock Breaker Unit 4	1	300 HP	Diesel Drive
4	Tippers / Dumpers	3	20 Tonnes	Diesel Drive

### 2.7 CONCEPTUAL MINING PLAN/ FINAL MINE CLOSURE PLAN

- ✚ At the end of life of mine, the excavated mine pit / void will act as artificial reservoir for collecting rain water and helps to meet out the demand or crises during drought season.
- ✚ After mine closure the greenbelt developed along the safety barrier and top benches and temporary water reservoir will enhance the ecosystem
- ✚ Mine Closure is a process of returning a disturbed site to its natural state or which prepares it for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.
- ✚ The principle closure objectives are for rehabilitated mines to be physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/ non-contaminating, and capable of sustaining an agreed post-mining land use.

### 2.8 ULTIMATE PIT DIMENSION

Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	182	80	38 m bgl

## 3. DESCRIPTION OF THE ENVIRONMENT

Field monitoring studies to evaluate the base line status of the project site were carried out during October to December 2021 as per CPCB guidelines. Environmental Monitoring data has been collected with reference to proposed quarry by Enviro Tech Services, Ghaziabad an NABL Certified & MoEF Notified Laboratory

### 3.1 ENVIRONMENT MONITORING ATTRIBUTES

S. No.	Attributes	Parameters	Frequency
1	Ambient Air Quality	PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> & mineralogical composition of PM <sub>10</sub> , particularly for free silica	24 hourly samples, twice a week for three months at 8 locations.
2	Meteorology	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall	Continuous hourly recording (one season) at project site. Secondary data from the nearest IMD station.
3	Water quality	Physical and Chemical parameters.	Grab samples collected once during study period from 5 ground water and 2 surface water locations.
4	Soil Quality	Physical and Chemical parameters.	Grab samples collected once during study period from 6 locations.
5	Ecology	Existing terrestrial flora and fauna covering Core Zone	Through field studies once during study period. Secondary data also collected.

Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

### Executive Summary

S. No.	Attributes	Parameters	Frequency
		(1.00.0 Ha) & Buffer Zone (10-Km radius). Existing aquatic ecological status in Buffer Zone (10-Km radius).	
6	Noise levels	Noise levels in dB (A) Day and Night.	Hourly Noise levels in and around the project area for 24 hours at each location once during study period at 7 locations.
7	Land use	Current land use scenario	Once during study period based on recent satellite imagery and ground-truthing at site.
8	Geology	Geological details	Once during study period. Data collected from secondary sources
9	Hydrogeology	Drainage area and pattern, nature of streams, aquifer characteristics, recharge and discharge areas, etc.	Based on primary and secondary sources, once during study period.
10	Socio-Economic aspects	Socio-economic aspects like demography, population dynamics, infrastructure resources, health status, economic resources, etc.	From primary and secondary sources (like census abstracts of census of India 2011) once during the study period.

### 3.2 LAND ENVIRONMENT

S.No	Level I	Level -II	Area (Km <sup>2</sup> )	Percentage (%)
1	Built-up Land	Built-up Land	92.22	29.40
2	Agricultural Land	Crops – Cultivated & Uncultivated	171	54.50
3	Waste Land	Scrub/Shrub	9.46	3.02
		Plantation	31.46	10.03
4	Water Body	Water Body	4.92	1.57
5	Others	Mining land	4.62	1.47
		Total	314	100

The cluster area of 12.08.50 Ha contributes to part of Mining which land which is 4.62 sq km i.e. 1.47% of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

### 3.3 SOIL ENVIRONMENT

#### Physical Characteristics –

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay Loam Soil and Bulk Density of Soils in the study area varied between 0.59 to 1.23 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 27 to 40%.

**Chemical Characteristics -**

1. The nature of soil is slightly alkaline to strongly alkaline with pH range 7.36 to 8.43
2. The available Nitrogen content range between 148 to 263 kg/ha
3. The available Phosphorus content range between 0.58 to 1.56 kg/ha
4. The available Potassium range between 25.7 to 45.8 mg/kg

**3.4 WATER ENVIRONMENT**

**Surface Water**

The pH of the water samples collected is 7.27 and 7.63 and is within the acceptable limit of 6.5 to 8.5. The total dissolved solids were found is 453 and 526 mg/l in all samples. The total hardness is 189.5 and 236.3 mg/l for samples collected at 2 locations.

In both samples, iron content is 0.18 mg/l, Nitrate is 15.6 and 27 mg/l, fluoride is 0.16 and 0.27 mg/l, chloride is 65.7 and 92 mg/l, Sulphate is 19 and 26 mg/l, alkalinity is 153 and 213 mg/l, calcium is 25 and 37.6 mg/l and magnesium is 23.5 and 31.6 mg/l. The overall ground water quality was found to be good in most of the villages. The levels of heavy metals content were found to be within permissible limits.

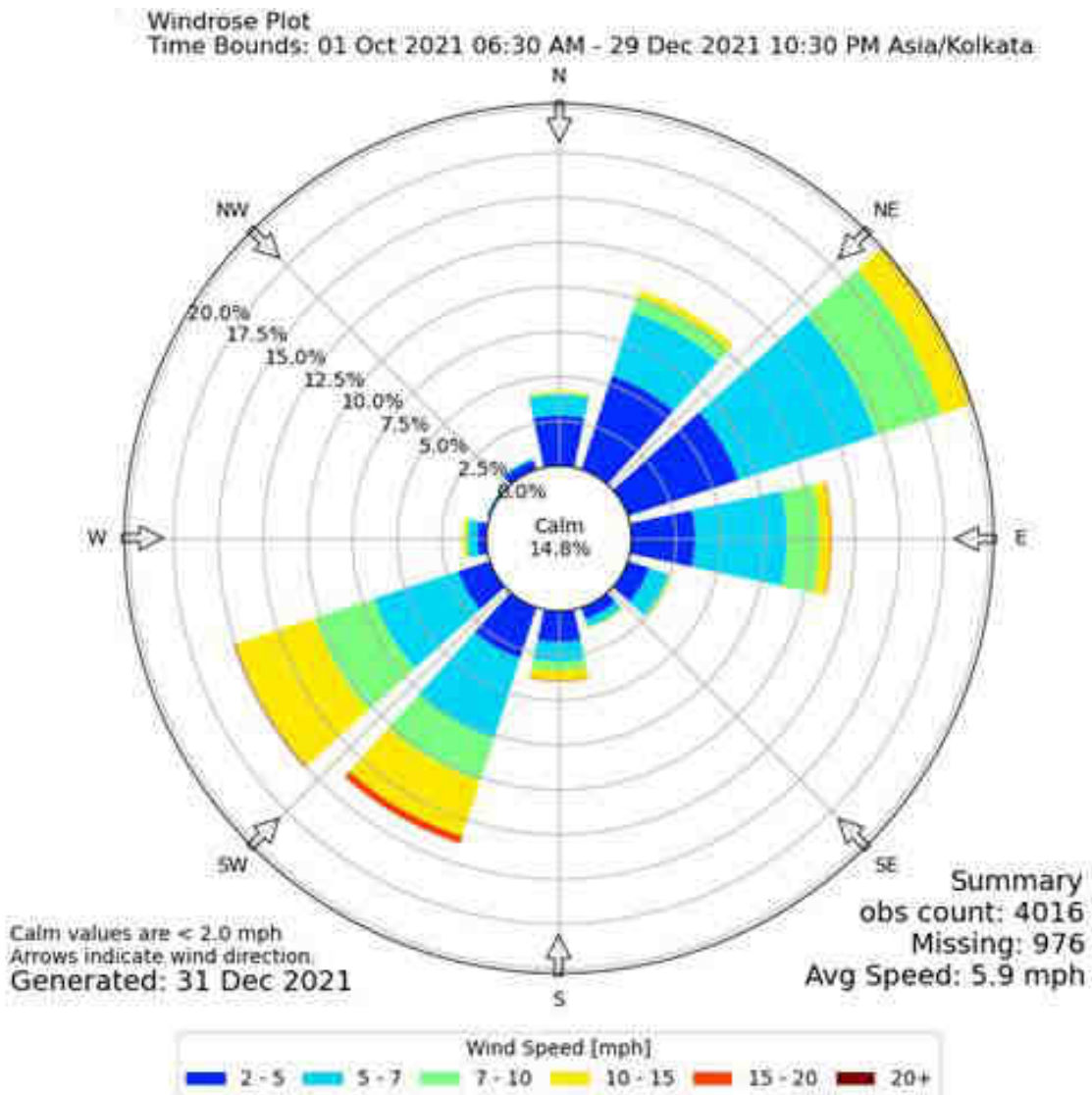
**Ground Water**

The pH of the water samples collected ranged from 6.42 to 7.80 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. The Total Dissolved Solids were found in the range of 415 to 523 mg/l in all samples. The Total hardness varied between 139 to 190.8 mg/l for all samples. On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with IS 10500:2012 and are well within the prescribed limits.

**3.5 AIR ENVIRONMENT**

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the proposed quarry forms the baseline information.

The results of ambient air quality monitoring for the period (October to December 2021) are presented in the report. Data has been compiled for three months. As per monitoring data, PM10 ranges from 38.6 to 46.8 µg/m<sup>3</sup>, PM2.5 data ranges from 16.8 to 27.6 µg/m<sup>3</sup>, SO<sub>2</sub> ranges from 4.3 to 9.7 µg/m<sup>3</sup> and NO<sub>2</sub> data ranges from 15.1 to 24.7 µg/m<sup>3</sup>. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.



**FIGURE - 3: WIND ROSE DIAGRAM**

### 3.6 NOISE ENVIRONMENT

Ambient noise levels were measured at 7 (Seven) locations around the proposed project area. Noise levels recorded in core zone during day time were from 40.5 to 55.3 dB (A) Leq and during night time were from 33.5 to 46.9 dB (A) Leq.

### 3.7 ECOLOGICAL ENVIRONMENT

The study involved in the collection of primary data by conducting a survey in the field, examination of floral and faunal records in previously published reports and records. Analysis of the information is the view of the possible alteration in the environment of the project site. For the survey of fauna, both direct and indirect observation methods were used.

There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered

red list species found in the study area. Hence this small operation over short period of time will not have any significant impact on the surrounding flora and fauna.

### **3.8 SOCIO ECONOMIC ENVIRONMENT**

It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project. The socio-economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis. The proposed projects will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

### **4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES –**

To maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction.

#### **4.1 LAND ENVIRONMENT:**

##### **ANTICIPATED IMPACT**

- Permanent or temporary change on land use and land cover.
- Change in Topography: Topography of the ML area will change at the end of the life of the mine.
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.

If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course

##### **MITIGATION MEASURES**

- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development of greenbelt etc.
- Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
- Green belt development along the boundary within safety zone. The small quantity of water stored in the mined out pit will be used for greenbelt
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir
- In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 7.5 m safety barrier and other safety provided) so as to help minimise dust emissions.



- Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle.

#### **4.2 WATER ENVIRONMENT**

##### **ANTICIPATED IMPACT**

- The major sources of water pollution normally associated due to mining and allied operations are:
  - Generation of waste water from vehicle washing.
  - Washouts from surface exposure or working areas
  - Domestic sewage
  - Disturbance to drainage course in the project area
  - Mine Pit water discharge
- Increase in sediment load during monsoon in downstream of lease area
- This being a mining project, there will be no process effluent. Waste from washing of machinery may result in discharge of Oil & grease, suspended solids.
- The sewage from soak pit may percolate to the ground water table and contaminate it.
- Surface drainage may be affected due to Mining
- Abstraction of water may lead to depletion of water table

##### **MITIGATION MEASURES**

- Garland drains, settling tank will be constructed along the individual mining leases. The Garland drains of the individual leases will be connected to settling tank and after settling the water will be discharged out to the natural drainage
- Rainwater will be collected in sump in the mining pits and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression onwards and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judiciously utilize the rainwater as part of rainwater harvesting
- Providing benches with inner slopes and through a system of drains and channels, allowing rain water to descent into surrounding drains, so as to minimize the effects of erosion & water logging arising out of uncontrolled descent of water.
- Reuse the water collected during storm for dust suppression and greenbelt development within the mines
- Installing interceptor traps/oil separators to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will pass through interceptor traps/oil separators prior to its reuse;
- Using flocculating or coagulating agents to assist in the settling of suspended solids during monsoon seasons;
- Periodic analysis of quarry pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits.
- Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
- De-silting will be carried out before and immediately after the monsoon season.
- Regular monitoring and analysing the quality of water in open well, bore wells and surface water

### **4.3 AIR ENVIRONMENT**

#### **ANTICIPATED IMPACT**

- During mining, at various stages activities such as excavation, drilling, blasting, and transportation of materials, particular matter (PM), gases such as Sulphur dioxide, oxides of Nitrogen from vehicular exhaust are the main air pollutants.
- Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.
- The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

#### **MITIGATION MEASURES**

**Drilling** – To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar.

#### **Advantages of Wet Drilling: -**

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

#### **Blasting -**

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e., at the time lunch hours, controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored

#### **Haul Road & Transportation -**

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- Transportation of material will be carried out during day time and material will be covered with tarpaulin
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- Water sprinkling on haul roads & loading points will be carried out twice a day
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.

- The un-metalled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.
- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Grading of haul roads and service roads to clear accumulation of loose materials

**Green Belt –**

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project areas

**Occupational Health –**

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical check-ups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

**4.4 NOISE ENVIRONMENT**

**ANTICIPATED IMPACT**

- Noise pollution poses a major health risk to the mine workers. Following are the sources of noise in the existing open cast mine project are being observed such as Drilling, & Blasting, Loading and during movement of vehicles.

**MITIGATION MEASURES**

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;
- The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;
- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;
- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

## ***Executive Summary***

### **4.5 BIOLOGICAL ENVIRONMENT**

#### **ANTICIPATED IMPACT**

There are no National Park and Archaeological monuments within project area. There are no migratory corridors, migratory avian-fauna, rare endemic and endangered species. There are no wild animals in the area. No breeding and nesting site were identified in project site. No National Park and Wildlife Sanctuary found within 10km radius. The dumps / bunds around the mine itself act as a good barrier for entry of stray animals. In the post mining stage, barbed wire fencing is proposed all around the mined-out void to prevent fall of animals in the mine pits.

#### **MITIGATION MEASURES**

To reduce the adverse effects on natural flora/fauna status of the area due to deposition of dust generated from mining operations, water sprinkling and water spraying systems will be ensured in all dust prone areas to arrest dust generation. Methodical and well-planned plantation scheme will be carried out.

#### **4.5.1 GREENBELT DEVELOPMENT PLAN**

<b>Year</b>	<b>No. of trees proposed to be planted</b>	<b>Survival %</b>	<b>Area to be covered sq.m</b>	<b>Name of the species</b>	<b>No. of trees expected to be grown</b>
I	40	80%	340	Neem, Pongamia Pinnata, Casuarina etc.,	32
II	40	80%	340		32
III	40	80%	340		32
IV	40	80%	340		32
V	40	80%	340		32

### **4.6 SOCIO ECONOMIC ENVIRONMENT**

#### **ANTICIPATED IMPACT**

- Employment generation due to the project will provide direct employment for about 24 persons.

#### **MITIGATION MEASURES**

- Good maintenance practices will be adopted for plant machinery and equipment, which will help to avert potential noise problems.
- Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.
- Appropriate air pollution control measure will be taken to minimize the environmental impact within the core zone.
- For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules.
- Benefit to the State and the Central governments through financial revenues by way of royalty, tax, DMF, NMET etc, from this project directly and indirectly.

## 5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

- The site has been selected based on geological investigation and exploration as below:
- Occurrence of minerals at the specific site.
- Transportation facility for materials & manpower.
- Overall impact on environment and mitigation feasibility
- Socio – economic background.
- The mineral deposits are site specific in nature; hence question of seeking alternate site does not arise for this project.

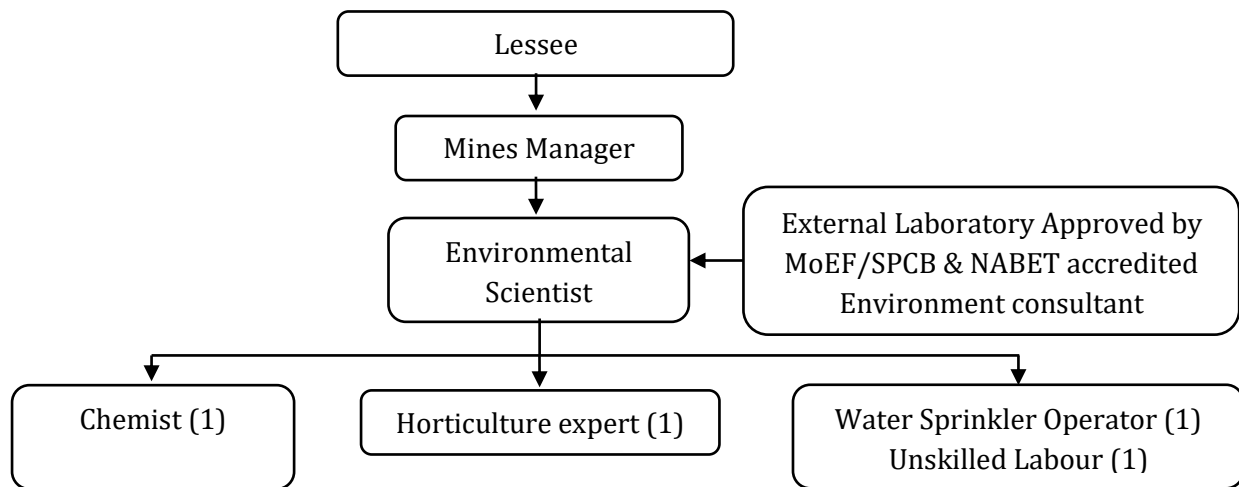
## 6. ENVIRONMENT MONITORING PROGRAM

Usually, an impact assessment study is carried over short period of time and the data cannot bring out all variations induced by natural or human activities. Hence regular monitoring program of Environmental parameters is essential to take into account the changes in the Environment.

The Objective of Monitoring -

- ✚ To check or assess the efficiency of the controlling measures;
- ✚ To establish a data base for future impact assessment studies.

### 6.1 ENVIRONMENTAL MONITORING CELL





Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

## *Executive Summary*

### 6.2 POST ENVIRONMENTAL CLEARANCE MONITORING SCHEDULE IN COMMON

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> and NO <sub>x</sub> .
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall
3	Water Quality Monitoring	2 Locations (1SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in bgl
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly - 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	-	During blasting Operation	Peak Particle Velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	-	Once in six months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

## 7. ADDITIONAL STUDIES

### 7.1 RISK ASSESSMENT

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31<sup>st</sup> December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities. The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

## 7.2 DISASTER MANAGEMENT PLAN

The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

- ✚ Rescue and medical treatment of casualties;
- ✚ Safeguard other people;
- ✚ Minimize damage to property and the environment;
- ✚ Initially contain and ultimately bring the incident under control;
- ✚ Secure the safe rehabilitation of affected area; and
- ✚ Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency

## 7.3 CUMULATIVE IMPACT STUDY

### CUMULATIVE PRODUCTION LOAD OF ROUGH STONE

PROPOSED PRODUCTION DETAILS			
5 Years in m <sup>3</sup>	Per Year in m <sup>3</sup>	Per Day in m <sup>3</sup>	Number of Lorry Load Per Day
1,93,225	38,645	126	21

### CUMULATIVE PRODUCTION LOAD OF GRAVEL

PROPOSED PRODUCTION DETAILS			
3Years in m <sup>3</sup>	Per Year in m <sup>3</sup>	Per Day in m <sup>3</sup>	Number of Lorry Load Per Day
22,365	7455	25	4

### ANTICIPATED GROUND VIBRATIONS IN CLUSTER

Distance from blasting site (D) (m)	Quantity of Explosive/Blast for Project 1 (Q) (Kg)	PPV (mm/s)
100	56	7.8
200	56	6.5
300	56	3.9
400	56	2.7
500	56	2.1
600	56	1.6
700	56	1.3
800	56	1.1
900	56	1.0
1000	56	0.9

Draft EIA/EMP for Punnam Village Rough Stone & Gravel Quarry at 1197/1 (P), 1197/5, 1197/6 & 1197/7, Pugalur Taluk, Karur District, Tamil Nadu having a lease area of 2.58.0 Ha. While cluster area is 12.08.50 Ha.

Lessee Tvl. VST Blue Metals

## *Executive Summary*

### SOCIO ECONOMIC BENEFITS FROM CLUSTER

<b>Project Cost</b>	<b>CER @ 2%</b>
₹ 47,62,000	₹ 96,000

### EMPLOYMENT BENEFITS





S.No	Particulars	Nos
1.	Mine Foreman	1
2.	Blaster/mate	1
3.	Excavator- Operator & Driver	4
4.	Jack hammer operator	10
<b>Semi- Skilled Labour</b>		
5.	Security	1
<b>Unskilled Labour</b>		
6.	Labour & Helper	3
7.	Cleaner	4
<b>Total</b>		<b>24</b>

### GREENBELT DEVELOPMENT BENEFITS FROM CLUSTER

No of Trees proposed to be planted	Survival %	Area Covered Sq.m	Name of the Species	No. of Trees expected to be grown
200	80%	1700	Neem, Casuarina	160

## 8. PROJECT BENEFITS

The Proposed Project for Quarrying Rough Stone & Gravel at Punnam Village aims to produce 1,93,225 m<sup>3</sup> Rough Stone, 22,365 m<sup>3</sup> of Gravel over a period of 5 Years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

-  Increase in Employment Potential
-  Improvement in Socio-Economic Welfare
-  Improvement in Physical Infrastructure
-  Improvement in Social infrastructure

## ENVIRONMENT MANAGEMENT PLAN

The Environment Monitoring Cell discussed formed by the mine management will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level.

The said team will be responsible for:

1. Implementation of pollution control measures as suggested in Environmental Management Plan and recommended in EC
2. Conducting environmental monitoring as per EMP and EC stipulation through external laboratories approved by MoEF/SPCB and NABL
3. Ensuring compliance with other conditions stipulated in Environmental Clearance for the project.
4. Ensuring compliance with the conditions stipulated in 'Consent to Operate' for the project.

5. Timely submission of compliance status to MoEF/ SPCB
6. Seeking experts' guidance, as and when required.
7. Conducting CSR activities in nearby villages.
8. Co-ordination of the environment related activities within the project as well as with outside agencies
9. Collection of health statistics of the workers and population of the surrounding villages
10. Green belt development
11. Monitoring the progress of implementation of the environmental monitoring programme
12. Monitoring of the water/ waste water quality, air quality and solid waste generated
13. Analysis of the water and air samples collected through external laboratory
14. Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc
15. Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

## **9. CONCLUSION**

It can be concluded from overall assessment of the impacts, in terms of positive and negative effects on various environmental components, that the mining activities will not have any adverse effect on the surrounding environment.

To mitigate any impacts due to the mining activities, a well-planned EMP and a detailed post project monitoring system is provided for regular monitoring and immediate rectification at site. Due to the cluster quarrying activities, socio economic conditions in and around the project site will be improved substantially. Hence, the Prior Environmental Clearance shall be granted at the earliest.