



Ekati Closure and Reclamation Plan Working Group Advisory Document

Prepared: February 13, 2009

Files: MV2001L2-0008 & MV2003L2-0013

Working Group Meeting Date: February 3 & 4th, 2009

Board Meeting Date: February 23rd, 2009

Subject:

Final advisory document to inform the Board of both outstanding and settled items in preparation for the public hearing (phase 4 of the ICRP Terms of Reference).

Regulatory History:

On January 15, 2007 BHP Billiton (BHPB) submitted an Interim Closure and Reclamation Plan (ICRP) to the WLWB to satisfy the requirements of Water Licences MV2001L2-0008 and MV2003L2-0013.

Submission of the ICRP triggered the Working Group responsible for providing “... *opinions and recommendations in a timely manner to the Board on the technical soundness and adequacy of the ICRP in fulfilling the requirements set out in Water Licences MV2001L2-0008 (Part L) and MV2003L2-0013 (Part J), and the requirements set out in the ICRP Terms of Reference once approved by the Board*” (taken from the Working Group Terms of Reference, December 2005).

The ICRP was divided into four sections to ease its review:

Working Group Section	Corresponding Parts of the ICRP
1	1. Executive Summary 2. Introduction 3. Scope 4. Project Background 5. Mine Overview Appendix A - Terms and Definitions Appendix C - Closure Goal, Objective and Criteria
2	6.1 Open Pits 6.2 Underground Mines

	6.3 Waste Rock Storage Area Appendix D- Engineering Summary only those items that apply to sections 6.1 -6.3
3	6.4 Processed Kimberlite Containment Facilities 6.5 Dams, Dykes and Channels 6.6 Buildings and Infrastructure Appendix D - Engineering Summary only those items that apply to sections 6.4-6.6.
4	7. Temporary Closure Measures 8. Environmental Assessment 9. Progressive Reclamation Appendix F - Reclamation Research Plan Appendix G - Post Closure Monitoring
Sections of the ICRP providing background and supplementary information, but were not to be reviewed and approved by the Board.	Appendix B - Community Consultation Summary Appendix E - Risks and Contingencies Appendix H - Expected Cost of Closure and Reclamation Appendix I - ICRP Terms of Reference Appendix J - Plain English Summary

Working Group members were given four weeks to familiarize themselves with the document. Following the familiarization phase, each of the working group sections underwent a similar review process that consisted of:

- a comment period from reviewers
- a response period from the company
- a working group meeting to discuss the particular section of the document
- a verification period where reviewers submitted written comments verifying whether or not BHPB's responses during the meeting satisfied their concerns
- a section advisory document was prepared by Board staff after each meeting to keep the Board members informed of recommendations from the working group and any outstanding issues, which will be used in their final deliberations on the approval of the ICRP

After all of the four sections of the ICRP (as broken down in the above table) were reviewed, BHPB were given five months to revise their plan. The company submitted the '*Final ICRP Working Draft*' on December 12th, 2008. Parties submitted comments on BHPB's submission, the company responded, and the '*Final Working Group Meeting*' was held on February 3rd, 2009 to discuss any outstanding items from previous working group meetings as well as any items identified during the final review of BHPB's revised ICRP.

Attendees at the Final Working Group Meeting – February 3rd, 2009:

Kathy Racher	Wek'eezhii Land and Water Board (WLWB)
Ryan Fequet	Wek'eezhii Land and Water Board
Sarah True	GNWT-Environment and Natural Resources
Bruce Hanna	Department of Fisheries and Oceans (DFO)
Anne Wilson	Environment Canada (EC)

Jane Fitzgerald	Environment Canada
Nick Lawson	Jacques Whitford (JW)
Steve Wilbur	Jacques Whitford
Lionel Marcincoski	INAC- Environment & Conservation
Jason Brennan	INAC- Operations
Robert Jenkins	INAC-Water Resources Division
Marc Casus	INAC-Water Resources Division
Kevin O-Reilly	Independent Environmental Monitoring Agency (IEMA)
Laura Tyler	BHPB (BHPB)
Helen Butler	BHPB
Marc Wen	Rescan
Kevin Jones	EBA Engineering

Summary of Major Issues Raised During the ICRP Review (2007-2008):

The following issues were the major concerns identified during each of the four section reviews of the ICRP. Some of the following issues have been dealt with by the Board or parties have come to a resolution on how to address it. More detail on a specific issue can be found in the corresponding advisory document.

Advisory Document #1

1. Structure for the closure goal, objectives, criteria
2. Definitions

Advisory Document #2

3. The creation of fish habitat / littoral zones within the pits as a closure and reclamation technique
4. The timing of the Beartooth Pit closure with the completion of closure-related research and the ICRP approval from the WLWB

Advisory Document #3

5. The first concern related to the creation of fish habitat and passage throughout the mine and the use of fish barriers to prevent fish from accessing certain areas
6. The second outstanding issue related to the reclamation research required to ensure measurable criteria are identified as part of the closure process.

Advisory Document #4

7. The first outstanding issue related to the establishment of clear linkages between the research plan and measurable closure objectives and criteria.
8. The second issue was regarding the research tasks to be completed within the Pit Lakes Study.
9. The third issue was regarding the cut-off date for the inclusion of new information into the ICRP.

Summary of Outstanding Issues Following the Final Working Group Meeting in February 2009

The review process described above was designed to allow parties to come to consensus on as many issues as possible through open discussion and negotiation. In this way, a large number of issues were resolved by the parties themselves; however, a few disagreements between parties still exist and it is these that the Board must now address.

The following section outlines the issues that have been identified by reviewers and Board Staff as 'unresolved'. A summary of each issue as well as several practical options have been identified to help the Board in considering how to proceed with each.

1. Using the Beartooth Pit as Minewater Retention Pond

On December 19th, 2008, BHPB submitted the annual update of its Waste Water and Processed Kimberlite Management Plan (WPKMP) as required by their water licence. The update proposed a change to the management of minewater from sumps and underground workings at the EKATI site. The Long Lake Containment Facility (LLCF) currently stores water from these sources, however, the high nitrate and chloride levels have caused BHPB to consider other storage options.

BHPB is proposing to use the Beartooth open pit as storage for these water sources as operations at Beartooth are expected to be complete by the summer of 2009. The Independent Environmental Monitoring Agency (IEMA), Indian and Northern Affairs Canada (INAC), and the Department of Fisheries and Oceans (DFO) are concerned that using the Beartooth pit for storage means that it won't be available as a test pit or for reclamation research until a later date.

An application for BHPB's proposal is currently before the Board and undergoing the WLWB's standard review process. IEMA and BHPB have both suggested wording in the current version of the ICRP that will allow the ICRP review process to continue without being held up by the Board's decision on the WPKMP.

The suggested wording would be similar to: *"the use of Beartooth for minewater storage and the resulting change of timing of Beartooth Pit reclamation are dependent on the approval of the WPKMP by the WLWB."*

Option #1 – The Board accept the proposed wording changes to the ICRP from BHPB and IEMA, which will be incorporated into this version of the ICRP and address the WPKMP issue separately within the WLWB's standard review process.

Option #2 – The Board make a ruling on BHPB's request regarding the use of the Beartooth Pit prior to the public hearing and direct the company to update the ICRP to incorporate the Board's decision.

Option #3 – Other direction as provided by the Board.

2. Road Decommissioning and Related Reclamation Research

IEMA is concerned that there is currently no classification of roads or specific timelines for the decommissioning of certain sections of roads. They agree that more detailed work is acceptable to leave until the next revision of the ICRP, however, they would like conceptual plans regarding berm treatment, grades, stream crossings, scarification, and revegetation included in this version of the ICRP.

Option #1 – The Board require BHPB to include the requested information in this version of the ICRP prior to a public hearing.

Option #2 – The Board require BHPB to include the requested information in this version of the ICRP following the public hearing.

Option #3 – The Board request additional information from IEMA in a paper submission prior to the public hearing on why inclusion of this information is necessary in this version of the ICRP rather than the next.

Option #4 – The Board require BHP Billiton to include the requested information in the next update of the ICRP which will be in approximately 3-5 years (time until next update is due is still TBD by Board).

Option #5 – Other direction as provided by the Board.

3. Industrial Standard for Hydrocarbon and Soil Remediation

BHPB has stated in its ICRP that soil remediation for hydrocarbon contaminated areas will be carried out to an “Industrial Standard”. GNWT – Environment and Natural Resources (ENR), IEMA and INAC have all requested that BHPB remediate these areas to the Residential/Parkland Standard.

BHPB wasn't opposed to this idea when it was raised and committed to do some research into what it would mean for the company to work towards a 'Residential/Parkland standard'. They also wanted to look into past and current practices as well as look at what is done at other sites. This issue was raised during the review of the Final Working Group Meeting and so is fairly recent in nature.

Option #1 – The Board require BHPB to include this information in this version of the ICRP prior to the public hearing.

Option #2 – The Board require BHPB to include this information in this version of the ICRP following the public hearing.

Option #3 – The Board require BHP Billiton to include this information in the next update of the ICRP which will be in approximately 3-5 years (time until next update is due is still TBD by Board).

Option #4 – Other direction as provided by the Board.

4. Component-Specific Wildlife Objectives and Criteria

The most crucial part to building consensus on how a mine will be reclaimed for closure is determining the objectives – what we want to achieve – for each of the valued ecosystem components (VECs); air, land, water, wildlife, and community. This work needs to be done in consultation with the appropriate parties because this is where everyone has the

opportunity to offer their suggestions and opinions on what they believe is the best way to achieve the overall closure goal of the company.

In BHP Billiton's case, their reclamation goal is to *"return the EKATI site where viable, and wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment, human activities, and the surrounding environment."*

BHPB has done significant work in developing objectives and criteria from the working group meetings over the last two years that will continue to be refined within each future version of the ICRP. The document currently under review is only the second version of the ICRP and will be followed by several updates, as well as a Final Closure and Reclamation Plan (FCRP) to be submitted at least two years before the mine finishes operations. As mentioned above, determining the objectives is crucial and needs to be determined upfront. The process of identifying measurable criteria – that is, how we know the objectives have been achieved – follows after the objectives have been determined and is just as important of a step. However, it is understood that the criteria will continue to be refined as research uncovers certain closure options and further uncertainties.

IEMA is concerned that the closure objectives and criteria that BHPB has selected for 'wildlife' (one of the Valued Ecosystem Components) aren't detailed enough for each mine component. The Board will have to decide how refined the closure objectives and criteria should be in this version of the ICRP.

Option #1 – The Board approve the ICRP as it stands now, understanding that the company has committed to refining their closure objectives and criteria in future updates of the ICRP.

Option #2 – The Board direct BHPB to invite IEMA and other interested members of the working group to refine the closure objectives for "Wildlife" and submit these proposed objectives prior to the public hearing so they considered by the Board .

Option #3 – The Board wait to hear evidence on this matter at a public hearing.

Option #4 - Other direction as provided by the Board.

5. Reclamation Research Plan and Engineering Studies Structure & Content

Following the Final Working Group meeting on February 3rd, parties interested in discussing the reclamation research plans in more detail were invited to participate in a session on February 4th, 2009. Several parties including the Independent Environmental Monitoring Agency (IEMA), the Board's consultant (Steve Wilbur from Jacques Whitford), BHPB and the WLWB were in attendance. The discussion resulted in some proposed changes to the format of the reclamation research plan which will also apply to the engineering studies, as well as suggestions on how to proceed with the remainder of the process.

IEMA has two issues that it considers extremely important: vegetation cover on the Processed Kimberlite Containment Area and the stabilization of Extra Fine Processed Kimberlite in the Long-lake Containment Facility . BHPB has agreed to modify the

research plans that address these two issues (#14 & #16) prior to a public hearing so parties can comment on them in their interventions. This will provide an opportunity for the company to receive constructive suggestions from reviewers and direction from the Board before they go back and modify the other 24 reclamation research plans (RRPs).

Option #1 – The Board direct BHPB to modify all of its 26 research plans according to the proposed format prior to the public hearing. This will take a significant amount of time so the public hearing would have to be rescheduled for several months down the road.

Option #2 – The Board direct BHPB to modify Reclamation Research Plan #14 and #16 prior to the intervention deadline. This will allow reviewers a chance to see the proposed level of detail that the remainder of the plans will be completed to following the public hearing.

Option #3 – Other direction as provided by the Board.

6. Reclamation of the Open Pits - Fish in the Pit Lakes and Cell E & Fish Barriers

This issue is extremely contentious because there has been significant change in BHPB's original intentions with regards to the reclamation of the open pits (as approved in the 2001 version of their ICRP) and their intentions as described in the January 2007 submission, and most recently in the Final DRAFT ICRP submitted in December 2008.

BHPB's original intent was that: "As each pit is closed, a productive post-closure pit lake will be developed if possible in accordance with the Guidelines for Abandonment and Restoration Planning for Mines in the Northwest Territories (DIAND, 1990). The upper walls of the pits will be modified and the pit will be allowed to flood. Select areas of the pit lip will be sloped back at a shallow angle to form beach areas. The drop off to the first bench will occur at approximately 5 m of water depth. Waste rock will be used to form steep rocky slopes extending from the littoral zone down to the first bench. The constructed littoral zone will include esker material and crushed granite and boulders, for wave breaks, as well as fish refuge and spawning areas." (from section 4.2.1. of BHPB's ICRP, submitted June 2001 and approved by the MVLWB in May 2002).

From the above quote, it is clear that BHPB had planned on creating some amount of self-sustaining aquatic ecosystem within the pit lakes following mine closure. This strategy was stated in several subsequent documents including their 2001 submission to MVEIRB for the Sable, Pigeon, Beartooth Environmental Assessment, their revised ICRP submission to the MVLWB in 2003, and in the Terms of Reference for Pit Lakes Studies as submitted in October 2004 and approved by the MVLWB in 2005.

In the January 2007 version of the ICRP, BHPB had changed its mind on how to leave the pit lakes following closure. This is summarized in a quote from the January 2007 plan for closure of the Open Pits: "The closure plan for all the open pits at EKATI is to pump flood with water from selected source lakes on the claim block. As each pit is closed, the open pit will be flooded to create post closure pit lakes. The pit lakes will differ from natural lakes because they will be deep relative to their surface area.

... The pit lakes will have steep high walls remaining around some of the pit lake perimeter which will provide raptor nesting locations, while other areas of the lake edge will be sloped back to allow wildlife access and/or egress. Beach areas that are able to support riparian habitat will be encouraged through stabilization work and some plant seeding if required. Fish passage or habitat will not be constructed in the pit lakes, and a fish access will be prevented by the use of fish barriers. An engineered water outlet structure will be in place to allow discharge of water from each of the pit lakes...”

Essentially, the 2007 version of the ICRP has BHPB filling each pit with water and then doing the work necessary to ensure the areas would be safe for humans and wildlife. The 2007 ICRP contains no plans to create an aquatic ecosystem in the pit lakes and instead recommends that fish access to the pit lakes be blocked. This is a large departure from the reclamation strategy for the open pits as approved by the MVLWB in the 2001 Interim Closure and Reclamation Plan.

Review comments on current final draft of the ICRP

During the review of the current ICRP, several reviewers have asked BHPB to re-consider the development of shallow zones or littoral zones along the pit edges to promote the restoration of the aquatic ecosystem in the pit lakes. BHPB believes that reviewers are asking them to restore fish habitat in the pit lakes and has taken the position that they do not have to do that since they have already paid financial compensation to the Department of Fisheries and Oceans (DFO) for the destruction of fish habitat in the original lakes. BHPB and DFO have been attempting to resolve this issue through a formal agreement. They currently have an agreement-in-principle which gave BHPB the impetus to state, in their final draft ICRP (submitted in December 2008), that they would construct “shallow zones” at the edges of the pits that could be used by parties such as DFO to attempt to re-create fish habitat in the pit lakes. Nonetheless, neither DFO nor IEMA is satisfied with BHPB’s commitments in this last draft of the ICRP (please see attached comments).

IEMA’s current position is as follows:

“This issue is currently unresolved. The Agency recommends that the closure approach for pits include a statement that the fish barriers would be temporarily used during pump flooding and then removed when water quality was safe for fish passage, and that there will be shallow zones established around the pit perimeters. This would be consistent with the overall site closure goal.” IEMA goes on to recommend the following two closure objectives (and closure criteria) for the Open Pits:

1. Objective: “Pit Lakes are safe for fish passage”
Closure Criteria: “Pit Lake water quality and flow is of sufficient quality and quantity that fish can freely and safely pass into and out of these water bodies. No fish mortalities due to water quality or quantity.”
2. Objective: “Creation of shallow zones around the pit lakes edges to facilitate a self-sustaining ecosystem.”

Closure Criteria:” Shallow zones that will support riparian life and have the potential to serve as fish habitat (to be designed in cooperation with DFO). Legal liability for this fish habitat should not accrue to BHPB, in accordance with an anticipated legal agreement between DFO and BHPB.”

DFO’s current position is as follows:

“This issue remains unresolved. DFO will be satisfied if shallow zones are created in the pit lakes, vegetation is established in these areas, and fish barriers are designed to be temporary and will be removed by BHPB once water quality criteria have been met. DFO and BHPB will meet on March 6, 2009 to attempt to finalize a definitive agreement that is acceptable to both parties. DFO looks forward to working with BHPB and all members of the ICRP Working Group to determine what exactly the shallow zones should look like.”

Lutsel’Ke Dene First Nation’s current position is as follows:

“There is a need to return the pit lakes and Cell E to a self sustaining area for fish habitat since such a large area is now disturbed for fish as well as for other wildlife in the vicinity.”

Unfortunately, no other community organizations have commented on this final draft ICRP.

The Board will need to decide on how to address the issue of reclamation of the pit lakes.

Option #1 – The Board approve the ICRP as it stands now – without a commitment from BHPB to create aquatic ecosystems within the pit lakes. Board Staff would recommend hearing from all parties in a formal public hearing before making such a decision.

Option #2 - The Board wait for BHPB and DFO to work out an agreement that would detail how the two parties would work together to create fish habitat in the pit lakes after closure. The agreement could be used as suggested by IEMA (above) to make one of the closure objectives be a self-sustaining ecosystem in the pit lakes. However, it is not currently clear to Board Staff how such an agreement, made privately between two parties, would be used in a Board-approved document such as the ICRP. More information would have to be gathered for this possibility.

Option #3 - The Board direct BHPB to restore the aquatic ecosystem in the pit lakes to a certain standard. Board Staff recommend hearing from all parties in a formal public hearing before making such a decision.

Option #4 - The Board request additional information from parties in paper submissions. This information could be summarized and presented to the Board prior to either a public hearing or to making a ruling on this matter.

Option #5 – Other direction as provided by the Board.

7. Conformity Check with the ICRP Terms of Reference (ToR)

An internal conformance check was conducted which compared the approved September 2006 Terms of Reference (ToR) to the December 2008 Final Draft ICRP (please see attached table).

Almost all areas in the ToR have been addressed, many under a new section heading and sometimes in a different order. However, under the Environmental Assessment section,

there are three areas which appear not to be addressed in the December 2008 version of the ICRP:

1. Section 8.2 – Predictive Water Quality Modelling
2. Section 8.5 – Other Resource Users
3. Section 8.6 – Environmental Impacts

The direction and content of the ICRP has changed substantially during the review over the last several years, so there may be an explanation as to why these sections weren't explicitly discussed or easy to locate within the revised document.

Recommendation #1 – The Board direct BHPB to explain either: where in the document they are currently located and discussed in detail; where in the document they intend to include these discussions; or if they have decided not to include them intentionally, the rationale for doing so.

8. How to Proceed with the Next Revisions Required in the ICRP

This issue was raised by many reviewers and relates to the process moving forward for the next revisions that BHPB must make to this version of the ICRP. Many of the outstanding issues listed above are linked to one another and the result of choosing one option for a specific issue may affect how other issues will be addressed. This in turn may affect how the process moves forward.

According to the original Terms of Reference approved by the Board, at this stage of the Working Group process BHPB is required to submit a 'Final Draft ICRP' within eight weeks of this document being approved. This Final Draft ICRP will contain all of the revisions and commitments made throughout the review of each of the four sections of the ICRP, the working group meetings themselves, and during any additional meetings where the company and reviewers met to discuss specific topics.

Several reviewers believe that BHPB should make all of the revisions committed to prior to a public hearing, while some are neutral, and others believe that as long as they commitments are documented, they can be included in revisions after the hearing or in future updates of the ICRP.

Option #1 – The Board direct BHPB to incorporate all changes that they've committed to thus far in their current ICRP prior to a public hearing. This will provide reviewers and the Board with a document that contains all of the commitments from the company. BHPB will have to be given time to modify its ICRP which may take several months before a public hearing can proceed.

Option #2 – The Board direct BHPB to submit a list of all the changes that they have committed to that still need to be incorporated into the ICRP as well as modify Reclamation Research Plan #14 and #16 prior to a public hearing. The Board would then provide direction to the company following the public hearing on all the revisions that should be incorporated immediately, and the revisions that can wait until the next revision of the plan in approximately 3-5 years (time until next ICRP update still to be determined).

BHPB would modify their document accordingly and submit it in a time period determined by Board Staff and the company:

- a) for Board Staff to complete an internal conformity check to ensure that BHPB has made all of the changes agreed to by the Board and reviewers, or
- b) for Board Staff to circulate BHP's submission to reviewers to conduct a conformity check to ensure that BHPB has made all of the changes agreed to by the Board and reviewers. Reviewers would not be allowed to make new comments, only comment on the status of whether BHPB's commitments regarding their issues have been fulfilled.

Option #3 – The Board document all of the changes that are still outstanding and require BHPB to incorporate them in the next revision of the ICRP, which is expected to be in approximately 3-5 years (time until next ICRP update still to be determined).

Overall Recommendations:

1. The Board select one of the options presented to address outstanding issues # 1-6, & 8 as presented in the "Summary of Outstanding Issues Following the Final Working Group Meeting" section.
2. The Board allow Board Staff to determine an appropriate date to reschedule the public hearing based on the options selected above.
3. The Board accept the proposed Reclamation Research Plan outline as modified on February 4, 2009. Board Staff are confident that this format will satisfy the concerns of Working Group members and make for a much more robust ICRP.
4. The Board accept the recommendation to address Outstanding Issue #7 (Conformity Check with the ICRP Terms of Reference)
5. The Board should provide guidance in the future to BHPB on how to report on reclamation activities and research in their annual reports.

Attachments:

- BHPB's Final Draft ICRP, submitted December 12, 2008 (on CD)
- Advisory Documents from Section 1, 2, 3, 4
- WLWB Verification Comment Summary Table (on CD)
- Verification Letters from IEMA, INAC, DFO, ENR, LKDFN, JW
- Conformance Check Table –2006 Terms of Reference to 2008 Final Draft ICRP
- Letter from WLWB, dated February 4, 2009, with the proposed format for the Reclamation Research Plan and Engineering Studies sections
- DFO & BHPB DRAFT Agreement In Principle (AIP)

Respectfully submitted,



Kathleen Racher, PhD.
Regulatory Director



Zabey Nevitt
Executive Director



Ryan Fequet, B.Sc.
Regulatory Specialist