



INDEPENDENT ENVIRONMENTAL MONITORING AGENCY

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**BUILDING CONSENSUS:
TOWARDS A SHARED UNDERSTANDING
ON THE EKATI ENVIRONMENTAL IMPACT REPORT**

**A Discussion Paper from the
Independent Environmental Monitoring Agency**

January 2011

1.0 Introduction

The purpose of this discussion paper is to help build a consensus amongst the interested parties, including Aboriginal governments and communities, public governments and regulators, BHP Billiton (BHPB) and the Independent Environmental Monitoring Agency (IEMA or the “Agency”) around the process and substance of the Environmental Impact Report (EIR). The EIR is to be generated every three years by BHPB and is to serve as one of the major public record on the environmental performance and adaptive management at Canada’s first diamond mine.

2.0 Environmental Agreement Requirements for the Environmental Impact Report

The following requirements for the EIR are laid out in the 1997 Environmental Agreement:

- EIR Report to be accompanied by a **plain English summary** (5.2(a));
- EIR Report shall report on:
 - **longer term effects** of the Project (5.2(a));
 - **results** of the environmental monitoring programs (5.2(a));
 - **actual performance** of the Project **in comparison to the results predicted** in the Environmental Impact Statement (5.2(a));
 - **evaluation of how BHPB’s adaptive environmental management** has performed to the date of such report (5.2(a));
 - **summary of operational activities** during the reporting period (5.2(a)(i));
 - **actions taken or planned to address impacts or compliance programs** which are set out in the EIR (5.2(a)(ii));
 - summary of operational activities for the next reporting period (5.2(a)(iii)); and
 - **list and abstracts of all Environmental Plans and Programs** (5.2(a)(iv)).
- BHPB shall **consult with representatives of DIAND, GNWT and the Agency as BHPB compiles the information and data to be included in such EIR** to ensure an opportunity for **early disclosure and discussion** and that each EIR meets the requirements of the Environmental Agreement (5.2(b)); and
- BHPB shall make each EIR **available to the public** and shall arrange **public meetings** to review and discuss each EIR (5.3). [**emphasis added**]

While the requirements may appear clear, the last two EIRs have resulted in Minister’s Reports whereby they were judged to be unsatisfactory due to the process followed by BHPB and/or the substance of the documents. If it is possible to reach some measure of consensus and clarity on expectations around process and substance, it should be possible to avoid future misunderstandings and delays.

3.0 Experience with the EIRs

Appendix 1 summarizes the process for each of the four EIRs submitted to date. The first EIR was submitted by BHP (since changed to BHPB Canada) in 2000 following three years of operating experience and an even longer period of environmental monitoring that dates back to the mid-1990s when an environmental baseline was being established in anticipation of the mine.

The 2000 and 2003 EIRs were deemed satisfactory. The 2006 and 2009 EIRs resulted in Minister's Reports under the Environmental Agreement. That is, they were found to be less than sufficient and needed further effort to fix identified problems. The meetings following the Minister's Report on the 2009 EIR were especially helpful in identifying a number of procedural and substantive issues. The Agency was pleased to report progress at these sessions. The commitments made by BHPB to consultation before the next EIR and to a more transparent methodology with acknowledgement of uncertainties, have resolved many of the issues that were the cause of the latest Minister's Report. What remained after the meetings, was largely a disagreement over what the focus of the EIR should be and how BHPB ranks or rates residual effects from its mine in the EIR and elsewhere. The purpose of this discussion paper is to try to reach some further consensus on these two items in particular, before the next EIR in 2012.

The Agency's concerns with the substance of the EIRs is found in section 4 of this discussion paper below. In reviewing past processes for the EIRs, we would suggest BHPB should find ways to ensure more timely submission of the document with the technical and plain language versions submitted at the same time, and on time. The Agency would be pleased to suggest some plain language resources and consultants who may be able to assist. In addition, INAC has recently failed to meet the deadlines set out in the Environmental Agreement for its determination on the adequacy of the last EIR as well as the 2009 Annual Report.

In reviewing the experience with past EIR's the Agency has noted that there is no systematic tracking of EIR comments, responses and any follow-up on Minister's decisions.

Based on the above procedural observations, the Agency offers the following recommendations on the EIR process:

- BHPB should consult with the INAC, GNWT, Aboriginal governments and the Agency in advance of preparation and distribution of each EIR to discuss focus and preliminary findings. (Note that the consultation with INAC, GNWT and the Agency are required by the Environmental Agreement. We suggest that including the Aboriginal Governments would be helpful, as they are explicitly to be included in dissemination of the EIR.)
- BHPB should submit its EIR on time and with the plain language summary. The plain language summary should reflect what is in the full EIR.
- INAC should have a consistent process for soliciting comments on the EIR and making decisions on its adequacy, all within the timeframes set out in the Environmental Agreement.
- INAC should have a systematic tracking of EIR comments, responses and Minister's decisions by INAC, BHPB, GNWT and the Agency.

4.0 Substantive Issues

This section of the discussion paper covers the Agency's views on the focus and content of the EIRs. While the Environmental Agreement provides some guidance, the experience and lessons learned from monitoring and management of the Ekati Mine should help direct what is covered in the EIRs and how.

4.1 Focus on Most Important Issues of the Day

As required by the Environmental Agreement, the EIRs should deal with:

- (1) longer term effects;
- (2) results of monitoring programs;
- (3) actual versus predicted effects; and
- (4) an evaluation of BHPB's adaptive management systems.

The Environmental Agreement is silent on what priority should be given, if any, to these four areas. It is the Agency's view that the focus of the EIR should be what is important for managing the Mine at the time the EIR is prepared. The EIRs should allow for and encourage periodic readjustments to adaptive management and should focus on what is significant to prevent or avoid future potentially significant impacts.

In the earlier EIRs, it was important to understand if the predicted effects were taking place, as shown by monitoring and effective application of mitigative measures. The relevance of many EIS predictions has been surpassed based on current insights and knowledge from monitoring and some potentially significant unpredicted effects.

Two examples may help shed further light on this point. Predictions of water quality downstream from the LLCFF made in the original EIS are not of much use today as there are extensive monitoring results and the LLCFF water quality modeling. Both of which provide a better understanding of this issue than does the 1995 EIS. However, changing water quality downstream is very important in managing the Mine during the rest of its life and into closure. This should certainly be a focus of the EIR. Similarly, the EIS did not predict a zone of influence around the mine site where caribou are less likely to be found. BHPB's monitoring and management of Mine effects on caribou should be discussed in the EIR as a priority relying much more on understanding developed since 1995.

The Agency is of the view that BHPB should turn its focus of the EIR from actual versus predicted effects to the longer term effects and its adaptive management systems, particularly as the Mine moves closer to closure and reclamation. With over 15 years of monitoring, changes in conditions from baseline that are caused by or contributed to by the Mine. Trend analysis is now being done and is encouraged by the Agency. Predictions into the future based on monitoring results and recently created models would also be helpful in determining whether effects are likely to reach some critical thresholds, and should trigger management responses. These are matters that should become the focus of the EIR.

The Agency suggests the following focus for the 2012 EIR, in order of priority;

1. longer term effects,
2. an evaluation of BHPB's adaptive management systems,
3. results of monitoring programs, and
4. actual vs. predicted effects.

4.2 Adaptive Environmental Management

BHPB's Ekati Mine was approved on the basis of its adaptive management strategy as noted in the preamble to the 1997 Environmental Agreement:

AND WHEREAS BHP proposes to conduct adaptive environmental management to minimize the environmental impact of the Project and in connection therewith it is necessary and appropriate to ensure that research and monitoring with respect to the effects of the Project (including, without limitation, pit groundwater, water quality, lake biology, wildlife, wildlife habitat, stream biology, hydrology, reclamation, vegetation, permafrost, climate, ambient air quality, stationary emission sources and the cumulative effects of the Project with respect to all of these) be carried out throughout the term of the Project;

In the Agency's view, adaptive environmental management consists of purposefully determining the effectiveness of environmental management in the face of recognised uncertainty concerning the outcomes of management practices. In the context of the Ekati mine and other projects subject to impact assessment, this is likely to involve uncertain impacts or uncertainty regarding mitigation measures.

Adaptive environmental management involves:

1. proactively establishing monitoring programs to determine the (uncertain) consequences of one or more management strategy(ies);
2. analysing the results of the monitoring programs to reduce the underlying uncertainty and to determine the effectiveness of the management strategy(ies) and to predict unforeseen effects;
3. adaptation of the management strategy(ies) as appropriate. This adaptation may well involve further investigation to increase the probability that any new management strategy adopted will improve the result.

In the context of Ekati, adaptive environmental management usually involves monitoring programs targeted at environmental impacts. When these monitoring programs and the resulting analysis show less than desirable environmental effects, BHPB has either changed the relevant management strategy or carried out further investigations to better understand the system and then changed the management strategy based on the better understanding.

Only cases that involve monitoring, analysis of results and subsequent change of management should be listed as adaptive environmental management. There are many such successes.

Several good examples of adaptive management were presented in the EIR 2009 text and summarized in accompanying tables. These are a considerable strength of environmental

management at Ekati as documented by the company and in earlier correspondence. There were also many examples of mitigative measures and environmental policies that are clearly not adaptive management as defined by BHPB as discussed in the Agency's October 14, 2009 letter to BHPB. Effective management of project effects is not necessarily adaptive management if the mitigative measures simply reflect best practices. We encourage BHPB to make a clear distinction between adaptive management (monitoring programs attempting to fill information gaps and hence leading to suitable management adaptations) and implementation of best practices.

While examples of adaptive management decisions and outcomes are important in the EIR, the Environmental Agreement also requires an evaluation of BHPB's adaptive management. We would suggest a more systematic approach using the three points above as a basis for a review of the systems in place for the Ekati Mine. We have urged BHPB to use its own internal environmental and management audits as an example of adaptive management. Highlights and more details of these efforts would go a long way towards the evaluation of BHPB's adaptive management.

4.3 Effects Significance

One of the major areas of disagreement with previous EIRs has been on the significance ratings or rankings assigned to Mine effects or impacts. BHPB agreed to provide clearer definitions of its terminology and the methods it used to determine significance in closing out its 2009 EIR and with future EIRs. We agree that this is helpful. However, part of the problem here is the original rating system adopted by BHPB in its EIS. That significance rating system uses non-exclusive ratings (overlapping) that are also not based on quantitative measurements. Simply put, it is difficult if not impossible to properly rate a residual effect against this system, and thus the differences in view on the significance of the residual effects. For the Agency, the guiding principle is that the impacts should be the difference between what is now and what would have been without the project with a focus on avoidance and prevention.

Effects significance ratings should be based on trends, not just the last three-year reporting period. In many cases, BHPB now has over 15 years of monitoring data for which trend analysis is often possible. Indeed, trend analysis is now used in AEMP reporting, for example. Effects needs to be considered as the change from the baseline conditions that can be attributed to the Mine, with a view to trends into the future without further mitigation or management. Unpredicted effects also need to be included in any assessment, not just those predicted in the original EIS.

BHPB has also agreed that the methodology behind the rankings and ratings of the effects on the Valued Ecosystem Components (VECs) should be made more explicit and provided with the EIR. Some reviewers have felt that BHPB has underestimated effects. There is a need to better document and present the limitations of its ratings, areas and ranges of uncertainty, and where further research or monitoring is underway to provide greater clarity whether by BHPB or others. It would be far more appropriate to indicate that the residual effects are uncertain or unknown until appropriate studies and research are concluded.

5.0 Summary and Recommendations

The Agency views the EIRs as a very important management tool for the Ekati Mine where periodic review and evaluation of trends, impacts, mitigation and management responses can be discussed and improved. We are also of the view that INAC, GNWT and the Aboriginal Governments are similarly inclined to commit time and effort to work with BHPB to create excellent EIRs.

The following recommendations will hopefully improve the process and substance of future EIRs:

1. BHPB should consult with the INAC, GNWT, Aboriginal governments and the Agency in advance of detailed preparation and distribution of each EIR to discuss focus and preliminary findings.
2. BHPB should turn its focus of the EIR from actual versus predicted effects to the longer term effects and its adaptive management systems, particularly as the Mine moves closer to closure and reclamation.
3. BHPB is encouraged to make a clear distinction between adaptive management and implementation of best practices. Adaptive management examples should be based on monitoring programs attempting to fill information gaps and hence leading to suitable management adaptations.
4. An evaluation of BHPB's adaptive management should move beyond presenting examples to a more systematic approach that included details and highlights of its own internal environmental audits.
5. Effects significance ratings should be supported by clear definitions and a methodology that is sound and focuses on what is important and avoidance. There is a need to better document and present the limitations of its ratings, areas and ranges of uncertainty, and where further research or monitoring is underway to provide greater clarity whether by BHPB or others.
6. Effects should be considered as the change from the baseline conditions that can be attributed to the Mine, with a view to trends into the future without further mitigation or management.
7. BHPB needs to submit its EIR on time and with the plain language summary. The plain language summary should reflect what is in the full EIR.
8. INAC, BHPB, GNWT and the Agency should systematically track EIR comments, responses and Minister's decisions.

9. INAC needs to have a consistent process for soliciting comments on the EIR and making decisions on its adequacy, all within the timeframes set out in the Environmental Agreement.

The Agency welcomes comments and suggestion on this discussion paper, but more importantly, a workshop to discuss the purpose and focus of future EIRs. We would be pleased to host or co-sponsor such an event with BHPB. We can be contacted as follows:

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Appendix 1. Summary of Ekati EIR Process Results

Building Consensus: Towards a Shared Understanding of the Ekati EIR

EIR	Agency Comments	Other Comments	Minister's Decision	Follow-Up
<p>2000 (received by Agency May 2, 2000)</p>	<ul style="list-style-type: none"> • Aug. 5/99 Letter from Agency on combining the EIR and Annual Report under the water licence, and advice on EIR content. No objection to combining, note focus of EIR is on the longer term. Need to cover predicted and unpredicted impacts. BHP's major effect category only includes Kodiak Lake but nutrient enrichment also taking place farther downstream. There should be a substantial section on adaptive management. Results could be disseminated widely as a good example of follow-up. • Nov. 10/99 Letter from Agency on EIR Framework. Scope should cover entire claims block and all related activities. Concern over using CSA significance criteria rather than those used in EIS. BHP should evaluate effects against baseline conditions. Changes to VECs should be carefully considered and justified. Unpredicted effects and substantive discussion of adaptive management should be included. Use of TK in identifying environmental changes and management responses should be explained. Updates on the research under the Environmental Agreement should be included. Future activities should include exploration. Lessons learned (including internal audits) and implications of emerging trends should be discussed. Efforts on EIR consultation should be included. A draft EIR should be circulated for review. • July 14/00 Letter from Agency on EIR. Report did not identify emerging environmental trends at site. No discussion of increasing downstream nutrients and metals or of low pH results near waste rock piles, none of which were predicted in the EIS. Residual impacts analysis not completes as findings use end of mine life predictions after mitigation and not current results. Monitoring data do not support the conclusions drawn. 	<ul style="list-style-type: none"> • Aug. 22/00 Federal comment letter. EIR acceptable. Good examples of adaptive management provided. Conclusions should be clarified and in some cases, not supported by data. No observations to support gyrfalcons at site overwinter. No explanation of why LLCF Cell A is not being used and implications for tailings management. Vegetation metal uptake conclusions need to be clarified. Grizzly Lake considered an 'affected lake' but no reasons given. Loss of stream flow from dewatering should be calculated based on data. Need to monitor calcium levels closely. Copper levels elevated but no explanation provided. Suggestion that pH discharge limits in water licence might need to be adjusted higher requires further information as to the cause of acidic seepages. This should also be included as an unpredicted impact. Other unpredicted impacts not included (possible loss of age class for Kodiak Lake due to low oxygen and nitrate levels in Grizzly Lake due to blasting). • If sent, GNWT or other comment letters not on file. 	<ul style="list-style-type: none"> • Sept. 22/00 Letter from Minister to Agency. EIR determined to be satisfactory. Expectation that BHP staff will fully address comments received. 	<ul style="list-style-type: none"> • No formal response from BHP on file.
<p>2003 (received by Agency on April 29, 2003)</p>	<ul style="list-style-type: none"> • Mar. 3/03 Agency comment letter on a draft table of contents for 2003 EIR. Company should provide a consultation strategy for the full EIR. Agency prepared to host a workshop on scoping the EIR (to help identify trends and priorities). A draft report should be circulated. EIR should focus on trends, effects vs. predictions including unpredicted effects, all with adequate definitions and descriptions. • No record of other Agency comments on 2003 EIR. 	<ul style="list-style-type: none"> • No comment letters on file. 	<ul style="list-style-type: none"> • No decision from the Minister on file. 	

Building Consensus: Towards a Shared Understanding of the Ekati EIR

EIR	Agency Comments	Other Comments	Minister's Decision	Follow-Up
<p>2006 (received by Agency end of April 2006, DIAND received EIR with plain language summary on July 11, 2006)</p>	<ul style="list-style-type: none"> • Sept. 26/05 Agency comment letter on format and content of 2006 EIR. Environmental Agreement requirements for the EIR summarized including focus and consultation. Agency hosted a successful scoping session for the 2003 EIR and it was suggested that this process be repeated. Further advice offered on consultation to ensure a good report and suggested that AEMP, caribou monitoring, and LLCF operational improvements be included. • June 23/06 Agency comment letter on 2006 EIR. Confusion between best practices and adaptive management. Better explanation needed on use of TK and mine effects on downstream zooplankton. Assessment of residual effects against EIS predictions is not accurate and not supported by monitoring data and its limitations. Inaccurate examples of monitoring and limited description of reclamation research. Improvements or changes as a result of environmental audits would have been very helpful. Conclusion on compliance with ambient air quality standards is erroneously drawn from snow and lichen sampling. Significance ratings are flawed and many conclusions are unsupported by the monitoring data. Positive residual effects are in at least two cases (permafrost development in waste rock piles and progressive reclamation) are flawed. 	<ul style="list-style-type: none"> • June 26/06 Memo from DIAND Water Resources. Management responses to increasing contaminant levels downstream of the mine should be provided. More information on permafrost disturbance, discharge exceedences and nitrate remediation should be in the report. The significance of the studies referenced in the report should be better highlighted. Predictions consistent with current trends would have been helpful regarding underground mine water and LLCF discharges. Descriptions of risk factors are misleading or unjustified. • Undated (July ?, 2006) Letter from GNWT to DIAND. GNWT finds the 2006 EIR unsatisfactory. EIR conclusions are unsubstantiated. EIR should reflect the views of all the stakeholders and must identify areas of uncertainty. A draft of the report should have been circulated. Similar concerns were brought forward in 2003 and the hope was to resolve them collaboratively. EIR sections on air quality contained inaccuracies, questionable analysis and unsubstantiated conclusions. Detailed comments provided on all aspects of BHPB's air quality monitoring. Wildlife section of the EIR contains numerous erroneous and/or substantiated conclusions. Wildlife incidents are not reported. Detailed comments provided on birds, caribou, bears, wolverines, wolves, foxes, and other species. Concern expressed over the amount of hydrocarbons making their way into the LLCF and possibly downstream. Permafrost in waste rock piles is not a positive residual effect. Previous permafrost studies are not detailed and it is unclear how TK may have played a role. 	<ul style="list-style-type: none"> • Aug. 14/06 Minister's Report issued based on GNWT comments. 	<ul style="list-style-type: none"> • Oct. 16/06 Letter from BHPB to DIAND. Two source documents for the EIR on CALPUFF modeling and the 2005 AQMP report should be submitted by the end of October 2006. BHPB continues to stand behind the conclusions in the 2006 EIR. BHPB remains open to further discussions and meetings. • Many concerns appear to have been resolved through meetings and commitments by BHPB to improve air quality monitoring and future EIR consultations.

Building Consensus: Towards a Shared Understanding of the Ekati EIR

EIR	Agency Comments	Other Comments	Minister's Decision	Follow-Up
<p>2009 (received by Agency on May 4, 2009; plain language summary received by DIAND on Sept. 1, 2009)</p>	<ul style="list-style-type: none"> Oct. 14/09 Comment letter from the Agency. EIR is not satisfactory. Many concerns are the same as those raised with the 2006 EIR. Most significant effects (downstream aquatic contamination and caribou avoidance) are not identified. Significance ratings often are not supported by monitoring data. No consultation with the Agency or others prior to submission of the EIR. EIR does not focus on important trends. Confusion between best practices and adaptive management. Flawed examples of positive residual effects continue to appear in the EIR. Role of TK in adaptive management at site not clear. 	<ul style="list-style-type: none"> Oct. 20/09 Comment letter from GNWT. EIR technical sessions should be held before report is finalized and distributed. Expect to see further improvements in wildlife and air quality monitoring as a result of other ongoing processes. Future research needs to be clarified. Wolverine findings should be corrected. The Fay Lake spill and remediation efforts should have been included. Oct. 27/09 Comment letter from YKFDN. Significance ratings are not done properly and often underplay the actual effects. Conclusions not supported by the monitoring data. Monitoring data should be used to identify trends and significance. Cumulative effects not considered. Concern over whether the mine might be generating toxic long-lasting contaminants. Oct. 15/09 E-mail from DFO. CCME or water licence EQC exceedences and trends related to unpredicted effects, should all be explained in the EIR. 	<ul style="list-style-type: none"> Jan. 13/10 Minister's Report issued based on IEMA comments [note that this letter was almost six weeks overdue]. May 21/10 DIAND letter to BHPB stating EIR is now satisfactory based on additional reports and commitment to better consultation prior to 2012 EIR. 	<ul style="list-style-type: none"> BHPB held technical sessions in May 2009 in Yellowknife and a general session at the mine site August 25-28, 2009. Minister's Report follow-up meetings held on Dec. 16/09 and Feb. 15/10. BHPB submitted a Close-Out Report and Technical Addendum that addressed some of the issues raised (better explanation of EIR methodology, commitments to future consultation on future EIRs) Apr. 28/10 Agency Letter DIAND acknowledges work done by BHPB but still some areas of disagreement. Further effort better directed at future EIRs and process.