



Independent Environmental Monitoring Agency

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March 31, 2006

David Scott
BHP Billiton Diamonds Inc.
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Dear David

Re: Closure and Reclamation at Ekati

The Agency submits the following comments on closure and reclamation at Ekati. These comments are based on several recent events including the October 29, 2005 discussion with the company, the internal Agency workshop held on February 14-16, 2006, and the March 23, 2006 meeting of the Wek'eezhii Land and Water Board *ICRP* Working Group. At the last meeting, the WLWB urged members of the *ICRP* Working Group to make helpful suggestions directly to the company. This submission is made, in part, with that advice in mind.

The purpose of our internal workshop was to enable us to better develop informed positions respecting closure issues at Ekati. This included a better understanding of what technically sound and achievable objectives might be considered for mine components.

We trust that the ideas set out below will contribute to BHPB's closure planning process.

The Agency stresses that there is need for all parties to work in a collaborative fashion during this process, including strong community involvement, to ensure that mutually agreeable closure objectives and preferred options are selected.

We have organized our comments and suggestions into three main areas; consultation and collaboration, key considerations, and thoughts on closure and reclamation of some selected mine components.

1. Consultation and Collaboration

The Agency has commended BHPB for the type of consultation approach that was used during the recent review of the Long Lake Containment Facility (LLCF). We also recognize the effectiveness of the Environmental Impact Review 2006 planning session that was held on January 20, 2006 when BHPB invited all of the interested parties to assist with the planning of the report and the June 2006 site visit. We strongly encourage BHPB to take a similar approach during the drafting of the *Interim Closure and Reclamation Plan (ICRP)*.

In our view, the current process as proposed by BHPB at the Working Group meeting on March 23, 2006 has the following difficulties:

- Round #1 of community consultations was not properly completed as follows;
 - some parties not consulted,
 - those consulted were not adequately notified ahead of time about the consultation event and, therefore, were not properly prepared to give considered responses; and,
 - consultation sessions that did occur did not canvas views on all mine components or closure issues.
- in spite of the above difficulties, BHPB appears to be moving immediately into its internal Failure Modes and Effects Assessment (FMEA) process;
- the output from Round #1 is not available in an integrated form for the review and consideration of the parties prior to the BHPB internal screening;
- the complete array of options to be screened by BHPB in the FMEA is not available to the parties for review;
- the next round of consultations will review the results of BHPB's internal screening, but some options will have been removed from further consideration by the parties; and
- the identification of closure objectives are proposed by BHPB to come near the end of the process (MAA) instead of being developed at the beginning which is critical (objectives need to be defined for a proper evaluation session).

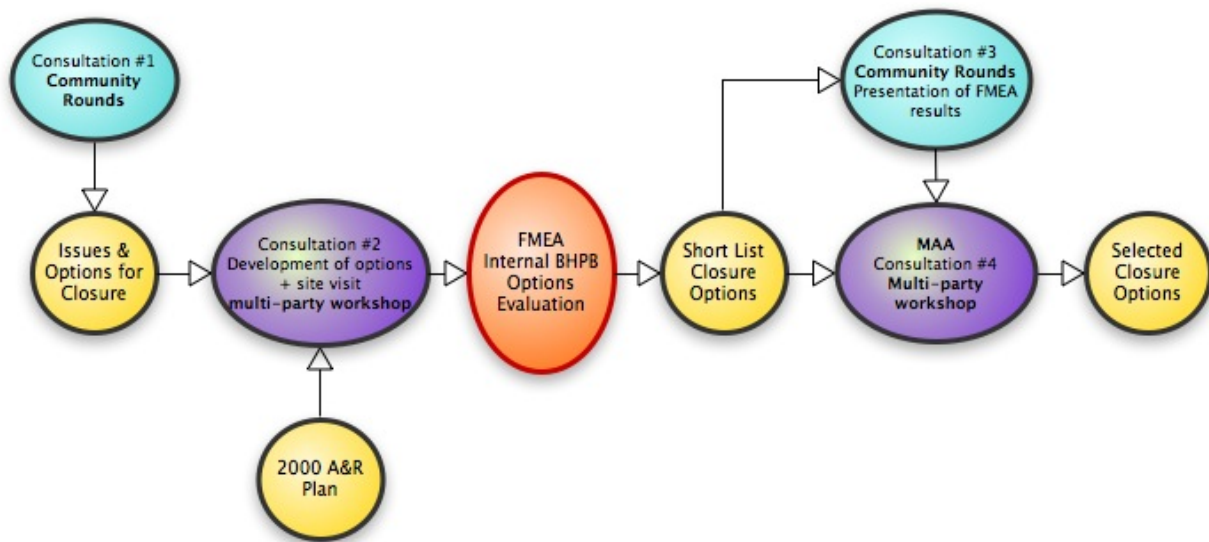
We note that many of these concerns are shared by almost all the *ICRP* Working Group participants.

The Agency is very concerned with the compressed timelines for consultation that would see much of it done in June and July—a time when not many people are available for this kind of activity. BHPB is urged to take the necessary steps to ensure that the timing for community consultation is such that participation will be maximized.

We urge BHPB to plan the timing and manner of consultations in a collaborative manner with all the interested parties. If, as a result of these discussions, further time is needed for the *ICRP* to be properly developed, the Agency would be prepared to support an extension with the Wek'eezhii Land and Water Board for the submission of the draft *ICRP*. The goal should be an effective plan, not a quickly developed one. We are prepared to assist in whatever way we can to facilitate a collaborative approach to consultations in developing the *ICRP*.

In our view, the consultation process could easily be improved by revising the steps as shown below. Such an arrangement would provide for greater transparency of the options selection process, more meaningful substance provided as input to the process, and greater participant buy-in for the final result.

PROPOSED PROCESS



This proposal moves one community consultation event forward to occur BEFORE the FMEA, combining the site visit event with a more effective ‘issues & options identification’ exercise to improve the input for the FMEA.

2. Key Considerations for Closure and Reclamation at Ekati

The following points are identified as important ideas to provide context for the suggestions which follow:

- Mining is not a temporary use of land – usually ongoing maintenance, repair, monitoring and site visits are required.

- It is impossible to restore a mine site to what was there before; some restoration actions may cause more harm than good!
- Many past failures were caused by optimistic professional judgement and computer models rather than scientific evidence. Need for solid information emphasized.
- Contingency plans and adaptive management coupled with reclamation research may be the most effective means of dealing with uncertainty.
- Protection of the integrity of the databases and other site information is critical and essential for successful reclamation planning and implementation.
- Climate is changing in the NWT. More information is needed on the long-term effectiveness of closure strategies and measure, particularly the use of permafrost encapsulation to prevent metal leaching from waste rock. The burden of proof rests on BHPB to prove that closure plans, especially those relying on permafrost durability, will work.
- Concern about reliance on winter road for long-term access given that winter road seasons are shrinking. This point is important for accurate reclamation liability estimates and security.
- Costing models must be transparent and in an auditable format to allow reduction in security as a result of successful progressive reclamation.
- It is very important to do a post-closure assessment of all residual environmental effects from the mine after remediation and reclamation efforts are completed, to help establish a new baseline for measuring any further changes, and to build public confidence that the area is once again safe for people and wildlife.

3. Objectives, Options, and Research for Selected Mine Components

To help complement the short preliminary discussion held on October 29, 2005 between the Agency and BHPB staff on closure of various components, the Agency submits the following comments on roads, pits, waste rock dumps and the tailings facility:

Roads

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

OPTIONS

- Edge sloping 1:3 ratio
- small substrate (cover road sides with finer material)
- Berm removal
- Scarifying
- Accelerated revegetation
- Remove culverts and bridges when roads no longer needed

RESEARCH

- 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?
- 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 100 m)
- 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 pile 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
- Fill with extra fine processed kimberlite during operations or at closure (see note below)
- 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
- Pump extra fine processed kimberlite into pit during operations or at closure (see note below)
- 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

Note: At our recent Board meeting, we discussed the idea of pumping the extra fine processed kimberlite from LLCF to a pit. At closure (or better, before when a pit becomes available) the EFPK (not the FPK, which will have settled) could be pumped out of the LLCF and into a pit. Since a pit lake may be meromictic, the quality of the water (if that is what one calls it) at the bottom should not be of great concern. Thus, this could be a win-win (better for closure of pits and much better for closure of LLCF).

RESEARCH

- geochemistry and mineral composition and distribution in FPK tailings
- pore water composition
- Study how to deal with ‘fluffy’ tailings (such as the suggestion above)
- 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 and ptarmigan sampling too)
- feasibility studies of closure options for transition zone (beach/pond interface) of LLCF
- identification of vegetation types which deter or are neutral to wildlife

COMMENTS

- Discourage use of LLCF by caribou if evidence of toxicity

We trust that BHPB finds these comments helpful and we would welcome the opportunity to discuss them with you further at your convenience.

Sincerely,

-ORIGINAL SIGNED BY-

William A. Ross,
Chairperson

cc. Society Members