Care and Maintenance

When the decision is made to place a mine on care and maintenance (C&M), it has to be recognised that there are still ongoing environmental obligations to be met.

The commitments made in any Notice of Intent (NOI) or Annual Environmental Report (AER) which have subsequently been imposed as conditions on the relevant tenement/s, still apply and if not complied with may put the tenement/s at risk of forfeiture action. Furthermore, relevant sections of the *Mining Act* 1978 and *Mining Regulation* 1981 apply.

It is therefore necessary to have in place a care and maintenance plan not only for the plant and equipment on site but also for the management of all environmental aspects of the site during this phase. It is also essential that public safety is considered during the C&M phase.

PLANNING

As early as possible after the decision is made to place a site on care and maintenance, an environmental audit of the site should be carried out. This will establish the status of all landforms and infrastructure with respect to the environmental risk of each element during the expected period of C&M. If this time is not known, then for the next two years as a minimum. From this audit, a plan can be developed to manage/ameliorate the environmental risks identified.

The following outlines some aspects of mining operations that need to be considered. This is not intended to be a complete coverage of all potential environmental risks. Each site will be unique and may have other aspects that need to be considered when going onto C&M.

Once the C&M plan is developed it should be submitted to the Department of Mines and Petroleum (DMP) for our information.

WASTE DUMPS

There are two main environmental risks from un-rehabilitated, or partly rehabilitated waste rock dumps. These are dispersal of dump material to the surrounding environment as a result of erosion; and pollution of the surrounding environment as a result of chemicals or other materials coming from the dump.

Severe erosion of dumps can disperse large quantities of material that may affect surrounding vegetation and habitat, block natural drainage lines and interfere with the operations of other land users in the area.

Dumps may contain a number of chemicals that could be mobilised over time and pollute ground or surface waters and cause damage to vegetation and habitat.

TAILINGS STORAGE

Tailings storage facilities have the same potential risks as waste dumps, with the added risks of release of liquor from the facility or in the worst case, catastrophic failure of the facility.

There is potential for release of liquor from the facility as seepage through the containment walls, directly into the ground water through the base of the facility, through over-topping of the facility and through any under drainage or gravity out-fall from the decant pond.

A catastrophic event can occur as a result of failure of a containing wall (especially in a facility with unconsolidated tailings), through a structural weakness in the wall because of a design or construction fault, or erosion of the wall, particularly through over-topping in the event of heavy rainfall.

TREATMENT PLANTS

At the time of shut down, treatment plants will contain significant volumes of process-related materials and chemicals. If these are not stored or disposed of correctly, they may disperse outside the plant area and have an adverse effect on the environment.

CHEMICAL/HYDROCARBON STORAGE

Most mines store significant quantities of various chemicals, fuels, oils and greases including used chemicals, oils and greases. If not stored in

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appropriate containers or disposed of correctly, these can disperse and cause harm to the environment, through damage to vegetation or ground and surface waters.

OPEN PITS

If appropriate bunding or other surface drainage structures are not in place at the time of placing an open-pit operation on C&M, there is a possibility that significant surface water flows will make their way into the openpit. The pit then acts as a storage dam depriving vegetation systems downstream of their normal supply of water from surface drainage following rainfall events. Pits may fill with saline or low pH water during C&M. This may not be a problem during C&M, but disposal of this water if and when the operation recommences, may pose environmental problems.

UNDERGROUND

As for open pits, openings to underground workings such as shafts and decline portals may act as drainage pathways to underground workings thus depriving downstream vegetation of normal water supply. If mining is recommenced, the disposal of any water from flooded underground workings may pose an environmental problem.

SURFACE DRAINAGE

Natural and engineered drainage structures around the mine site may become ineffective due to erosion, sedimentation or other factors. This can lead to severe erosion of the natural land surface, or the erosion of constructed landforms such as waste dumps or tailings facilities.

INSPECTION AND MONITORING

Regular environmental monitoring carried out during operations should generally continue through the C&M stage. Extra monitoring may need to be carried out, especially to determine stability of structures that may be prone to erosion. Establish a regular inspection regime carried out by competent persons.

Results of all monitoring and inspections should be recorded in writing and analysed by qualified people.

EMERGENCY RESPONSE

It is important that there is an emergency response action plan in place with clear lines of communication. Any adverse findings during inspections or monitoring that may lead to serious environmental harm must be dealt with in a timely manner. If a catastrophic event does occur, it is essential that there is a plan in place to minimise injury and damage.

REPORTING

Regular reporting to DMP and other government agencies carried out during operations will need to be continued through the C&M stage. Any environmental incidents and potential major incidents should be reported at the time of occurrence/discovery.

This Environmental Note was approved for release in January 2001.