

1.0 RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN

Risk assessment has been carried out and based on the same disaster management plan has been prepared which is as follows:

During the operation of the open-cast mine, following risks have been identified.

1. Failure of Slope in the pits
2. Failure of slope of external dumps
3. Fly rock from blasting operations
4. Surface Fire (Electrical and Oil)
5. Possible Danger due to storage and handling of explosives
6. Opencast Inundation
7. Exposure to Siliceous and low level radioactive dust
8. Accident at the time of transport

i) Failure of Slope in the pits

In order to allay dangers due to open cast slope failure slope stability estimations have been made for quarries after determining various physical parameters of the ground mass like uni-axial compressive strength, tri-axial compressive strength, cohesion, angle of friction, specific gravity of the rock, water pressure etc. Besides, all the discontinuities have been plotted in stereo plots, which indicates that there is no chance of any planer failure, or wedge failure. Even then, factor of safety has been determined against overall slope failure as well as against individual bench slope by circular failure, planer failure, wedge failure. Besides determining factor of safety the slopes will be monitored at regular intervals to check for any possible failure. The well-developed drainage system over the lease area ensures that storm water does not accumulate in the lease area and therefore hydrostatic pressure remains at a low level.

ii) Failure of Slope of External Dumps

The slopes of external dumps shall be planned at an overall angle of less than 28° with individual lifts at less than 37°. After re-handling of dump, the area will be properly vegetated which will cause binding of the soil. Retaining walls will be built all-around the external dumps which will have weep holes for passage of storm water to join garland drains.

iii) Surface Fire (Electrical and Oil)

Spillage of HSD and resultant fire constitutes a potential risk. The quantity of the maximum oil, which can spill, is not much and can be easily controlled.

Regular maintenance of all the electrical fitting and wiring will be carried out to prevent outbreak of fire. Sufficient nos. of portable fire extinguishers will be provided at strategic locations near the fuel store, oil storage area, fuel-filling area and DG sets to take care of any eventuality. Dry and foam type portable fire extinguishers shall be made available at the electrical substation and control room. In case of any electrical fire, the personnel on duty shall shut down the equipment and inform the shift-in-charge. Personnel trained in dealing with electrical fires will be summoned. The fire area will be cordoned off till the fire is fully extinguished and remain so until all wreckage and debris is cleared away. After necessary repairs the power will be restored. The clearance for restoration of power shall be given only by the shift-in-charge. As soon as any fire is reported, the shift-in-charge shall assume the function of disaster controller. In case of serious fire and depending on the gravity of the situation, the Mines Manager may be summoned to assume charge. Meanwhile the hospital will be informed to standby to handle casualties.

iv) Fly Rock from Blasting

Trial blasting results of a nearby mine (with similar geo-mining characteristics) have been used to arrive at the field empirical equations based on which the charge per delay has been regulated to protect the nearby structures. All precautions related to control of fly rock will be taken during the blasting operations (described in chapter 6 of EIA report). Safety zone of 300m as per statutes shall be maintained.

v) Danger due to Storage and Handling of Explosives

As stated earlier, no magazine house has been envisaged for the mine. The magazine will be supplied from adjacent Khandbandh iron ore mine of M/s OMC Ltd. However, all safety precautions will be undertaken as per the requirement.

vi) Opencast Inundation

Following precautionary measures shall be undertaken:

- A careful assessment of the danger of inundation from surface water shall be made before onset of monsoon season every year and adequate precautions against such dangers shall be implemented.
- Effectiveness of precautions, obstructions in normal drainage system etc. shall be checked regularly. During rainy season, blockage of nala / stream may occur, which needs to be cleared.

- Every entrance into the mine shall be at least 3.5 m above the High Flood Level (HFL) at that point.
- Fixation of danger mark of water level and effectiveness of communication shall be taken care of.

vii) Accident at the time of transport

As mentioned earlier, iron ore will be sent to railway siding via trucks for further processing. Movement of vehicle will be regulated as per the traffic load. In case of accident the area will be cordoned and the expert from OMC will be informed for necessary action.

viii) Pit Safety Committee

A pit safety committee (PSC) will be constituted, headed by the Mines Manager. The Senior Manager (Safety) will act as the Secretary of the PSC

The functions of the PSC are as follows

- Visit various working areas of the mine (mine pits, ore handling plant, workshop, electrical premises, loading area etc.) regularly (at least once a month) and meet the workers to discuss matters regarding safety and invite their suggestions on the same.
- Review all accidents (including minor ones) reported since the last visit and suggest measures to prevent recurrence of the same.
- Enquire into all serious accidents that are referred to PSC by the Mines Manager for enquiry.
- Discuss recommendations of Inspector of Mines on matters of safety and DGMS violations placed by the Mines Manager before the PSC for information and necessary action.
- Take active part in organizing and observing Mines Safety Week.
- Undertake publicity and propaganda work at the mine for creating safety consciousness amongst the workers.

2.0 ONSITE EMERGENCY PLAN

To take care of emergencies which may occur during mining operations an Onsite Emergency Plan has been prepared with an objective

- to be in a state of perpetual readiness through training and development to immediately control and arrest any emergency situation so as to avert a full-fledged disaster and the consequence of human and property damage.
- in the event of a disaster still occurring, to manage the same so that the risk of the damage to life and property is minimized

The plan contains instructions to be followed in case of an emergency, major or serious accident, Fire etc. M/s OMC Ltd. has already a procedure in vogue for emergency preparedness and responses. Some of the steps are

- Any person who notices any emergency as mentioned above shall take immediate action to deal with the same if it falls within his scope and if more than one person is present there, one of them shall proceed for getting assistance and to give warning.
- If the person notices that the emergency is of such type or magnitude that it cannot be tackled by him or if he fails to control the same as described above, he shall proceed to give warning.
- Any person detecting such emergency shall take steps to give warning by the fastest means to the nearest available officer in- charge.
- As per gravity of the situation and if required, the steps will be taken to withdraw the persons from workings area. Telephones where available, would be used to convey warning to different parts of the mine.
- The official to whom warning of emergency is given shall send warning by fastest means to key personnel

All emergency situations will be dealt in prompt manner as per the requirement. Trained personnel and rescue team will be made available to handle the various emergency situations. External regulatory authorities will also be taken in confidence to tackle the emergency situation.

In case emergency, anticipated in any section of the mine, key personnel will take necessary action. The key personnel includes Site Controller, Accident Controller / Communication Officer, Primary Controller, Liaison Officer etc. The names of key personnel will be finalized once the mine comes under operation

The major responsibilities of Key Personnel are given below

Site Controller:

- The site controller shall have an overall responsibility for controlling the incident / accident and directing the personnel. He will be in the rank of Agent (Mines).
- To prepare a full proof plan for control of accident like, landslides, subsidence flood and other natural calamities.
- To inform statutory bodies of the State and Central Government.
- To inform communication officer about the emergency, control centre and assembly point.
- To provide all assistance and call for fire squad, security officer and other services required for removing / control of danger.
- To ensure that all necessary personnel assemble at assembly point.
- Make arrangement for medical treatment to the personnel injured seriously.

Accident Controller:

- Mines manager shall act as accident controller/ communication officer.
- Mock rehearsal of management plan prepared for accident.
- To withdraw men / machine from the affected area with priority for safety of personnel, minimize damage to the machines, environment and loss of material.
- To make a report based on the facts and figure and submit to the site controller.
- To communicate to the site in charge and make arrangement for first aid and transportation of the injured personnel.

Primary Controller:

- To inform the Accident Controller from the nearest means of communication about the location and the nature of accident.
- To assist in clearing any obstruction in relief of accident.
- To carry out all instructions of accident controller.
- To provide first aid treatment and communicate to the shift in-charge.
- Capability of Lessee:
- Following facilities will be made available at the mine site, once the mine comes under operation:
 - Public address system
 - Telephone / Mobile handsets
 - Messenger
 - Firefighting equipment and accessories with trained manpower
 - Hospital close to the mine.
 - Training Centre
 - Ambulance van
 - Jeeps

List of contact person of mines in case of emergency is given below:

Table 7.2: List of person to be contacted in case of emergency

| Name | Designation & Department | Address | Contact No. |
|-------------------------|--------------------------|--|--|
| Shri Hemanta Behera | Sr. Manager (Mining) | Unchbali Iron Ore Mines, P.O. Guruda, Keonjhar Dist., PIN-758086 | 9437415894 |
| Bamebari Police Station | Police Station | P.O.: Bamebari, Keonjhar Dist. | 9439962914 |
| Central Hospital | Hospital | P.O. Joda, Keonjhar Dist. PIN – 758 034 | 06767-272231 |
| Fire Station | Fire Station | Joda, Keonjhar Dist. | 06767-218463 (Joda) 06767-272631 (Barbil) |