Pre-FEASIBILITY REPORT

In Respect Of

BAJROKOTE SAND BED - II OVER 12.500 ACRES OR 5.05 HA.
IN VILLAGE BAJROKOTE, GANJAM TAHASIL OF
GANJAM DISTRICT, ODISHA

(For the Financial Year-2014-15 to 2018-19)

Prepared on Behalf of

V. VENKAT RAO DORA

Chhatrapur,
Ganjam, Odisha

PREPARED BY

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1.0 EXECUTIVE SUMMARY

Bajrokote Sand Bed - II over an area of 12.500 Acres or 5.05 Ha, is located in village Bajrokote under Ganjam Tahasil of Ganjam District, Odisha. In accordance to the provisions of OMMC (Ammendment) Rule, 2014 & 2015. V. Venkat Rao Dora, Chhatrapur, Ganjam, Odisha has been declared as highest bidder against long term sand sairat lease for a period of five years (2014-15 to 2018-19), preparation and approval of mining plan and to obtained environment clearance in the stipulated time period. In accordance of rule 27- A(3) of OMMC Rule, 2004 (ammended on 2014&2015) the mining plan has prepared and approved by The Authorised Officer, Deputy Director, Geology, O/o. Joint Director, Geology, S.Z Berhampur, Odisha vide letter No.1147/sz, Dt. 24.06.2016. For obtaining environment clearance the pre-feasibility report is being prepared and submitted.

The proposed lease area is bounded by latitude N 19° 26’ 34.00” – N19°26’46.6” and longitude E 85°59’23.6” - E 85° 59’ 30.2” & It is a part of Rushikulya River and the area covered in the Survey of India Topo-sheet No. E45 A 15. Lease area can be accessible by road networks. The lease area is at a distance of 41 km from the district head quarter Chhatrapur. The lease area is approx 191 km from the state capital Bhubaneswar. The nearest railway station is at Ganjam located at a distance of 07 km. Telecommunication facilities have vastly improved with the advent of mobile phones. District Telecom office is running at Chhatrapur.

The proposed Bajrokote Sand Bed - II is of 12.500 Acres or 5.05 Ha. bearing Khata No. – 39, Plot No. – 197/A. The lease area is a Government waste land (Nadi Kissam) and total lease hold area is river bed and the whole area is covered with sand and water body.

The Project will bring economical benefits to the state by way of royalty on the mineral excavated and dispatched. It provides employment to the people residing in vicinity directly or indirectly. The mine management will also help nearby villages by providing aid to school, conducting medical and social awareness camps, helping in formation of self help groups, etc. Thus the project is viable and will bring about socio-economic improvement of the area and will prove beneficial to the area.
INTRODUCTION OF THE PROJECT/BACKGROUND INFORMATION

2.1 Identification of project and project proponent In case of mining project, a copy of mining lease / letter of intent should be given.

Bajrokote Sand Bed - II has been applied for 5 (Five) years, over an area of 12.500 Acres or 5.05 Ha. in village Bajrokote under Ganjam Tahasilof Ganjam District, Odisha. The Tahsildar Ganjam has been declared as highest bidder for long term sairat to V. Venkat Rao Dora, Chhatrapur, Ganjam, Odisha. (The copy of the letter from Tahasildar is enclosed as annexure in the approved Mining Plan).

2.2 Brief description of nature of the project.

Bajrokote Sand Bed - II is located in village Bajrokote under Ganjam Tahasil of Ganjam District, Odisha over an area of 12.500 Acres or 5.05 Ha. bearing Khata No. – 39, Plot No. – 197/A. The total lease area is Government waste land (Nadi Kissam).

The project site is located at a distance of 41 km from the district head quarter Chhatrapur. The lease area is approx 191 km from the state capital Bhubaneswar. The nearest railway station is at Ganjam located at a distance of 07 km. The nearest market place is Ganjam is about 07 Km from the lease area.

The proposed ML area concession is for five years i.e. 2014-15 to 2018-19. The project for production of river sand (minor minerals) from Bajrokote Sand Bed - II has been proposed for a production of 8200 cum within the five year period.

2.3 Need for the project and its importance to the country and or region.

Due to the increase urbanization now days, there is an increase in demand of minor minerals like sand and stone. Hence the execution of mining activities for extraction of minor minerals is in process. The main objective of the project is to fulfill the growing demand of the minor minerals in the field of development and construction. River sand is mainly used in construction or road and buildings. Further they are also required by other civil and construction activities. In current times, Government emphasizes on rapid improvement of basic infrastructure like roads, railways, dams and other social infrastructure - both in rural and urban areas, there is a constant requirement for ensuring regular supply of these minor minerals.

The increasing mining of minor mineral (River Sand) has uplifted the economy of
minor mineral producing localities which has resulted into up-liftment of the standard of living of the people in the adjoining area, besides contributing to the exchequer of the State and Central Government. The project also generates revenue and provides employment to the people of nearby locality.

2.4 Demand-Supply Gap.

Now a days Government has given a special emphasize on growth of infrastructure industrial development. Minor minerals like river sand are one of the basic inputs in any kind of construction work. Since these are low value items and is voluminous - the users of this basic input- looks for local supply sources instead of transporting the material from far away areas. Thus any efforts for increasing minor mineral production in the locality must be encouraged to ensure smooth supply of river sand to match the pace of developmental activities in the area. Further, from the mineral conservation point of view, focus is to develop systematic mining for known small and medium size deposits.

2.5 Imports vs. Indigenous production.

There are no imports of such low value mineral. In fact since these minerals are low value - high volume items- efforts are made to source the material from the nearest point of supply. This is to avoid high cost of transportation and keeping the cost within reasonable limits.

2.6 Export Possibility.

The excavated materials will be marketed in the local market only. There is no export possibility for the sand produced from the lease area.

2.7 Domestic/ export Markets.

The excavated materials will be marketed in the local market only.

2.8 Employment Generation (Direct and Indirect) due to the project.

Keeping in view of manual method of mining, a total of 6nos (Both skilled & non-skilled) of workers are to be employed in mine during the tenure of the plan period. Indirect employment through creation of shops, hired vehicles, etc also can be generated to full fill the day to day requirements of the mining personals.
3.0 PROJECT DESCRIPTION

3.1 Type of project including interlinked and interdependent projects, if any.

The project has been proposed for extraction of river sand from the Bajrokote Sand Bed - II. It is estimated that the amount of total production of river sand during the plan period is 8200 Cum which is to be extracted by manual method of mining. This project is not linked or dependant on any other project.

3.2 Location (map showing general location, specific location, and project boundary & project site layout) with coordinates.

The project site is located in Survey of India Topo-sheet No E45 A 15 and bounded by N 19° 26’ 34.00” – N19°26’46.6”and longitude E 85°59’23.6” - E 85° 59’ 30.2”. The description of the project site has been given in surface geological plan along with the Modified approved mining plan. As the lease area is a river bed there is no vegetation within the lease area. There is no human settlement within the quarry lease.

3.3 Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted.

As it is a river sand mining project, no alternate site has been considered for the project.

3.4 Size or magnitude of operation.

Total lease area is of 12.500Acres or 5.05 Ha. of Govt waste land and the applicant will work within the said area for the plan period of 5 years, 2014-15 to 2018-19 with a total production of 8200 Cum of river sand for all type of civil construction buildings within the nearby locality.

3.5 Project description with process details.

The lease area is a part of Rushikulya River. The lease area is almost flat land covered with clay, sand and water. During monsoon season due to heavy flow of water; sand dunes of 1.5 meter are formed within the lease area.
Geological Resources

Based on the field observation and surface geological study it has been observed that the sand dune deposits in the river bed is 1.5 m. The reserve has been estimated by surface area method i.e. Reserve = Surface x Thickness of Sand. The details calculation or geological reserve is given below;

**GEOLOGICAL RESERVE**

<table>
<thead>
<tr>
<th>Surface Area (m²)</th>
<th>Depth (m)</th>
<th>Volume (Cum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>46500.00</td>
<td>1.5</td>
<td>69750.00</td>
</tr>
</tbody>
</table>

**Mineable Reserves**

The mineable reserve has been calculated by considering ultimate pit slope of the working quarry and leaving 7.5m from the lease boundary. The detail of mineable reserve is given below;

**MINEABLE RESERVE**

<table>
<thead>
<tr>
<th>Surface Area (m²)</th>
<th>Depth (m)</th>
<th>Volume (Cum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>39825.00</td>
<td>1.5</td>
<td>59737.00</td>
</tr>
</tbody>
</table>

The proposed sand bed lease area is a part of Rushikulya River. Therefore surface mining of river sand would not be possible during monsoon season. The mine will be function in the remaining 8 months of the year. Manual method will be adopted during the mining operation within the plan period. The sand will be loaded from the quarry by deploying of labors and transporting will be done by deploying Tractors.

Generation of river sand is continuous natural process. During monsoon during flow of water sand silt and clay will be deposited in the river bed. However, during mining whatever quantity of sand will excavate, will be again filled up by flow of flood water
during monsoon season. The question of exhaust of sand is very less which may not affect by the process of mining. The details of Year-wise production are given below:

**Summary of Production Schedule during the Plan period**

<table>
<thead>
<tr>
<th>Year</th>
<th>Surface Area (m²)</th>
<th>Depth (m)</th>
<th>Volume (Cum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-17</td>
<td>2500.00</td>
<td>1.0</td>
<td>2500.00</td>
</tr>
<tr>
<td>2017-18</td>
<td>2700.00</td>
<td>1.0</td>
<td>2700.00</td>
</tr>
<tr>
<td>2018-19</td>
<td>3000.00</td>
<td>1.0</td>
<td>3000.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8200.00</strong></td>
<td><strong>1.0</strong></td>
<td><strong>8200.00</strong></td>
</tr>
</tbody>
</table>

3.6 Raw material required along with estimated quantity, likely source, marketing area of final product/s, Mode of transport of raw material and finished product.

No raw material is required for the extraction of river sand.

3.7 Resource optimization / recycling and reuse.

Not applicable in the present case as materials will be extracted and transported to destined place.

3.8 Availability of water its source, energy / power requirement and source.

**Water Requirement**

This is a river sand mining project to produce river sand as a raw material for civil constructions etc. As such no raw material is required for the purpose. However, total water approx. 50 liters/day will be required for drinking purposes and the water will be supplied from the pre-existing ground water sources from the nearby villages.

**Power requirement**

No electrical power shall be required for operations as the mining will be worked out during day time only.

3.9 Quantity of wastes to be generated (liquid and solid) and scheme for their management / disposal.

**Solid waste generation & its disposal**
As the mining project is meant for production of river sand, hence the generation of waste is proposed to be nil.

**Liquid effluent**

No liquid effluent will be generated at the mine site due to the mineral excavation.

### 4.0 PROJECT DESCRIPTION

#### 4.1 Connectivity

The lease area is a part of Rushikulya River. The lease area is well connected by road networks. The project site is located at a distance of 41 km from the district head quarter Chhatrapur. The lease area is approx 191 km from the state capital Bhubaneswar. The nearest railway station is at Ganjam located at a distance of 07 km. The nearest market place is Ganjam is about 07 Km from the lease area.

#### 4.2 Land form, land use and land ownership

The lease area is a part of Rushikulya River, flowing in a flat terrain. The estuary of the river is about 10 km from the lease area. Total lease area is 12.500 acres or 5.05 hectare.

The lease area is belongs to Govt. of Odisha.

#### 4.3 Existing infrastructure

There is no existing infrastructure within the proposed lease area.

**Site office:** A temporary site office will be constructed nearby to the lease area.

**RestShelter:** A temporary Rest shelter will be constructed in the lease area; further drinking water will be made available in the site office.

#### 4.4 Soil classification

The proposed Bajrokote Sand Bed - II is a part of Rushikulya River and the whole lease area is within the river bank. So, there is no soil covered area within the lease area. Therefore the classification of soil will not arise.
4.4 Climate data from secondary sources

The area experiences sub tropical climate with abundant rainfall during monsoon months. The summers are very hot in the area. April-May is the hottest months and December-January the coolest months. The area enjoys high precipitation during the monsoon season. The area may be divided into four seasons. Hot season starts from March to May, period from June to September are the monsoon season and the cold season is from December to February. The average temperature in summer ranges between 35°- 43.5°C and during winter the temperature ranges 7°-12°C.

4.5 Social infrastructure available

The general living condition of the people in the nearby area is below poverty line. Agriculture has not been developed in the region to the extent it should have been. People, therefore, depend mostly on this type of mines or other local work for their livelihood. This has got a positive impact on the living condition of the local inhabitants.

Besides the direct employment in the mines, indirect engagement may be two to three times. Mining activity in the area has brought some positive effect like better employment potentiality, better health care, better living, better sanitation conditions, better education facilities etc.

5.0 PLANNING BRIEF

5.1 Planning concept (Type of industries, facilities, transportation etc) town and country planning / development authority classification

Open cast manual method of mining will be adopted for river sand mining. Project will produce 8200 cum of river sand, which will be utilized for domestic use only (in order to fulfill the local requirement).
5.2 Population projection
Keeping in view of manual method of mining, a total of 5nos (Both skilled & non-skilled) of workers are to be employed in mine during the tenure of the plan period.

5.3 Assessment of Infrastructure Demand (Physical & Social)
Necessary approach & mine roads will be constructed.

5.4 Amenities / facilities
The management of the mine will extend facilities like
   a) Provision of drinking water.
   b) Direct and indirect employment opportunities
   c) Arrangement of safety and healthy working conditions.

6.0 PROPOSED INFRASTRUCTURE

6.1 Industrial area (Processing area)
No permanent infrastructure is proposed.

6.2 Residential Area (Non processing area)
As the local person shall be employed, no residential building is proposed.

6.3 Green Belt
The lease area of Bajrokote Sand Bed - II is inside the River and the whole lease area is a river bed. Therefore plantation could not be possible within the lease area.

6.4 Connectivity
The lease area is a part of Rushikulya River. The lease area is well connected by road networks. The project site is located at a distance of 41 km from the district headquarter Chhatrapur. The lease area is approx 191 km from the state capital Bhubaneswar. The nearest railway station is at Ganjam located at a distance of 07 km. The nearest market place is Ganjam is about 07 Km from the lease area.

6.5 Drinking Water Management
Water required for drinking purpose will be obtained through tankers from the nearby available sources.
6.6 Sewerage System
Does not arise

6.7 Industrial Waste Management
Does not arise

6.8 Solid Waste Management
As the mining project is meant for production of river sand, hence the generation of waste is proposed to be nil. The question of waste management will not arise.

6.9 Power requirement & Supply / sources
The mine will work in day time only, so no lighting arrangement will be required and the other equipment will be run by diesel.

7.0 REHABILITATION AND RESETTLEMENT (R&R) PLAN

7.1 Policy to be adopted (Central / State) in respect of the project affected persons including home oustees, land oustees and landless labourers (a brief outline to be given)

No human settlements are existing in the ML area and no humans will be displaced from the area, so the proposed project does not involve any rehabilitation and resettlement.

8.0 PROJECT SCHEDULE & COST ESTIMATES

8.1 Likely date of start of construction and likely date of completion (Time schedule for the project to be given)
The project will commence once the Environmental Clearance and other necessary statutory clearance certificates are obtained from the respective departments / authorities.

8.2 Estimated project cost along with analysis in terms of economic viability of the project
Capital Cost
The capital cost covers the expenditure incurred towards Mine development, cost involved towards land, infrastructure, plant and machineries etc. Besides the interest during development stage insurance, margin money on working capital, contingencies etc have also been included in the figures. The details of the break ups are furnished below;
PRE-FEASIBILITY REPORT ON
BAJROKOTE SAND BED-II OVER 12.500 ACRES OR 5.05 HA
IN VILLAGE BAJROKOTE, GANJAM TAHASIL OF
GANJAM DISTRICT, ODISHA

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Major Head</th>
<th>Rs. In Lakh</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cost of infrastructure</td>
<td>00.50</td>
</tr>
<tr>
<td>2</td>
<td>Cost of Machinery &amp; Plant</td>
<td>00.00</td>
</tr>
<tr>
<td>3</td>
<td>Contingency</td>
<td>00.50</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Cost of Production of river sand

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Material Description</th>
<th>Production Cost Rs. Per Cum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sand (0-10mm)</td>
<td>125.00</td>
</tr>
</tbody>
</table>

Present rate of sell price

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Material Description</th>
<th>Selling Price Rs. per Cum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sand (0-10mm)</td>
<td>175.00</td>
</tr>
</tbody>
</table>

Cost Benefit Analysis

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Material Description</th>
<th>Production Cost Rs. Per Cum</th>
<th>Selling Price @ Ex-Mines Rs. per Cum</th>
<th>Profit in Rs per Cum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sand (0-10mm)</td>
<td>125.00</td>
<td>175.00</td>
<td>50.00</td>
</tr>
</tbody>
</table>

Considering cost of production in all aspects and selling price of the produced building stone, the project is economically viable.
9.0 ANALYSIS OF PROPOSAL (Final Recommendation)

The project operation will provide livelihood to the poorest section of the society/economically backward population and tribal’s in the area. It provides employment to the people residing in vicinity directly or indirectly. The mine management will also help nearby villages by providing aid to school, conducting medical and social awareness camps, helping in formation of self help groups, etc. Thus the project will bring about socio-economic improvement of the area and will prove beneficial to the area.

With progress in mine development activities, the per capita income of local people will increase which will reduce the public expenditure of the Govt. on social consumption need. Ultimately, it will add to the Govt. exchequers in the form of various taxes & returns. On the whole, overall development of the area will be there. However, the feasibility report indicates that the mining of river sand is technically and economically viable under foreseeable operating scenario. Hence, the Miner Mineral river sand as a raw material for domestic use, civil work etc from surface mining is economically viable.

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ENVIRONMENTAL MANAGEMENT PLAN
FOR
BAJROKOTE RIVER SAND QUARRY PROJECT

LESSEE - SRI V VENKAT RAO DORA

Vill – COLLEGE SQUARE, CHHATRAPUR
Post – CHHATRAPUR
P S - CHHATRAPUR
District : Ganjam

TOTAL MINE LEASE AREA - 5.05 HECTARES

ENVIRONMENT CONSULTANT - GLOBAL TECH ENVIRO EXPERTS PVT LTD

LISTED AS A CATEGORY A ENVIRONMENTAL CONSULTANT SL NO 82 AS PER THE List of Accredited Consultant Organizations (Alphabetically)/ Rev. 42 June 08, 2016) BY NABET, QCI.

ACCREDITED BY NABET UNDER CATEGORY “A” FOR OPEN CAST MINES
ENVIRONMENTAL MANAGEMENT PLAN

INTRODUCTION

Bajrokote Sand bed situated on the river Rishikulya at village – Bajrokote covering a lease area of 5.05 Ha has been awarded to V. Venkata Rao Dora of Vill – Chhatrapur Post – Chhatrapur District : Ganjam on highest bid basis by Tehsildar Ganjam as per the provisions of OMMC(Ammendment ) Rule 2014.

DETAILS OF THE LEASE AREA

The quarry at Bajrokote situated in plot no-197 and khata no-39 of Nadi Kisam in village Bajrokote under Bajrokote Tehsil of Ganjam district in a lease area of 7.85Hectars. The lease deed subsequently has been executed by the Tahasildar, Ganjam for a period of five years from 2015-2019.

(i) Location(map showing general location, specific location and project boundary and project site layout) with coordinates

Fig 1 General location map of the Project Site
LAND USE PATTERN

Location

<table>
<thead>
<tr>
<th>Corner Pillar No</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>19°26′34.0″</td>
<td>84°59′23.6″</td>
</tr>
<tr>
<td>B</td>
<td>19°26′46.6″</td>
<td>84°59′30.2″</td>
</tr>
</tbody>
</table>

Project site lay out map:

The given area is on Plot no. 197/A, Khata No. 39 of Bajrokote Mouza at Bajrokote Tehsill, P.S. Bajrokote, Dist: Ganjam, Odisha. The Kisam of land is “Nadi” and is a lease plot belonging to Govt. of Odisha. The details of the land and vicinity map is as given below.
(ii) Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted.

No alternate site is considered, as this particular site has been awarded on successful highest bidding basis by Tehsildar, Ganjam.

Size or magnitude of operation

The project area is 5.05 ha and proposed lease period is 2016-17 to 2018-19. The sand excavation for 3 year plan period will be @ 2735 cum per annum avg. with a total excavation of 8200 m³ and further details are given in the attached mining plan.

SITE CONNECTIVITY

(i) Connectivity:

The area can be approached from Ganjam to Bajrokote is 7 kms and 32Kms from the district head quarter. Earlier mining has been done in this area.
(ii) Land form, Land use and Land ownership.

The land of proposed quarry is under khata No-39, plot No- 197/A of 5.05 acres Nadi. The area is not coming under forest. Kissam of the land is Nadi, owned by Govt. of Odisha. No forest area is involved in the allocated lease area.

(iii) Topography (along with map)

Topo sheet showing total area is given below in 1:50,000 scale.

(iv) Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ), shortest distances from the periphery of the project to periphery of the forests, national park, wild life sanctuary, eco sensitive areas, water bodies (distance from HFL of river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given.

The quarry land is inside the river Rishikulya. It is awarded to PP on highest bid auction by Tehsildar, Ganjam. No national park, neither any wild life sanctuary nor eco sensitive area is there within 5 km radius of quarry site.
(v) Existing infrastructure

Quarry is connected by a kacha road to River Bund & then by a black topped road connecting to main road.

(vi) Soil classification

The sand deposit in the lease area belongs to Quarternary deposit from Holocene period deposited by the alluvia action of the river Rishikulya.

(i) Climatic data from Secondary Sources:

The climate of the area is sub tropical. May is the hottest month whereas December and January are colder months. The average annual precipitation is 1400 mm out of which about 90% precipitation over it is due to monsoon. Very often, depressions and cyclones in the Bay of Bengal cross the area which affects the weather causing heavy rains.

The maximum average temperature ranges from 25.1 to 44.2\(^\circ\) C and minimum average monthly temperature ranges at21.3 to 12.5\(^\circ\) C. The wind direction is predominantly from S, SE. The average annual rainfall is observed as around 1400 mm.

Source of information:

- Secondary information on meteorological conditions has been collected from the nearest IMD station at Berhampur and IMD Book (1971-2000).

PROJECT SCHEDULE & PLANNING

Details of Machine to be used in Mining Operation:

The proposed activity is of Open cast by manual dry pit mining method and Sand is excavated up to up to a maximum depth of 1 Mtr as per the mining plan & OMMC Rules. The sand shall be excavated & loaded manually to the dumpers / trucks from the pit to the users through tractor / Tippers/ dumps. Hence no machine for excavation will be used. No drilling & blasting will be required during the sand mining.

Conventional method of mining will be adopted. No benching will be necessary. One quarry with a depth of 1 mtr will be developed. Further details are given in mining plan attached.

- No external raw materials are required except the shovels & manual loading equipment.

- The sand will be transported on road through covered trucks compatible to pollution standards.

Detail of measurement of mining pit earlier excavation in the area to be sanctioned and details of mineral Concessions situated within 100 meter periphery of this area.

There is no other sand quarry is situated within 100 mtrs of the proposed sand quarry.
**Proposed Annual Production of Mineral / Sand**

The minable reserves are calculated on the basis of barrier zone and position of the water stream. Distance of 7.5 mtrs is left as barrier zones from the lease boundary and sand will be excavated up to 1 mtr from the top level.

The production schedule is as per the approved plan for next 5 years as given below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Height of the Excavation</th>
<th>Area of influence</th>
<th>VOLUME IN CU. MTRS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015-16</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2016-17</td>
<td>1.0m</td>
<td>2500</td>
<td>2500</td>
</tr>
<tr>
<td>2017-18</td>
<td>1.0m</td>
<td>2700</td>
<td>2700</td>
</tr>
<tr>
<td>2018-19</td>
<td>1.0m</td>
<td>3000</td>
<td>3000</td>
</tr>
</tbody>
</table>

Therefore based on the production and utilization of the product the revenue from this mine shall be estimated. Further, the product from this mine is subjected to be used in the road & Building construction.

**Resource optimization/recycling and reuse envisaged in the project, if any, should be briefly outlined.**

No waste will be generated during mining operation.
### Mine closure plan

(a) Describe the process / activities to be undertaken for reclamation and rehabilitation in respect of following

| (i) Mined out land | - | The quarry empty area shall be made a side slope of 33º inward before abandoning mining. The area excavated shall be leveled at par with the surface levels for preventing any accidents. |
| (ii) Waste / reject dump | - | As there will be no waste or top soil excavated during mining, there will not be any dumps left after mining. |
| (iii) Plantation Program | | The mining activity Adjacent to the bank area shall maintain the slope of the existing bank and along the bank for the stretch of operation, plantation shall be done to reinforce the bank conditions. |

### PROPOSED INFRA STRUCTURE

This being a small river sand excavation and transportation project no, infrastructure like construction of buildings, extension of roads or setting of school, colleges and hospitals are not envisaged. However, approach road to sand quarry has to be constructed utilizing the same sand.

In safety zone there will be no excavation / mining. The temporary haulage road will be constructed by the proponent.
<table>
<thead>
<tr>
<th>Sl no</th>
<th>Potential Impact</th>
<th>Activity</th>
<th>Cause</th>
<th>Impact</th>
<th>Mitigation</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Air Environment</td>
<td>Transportation</td>
<td>1. Spillage of Suspended Solids / Sand during transportation.</td>
<td>1. Impact on the passers by due to blowing of dry sand during transportation.</td>
<td>1. Covering the loaded tractors / Trucks / dupers with tarpaulin &amp; watering of the loaded sand. 2. Pollution emission to be checked &amp; certified vehicles has to be used.</td>
<td>Impact will be negligible after mitigation but plantation has to be carried out. Impact will be negligible after mitigation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Emission of SO2 &amp; NOx during transportation</td>
<td>2. Negligible increase in the level of SO2 &amp; NOx.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Water Environment</td>
<td>Nil</td>
<td>Not Required</td>
<td>Not Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Soil</td>
<td>Nil</td>
<td>Not Required</td>
<td>Not Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Health</td>
<td>Total Process</td>
<td>Loading &amp; unloading of sand</td>
<td>Intrusion of fine sand</td>
<td>Yearly Health Check Up of all labours employed</td>
<td>Preventive medication has to be done.</td>
</tr>
<tr>
<td>5</td>
<td>Noise Environment</td>
<td>Transportation</td>
<td>Transportation</td>
<td>Noise pollution</td>
<td>Low sound Horne has to be used by vehicles</td>
<td>Minimal effect</td>
</tr>
</tbody>
</table>
## Details of preventive and control schemes of air and water pollution.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Management</strong></td>
<td><strong>Quality</strong></td>
</tr>
<tr>
<td>Transportation</td>
<td>Loading</td>
</tr>
<tr>
<td></td>
<td>Water sprinkling be done before loading by making it moist.</td>
</tr>
<tr>
<td></td>
<td>➢ Water sprinkling during transportation over approach roads will be done for suppression of dust.</td>
</tr>
<tr>
<td></td>
<td>➢ Regular maintenance of machinery will be carried out.</td>
</tr>
<tr>
<td></td>
<td>➢ Overloading will be prevented.</td>
</tr>
<tr>
<td></td>
<td>➢ Trucks/Dumpers covered by tarpaulin covers.</td>
</tr>
<tr>
<td><strong>Plantation</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Plantation will be carried out at the approach road, along the road of river bank and vicinity area in village roads.</td>
</tr>
<tr>
<td><strong>Noise Management</strong></td>
<td><strong>Transportation</strong></td>
</tr>
<tr>
<td></td>
<td>➢ Source of noise will be during operation of transportation vehicles, for this proper maintenance will be done at regular intervals.</td>
</tr>
<tr>
<td></td>
<td>➢ Oiling and greasing at regular interval will be done.</td>
</tr>
<tr>
<td></td>
<td>➢ Adequate silencers will be provided in all the diesel engines of vehicles.</td>
</tr>
<tr>
<td></td>
<td>➢ Minimum use of horns and speed limit of 10 km/hr in the village area.</td>
</tr>
<tr>
<td></td>
<td>➢ It will be ensured that all transportation vehicles carry a valid PUC Certificates.</td>
</tr>
<tr>
<td><strong>Greenbelt Development</strong></td>
<td><strong>Plantation</strong></td>
</tr>
<tr>
<td></td>
<td>➢ Plantation will be carried out at the approach road, river bank and vicinity area to control Dust, Air &amp; Noise Pollution and improve aesthetic environment</td>
</tr>
<tr>
<td><strong>Water Quality Management</strong></td>
<td><strong>Surface Water Quality Management</strong></td>
</tr>
<tr>
<td></td>
<td>➢ Waste water will not be generated during removal/ collection of river bed material. Mining will be conducted on dry area.</td>
</tr>
<tr>
<td><strong>Ground Water Management</strong></td>
<td>➢ Ground water will not be intersected during mining activities.</td>
</tr>
<tr>
<td></td>
<td>➢ Excavation will be carried out up to a maximum depth of 1 meter from the surface of river bed material deposit.</td>
</tr>
<tr>
<td><strong>Waste Water Management</strong></td>
<td>➢ Waste water will not be generated during removal/ collection of river bed material.</td>
</tr>
<tr>
<td><strong>Solid Waste Management</strong></td>
<td>➢ No waste is generated in the mining activities as the project involves collection of river bed material.</td>
</tr>
<tr>
<td><strong>River bank protection and management</strong></td>
<td>➢ Collection will be done during day light only.</td>
</tr>
<tr>
<td></td>
<td>➢ No stockpiling of collected sand will be done.</td>
</tr>
<tr>
<td></td>
<td>➢ Mining will be conducted on demand.</td>
</tr>
<tr>
<td></td>
<td>➢ Mining will be done for 0.5 meters thickness at a time in direction of river, to avoid the providing effect and maintaining the uniform surface.</td>
</tr>
</tbody>
</table>
SCHEME OF PLANTATION & GREE BELT DEVELOPEMENT

Trees are good barrier of suspended solids pollution. They restrict the dust carried out by the air to maximum. They also absorb the gaseous pollutants in the environment. Although the sand mining is limited to the river bed only but to mitigate the effect of vehicular pollution plantation of trees are the only mitigation measures. The plant has to be planted on the both sides of the connecting road to the river & also in the free government lands with consultation with the Tahsildar on yearly basis. The survival rate is expected to be 75%. Hence the dead plants are to be replaced by new ones every year during the rainy season in addition to the no of trees required to be planted every year. The total planning of tree plantation is as under
**OCCUPATIONAL HEALTH AND SAFETY**

Occupational Health and Safety are important. Periodic assessment of it will be useful. Identifying workplace hazards, assessing risks to employee health and safety, are important. Health and Safety points are also important in many of the environmental aspects of the workplace.

**Occupational Health and Safety works**

- Except dust generation there is no source which can show a probability for health related diseases and proper dust suppression will control dust generation and dispersion.
- Dust masks be provided to the workers working in the dust prone areas as additional personal protective equipment.
- Any workers health related problem be properly addressed.
- Periodical medical checkup be conducted.
- Promote occupational health and safety within workers in mine and develop safer and healthier ways of working;
- Help supervise the investigation of accidents and unsafe working conditions, study possible causes and recommend remedial action;

**Budget for Occupational Health and Safety of the workers (Lakhs)**

<table>
<thead>
<tr>
<th>Items</th>
<th>Rs. In Lakhs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measures to Prevent Accidents during minerals Transportation.</td>
<td>20,000.00</td>
</tr>
<tr>
<td>Measures to Prevent Accidents due to Trucks/ Dumpers etc.</td>
<td>15,000.00</td>
</tr>
<tr>
<td>Education awareness and first aid kit</td>
<td>10,000.00</td>
</tr>
<tr>
<td>Medical Examination Schedule</td>
<td>5,000.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50,000.00</strong></td>
</tr>
</tbody>
</table>
COST OF EMP MEASURES

environment protection measures.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Particulars</th>
<th>Amount in Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pollution monitoring – Air, Water, Noise and Soil</td>
<td>10,000.00</td>
</tr>
<tr>
<td>2.</td>
<td>Dust Suppression</td>
<td>25,000.00</td>
</tr>
<tr>
<td>3.</td>
<td>Plantation including maintenance</td>
<td>15,000.00</td>
</tr>
<tr>
<td>4.</td>
<td>Haul road and other roads repair and maintenance</td>
<td>10,000.00</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>60,000.00</strong></td>
</tr>
</tbody>
</table>

SUMMARY

Fugitive emission in the form of dust shall be generated during handling and loading of sand. The adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Plantation development will be carried out in the mine premises, along the approach roads, around Govt. buildings, schools approx 100 trees per year. It will prove an effective pollution mitigate technique, and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the locals to improve their live hood.

A budget of Rs. 0.50 Lakhs for occupational, Healthy and Safety and 0.60 Lakhs for EMP are proposed for the project.
FINAL RECOMMENDATION

In course of mining there will be no generation of waste. As every year during rainy season there will replenishment of the excavated portion, there will be no need of closure procedure. The total operation shall be carried out with ease & minimum risk of the workers. The excavation of river sand will not only generate royalty for the Government but also keep the river bed from filling up and the carrying capacity of the river will be intact to mitigate the floods.

The proposed Environmental Management Plan will keep the area in a safe environment with negligible impact on the environment.

Plantation will substantiate the impact due to the mining activity.

The auction holder shall pay 5 % of the royalty to the authority towards environment management fund.