



RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

1.1 RISK ASSESSMENT:

1.1.1 RISK ANALYSIS AND CONTROL MEASURES:

Risk assessment is a process whereby risks are analyzed, assessed and risk management priorities are evaluated. It is defined as the characterization of the potential adverse effect to human health & environment due to environmental hazards.

Objectives of risk assessment are:-

- Identifying hazardous activities
- Assessment of risk level and severity in different operations
- Identification of control measures
- Setting monitoring process
- Reduce the impact of mishaps of all kinds
- Reduce the inherent potential for major accidents

Methodology of Risk assessment:

- Collection of information & identification of hazard
- Classify their severity and probability of occurrence
- Identification of exposed risks
- Assess the risk and risk rating based on
 1. Probability
 2. Exposure
 3. Consequence
 1. Prioritization of the risks
 2. Implementation of control measures
 3. Monitoring risk assessment
 4. Evaluation and correction

Factors of risks involved due to human induced activities in connection with quarrying operations are 1) Removal of over burden 2) Excavation of ore and 3) Transportation of ore.

Other factors due to natural activities are 1) Fire 2) Water inundation 3) Electricity and 4) Natural calamities.



For the various risks, likely to arise, as above, detailed analysis of causes and control measures is given in below:

S.No	Factors	Causes of risks	Control measures
1.	Removal of O.B	a) Top soil & O.B bench may slide due to its unconsolidated nature. b) Vibration due to movement of vehicles in the O.B benches.	- The maximum depth of mining is 2.5 meters only. After extraction of Limekankar it is proposed to backfill the mined out pit with the overburden clay, hence the risk of bench failure is practically absent.
2.	Excavation of Ore	a) Hauling and loading equipment are in such proximity while excavation b) Swinging of bucket over the body of tipper c) Driving of unauthorized person	- Operator shall not operate the machine when person & vehicles are in such proximity. - Shall not swing the bucket over the cab and operator leaves the machine after ensuring the bucket is on ground. - Shall not allow any unauthorized person to operate the machine by effective supervision. - Will follow SOP issued for this purpose.
3.	Transportation of ore	a) Operating the vehicle “nose to tail”	It will be ensured that all these causes will be nullified by giving training to the operators.
		b) Overloading of material	No over loading will be done.
		c) While reversal & overtaking of vehicle	Audio visual reverse horn will be provided.
		d) Operator of truck leaving his cabin when it is loaded	Proper training will be given.
4.	Fire due to electricity and Oil	a) Due to the short circuit of cables & other electrical parts	Electrical parts shall be cleaned frequently with the help of dry air blower
		b) Due to the leakage of inflammable liquid like diesel, oil etc.	All fastening parts and places will be tightening. Suitable fire suppression equipment shall be provided.
5.	Natural calamities	Unexpected happenings	The mine management is capable to deal with the situation.



1.2 DISASTER MANAGEMENT PLAN

The management is able to deal with the situation efficiently to reduce confusion keeping in view of the likely sources of danger in the project.

Structure of the Disaster Management Plan:-

1) **Outline of Disaster Management Plan :-**

The purpose of disaster management plan is to restore the normalcy for early resumption of mining operation due to an unexpected, sudden occurrence resulting to an abnormality in the course of mining activity leading to a serious danger to workers or any machinery or the environment.

2) **System of Communication:-**

An internal communication system will be provided for the department head and to their line of command with telephone facility. Telephone nos and addresses of adjoining mines, rescue station, police station, fire service station, local hospital, electricity supply agency and standing consultative committee members will be provided.

3) **Consultative Committee:-**

A standing consultative committee will be formed under the Head of Mines. The members consists of Mines Manager / Safety Officer / Medical Officer / Public Relation Officer/ Foreman/ and Environmental Engineer.

4) **Facilities & Accommodation:-**

Accommodation and facilities for medical centre, rescue room and for various working groups will be provided.Regular checking of these facilities shall be undertaken by the Mines Manager.

5) **First Aid & Medical Facilities:-**

The mine management will be having first aid / medical centre for use in emergency situation. All casualties would be registered and will be given first aid. The centre will have facilities for first aid & minor treatment, resuscitation, ambulance and transport. It will have proper telephone / wireless set for quick communication with hospitals where the complicated cases are to be referred.Regular checking of these facilities shall be under taken by the doctor and the in-charge of the first aid room.

6) **Stores and Equipment :-**

A detailed list of equipment available, its type and capacity and items reserved for emergency will be maintained by the Mine Manager.



7) **Transport Services:-**

A well-defined transport control system will be provided to deal with the situation. Asst. Manager Mines shall be made in-charge for these services.

8) **Functions of Public Relations Group:-**

It is essential to keep cordial relation with government officials and other social service organization and working groups. Liaison with representatives of the mine workers is required to ameliorate the situation of panic, tension, sentiments, grievances and misgivings created by any disaster. Management is required to ameliorate the injured, survivors and family members of affected persons by providing material, finance, moral support and establishing contact with relatives of victims. The consultative committee formed, especially the nominated public relation officer shall look into these aspects.

9) **Security:-** Manning of security posts is very essential during the disaster management. This shall be undertaken by the mine manager /Manager Security.

10) **Catering & Refreshment:-** Arrangement will be made for the victims, rescue teams and others.

1.2.1 CARE AND MAINTENANCE DURING TEMPORARY DISCONTINUANCE:

If the mine is discontinued due to extraneous factors like government ruling or unforeseen circumstances, the proper safety measures like bunds and security arrangements will be made. Watch and ward is arranged to take care of plantation and installations.

The pit safety committee would draw up emergency plan for a temporarily-closed mine, detailing all the actions that would be taken in case of emergency in the mine. Detailed procedures and action plans will be evolved on the following points. Person's in-charge to handle the situation, infrastructure required to gather and disseminate information to take actions, men and material requirement, inspection schedules, getting outside help, training needs to take care of emergency, logistics, etc., is already in place.

If the mine is to be discontinued temporarily for more than 120 days, notice will be given 30 days before the date of such discontinuance to the concerned authorities. During discontinuance period safety arrangement and fencing will be provided to avoid the entry of unauthorized persons. The accessibility to the mine from the surface will be prevented by providing fencing arrangement. The mines manager shall take all the steps required for the care and maintenance during temporary discontinuance.



1.2.2 EMERGENCY PLAN:-

The emergency plans to be adopted to deal with any emergency situation are described below:

Organization Plan:

Organization plan includes a clear statement on the line of command and the responsibilities of each person involved in case of emergency situation.

Equipment Plan:

Equipment plan includes clearly stipulating make and type of machinery, capacity of machinery, location of operations and field of operations. Emergency plan includes Emergency Preparedness Plan and the standing orders will be prepared and displayed at all conspicuous places.

Functions of the emergency consultative committee:

1. The team shall meet once in six months to discuss the possible or probable causes/ instances leading to any disaster that may occur in and around the mines.
2. The team shall assess the required resources to deal with the situation that may be identified as above.
3. The team leader shall lay down a detailed procedure or oral information to each member to follow in case of any impending or possible or actual disaster.
4. The team shall conduct mock drill once in a year to understand the practical problems that may arise while implementing the Emergency Preparedness Action Plan including the response time and take necessary steps to make the system effective.
5. The team shall make necessary recommendations/suggestions to the Management for identifying / monitoring/ dealing with any possible or probable disaster.
6. The minutes of the meeting of team shall be prepared including the probable cause of incident, response time and corrective and preventive actions required to be taken to avoid the reoccurrences of the same and kept as record.
7. The team may draw an Action Plan and modify the same from time to time based on changed circumstances.
8. The Emergency Preparedness team shall come into action immediately in case of any disaster by establishing the control room at an appropriate place nearer to the affected area.



9. The team shall record the actual performance/procedure followed/short comings while dealing with any actual disaster which will be discussed at various levels to strengthen the plan and approach.
10. Mines Manager shall inspect all the places where disaster occurred, along with Emergency Preparedness & Response Team to give further instructions.
11. Mines Manager shall ensure that all affected places are safe to resume the normal works and then only shall give permission to start the operations.

1.2.2.1 Executorial procedures for emergency plan:

The following procedural methodologies will be adopted for proper execution of emergency plan.

- On realizing anything serious occurrence happened anywhere in the mine, immediate information has to be passed on to the nearest available mining official and the mine management to take prompt action.
- On being informed about the emergency it will be verified for its correctness by the mining official who will telephone in particular to the Manager and supervisors of other parts/operations of the mine and managers of adjoining mine so that persons may be withdrawn from the area of danger.
- On receiving information of emergency intimation, it will be sent to the consultative committee, already formed. The mines manager shall also inform about the disaster to the police, nearest office of mines safety, office of pollution control board, District Collector in charge of emergency plan of the district and other required statutory bodies of State and Central Government. Asst. Manager will ensure that all the materials and transport system to deal with emergency situation are made available at the site.
- First aid facilities and ambulance to be made ready for providing to the victims. The Doctor should be immediately called upon.

In case of likelihood of any possible risks or disasters, pertaining to the mine workings spreading to outside peripheral areas, an “Off-site Emergency Plan” has to be properly planned and documented in consultation with Collector, Virudhunagar District and other concerned Government Officials. In case of any unfortunate happening of an emergency in off-site areas, prompt execution of various action plans as laid down in the offsite Emergency plan has to be carried out with the help of the concerned Government officials and local people.



1.2.2.2 Protocol in case of any accident and monitoring committee:

The objective of onsite disaster management plan for the captive mine is to be always in a state of perceptual readiness through training, 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 and in the event of a disaster still occurring, to manage the same so that the risk of the damage consequences to life and property is minimized. Quarrying Lease for Limekankar& Clay (others) mine area has formulated a disaster management plan for Emergency Preparedness & Responses. The salient features are elaborated as below:

- Emergency response Organization
- Communication System
- Action on the site

Key Personnel and their responsibility

Sri V.Manickam, Director is nominated as Mine Owner and Sri S.Shanmugam, Joint President (Manufacturing) is nominated as Agent by the Board of Directors for taking corrective action on account of any disaster. Entire quarrying operations will be done under the supervision of experienced & qualified competitive persons.

Site Controller:

- Mine agent shall have overall responsibility for controlling the incident/accident and directing the personnel.
- To prepare fool 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 to assemble at assembly point.

Incident Controller/Head of the Mine/ Mine manager:

- Mock rehearsal of plan prepared for accident.
- To withdraw men/machines from the affected area with priority for safety of personnel, minimize damage to the machines, environment and loss of material.
- To act as accident controller to all.
- To make a report based on the facts and figure and submit to the Site Controller.



Primary Controller:

- To inform the Accident Controller / shift in charge by the nearest mode of communication about the location and the nature of accident.
- To assist in clearing any obstruction in relief to accident affected person or site.
- To carry out all instructions of accident controller.

1.2.2.3 Capability of Lessee:

Following facilities will be created at Quarrying Lease for Limekankar& Clay (others) mine area.

- Public addressing system
- Telephones/ Mobile handsets
- Runners/messenger
- Emergency alarm
- Fire-fighting equipments& accessories with trained manpower
- Training centre
- Fire tender, Ambulance

Other Facilities available:

Primary Health Centre at Pandalgudi & Government Hospital at Aruppukottai will take care of immediate requirements. As per Risk Assessment studies, the possibility of “Offsite” emergency situation cannot be ruled out. Good hospitals and fire stations are available in Aruppukottai at a distance of 15 km by road from the quarrying site. Further the residential quarters and living area are far from the mine. However, considering extreme situation, district authorities, including police, would be informed about any offsite emergency if situation arises.
