Attachment 3A: Environmental Commissioning Plan - Hercules dewatering infrastructure

1. Summary

This environmental commissioning plan relates to the commissioning of saline water dams (turkeys nests) and dewatering pipeline infrastructure, at the Hercules Gold Mine Project, required to allow for the mining of ore. The infrastructure and activities that form the subject of the Works Approval application and this Commissioning Plan are:

- Construction of four HDPE lined saline water dams; and
- Construction of dewatering pipelines from dewatering infrastructure (pumps; bores) to the saline water dam and open pit emissions points, and to join the existing KCGM borefield network to the north.

The saline water dams will feature level sensors, telemetry and process control logic to prevent over topping. The pipeline infrastructure will be bunded and buried, as required, and also feature telemetry and leak detection process control logic (automatic shutdown) to reduce the volume and duration of spills associated with pipeline failure.

2. Environmental Commissioning Activities – Sequence and Duration

Due to the simplicity of the dewatering management system, commissioning will be completed immediately following construction.

Saline Dam commissioning activities will include, in sequence:

Dry verification of the saline dam construction, including:

- Verification of the embankments and earthworks prior to HDPE lining stage;
- Physical checking of the HDPE liner, once installed; and
- Verifying installation of instrumentation install (level sensors and telemetry).

Wet commissioning by filling with dewatering effluent to standard operational level. Commissioning activities include:

- Leaving filled dam to stand for 24-hours to check the water level remains steady and there is no evidence of leaks (dampness) in the earthen embankments;
- Verifying operation of instrumentation and telemetry; and
- Verifying that level sensors and process control logic (automatic shutdown) function as intended.

Pipeline commissioning activities will include, in sequence:

Dry verification of the pipeline construction, including:

- Verification of the mechanical build against design specifications;
- Physical checking of flanges, valves, welds and other connections;
- Verification of bund and scour pit integrity and capacity against design requirements; and
- Verifying installation of instrumentation (flow meters, level meters and telemetry).

Wet commissioning, by pumping dewatering effluent through the new pipelines for discharge to the emissions points and the borefields pipeline system. Commissioning activities will include:

- Checking for and correcting leaks;
- Verifying operation of instrumentation and telemetry; and
- Verifying that leak detection functions as intended.

3. Commissioning process inputs and outputs

The inputs to the commissioning process are:

- Dewatering effluent from sumps in open pit or dewatering bore(s).

The outputs of the commissioning process are:

- Dewatering effluent.

4. Emissions and discharges expected to occur during commissioning

- Dewatering effluent; and
- Potential saline water leaks within bunded pipeline areas.

5. Steady-state operation

Due to the simplicity of the water management system, there is no requirement for it to be operated and monitored to achieve a steady state operation. Once commissioning activities have confirmed that the system is leak free and that its instrumentation and process control logic operates such that the overtopping of the Saline Dams or continued operation during a leak event can be avoided, it is in the desired steady state.

While pumping rates to the open pits will be varied to maintain the pit water level at or below maximum freeboard (proposed 3 meters below pit crest), those variations will not increase the risk to the environment. Additionally, open pit lake water levels will be measured periodically (proposed monthly) when actively receiving dewatering effluent.

6. Controls to address expected emissions

The potential risks/ unwanted events associated with mine dewatering activities and infrastructure, including proposed management measures/ controls, can be found in **Table 1** below.

Table 1. Potential risk/ unwanted events associated with mine dewatering activities/ infrastructure and proposed controls.

Item	Potential risks/ unwanted events	Proposed management measures/ controls
Saline water dam (turkeys nest).	• Seepage of saline dewatering effluent into immediate surroundings. • Spills due to overtopping/ overfilling.	• Lined with HDPE to minimise seepage. • Maintain minimum operational freeboard of 300 mm.
Dust suppression (saline water).	• Overspray & overuse - Damage to surrounding vegetation.	• Dribble bars and directional sprays to minimise overspray. • Dust suppression only where and when required.

Item	Potential risks/ unwanted events	Proposed management measures/ controls
Dewatering pipeline.	• Spills due to pipe damage/ failure.	• Bunding/ secondary containment sufficient to contain any spill for a period equal to the time between routine inspections; or • Equipped with telemetry systems, flow meters or pressure sensors along pipelines to allow the detection of leaks and failures; and • Equipped with automated cut-outs in the event of a pipe failure. • Pipeline to be buried at northern drainage line to reduce the risk of pipeline damage from floods and to allow surface water to flow unimpeded.

7. Contingency measures during commissioning

Unplanned emissions and discharges during commissioning would be restricted to accidental leaks, spills or loss of containment of saline water, that would be:

- Limited in volume by the operation of process control logic level, leak detection and automatic shutdown systems, that would stop pumping in the event of a leak or overfilling;
- Contained within the bund and scour pits associated with the pipelines; and
- Contained within the immediate cleared area of the saline dams.

8. Difference between commissioning and operations

There is no material difference between wet commissioning and operations; All emissions, risks, controls and contingency measures are the same.