

## **RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN**

Risk analysis is the systematic study of risks encountered during various stages of mining operation. Risk analysis seek to identify the risks involved in mining operations, to understand how and when they arise, and estimate the impact (financial or otherwise) of adverse outcomes. The mining operation at Raichanda Sand bed is an Open cast mines is by Semi mechanized method of mining without any drilling or blasting. Excavation of the sand will be carried out by excavators.

### **IDENTIFICATION OF RISK DUE TO RIVER SAND MINING**

There is no land degradation due to mining activities as mining is done only on river bed dry surface. There will be no OB or waste generation as the sand is exposed in the river bed and is completely selable. There will be neither any stacking of soil nor creation of OB dumps in the lease area. The mining activity will carry out upto a depth of 1.5m below the surface level. So, there is no chance of slope failure, bench failure in this mine. However, there are some identified risks in this mining activity which are as below:

1. Accident during sand loading and transportation
2. Inundation/ Flooding
3. Quick Sand Condition

### **MITIGATION MEASURES:**

#### **Measures to prevent accidents during loading and transportation:**

- During the loading truck would be brought to a lower level so that the loading operation suits to the ergonomic condition of the workers.
- The workers will be provided with gloves and safety shoes during loading.
- Opening of the side covers of the truck should be done carefully and with warning to prevent injury to the loaders.
- Mining Operations will be takes place during daylight only.
- The truck will be covered with tarpaulin and maintained to prevent any spillage.
- To avoid danger while reversing the trackless vehicles especially at the embankment and tipping points, all areas for reversing of lorries should be made man free as far as possible.
- All transportation within the main working will be carried out directly under the supervision and control of the management.
- Overloading should not be permitted and the maximum permissible speed limit should be ensured.

- There will be regular maintenance of the trucks and the drivers will have valid driving license.

#### **Measures to prevent incidents during Inundation/ Flooding:**

To minimize the risk of flooding/ inundation following measures will be under taken:

- Mining will be completely closed during the monsoon months
- Proper weather information particularly on rain should be kept during the operational period of mines so that precautionary measures will be undertaken.

#### **Measures for mitigation to quick sand condition:**

- Quick sand zone and deep-water zone will be clearly demarcated and all the mines' workers will made aware of the location.
- Mining will done strictly below 1m of the surface level and as per the approved mining plan.

#### **DISASTER MANAGEMENT PLAN**

As the depth of mining will be only 1.5m below the surface level the risk related to mining activity is much less. The mining operation will be carried out under the supervision experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS. All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955 and other laws applicable to mine will strictly be complied with. During heavy rainfall and during the mosoon season the mining activities will be closed. Proper coordination with Irrigation Department will be maintained so that at the time of releasing water, if any, from the dam suitable warning/information is given in advance. Special attention and requisite precautions shall be taken while working in areas of geological weakness like existence of slip, fault etc. The mining site will be supplied with first aid facilities and the entire mines worker will have access to that.

#### **OCCUPATIONAL HEALTH HAZARDS**

Dry pit Semi mechanised opencast mining involved for excavation of sand from Raichanda Sand Mines over Brahamani River may leads to occupational hazard due to dust generation by excavation, loading and transportation of mineral. Dust is the major pollutant which affects the health of the mining worker. Occupational hazard due to sand mining is as below:

- The mines worker will be mostly exposed to heat and humidity mainly during summer season. The direct effects of heat exposure are burns, heat exhaustion, heat stroke and heat cramps; the indirect effects are decreased efficiency, increased fatigue and enhanced accident rates.

- Heat and humidity are encountered in hot and humid condition when temperatures and air temperatures increase in summer time up to 45° C or above in the river bed mining area.
- During the high windy days in summer the sand could be the problems for eyes like itching and watering of eyes.
- Respiratory disorder may cause due to continuous exposure to dust during excavation, loading and transportation.

#### **Mitigation Measures**

- During the summer season proper drinking water facility will be provided for the mines worker so that they will remain hydrated and avoid sun stroke.
- First aid facility will be made available and easily accessible to all the workers in case of emergency situation.
- Mines workers will be provided with PPEs like dust masks, goggles and ear muffs.
- Periodic medical examinations will be provided for all workers.