

Attachment A

Further Information Request – Princess Louise and North Point Gold Mines August 2007

The Environmental Protection Agency Program requests the following information be submitted with regard to the above proposal. The issues raised are considered to be environmentally relevant, and required to facilitate examination under the *Environmental Assessment (EA) Act*. The Assessment process is suspended until the proponent submits the information requested and it is deemed adequate.

Water management

Water management is considered by the EPA Program to be one of the most important issues for the environmental management of a mining proposal. The Guidelines (*EPA 2006*) (s3.4 - *Water Management*) included a requirement to submit a site water balance (all inputs and outputs) for the expected mine life, including rehabilitation. A water balance is required to indicate how stormwater and mine pit dewatering activities can be managed without off-site impacts.

Uncertainties exist relating to high metal levels in waste rock, including arsenic, that could be mobilised under acidic and near-neutral conditions during and post-mining. Potentially acidic drainage from a waste rock dump (WRD) may not appear for >5-10 years, but then persist potentially indefinitely.

- 1) Identification is required of individual aspects of the proposed development that have the potential to impact on groundwater and surface water quality, from Acid and Metalliferous Drainage (AMD) and stormwater runoff; and
- 2) Contingencies need to be presented to manage contaminated runoff or seepage from the mine infrastructure. Consideration is also required of potential contamination of waters from pit walls and mine infrastructure built from oxide rock.

Climate data from Daly Waters has been used to design and plan water catchment structures and water management for a mine in the Pine Creek region (PER Tables 6-1 and 6-2). The rainfall patterns between Daly Waters and Pine Creek are significantly different and therefore the current water management proposal is invalid.

- 3) Corrected local rainfall data should be used to amend relevant sections of the PER currently based upon the erroneous data, including infrastructure designs and water balances; and

- 4) Description is required of the management of high/extreme rainfall events, i.e. which exceed the designs accommodating a 1-in-2 year flood event. This is particularly relevant for mine structures that will remain after mining has ceased.

Waste Rock Dump

Greater design detail is required of the WRD, demonstrating how this design will control erosion and development of AMD. Potentially Acid Forming (PAF) material is proposed to be encapsulated under a cap of oxide waste rock, stripped from the upper benches of the pit.

Certainty needs to be provided that Acid Rock Drainage issues will be minimised through the availability of sufficient amounts of clay material with the correct properties, to effectively cover the WRD at the appropriate thicknesses to prevent transmission of water and oxygen to the contained problematic material.

Provide design details and physical characteristics of the material proposed to encase the cell of problematic material. This should include:

- 5) The proposed thicknesses of any impermeable liner materials;
- 6) Water transmission rates/permeability rates for the encasing material. Describe theoretical permeabilities of all major material types used, to predict WRD seepage; and
- 7) Indicate available sources and amounts of clay or low permeability material suitable for containment of the problematic material.
- 8) Indicate the proposed depth and sources of the WRD growth medium / topsoil cover and relate this to store/release principles as outlined in *TEAM NT (2004): Ch. 4*;
- 9) Quantify the total amount (m^3) of rock characterized as PAF;
- 10) Quantify the amount and quality of acid seepage to be delivered from the WRD over a specified time period. Assume high rainfall; and
- 11) Provide an estimate of the quantity of material determined to have high metals and arsenic concentrations and where this material sits in the deposit to be mined.

Pit Voids

Insufficient information has been presented in the PER on the closure criteria proposed for the pit voids upon cessation of mining, including the management of potential pit water quality issues.

- 12) Final pit water depths and long term pit water quality should be estimated, including those of the Yam Ck mine pit; and
- 13) Existing quantity and quality of water in the Yam Creek mine pit should be presented (this should be accounted for in the water balance requirements outlined above).

Consideration is required of the effects of using water high in arsenic and other metals to suppress dust on the site, in terms of its potential to accumulate in the environment through evaporation, before mobilisation with stormwater runoff;

- 14) Indicate existing soil concentrations of Arsenic and other potentially mobile contaminants.

Sedimentation Basins

Certainty is required that sedimentation basins will be able to effectively capture acid, metal and salt seepage in expected and worst case scenarios.

- 15) Present design standards for the sedimentation basins – i.e. to what size particles, and to what level of treatment;
- 16) Present a management plan for the sediment basins, including contingency arrangements if water quality monitoring determines unacceptable discharges are occurring;
- 17) Discuss post closure management of AMD from the waste rock dump; and
- 18) Define clearly whether wetlands as treatment systems are proposed (PER s3.7.2). If wetlands are proposed, discuss issues of:
 - seasonal water availability;
 - Flora species proposed;
 - Prevention of mosquito breeding; and
 - Long-term fate and management of the wetlands.

Closure

Consideration and discussion is required of the potential future use of the area as a catchment for the Marrakai Dam, a potential future drinking water dam to supply the Darwin population.

- 19) Rehabilitation and closure plans should be presented which demonstrate that a legacy of decreased water quality will not be created for the longer term by these mining actions.

References:

EPA (2006) *Guidelines For Preparation of a Public Environment Report – Burnside Operations Pty Ltd, North Point and Princess Louise Deposits, GBS Australia Pty Ltd, August 2006*. Environment Protection Agency Program / Department of Natural Resources, Environment and the Arts / Northern Territory Government.
<http://www.nt.gov.au/nreta/environment/assessment/register/burnside/burnside.html>

TEAM NT(2004) Northern Territory Minerals Council (Inc.) and the Mines and Petroleum Management Division of the Northern Territory Government,

2004, *TEAM NT: Technologies for Environmental Advancement of Mining in the Northern Territory: Toolkit*, D.R. Jones and M. Fawcett, principal authors. Posted on the ACMER website at: <http://www.acmer.uq.edu.au/publications/attachments/TEAMNTToolkit.pdf>