1.0 RISK ANALYSIS AND DISASTER MANAGEMENT PLAN

1.1 RISK ANALYSIS
Risk analysis is the systematic study of uncertainties and risks encountered in various areas. 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. It also defines and analyzes the dangers to individuals, businesses and government agencies posed by potential natural and human-caused adverse events.

1.2 RISK PRIORITISATION BASED ON HAZARDS IN BAJRI MINING
There is no land degradation due to mining activities as mining is done only on lease area. There will be no OB or waste generation as the sand is exposed in the bajri mining. There will be neither any stacking of soil nor creation of OB dumps. So, no dumping area as well as stock piling area is required. Therefore, there is no chance of failure of dumps and no slope failure due to OB dump and stock piling.

However, there are various factors, which can create unsafe working conditions / hazards in mining of Bajri (minor minerals) from bajri. The following types of hazards are identified during the Bajri mining operations:-

1. Accident during sand/mineral loading, transportation and dumping
2. Accident due to vehicular movement
3. Inundation/ Flooding
4. Quick Sand Condition

1.3 MITIGATION MEASURES
1.3.1 Measures to prevent accidents during loading
The following activities will be done to minimize the risk are:-

a. At the time of loading no person will be there within the swing radius of the excavator/ JCB.
b. The dumpers/ trucks will stand near the loading equipment and fully braked when the muck is filled in it.
c. The truck would be brought to a lower level so that the loading operation suits to the ergonomic condition of the workers.
d. The workers will be provided with gloves and safety shoes during loading.
e. Opening of the side covers (pattas) should be done carefully and with warning to prevent injury to the loaders.
f. Operations during daylight only.
1.3.2 Measures to prevent accidents during vehicular movement & transportation
The following activities will be done to minimize the risk are:-

a. The truck will be covered with tarpaulin and maintained to prevent any spillage.
b. 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.
c. The vehicles must be maintained in good repairs and checked thoroughly at least once in a week.
d. All transportation within the main working will be carried out directly under the supervision and control of the management.
e. Overloading should not be permitted and the maximum permissible speed limit should be ensured.
f. The truck drivers should have proper driving license.
g. A statutory provision of the fences, constant education, training etc. will go a long way in reducing the incidents of such accidents.

1.3.3 Measures to prevent incidents during Inundation/ Flooding
The following activities will be done to minimize the risk are:-

a. During monsoon months and heavy rains the mining operations are ceased.
b. There should be mechanism/ warning system of heavy rains and discharges from the upstream dams.

Inundation of flooding is expected and beneficial for these mines as during this time only the mineral reserve gets replenished.

1.3.4 Precautionary Measure for Sudden Release of Water from Upstream Dam
The following activities will be done to minimize the risk are:-

a. The mining should be done only during the dry season and under strict supervision.
b. Mining activities should be avoided during monsoon season.
c. No go zones should be clearly marked and made aware to the mine workers.
d. Deep water areas must be identified.

1.3.5 Measures to prevent sudden increase in water level
The following activities will be done to minimize the risk are:-

a. The mining activities will be restricted to 3m depth from lease surface.
b. Mining activities will be avoided during monsoon season.