RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN

1.0 SAFETY & CONSERVATION

1.1 GENERAL

The Mining Plan has been drawn in conformity with the prevailing statutory provisions as per Mines Act, 1952 and CMR, 2017 applicable for safety in opencast mines. However, all statutory rules, regulations, applicable laws etc. and statutory requirement related to Govt. licenses, workers compensation, Insurance, etc. shall have to be adhered to. All the regulations & schedules of Coal Mines Regulations, 2017, DGMS circulars relating to opencast mining, inundation, dust suppression, slope stability etc will have to be adhered to and implemented in order to maintain day to day safety precautions as per statute.

1.2 INUNDATION

The HFL of Amb river flowing nearby the proposed quarry in the south eastern side is recorded as 274.85m. In the proposed Makardhokra-I Expansion OC Mine area, the surface elevation ranges between 274m to 295m. The low lying area is in the eastern side near Amb river. An embankment exists along the western bank of Amb river. Nala No.2 (Shirpur Nala) flowing in the eastern direction passing through the central part of the block is a seasonal nala and it ultimately discharges into the Amb river further east near Kanwa village outside the block. This nala has been will be diverted as per the design of CDO Nashik. To prevent mine inundation, a temporary arrangement has been made as informed by project authorities. Provision has been made in this report to divert this nala along the toe of proposed external dump D-3 so as to join to Nala no 3 which flows on to Amb river. The tentative proposed diversion route of nala is shown in Quarry &Surface Layout Plan.

1.3 DUST SUPPRESSION

For suppression of dust, fixed type water sprinklers have been provided. Suppression of mine dust may be done by using package bond & dust bond, for methodology of application DGMS Circular No.8 of 1997 may be referred.

1.4 FIRE AND SPONTANEOUS HEATING

i)W ild or herbaceous plants shall be removed from the mine.

ii) No person shall deposit heated material or ashes on any opencast working. Also no person shall light a fire or permit a fire to be lighted in any OC working except by the permission in writing of the Manager and only for a special purpose specified therein.

iii) No coal shall be left exposed in coal benches more than its incubation period to avoid fire due to spontaneous heating.

iv) Proper type of the extinguisher should be kept in each HEMM ready for use in case of emergency.

v) In coal stock, coal shall be dispatched on the basis of first in first out.

1.5 SLOPE STABILITY

It is suggested that following action may be taken to deal with slope stability problem.

i) Vulnerable area may be identified and marked on quarry plan.

ii) Observation of actual alignment of fault, its throw, joints, etc. may be recorded during the process of exploitation.

iii) Water drainage system may be properly implemented to prevent accumulation of water in cracks. Also dumps shall be levelled to prevent accumulation of water over it. Proper drainage in dumps shall be also provided to prevent erosion of toe of dump.

iv) Regular monitoring of tension cracks, horizontal and vertical movement of strata in critical area may be done.

v) Rise side slope to be reinforced if required because it has to stand throughout quarry life. No dumps/surface structures to be located within 15m of quarry edge as it will act as surcharge there by destabilizing the slope.

vi) No undercutting of slopes to be done.

vii) Proper hydro-geological studies should be done and if water table is at level of slope it should be brought down by using submersible pumps to prevent hydrostatic pressure.

viii) Proper selection of site for dumping to be done. Before dumping, place of dumping should be made free from loose material. Dumping shall not be done at an angle more than angle of repose of material being dumped.

ix) After completion of dumping operations, dumps should be stabilized by growing vegetation.

x) Every person deployed by leaser of HEMM must be trained & briefed about aspects related to slope stability.

1.6 HAUL ROAD MAINTENANCE

Adequate care must be taken for proper construction and maintenance of haul road as per the existing guidelines. The gradient of haul road should not be steeper than 1 in 16.

1.7 GENERAL LIGHTING

The standards of lighting to be provided in opencast coal mines during working at different places or areas where natural light is not sufficient has to be provided as per latest provision in CMR 2017. They have to be strictly adhered to for efficient and safe working.

1.8 BLASTING

i) At the time of operation of mine, drilling parameters have to be optimized on the basis of actual field trial depending upon joint pattern, bedding plane, type of rock and local geology of the blast site.

ii) Suitable precautions would be taken as per statute before and after blasting operations. While working near infrastructure, buildings etc., controlled blasting technique has to be practiced to minimize fly-off rocks and ground vibrations and to keep them within safe limits. Provision for conducting such scientific studies has been made in this report.

1.9 SAFETY ASPECTS FOR OUTSOURCING/HIRING OF HEMM

Special precaution should be taken while employing contractual labours in the mine. Before employing them to the mine proper vocational training should be imparted and recommendations of Safety Conference should be strictly

followed. Terms and conditions shall be fixed by management for deployment of contractual labours as well as machineries. Some of the major aspects are as follows :

A) <u>For persons :</u>

i) Records in proper forms shall be maintained.

ii) Records of VTC driving licence of operators shall be kept by Operators and readily available for inspection by management

iii) Salaries shall be distributed in front of management representative

iv) No person shall be employed unless person holds VTC certificate and Management is informed.

v) Adequate supervision shall be maintained by competent person.

B) <u>For Machineries</u> :

i) All the machineries to be deployed in mines should be passed by the management.

ii) RTO certificate photo copies of all vehicles shall be submitted to management.

iii) Daily welding, monitoring, inspection shall be done by contractor's mechanic as directed by management.

iv) Machine manufacturers should be asked to give risk analysis.

C) <u>General</u> :

i) No person/vehicle shall be deployed at any place other than authorised place.

ii) All employees of contractors should obey lawful instruction of mine management.

iii) Risk Management Plan by contractor of tipper/pay loader

iv) Trained Manpower

v) Restricted traffic & traffic control planning.

1.10 CONSERVATION OF COAL

i) Although for calculation of mineable coal reserves, 5% mining losses has been taken into account, but in practice all efforts would be made to minimise the losses. Surface Miner has been proposed to excavate coal where losses are minimum. OB benches would be kept sufficiently advanced to avoid mixing of coal & OB.

ii) All efforts shall be made to reduce carpet loss on floor of quarry, loss of coal in each contact zones and to reduce pilferage of coal while transporting it from coal face to coal stockyard/CHP.

1.11 SCIENTIFIC STUDIES

Following areas have been identified in the proposed Makardhokra-I Expansion OC mine for detailed scientific studies:

a) **Slope Stability**

It is proposed to carry out scientific study on slope stability external OB Dump and internal OB dumps as well as for stability of final slope of quarry batter. Based on the findings of scientific research the proposed slope of dumps and batter in the report may change.

b) **Drilling & Blasting**

For optimum fragmentation of rock and coal to minimize the overall cost of excavation, it is proposed in this report to engage some Scientific body to carry out research for optimum drilling and blasting. Accordingly, the powder factor suggested after this study will be followed in the proposed mine.

c) **Hydrogeology**

Proper provision has been made in this report for Scientific study to assess the hydrogeological parameters of the proposed area.

In addition to this, various other parameters like, soil testing, etc. need scientific study. Adequate capital provision has been made in the proposed Mining Plan for above studies.