



Independent Environmental Monitoring Agency

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May 18, 2004

Melody McLeod, Chair
Mackenzie Valley Land and Water Board
7th Floor - 4910 50th Avenue
Yellowknife, NT, X1A 2P6

Dear Ms. McLeod:

Re: BHP Billiton Application for Renewal of Ekati Water Licence MV2003L2-0013 (Formerly N7L2-1616).

Please accept this as the written submission of the Independent Environmental Monitoring Agency for the public hearing to be held on the above application.

This final submission has been modified based on further review we have undertaken, and on responses by BHPB to our preliminary comments submitted to the MVLWB on March 24, 2004. The April 29, 2004, *Summary of Changes to BHP Billiton Diamonds Inc. Current Water Licence Renewal Process* document circulated by the Board has been very helpful in focusing our work, and we have been guided by that document in revising this submission. We have assumed that the text provided in the *Summary of Changes* document accurately reflects the text changes proposed for the new Licence.

We anticipate on appearing in person at the public hearing to formally present this submission, and will take that opportunity to embellish or revise any of the recommendations made here, and answer questions from other interveners or the Board.

In making our comments about needed changes for the new Licence, we want to stress that BHP Billiton has conducted its Ekati operation in an environmentally safe and responsible manner since it was first licensed. No significant environmental problems have occurred, and no major environmental issues are looming. On the basis of its past performance, a renewed licence to continue operation is properly deserved. The comments we make below should be understood against this backdrop, and while we note below one or two substantial uncertainties about the future viability of mine closure, most of our comments are geared to fine-tuning and improving the new Licence in response to lessons learned over the past seven years of operation.

As a general point about the regulation of the mine, we believe that it is important to avoid situations where the Licensee implements changes to its management plans before they are approved by the Board. In the event that changes must be made urgently we believe that the NWT Waters Act contains provisions to handle emergency situations. Thus, there should be explicit language used in the appropriate places that will prevent

this situation from arising. However, to make this work successfully, the review and approval process conducted by the Board must be conducted in a timely fashion. In drafting the new Licence, the Board should give some consideration as to how to achieve the effective balance required for a timely and yet thorough assessment of plans, and the need for the operator to conduct its activities in manner responsive to changing conditions at the mine.

Except as otherwise noted below, we support the provisions as written in the April 29, 2004 *Summary of Changes* document.

Since there is inconsistency between numbering system used in the existing Licenses and the *Summary of Changes*, we follow where possible the numbering system adopted in the *Summary*.

PART A. SCOPE & DEFINITIONS

No changes recommended.

PART B. GENERAL CONDITIONS

Recommendation #1

Item 5 states,

“The Licensee shall take every reasonable precaution to protect the environment;”

This is consistent with our earlier recommendation, but omits our proposed addition of the *Precautionary Principle*. While we support the principle embodied in this clause, we recommend that a stronger formulation replace that wording, as follows:

“The Licensee shall apply the Precautionary Principle in all its environmental management activities at the site.”

Rationale

The term “every reasonable precaution” is not precisely defined, and therefore does not lend itself effectively to enforcement. To the contrary, the *Precautionary Principle* is well established in science, and has been upheld in Canadian court decisions, and would therefore add effective teeth to the licence. Canadian environmental law has stated that “sustainable development” must be based on the *Precautionary Principle*, which states that environmental measures must anticipate and prevent the causes of environmental degradation.¹ (*emphasis added*) This is completely consistent with BHPB’s *Health, Safety, Environment and Community Policy* which states, “At BHP Billiton, we are committed to sustainable development.”

¹ *Spraytech v. Town of Hudson* [2001], SCJ No. 42 (SCC) at par. 30-32. A copy of this Supreme Court of Canada case was put on the public record by the Dogrib Treaty 11 Council during its oral submissions at the MVLWB Snap Lake public hearing.

The *Principle* is a simple one—where there is scientific uncertainty about an outcome, and a potential for harm to be done, precautionary action should be taken. The technical literature on the topic clearly identifies the components of the *Principle*:

1. Taking precautionary action before scientific certainty of cause and effect.
2. Setting goals
3. Seeking out and evaluating alternatives to harmful practices
4. Shifting burdens of proof
 - a. Financial responsibility
 - b. Duty to monitor, understand, investigate, inform and act
5. Developing more democratic and thorough decision making criteria and methods

BHPB has argued (*Response to Reviewers*, April 28, 2004) that application of the *Precautionary Principle* “would prevent the timely implementation by BHPB of previously untested or innovative mitigation methods such as the Misery Land Treatment Atomization Project or waste rock toe berms.” Our view is the opposite—these initiatives (which we supported) of BHPB are completely consistent with the *Principle* generally, and specifically with components (1) and (3) identified above. Both measures were precautionary steps taken to further diminish environmental risk associated with previous practices, and BHPB rightly assumed the burden of proof for both financial costs and the adaptive environmental aspects of monitoring and learning from the exercise, which are identified as components 4(a) and (b) above. Rather than “preventing” innovative methods, the *Precautionary Principle* encourages consideration of these when potential harm can be reduced.

PART C. CONDITIONS APPLYING TO WATER USE

No changes recommended.

PART D. CONDITIONS APPLYING TO SECURITY REQUIREMENTS

Recommendation #2

A section should be added to the new licence consistent with the structure of Part C in MV2001L2-0008.

Rationale

In our view the security requirements should be consistent between the two Licences.

Recommendation #3

Part C Item 3 of MV2001L2-0008 reads:

“Security shall be maintained for the full current liability on the site. If there is a reduction in the total liability, due to progressive reclamation or alteration of the mine development plans, the applicant may apply to the Board for a reduction in the amount of security required.”

The Agency recommends adding the following words (underlined) for this provision:

“Security shall be maintained for the full current liability on the site. If there is a reduction in the total liability, due to progressive reclamation targets being successfully achieved, or alteration of the mine development plans, the applicant may apply to the Board for a reduction in the amount of security required.”

Rationale

The concept of reclamation targets or criteria being used to determine reclamation success is a key requirement for the responsible management of the security deposit.

PART E. CONDITIONS APPLYING TO DEWATERING AND DRAWDOWN

This part can be deleted; no longer relevant to existing operations. For greater certainty, we understand that Item 7 in the *Application* that identifies Leslie Lake for dewatering is no longer a component of the new Licence.

PART F. CONDITIONS APPLYING TO CONSTRUCTION

No changes recommended.

PART G. CONDITIONS APPLYING TO WASTE DISPOSAL

Item 7. Long Lake Tailings Containment Facility

Recommendation #4

In Item 7(ii) should be maintained, but replace “minimized” with “prevented or contained”.

Rationale

The concept of minimizing seepage from this facility is important and should not be deleted. It is agreed that the term “minimized” presents enforcement problems. Our suggested term “prevented or contained” is enforceable, but provides sufficient flexibility so that non-preventable seepage does not automatically render the Licensee out of compliance.

Item 8. Collection Ponds

Recommendation #5

In Item 8(ii) should be maintained, but replace “minimized” with “prevented or contained”.

Rationale

As for Item 7 above.

Item 10. King Pond

Recommendation #6

In Item 10(i) should be maintained, but replace “minimized” with “prevented or contained”.

Rationale

As for Item 7 above.

Item 13. Effluent Discharge

Recommendation #7

The Board should commission an independent review of proposed effluent quality criteria for the Long Lake discharge that considers the dilution available in the receiving environment (Leslie Lake), and determines what effluent concentrations are sufficient to ensure no significant adverse impacts to aquatic life.

Rationale

While IEMA generally supports changing the effluent discharge limits for the new licence to be consistent with the limits in MV20011L2-0008, these limits should not necessarily be considered appropriate or sufficiently safe for discharge of Ekati effluent to the environment. For reasons stated below, our view is that an expert review of the adequacy of these criteria with respect to Long Lake discharge would provide some certainty to the Board that levels are not being set in too restrictive manner (BHPB’s concern) or are set to more effectively deal with any emerging water quality issues in the future.

IEMA has noted that modeling undertaken by the Licensee with respect to predicting Cell E discharge water quality over the mine life (*Risk Assessment of Fox Mine Water Discharge in the Long Lake Containment Facility*) indicates that this water will exceed CCME guidelines for arsenic and cadmium. This water discharges into Leslie Lake, and the dilution here is unknown, so that it is difficult to tell whether CCME guidelines will be achieved in Leslie Lake when these contaminants reach their peak concentrations in Cell E towards the end of mine life.

In response to this concern, BHPB indicates (*Response to Reviewers Comments*) that it has initiated “a dilution study to evaluate the potential effects on the water downstream from the Long Lake Containment Facility” and that this will be available “May-June”. If this study produces results prior to issuance of the new licence, as indicated, then the Board should consider these results before finalizing the licence discharge limits. If this study will not be available in sufficient time, then the independent expert review recommended above would provide significant increased certainty to the Board, and comfort to the stakeholders, about the limits ultimately established in the new licence.

The Licensee argues that the current limits are as protective as they need to be, and that to reset criteria so that they are more “fully protective of downstream waters” would be “inconsistent with the intent of the project as approved and originally licensed.” To hold the original criteria static for these reasons seems to us to be inconsistent with the concepts of adaptive environmental management, the Precautionary Principle, Best Management Practices, and the Licensee’s own corporate *Health, Safety, Environment and Community Policy* which states, “We commit to continual improvement in our performance...”

The Licensee's argument that monitoring has not identified any long-term trends that are of a concern is true for the receiving environment. However, trends of increasing concentrations of a number of parameters in the Long Lake tailings cells (a surrogate for downstream lakes) indicate that future concerns are possible, as does the modeling predictive work described above.

Finally, despite the Licensee's contention in its original *Water Licence Application* (March 22, 1996) that "background levels of constituents (will) be attained at Slipper Lake", elevated levels of five water quality parameters (pH, sulphate, total dissolved solids (TDS), potassium, and total molybdenum) reached Slipper Lake last year. Since 2000, pH, potassium and molybdenum have been increasing annually through the whole Koala watershed downstream of the LLCF, and increases in sulphate were detected last year in Lac de Gras. While levels are still well below CCME guidelines, and presently not an environmental concern, these unpredicted trends are noteworthy. We conclude that caution and re-evaluation of this key component of the mine's operational plan (i.e., discharge criteria) are warranted.

In the alternative to undertaking an independent review of all effluent discharge criteria as recommended above, we offer three specific recommendations for discharge criteria, as follows:

Recommendation #8

The limit for **suspended sediment** should be set at 8 mg/L.

Rationale

Suspended sediment (TSS) criteria for MV2001L2-0008 are set at 15 mg/L (max average) and 25 mg/L (max grab), approximately ½ the levels in the current licence. Koala system water is exceptionally pure relative to more typical Canadian waters for which these objectives are normally set. Background TSS for lakes downstream of Cell E is approximately 3 mg/L or less. The CCME guidelines state that for clear flow conditions (freshet flows are not part of the determination) a 30-day average should not exceed more than 5 mg/L above background, while a short-term exposure (24 hours) should not exceed more than 25 mg/L above background. This suggests that a maximum average concentration in Leslie Lake should not exceed 8 mg/L.

BHPB observes (*Response to Reviewers Comments*) that such a level would be inconsistent with limits set by the federal *Metal Mining Effluent Regulations* (MMER) and would constitute an "attempt to achieve a 'no effects' level that is contrary to the approved design to which the Ekati mine is built. We observe that the *MMER* do not apply to diamond mines and that, at any rate, the MMER levels do not match those proposed by CCME as necessary for the protection of aquatic life. The limit we recommend appears to be achievable given present water quality data. As noted previously, the position that originally set standards should prevail for the life of the mine is not consistent with the notions of adaptive environmental management, the Precautionary Principle, or the Licensee's own corporate commitment to continuous improvement.

Recommendation #9

The effluent discharge criterion for **arsenic** ought to be re-evaluated in light of the results in *Risk Assessment of Fox Mine Water Discharge in the Long Lake Containment Facility*.

Rationale

Concentrations of arsenic are predicted to slightly exceed CCME guidelines in the final years of mine life, and it is unknown if there will be sufficient dilution in Leslie Lake to adequately protect aquatic life.

Recommendation #10

The effluent discharge criterion for **cadmium** ought to be re-evaluated in light of the results in *Risk Assessment of Fox Mine Water Discharge in the Long Lake Containment Facility*.

Rationale

Concentrations of cadmium are predicted to exceed CCME guidelines in the final years of mine life, and it is unknown if there will be sufficient dilution in Leslie Lake to adequately protect aquatic life.

PART _ . CONDITIONS APPLYING TO STUDIES

Recommendation #11

Prior to finalizing the new licence terms, the Board should commission an independent expert review to evaluate the adequacy of any studies submitted under Part H of the existing Licence, and then take any necessary steps to ensure that deficiencies are rectified in a timely fashion.

Rationale

In our detailed review ² of the *Tailings Characterization Study* submitted by BHPB under Part H, Item 1 of the Licence, we found that the three information objectives identified by the Board in Items 1(a) to (c) were not answered. This work is still outstanding, and fundamental to the sound operation and closure of the project.

Recommendation #12

The new Licence should include a provision that requires Board approval of the completed reports when submitted.

Rationale

The Board did not act on a recommendation from Board staff to reject the work submitted by the Licensee under Part H, Item 1, apparently because there was no Licence requirement for approval by the Board of the completed study. The Board needs to have

² Submitted to the MVLWB July, 2002

a mechanism that ensures it receives reliable and complete information that it specifies to responsibly fulfill its mandate.

PART I. CONDITIONS APPLYING TO AQUATIC EFFECTS MONITORING PROGRAM

Recommendation #13

The Board should consider adding a Licence requirement that the Licensee conduct annual reviews of the results of the environmental effects monitoring programs through a collaborative process with the affected parties (aboriginal groups and regulators).

Rationale

In previous years the Licensee has voluntarily conducted annual workshops with the regulators and aboriginal representatives to review the results of the previous year's environmental monitoring programs and plan changes for the forthcoming year. Last year the Licensee suspended the workshop. IEMA has found that these workshops contribute significantly to the stakeholders' understanding of what is happening to the mine and facilitate a collaborative approach through the collective discussion and exchange of ideas while, at the same time, improving the monitoring programs over the years as lessons are learned and our knowledge of the system is increased. Given their significant benefit to all parties involved, we believe that a requirement for the company to conduct these should be considered for the new Licence.

Recommendation #14

For the annual report on the *AEMP* the interpretation of data should also integrate the results of previous snow and air quality surveys.

Rationale

Water quality on the site appears to be affected in some cases by the airborne transmission of contaminants and deposition on snow and vegetation. Integrating the results of the company's monitoring programs to provide a more comprehensive interpretation of the causes of detected water quality changes would be a significant benefit for both environmental managers and regulators.

Recommendation #15

Leslie Lake should be added as an identified monitoring station for the AEMP.

Rationale

This would make the Licence consistent with the current program which now includes Leslie Lake as a monitored lake.

PART J. ABANDONMENT & RESTORATION

Having a clear and viable concept now about how the project can be safely reclaimed once the mine closes (different connotation than “the end of mine life” which is stated as 2014) is an expectation of the aboriginal peoples, and one on which they based their initial support for the project. It is, therefore, an issue of key importance for the licence renewal process.

The present *Application* is accompanied by both the approved February 2000 *Interim Abandonment and Reclamation Plan* and the July 2003 *Interim Abandonment and Reclamation Plan*, although BHPB in its application appears to refer to the latter as the source for current information on its reclamation plans. The former document is based on closure concepts that were reviewed during the 1996 EIS hearings and the initial NWT Water Board hearings under which the original Licence was issued. Despite the fact that the conditions set out in the original Licence are generally adequate and require little adjustment, the submission of two *A&R Plans* as supporting documents to the *Application* is troubling.

The revised 2003 *Plan* was submitted to the Board for approval in July 2003, but was returned to the Licensee with a request to address the many issues raised by reviewers. This *Plan* was subsequently re-submitted to the Board in April 2004, but remains unapproved at this time. In our recent review, we found the April 2004 *Plan* not adequate (as explained below), and have recommended against its approval in our May 14, 2004, submission to the Board. This is a vexing situation—an approved *A&R Plan* is in place, but it is one that is based on an outdated mine plan rather than the one currently adopted by the Licensee. Many aspects of it are not relevant to the present situation. What *Interim A&R Plan* should the Board rely on to evaluate the present *Application*?

In our reading of the current Licence, most of the requirements for the *Interim Plan* set out under Part K Items 1 and 4 of Licence N7L2-1616 have not been submitted to the Board to date, even though the mine has been in production for almost seven years. This raises a critical issue for the Board—how can it ensure it gets the information it requests in a Water Licence, in a timely fashion? It is clear that a process is required by the Board that ensures the adherence to licence provisions.

However, we want to emphasize that this is not just a regulatory procedural issue—it has very real, substantive implications for the safe closure of the project. The revised *A&R Plan* currently before the Board for approval does not have a demonstrably viable closure plan for the pit lake reclamation—much research is now underway by the Licensee, or needs yet to be conducted, in order to determine the viability of the proposed flooding option for the Panda and Koala pits, the fate of the Panda diversion channel, and the reclamation measures to be applied to the Long Lake tailings facility and other mine components.

Since there is also no approved *Restoration Research Plan* as required in Item 4 of Part K, we have no way of knowing whether the research currently being done in a number of areas will provide all the answers or only part of them. No schedule is set out for the

completion of research activities which could then inform the development of reclamation strategies for the various components of the mine.

We do not have a specific recommendation on how the Board should resolve this dilemma, but we flag it as an extremely important issue that needs resolution in the very near future and, properly, prior to the issuance of the new Licence.

For the record, the Agency would like to highlight the following principles, consistent with the intent of Part K of the current Licence, that could usefully be applied in judging the adequacy of any *Interim A&R Plan* for this project:

1. Concepts proposed for closure must be determined to be technically viable and environmentally sound prior to their approval.
2. Specific reclamation objectives must be clearly identified for each mine reclamation unit. Without these, appropriate reclamation measures cannot be defined.
3. Specific criteria for determining when the objectives are attained for each mine component must be provided. This is critical for determining when successful reclamation has been achieved. Without the criteria, progress in reclamation, including progressive reclamation, cannot properly be determined.
4. No credit for any reclamation work undertaken should be provided the Licensee until the identified criteria or targets are achieved, regardless of monies actually spent on the reclamation activities.
5. Annual updates of the outstanding reclamation liability should be made, and security adjusted as necessary to reflect the outstanding work in any given year.
6. If reclamation funds have been expended on a particular mine reclamation unit, but reclamation not achieved according to the criteria, a re-assessment of the outstanding liability for that unit could be undertaken, with a view to adjusting the security deposit to more appropriately match the liability.
7. For developed mine components, and for premature shutdown events, a level of detail beyond “conceptual” but short of “engineering design” is required. Plans should be specific, clearly viable, and detailed to the point where they could be implemented with little additional planning work. “Conceptual” plans are acceptable for those mine components that have not yet been constructed but, as noted in Point 1, they should not be approved as activities until they are proven to be demonstrably viable and committed to in the *Plan*.

Recommendation #16

Change Part K, Item 7 of the existing Licence to read,

“The Licensee shall implement the Plan(s) as approved by the Board in accordance with the schedules and procedures specified in the Plan(s) and shall carry out progressive reclamation of areas in accordance with the schedule and procedures described in the approved A&R Plan.”

Rationale

The current clause "...and endeavour to carry out progressive restoration of areas as soon as is reasonably practicable" in Part K, Item 7 of the existing licence is weakly formulated and non-enforceable.

TERM

Recommendation #17

The term of the licence should be set to coincide with the expiry of MV2001L2-0008 (August, 2009) so that the two operating licences can be effectively integrated.

Rationale

BHPB's currently requested completion date of Dec 31, 2015, (11 year term) is not supported by the Agency.

At the April 4, 2002, public hearing held by the MVLWB for the licensing of Sable Pigeon Beartooth projects, BHPB suggested that their preferred timing for integrating the two water licences would be during the renewal of the N7L2-1616, at which time this licence could be rolled into MV2001L2-0008. We agree with the objective of integrating the two licences at the earliest possible date and would fully support earlier BHPB's recommendation. In the event that this option is not available, our fallback recommendation would be that the renewal term ought to be matched to the expiry date of MV2001L2-0008 (August, 2009) so that the licences can be integrated at that time. This would give the company between four and five years to complete a number of critical studies it has initiated and, especially, to revise its tailings management scheme for Long Lake (major revisions apparently on the way) and upgrade the *Interim Abandonment & Restoration Plan* so that the closure options described are well supported by the research currently being undertaken. It would not be wise in our view, to now license the project until the end of mine life before having ensured the project can be safely and effectively closed. A 2009 expiry date for the new Licence will ensure there is an opportunity and a public process to properly resolve these issues.

SURVEILLANCE NETWORK PROGRAM

Recommendation #18

When an updated draft of the SNP has been prepared by the Board, it should be circulated to reviewers prior to being finalized.

Rationale

We support BHPB's suggested changes to the SNP as outlined in its March 24, 2004, letter to the Board. However, it is clear that many small changes to the SNP have been made over the years and it is challenging to track them all on a single document. An updated, consolidated version would be most helpful in order to understand the present situation fully, and to determine if any final refinements might be in order.

Sincerely,

-ORIGINAL SIGNED BY-

William A. Ross
Chairperson

Cc. Society Members, IACT