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**PREFEASIBILITY STUDY**

**FOR**

**PROPOSED BASALT QUARRY**

**OF**

**SHRI RAGHUNATH BAPU SHINDE**

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## Executive summary

Shri. Raghunath Babu Shinde has applied a Stone Quarry over an area of 1.00 Ha in Survey no 1114 Part of Village- Ghatnandre, Taluka- Kavathe Mahankal, District Sangli, Maharashtra State, to the District Collector, Sangli . The said land is Private Land. . for quarrying capacity of 15,000 Brass per year.

### The major highlights of the project are:

- The project comes under non agriculture land.
- Ideally Village located at a distance of 0.6 Km from South West of Sangola Vita Road. The Lease area is located South East of GhatnandreVillage.
- No National park or wildlife sanctuary lies within the buffer zone or nearby this region.
- No displacements of settlement are required.
- No sensitive places of notified archaeological, historical or tourist importance within or nearby the buffer zone.

### Project Description

**Location:** The site is located at Gut No. 1114 Part, Ghatnandre Village, Kavatemahankal Taluka, District Sangli, and Maharashtra. The site is accessible from Sangola-vita road.

**Land:** The land provided comes under mining area approved by the government of Maharashtra. Therefore no need of human displacement is needed in the project area. The land provided for stone mining is 1.00 hectare to the project proponent.

**Co-ordinate:** The coordinates of the plant site are latitude and longitude

Pillar No.	Latitude(N)	Longitude(E)
1	74°52'56.02"	17° 9'59.95"
2	17°10'4.52"	74°52'53.97"
3	17°10'5.29"	74°52'56.39"
4	17°10'0.91"	74°52'57.85"

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**Water:** Water requirement of the project will be met through the water tanker and bore well which is existing in the human settlement area. Company does not exploit any other water resources or ground water; therefore no adverse impact is anticipated on water environment. The water requirement is estimated to be maximum **of 1500 lit/day**.

**Electric Supply:** There is no need for electricity.

**Project Cost:** The total cost of the project including all facilities is estimated to be INR 45.00 Lacks.

### **Topography:**

The Sangli district is situated in the Southern part of Maharashtra and is a part of Deccan plateau. It is endowed with the gift of fertile black soils in the central parts. The rainfall decreases from west to east. The eastern part of Sangli district has a scanty drought prone belt of the state. Thus there are regional disparities. The central part of Sangli district is cultivable area. The eastern part include Jat, Kavathe Mahankal tahsils is drought prone area and has insignificant irrigation facilities. The northern part of Sangli district also rainshadow area. There is always accute shortage of drinking water. The Sangli district consists of Ten tahsils, namely district Walwa, Shirala, Atpadi, Khanapur, Tasgaon, Miraj, Jat, Kavathe Mahankal, Kavatemahankal and Palus.

Topographically the region has large diversified surface. Climatically the region falls under the rain shadow region of Sahyadri Mountain. Temperature increases from west to east and rainfall decreases from west to east. Climatically, the region shows four seasons, namely monsoon, post-monsoon, cold season and hot season. The region is drained by Krishna and its tributaries as Yerla and Agrani.

### **Soil Quality:**

Soil is considered to be very important resources because it is the soil that acts as medium for the cultivation of crops. India being an agricultural country. Soil is the primary resource of India. All our food, clothing and many other daily requirements are derived directly or indirectly from the soil. Soil occupies very important in India's economy. The soils of the region are derived from the Deccan trap. The characteristic and distribution of soils in the region are influenced by essentially by nature and intensity of weathering, mode and rapidity of fluvial transport. These are generally classified as follows.

- A. Coarse shallow soils.
- B. Medium black soils.
- C. Deep black soils.

**Meteorology:** The average annual rainfall within the district is heavy and is about 1000-1200 mm in Sangli district. The minimum temperature is the lowest and it ranges from about 16.8°C to 18°C. There is a rapid rise in temperature in March to May ranges from about 32°C to 39 °C. The mean maximum temperature in the area goes up to 39°C. In all season relative humidity is between 61-86% as reported by Indian meteorological center.

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**Water:** Water needed for operation requirement shall be drawn from water tankers and bore well which is present in the human settlement area and not in the lease area.

**Ecology:** No extra land will be acquired during the operation of the project there will be no adverse impact on some of the environmental aspect. In the area of the project proponent clustered green belt is found in the vicinity, hence there will not be any kind of deforestation. No rare or endangered species of flora and fauna are present in the immediate vicinity as well as the study area. Thus, there will not be any adverse impact on flora and fauna.

**Socio-economic:** The project will provide positive impact on the economic development of the region in terms of employment opportunities. Moreover the above unit will be operating in an authorized mining land declared by the Govt. of India. Therefore no population will be displaced.

### **Risk assessment plan**

Risks likely to pose threat to man, environment or property associated with various activities are addressed in this report. Such activities include transport, storage; handling and usage of fuels. Surrounding population shall be made aware of safety precautions to be taken in case of any mishap in project site.

### **Conclusion**

The minor mineral project of stone crushing will not have any adverse impact on the environment. Altogether the project will have a positive impact on social environment by providing employment opportunity for the skilled and unskilled labors living in the surrounding villages. Also the infrastructure around the site will be improved due to the project.

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## **Prefeasibility Report**

### **1. INTRODUCTION OF THE PROJECT**

#### **1.1 Identification of the project proponent**

Shri. Raghunath Babu Shinde has applied a Stone Quarry over an area of 1.00 Ha in Survey no 1114 Part of Village- Ghatnandre, Taluka- Kavathe Mahankal, District Sangli, Maharashtra State, to the District Collector, Sangli . The said land is Private Land. . for quarrying capacity of 15,000 Brass per year.

#### **The major highlights of the project are:**

- The project comes under non agriculture land.
- Ideally Village located at a distance of 0.6 Km from South West of Sangola Vita Road. The Lease area is located South East of GhatnandreVillage.
- No National park or wildlife sanctuary lies within the buffer zone or nearby this region.
- No displacements of settlement are required.
- No sensitive places of notified archaeological, historical or tourist importance within or nearby the buffer zone.

#### **Crushing Activity**

The crusher is not installed in the site.

#### **1.2 Description of Nature of the Project**

Over the last 10 years, the Construction sector has been registering strong growth rates in the range of 7-8%. Housing and construction is one of the major drivers of growth in more than 40 allied industries including STONE CRUSHING. In addition, for the building of roads, flyovers and bypasses, there is a mass and consistent need of crushed stone across the country. Several projects are in progress and are being commenced shortly which will have high demand of crushed stone all over the country. In order to make up the backlog and meet the projected requirements for the next 20 years, overall housing construction has to raise 500,000 housing units per annum. This process leads to construction of roads, bridges, new houses , markets , etc resultantly gear up construction activities and more use of crushed stones. The aforementioned facts and statistics provide enough evidences, assuring a steep and continuous growth vis a vis investment opportunity in the STONE CRUSHING business.

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### 1.3 Need of the Project

The project proponent has existing Stone Crushing activity in the mining lease as explorations have shown that these deposits occur in the subject lease area. The mining production is covered under the Ministry of Environment & Forests Notification 2006. This report of Prefeasibility & Environmental Management Plan is given here as a part of the information to be furnished to the SEAC, Govt. of Maharashtra for obtaining Environmental Clearance as per office Memorandum No. L-11000/47/2011/IA-II(M) dated 18.05.2012 .To meet the ever-increasing local demand for Crushed stone by the building industry and construction company the project proponent intends to produce the following quantities of crushed stones by Manual method of quarry activity. The year wise production and development details for the five years plan period are summarized in the table below.

**Table No. 1**

**Production Plan for Five years**

<b>Year</b>	<b>Crushed Stone</b>
I Year	15,000 Brass
II Year	15,000 Brass
III Year	15,000 Brass
IV Year	15,000 Brass
V Year	15,000 Brass
<b>Total</b>	<b>75,000 Brass</b>

### 1.4 Demand Supply Gap

Since it is an applied industry of the construction sector, growth in construction sector may be considered as proxy for the growth in stone crushing sector, i.e. around 7-8%.

Crushed stone has a very minor share among the exports of non-metallic mineral products of India. It is observed that total export volume of the crushed stone has been very low, whereas, Marble has the highest share and remained at the top. The market scope for crushed stone is found to be encouraging in local market with the increased demand from building industry & construction fields. There is also a sufficient demand from Govt. Contractors for lying of roads and construction of industries etc. The entry in the target market is easy and there is a narrow gap in the supply and demand, which is expected to grow in the coming years. The business opportunity to fill the demand and supply gap would be quite profitable.

## 1.5 Employment Generation

The establishment of this project will improve the socio-economic status of the surrounding area by way of direct & indirect employment. The Employment opportunity will be created for skilled and mainly unskilled people.

## 2. PROJECT DESCRIPTION

### 2.1 Location:

The project is located on a plot of land measuring 1.00 Hectare at Village Ghatnandre, Taluka Kavatemahankal, District Sangli Maharashtra. Project involve stone quarry of the capacity 15,000 Brass

**Table No.2 SALIENT FEATURES OF LOCATION**

Project Site	Proposal for Quarrying of Minor Minerals, Stone. Gat No 1114 ,Ghatnandre Village, Kavatemahankal Taluka, Sangli District.															
Co-ordinates	<table border="1"><thead><tr><th>Pillar No.</th><th>Latitude(N)</th><th>Longitude(E)</th></tr></thead><tbody><tr><td>1</td><td>74°52'56.02"</td><td>17° 9'59.95"</td></tr><tr><td>2</td><td>17°10'4.52"</td><td>74°52'53.97"</td></tr><tr><td>3</td><td>17°10'5.29"</td><td>74°52'56.39"</td></tr><tr><td>4</td><td>17°10'0.91"</td><td>74°52'57.85"</td></tr></tbody></table>	Pillar No.	Latitude(N)	Longitude(E)	1	74°52'56.02"	17° 9'59.95"	2	17°10'4.52"	74°52'53.97"	3	17°10'5.29"	74°52'56.39"	4	17°10'0.91"	74°52'57.85"
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Nearest Highway	State Highway No 78 Approx 600 m from the lease area															
Nearest City/Village	Ghatnandre approx 1.75 Kms from the site															
Nearest Railway station	Dhalgaon Railway station: Approx. 12.0 Km															
Water bodies	-															
Average rainfall	629 mm															
Average temperature	16°C to 22°C in winter and 30°C to 37°C in summer															
Average humidity	61 to 86%															
Archaeological monument	Not present in the 10 km radius of the site.															
Human settlement	No human settlement is observed in3km around the lease area.															
Shed Provided	Shed will be provided for the workers															
Crusher Location	Crusher location will be 200 meter away from quarry area.															

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## **2.2 Land Distribution around Site**

The project site will be having entirely quarry area.

## **2.3 Size and Magnitude of Operation**

The estimated cost of the project is going to be INR 45 Lacks, including a capital expenditure of INR 5 lacks on environmental matters. It is expected that the recurring costs on environmental matters would be INR 5 lacks. The project capacity is 15,000 Brass/Annum.

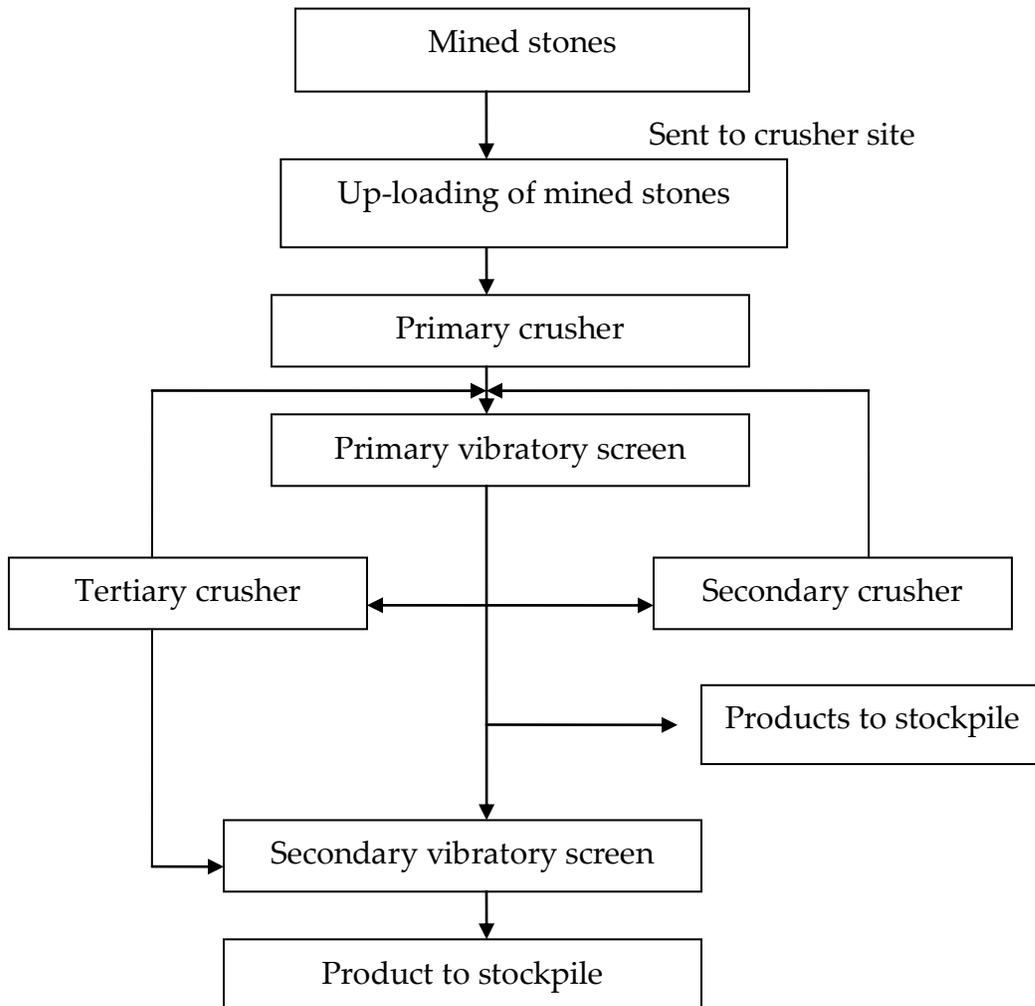
## **2.4 Proposed Crushing Unit Process Details**

The mined stones are transported to the crusher sites by road through tractor trolleys or pay-loaders. The pay-loaders unload the mined stones into storage hoppers located at elevated levels of the crusher sites. These stones are crushed in a primary crusher. The primary crusher uses 74 KW of power and the process is around 15-20 min duration. And then sent to a vibratory screen. Enclosures are provided to crusher & sprinkling arrangement to control the dust emission.

The oversized stones from the screen are sent for further size reductions in secondary and tertiary crushers. The power required by the secondary and tertiary crusher is 37 KW and 14.8 KW respectively also the time taken will be half an hour by secondary crusher and 1 hour for tertiary crusher. From the secondary and/or tertiary crushers, the crushed stones are sent for screening. In the screen, products of various sizes get separated which are stored in heaps. The movement of stones from the crusher to the screen and then to the product piles is done through conveyor belts. The products are generally stored in open areas. The final product is having various sizes like 10mm, 20mm and 30mm along the stone dust. All the materials are used in the construction and building purposes.

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## Process Flow Diagram of Typical Stone Crusher Unit



### 2.5 mining technology

Four technologies namely bucket wheel system, Dragline system, shovel dumper system and surface mine with pay loader system are well known for quarrying plan. Due to multi seam, abrasive sandstone, hard carb shale and many faults bucket wheel system has not been considered. Dragline system has also not been considered due to many faults. Shovel dumper system is very flexible and offer convenient mining. The project proponent is using Shovel dumper system and manual method for the quarrying of stones. Surface miner system can be considered when overburden generated can be backfilled. Surface miner system is costly, this can be the reason for its less use.

## 2.6 Water Sources

Water is required in the project site for various purposes like spraying to control the dust generation. Water is also used during the drilling process. The water requirement will be around 2.5 CMD. The source of the water will be bore well.

**Table 3  
Water Use Table**

<b>Sr. No</b>	<b>Activities</b>	<b>Demand (CMD)</b>
1	Domestic Purpose	0.5 CMD
2	Mine a. Drilling b. Dust Suppression c. Equipment/Vehicle washing	1.5 CMD
3	Green Belt	0.5CMD
	Total	2.5 CMD

## 2.7 Power Sources

There is no power requirement for project Site

## 2.8 Waste Generated

The possible waste generated by the mining process will be some rejection which can be used for leveling of the land. No solid or liquid waste will be generated from the mining process. The spent oil from the D.G set will be discarded by selling it to the authorized dealer.

**Table No. 5  
Type, Quantity and Mode of Disposal of Hazardous Waste**

<b>Sr. No</b>	<b>Cat. No.</b>	<b>Name of waste</b>	<b>Qty. T/A</b>	<b>Mode of Disposal as given in Authorization</b>
1.	5.1	Used/Spent Oil	60 liter/Annum	Sent to CPCB authorized recycler

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## 2.9 Explosive Storage

Project proponent conducts explosion at site to the help of licensed practitioner. Hence there is no storage of explosives on the quarry site.

## 2. 10 Manpower

Since this is a new Project The total manpower will be require is 16 people at the project site. Both the skilled and the unskilled labors are included.

**Table 7**  
**Organization Table**

Sr. No	Category	Operative Phase
1	Administrative	1
2	Supervisory	1
3	Skilled Worker	9
4	Unskilled Worker	5
5	Security	-

## Conclusion

Based on the foregoing study as summarized above, it is observed that there will be marginal increase in the dust pollution, which will be controlled by sprinkling of water and transportation of stone metal in closed/tarpaulin covered trucks. There will be no major impact on the ambient environment & ecology due to the mining activities moreover the mining operation will lead to direct and indirect employment generation in the area Kavatemahankal, Sangli District will have a positive impact on the **Socio Economics** of the area and lead to sustainable development of the region. The applicant will ensure the implementation of the environmental protective measures within the mine area & surroundings and will comply with the terms & conditions to be laid down by the Ministry of Environment & Forests as required under the Environmental Protection Act-1986 and its amendments.

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### **3.0. Rehabilitation and Resettlement (R&R) Plan**

- (i) **Policy to be adopted (Central/ State) in respect of the project affected persons including home ousters, land ousters and landless laborers (a brief outline to be given).**

There are no houses in the mineral bearing area. There will not be any home ousters.

All the rock bearing land has been either purchased by the applicant or will have acquired the surface rights before work could be started. The compensation paid while purchasing the land or while acquiring the land will be as per the market rate and has been mutually agreed upon. There is no specific income from the land to land owners. By acquiring the land by applicant, the concerned land owners will be getting regular income. A systematic reclamation plan will be prepared and executed. This will be under the guidance of competent authority. In such case land is going to be productive after mining is over and is likely to fetch regular income to the land owner.

#### **1. Project Schedule and Cost Estimates.**

- (i) **Likely date of start of construction and likely date of completion (Time schedule for the project to be given).**

This is the case of the new project. Mining at the said site will be started immediately after completing the formalities. It will be on small scale and level of production will be very less. Likely date of completion of project is after the exhaustion of Basalt which is likely to be after 20 years.

- (ii) **Estimated project cost along with analysis in terms of economic viability of the project.**

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## **COSTING**

### **COST OF MINING OPERATIONS (DIRECT AND INDIRECT)**

1. Preparatory work. Rs 20/-

This would involve cutting the trees and bush, making the ground ready for the work, extending the road to the working spot etc. There are bushes/ shrubs. Cutting would be done with the consent of concerned land owner and of the Forest department, if required. Local persons will be given the job of cutting. This work is required to be done during the initial phase of quarrying only. Some maintenance work may be required to be done every year especially after monsoon. Expected cost per brass will be hardly Rs 20/- per brass (for whole life of the mine)

2. Cost of Drilling and Blasting. Rs 80/-

It has been found that cost of drilling/ blasting (including that of explosives, detonators, accessories, transport, manpower etc) is Rs 90 per brass.

2. Cost of Breaking Rs 220/--

Blasted material is of varying sizes and will have to be broken to the required size (feed size of the plant). This has to be done by manual means. The job is done on piece rate basis and cost of breaking per brass of the material is Rs 280/- per brass.

3. Cost of Transport **Rs 90/-**

The broken and sized material will have to be transported to the crusher site. This work is also done on piece rate basis and the expected cost per brass is about Rs 140/-. (This includes rent of the tractor, fuel, manpower etc)

4. **Cost of Processing** Rs 90/-

The sized material will have to be crushed and screened to make it marketable. There will be crusher and screen with other equipment like conveyor, transformer/ generator etc. It has been found, by experience of the past, that cost of processing to the required sizes (metal stone) is about Rs 120/- per brass (this include investment, cost of energy/fuel, manpower, maintenance, wear and tear etc.)

7. Miscellaneous expenses	<b>Rs 50/-</b>
<b>8. Royalty</b>	<b>Rs 300/-</b>
<b>8. Total cost</b>	<b>Rs 950/-</b>

## **2. COST OF RELIEF AND REHABILITATION ACTION PLAN.**

**Rs 4/-**

There are no houses in the area to be worked. There are houses outside the applied area. Some houses are there away from the area to be worked and, in any case, would not be affected. No rehabilitation of these houses is required. There may be psychological effect on the people, living in that area, due to slight increase in noise level and impact on the air quality. No direct cost would be required for relief and rehabilitation work. However an amount of Rs 20,000/- would be allotted for such work per year. Unit wise (per brass)cost comes to about Rs 4/-

## **3. COMPENSATION TO BE PAID TO LAND OUSTEES**

**Rs 6/-**

Some part of the land has been purchased while some part is acquired through some compensation. The total direct and indirect cost per year is about Rs 0.30 lakhs. The unit price comes to about Rs 6/-

## **4. DAMAGE TO CROP PATTERN**

**Rs 5/-**

Land to be used for mining and allied activities does not fall in the agricultural land. No agricultural land will be directly affected. The nearest fields are at least 1 km away. The damage is likely to happen if contaminated water flows through the fields (affecting the quality of soil and reducing the productivity) and fall of dust particles from contaminated air. Water from the broken area/ pit will not go the fields as they are in different direction. Moreover water will be taken to the settling tank and only treated water will be allowed to go out. Quality of air may get affected (if proper measures are not taken) and if this air flows to the fields the yield of fields may get affected. Actual operations are restricted to short period and the damage will be very less. It is difficult to quantify the damage. A provision of Rs 25,000 will be made per year as compensation, in case it is proved that actual damage has occurred. The unit cost comes to about Rs 5/-

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## 5. COST OF OCCUPATIONAL HEALTH

Rs 5/-

Workers in the mines will not be exposed to any extreme or hazardous environment. Noise, Climatic conditions, water and other such parameters will be well within control. Air may get slightly affected. The projected level of damage will also be within the permissible limits but slight damage to the health cannot be over ruled as the process (of damage to the health) is cumulative one. Pneumoconiosis and Silicosis are the lungs diseases which are likely to occur due to mine air pollution. Regular (yearly) monitoring the health of the workers and medical insurance (for treatment) will be the only way to control the health of workers. A budget of Rs 0.20 lakhs will be maintained per year. The unit price comes to about Rs 5/-.

## 6. ENVIRONMENTAL PROTECTION MEASURES

Rs 10/-

Various protective measures would be taken. Each of such measures, along with the cost involved, is described below:

- (a) Garland drains – This will be made on the higher side of the pit. The length of the drain would be about 100m. It will have size of 1mx 1m. The total volume of excavation would be about 100 cum. The cost of excavation and its maintenance would be about Rs 10,000/-
- (b) Drain- This will be made at various places in the pit and lower side of it to collect and guide the rain water and pit water. The cost of drain making and its maintenance would be about Rs10,000/-
- (c) Settling tank- These will be made for collecting the rain water and pit water and allowing the contaminants to settle down. Lime may be added to accelerate the process. The cost of excavation, maintenance, cleaning etc. would be about Rs 15,000/-
- (d) Backfilling – This will not add to the cost as it already taken into consideration in mining cost.
- (e) Monitoring of Environmental parameters – Parameters like air, water, soil, noise etc will be regularly monitored. The cost of such monitoring for whole year would be around Rs 25,000/-.
- (f) Afforestation- It is proposed to plant about 1,000 saplings in the mine (backfilled portion, exhausted pit, general area). The total cost of afforestation (procuring the saplings, making pits, planting saplings, watering them, maintenance of saplings etc) would be about Rs 20,000
- (g) Maintenance of machinery – It is part of Mining cost and is already included.
- (h) Construction of retaining wall walls around the dump, on lower side of the pit etc.  
– Rs 10,000
- (i) Any other work required to be carried out- Rs 10,000
- (j) Total cost is Rs 1lakh. The unit cost is Rs 20/-

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7. SOCIAL WELFARE ACTIVITIES Rs 10/-

There are various features about this and have been described individually.

1. Provided fund, gratuity, Bonus etc. – This will be provided as per the statutory requirement. This feature is already covered in the Mining cost ( Administrative cost)
2. Employment of local people – It will be seen that only local people are employed. Training will be given to local people for special skills. Rs 10,000.
3. Yearly grant to local educational institutions - A grant of about Rs 15,000/- will be given to educational institutions falling in the local villages. .
4. Grant will also be given to local social, cultural organizations of the village. This may be about Rs 15,000/-.
5. Financial aid will be given to needy students for their higher and professional courses. This may be to the extent of 15000/-.
6. Health camp will be organized for local villagers. This may include various tests and treatment of particular cases. Cost of this may be about Rs 15,000/-.
7. Training camps for formers regarding soil quality, quality of seeds, fertilizers and pesticides etc. The cost may be about Rs 15,000/-
8. Any other activity to be carried out as and when required.- Rs 15,000/-
9. Total – Rs 1 lakhs. Unit cost Rs 10.

**8. TOTAL COST OF ALL THE ABOVE ITEMS Rs 790/-**

**9. PRICE OF METAL STONE IN THE DOMESTIC MARKET  
(AT THE MINES SITE) Rs 1200/-**

**10 Net Revenue Rs 240/-**

**11 Cost per brass for Non productive items (2 to 7) Rs 60/-**

**12 Cost for Nonproductive items in Per cent (items 2 to 7)  
6.25%**

**13 Cost for Nonproductive items per net revenue (Items 2 to 7)  
25%**

**14 Cost to benefit ratio 1:1.25**

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## 4 COSTING

Initial cost - It will be required for various activities, the details are given below:

- (i) Acquiring surface rights - Rs 30 lakhs.
- (ii) Carrying out legal formalities (Mining Plan, Environmental clearance etc) - Rs 5 lakhs.
- (iii) Purchase/ Deposit for machinery etc --5 lakhs
- (iv) Development of the Pit (site clearance, initial over burden handling etc) Rs 5lakhs.

Total amount required – Rs 45 Lakhs.

Operating cost – This will be required for day to day activities. Yearly production is 15,000 Brass. Monthly handling will be 1250 Brass

Capital requirement – It is expected that returns will be started from second month of the production. Till then funds are to be kept ready. These funds will be the initial Rs 8 lakhs Thus funds to the extent of at least Rs 5 lakhs will have to be kept ready to have smooth starting of the project.

### 5.0 Analysis of proposal (Final Recommendations)

Financial and social benefits with special emphasis on the benefit to the local people including triabl population, if any, in the area.

Following shall be the benefits of the project: (i) A small industrial project in the rural area of the Kavatemahankal Taluka. (ii) Production of Stone will help sustain and construction industry. (iii) Employment opportunities will be generated in the rural area. (iv) There may be development in the infrastructural facilities in the area due to this and group of mines. (v) Govt will get funds in the form of Royalty, sales tax, income tax, road tax etc. (VI) there will be improvement in the living standard of the people due to increased income. (vii) Contribution for CSR may improve the living style of people and development of natural resources.