



***Independent Environmental Monitoring Agency***

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October 31, 2006

David Scott  
BHP Billiton Diamonds Inc.  
#1102 4920-52<sup>nd</sup> Street  
Yellowknife NT X1A 3T1

Dear David

**Re: Closure Objectives at Ekati**

Please accept this letter as the Agency's response to your letter dated October 13, 2006 inviting comments on BHPB's proposed closure objectives at Ekati. The Agency appreciates the opportunity to comment on the proposed objectives.

We are encouraged to see that BHPB intends to develop closure criteria for each mine component that will allow for measurement of success. We urge BHPB to begin this process in the ICRP to be submitted be submitted in January 2007.

While it is important to get input from interested parties into closure objectives, as we suggested in our letter dated March 28, 2006, it is difficult to do this in isolation of specific objectives for each major mine component that should then guide the development and evaluation of options. It is the Agency's view that the objectives need to be developed for each mine component and not as overall objectives such as you have proposed. BHPB is now asking interested parties for input into some overall site objectives after a limited range of options were presented at the workshop earlier this year in July. Asking for input now on objectives, which we understand as component specific, is out of logical order and may create confusion with regard to closure options for the various components. More explicitly, one needs to have objectives for closure of the component before one can meaningfully judge the closure option for that component. Thus, in your letter, when you indicate that the objectives are to be "used to determine successful reclamation", we agree whole heartedly. We are however, not sure that all of the objectives you outline can do that.

We agree with the October 16, 2006 e-mail sent by KIA that suggests the need for a greater level of specificity with regard to objectives. This greater specificity would meaningfully enable development of the closure criteria, which must reflect the achievement of the objective (for the mine component). We also note that in BHPB's October 13, 2006 letter, objective 9 "Ensure that reputation of BHPB as a responsible corporate citizen is maintained and enhanced" is not appropriate as an objective for closure and reclamation of the mine site. This is not because it is in any sense wrong, but

because it should not be approved by the WLWB as a regulatory requirement for which closure criteria would need to be developed. BHPB will inevitably be judged on its efforts but this should not serve as a regulatory measurement of the success of closure and reclamation activities.

We would recommend that BHPB develop clear definitions and hierarchical relationships amongst overall mine closure and reclamation goals, objectives for specific components, and, corresponding to the objectives, measurable criteria for each mine component so the performance of closure actions can be assessed specifically related to how the objective is met. The four criteria specified in your October 13, 2006 letter (physical stability, chemical stability, biological stability, and sustainability and traditional use) would serve well to help in designing specific objectives for each mine component. The objectives set out by BHPB now have the potential to conflict with one another and some sense of priority would be better set for each mine component.

To better illustrate our expectations with regard to objectives, we attach an excerpt from the letter we sent on March 28, 2006 that sets our specific objectives for a variety of mine components. They illustrate what we view as suitable objectives.

We look forward to further opportunities to work collaboratively with BHPB on closing the mine in a safe, technically sound and measurable manner.

Sincerely,

A handwritten signature in black ink, appearing to read "W.A. Ross". The signature is fluid and cursive, with a long horizontal stroke at the end.

Bill Ross  
Chairperson

cc. Sarah Baines, Wek'ezhii Land and Water Board  
Society Members

## **Objectives, Options, and Research for Selected Mine Components**

To help compliment the short discussion held on October 29, 2005 between the Agency and BHPB staff on closure of various components, the Agency submits the following thoughts on objectives, options, and research needs for selected mine components. There is a recognition that the Agency may not be able to come up with the objectives for all of the mine components, and that BHPB needs to work in collaborative manner with other interested parties (especially the communities). There should be an appraisal of how the objectives relate to one another so that flexibility to compare objectives occurs. The company also has a key role to play in assisting in determining what is possible and affordable.

There may be a need for gradation of reclamation vs. alternatives. 'Stable and safe', 'set the stage for natural recovery', 'create productive habitat offsetting losses' may serve as some basic objectives for reclamation. 'Enhance' is key as it means you cannot just let the site go and do nothing. Minimal concepts include 'safe and secure', 'stable' is a term that is not possible or even desirable biologically. If end land use is a key target then a reclamation goal could start there and then work backwards to discuss complicating factors of technical constraints.

Roads, waste rock and kimberlite rejects, pits and the LLCF were the components subjected to our attempt to help identify objectives, options, and research needs.

### ***Roads***

<b>OBJECTIVES</b>
<ul style="list-style-type: none"><li>• Enhance natural recovery of revegetation on the roads</li><li>• Safe access for caribou</li><li>• Restore water flow</li><li>• Preserve key access roads for closure and post-closure monitoring (above objectives may not apply to these key roads) and emergencies</li><li>• Inventory and classify roads for reclamation purposes and caribou crossing</li></ul>



<b>OPTIONS</b>
<ul style="list-style-type: none"><li>• Edge sloping 1:3 ratio</li><li>• small substrate (cover road sides with finer material)</li><li>• Berm removal</li><li>• Scarifying</li><li>• Accelerated revegetation</li><li>• Remove culverts and bridges when roads no longer needed</li></ul>



<b>RESEARCH</b>
<ul style="list-style-type: none"><li>• Effects of scarification on caribou health (particularly foot issue – hoof damage and cuts) does scarification provide surface suitable for caribou or affect their use or transit of roads?</li></ul>

- Actual rate of natural revegetation and how scarification could enhance revegetation
- Effect of irrigation on roads to allow freeze thaw
- Test edge treatments at various linear distances on caribou movement and use
- Identify areas where caribou may require better quality of road crossing
- The Fox portal road was made with esker material and shows signs of natural revegetation that may be worth investigating further for the lessons that could be learned.

#### COMMENTS

- Caribou visual acuity determines spacing of edge sloping vs. coarse edge length
- Scarifying may provide source material for some roads
- Test to determine edge smoothness to allow for safe caribou use

### *Waste Rock (and coarse kimberlite rejects)*

#### OBJECTIVES

- Human safety
- Safe use for caribou (predator escape and insect relief access)
- Prevention of ARD and metal leaching
- Revegetation??

#### OPTIONS

- Sloping of edges with smaller granular materials (mixture of slopes)
- Allow some revegetation on top and edges
- Impervious rock cap
- Wildlife access and egress ramps (15-20% of edges as ramps of at least 100m)
- Collect and treat drainage (as a contingency only)
- Pit disposal of "problem" rock

#### RESEARCH

- How long will seep collection and monitoring be necessary?
- Inventory waste rock slopes and increased footprint required for additional sloping
- Map best areas for caribou access, seepages (use TK, elders and scientific study)
- Ramp design, location and frequency
- Test re-sloping for fine granular materials (cut and fill)
- Use of lakebed sediments for revegetation
- What is the contingency if waste rock does not freeze (e.g. capping as at Diavik)?
- Metal leaching and impacts of unfrozen waste rock
- Are the hazardous material and industrial wastes put into the waste rock breaking down or not?

#### COMMENTS

- BHPB should estimate metal loading and if required, develop a mitigation plan
- One of the reasons we are raising these issues is long-term permafrost degradation. This is a major difference from the original design.

## ***Pits***

### **OBJECTIVES**

- Safety for humans and wildlife (during refilling, and afterwards if necessary)
- Water quality must meet discharge criteria to protect downstream aquatic life
- Create biologically productive lake
- Create productive shore habitat
- Minimize effects on water balance for outside water bodies
- Safe passage for fish

### **OPTIONS**

- Create littoral zones at pit edges (prevent worker safety issues during work)
- Accelerate re-flooding with pumping but minimize effects on outside water bodies
- Tie Panda and Koala pits into Panda Diversion Channel and remove Upper Panda Dam
- Berming pit(s)
- Fill with waste rock or tailings during operations
- Create shallow lake vs. deep lake

### **RESEARCH**

- Pit water balance (surplus?), filling times
- Implications for tie-in to PDC and Upper Panda Dam (maintenance requirements if left in place)
- Better potential for productive pit lakes than most other mines
- How to design berms to avoid caribou impacts
- Berm design testing and monitoring at Misery (now while there is reduced activity)
- Filling times
- What would it take to make pit lakes biologically productive?
- Discharge quality and quantity
- PDC options

## ***Long Lake Containment Facility (Tailings Pond)***

### **OBJECTIVES**

- Protecting downstream water quality during closure
- Protection of surrounding terrestrial ecosystems
- Avoid wind erosion of tailings
- Wildlife protection and safety
- Avoid leaving dams in place that require monitoring and maintenance
- Stability of tailings within LLCF
- Tailings should be in a stable state (un-erodable) after closure

### **OPTIONS**

- Pump unconsolidated material into a pit
- Divert water from upstream sources into cell C
- LLCF cover and/or revegetation

- No revegetation directly on tailings, need for cover (rock or water?)
- Pump tailings backwards from the dike to have solids rather than water against the dikes
- A “neutral” landscape rather than a “green” one. A neutral landscape is neither an attractant nor a deterrent to wildlife species

#### **RESEARCH**

- Study how to deal with ‘fluffy’ tailings
- Study measures to prevent erosion of soft materials at closure
- Water quality discharge predictions after closure (including any impacts from underground)
- Have to see new tailings management plans before closure and reclamation
- Metal uptake and risk assessment related to revegetation (examine potential for snowshoe hare sampling too)

#### **COMMENTS**

- Discourage use of LLCF by caribou if evidence of toxicity