



Independent Environmental Monitoring Agency

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Lionel Marcinkoski
Environmental Scientist
Aboriginal Affairs and Northern Development Canada
Box 1500
Yellowknife NT
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Dear Mr. Marcinkoski

The Agency has had an opportunity to review BHP Billiton's (BHPB's) 2012 Environmental Impact Report and plain language summary, and the 2011 Annual Environmental Report. While reviewing these documents, we were also mindful of the full Wildlife Effects Monitoring Program (WEMP), Aquatic Effects Monitoring Program (AEMP) and Panda Diversion Channel (PDC) monitoring reports for 2011.

The Agency is of the view that the 2012 Environmental Impact Report and 2011 Annual Environmental Report are satisfactory and that the information provided is adequate, including the description of remedial actions taken or proposed in respect of impact or compliance problems.

The Agency makes the following general observation with a view to improving future Annual and Environmental Impact Reports. We would appreciate receiving responses from BHPB.

2012 Environmental Impact Report

General Comments

Environmental Impact Report (EIR) 2012 is a much improved document from the last one. The focus has been shifted from comparing predicted effects with current environmental effects, to the key environmental risks as identified from long-term trends and monitoring results. The document serves as an excellent summary of the environmental monitoring programs at Ekati, the results, mitigative measures, key risks and management responses. The EIR has also been improved through effective use of graphics and photos.

The process leading to the 2012 EIR was much improved over the last time around and provided BHPB and others a good opportunity to discuss the organization and priorities of the EIR. Many of our suggestions from the July 2012 meeting were well responded to in this EIR.

The removal of the spurious positive effects (as found in previous EIRs) from the 2012 EIR was much appreciated. The description of the concept of adaptive management is clear and correct, a great improvement over past years. The adaptive management section can be further improved by drawing out the lessons learned from the good cases presented and incorporating the outcomes or results of the audits described.

The Agency believes it is wrong to use BHPB's proposed aquatic benchmarks (including the proposed SSWQOs) in the EIR as a method to evaluate environmental risks. The benchmarks have not been properly reviewed by interested parties and have not been accepted by the appropriate regulators.

It is erroneous to state that roads at Ekati do not act as barriers to caribou movements, when the data clearly show the opposite. Roads do not form an impenetrable barrier but there is strong evidence that some animals are deflected from some crossings (and thus the road could be termed a semi-permeable barrier or a filter to movement) and this may have energetic consequences for the caribou.

There are some good future actions identified to address environmental risks including increasing the height of sections of the airport fence to better prevent caribou access and the assessment of the Misery Road to reduce its barrier effects. There are also some actions or risks that should be identified or improved. These include the addition of the risks associated with the elevated levels of dioxins and furans in Kodiak Lake sediment, the unfrozen Fox waste rock piles. There is also a need to investigate the causes of the zone of influence for caribou avoidance of the mine site.

Specific Comments

- The Glossary section is helpful but might be better presented using plain language (e.g. trap nets defined using "fyke net").
- Page 1-1, although the purpose of the EIR may be to meet the requirements of the Environmental Agreement, the real benefit or underlying reason to do this is to improve environmental management at Ekati and to communicate to interested people about environmental management at Ekati.
- Page 2-1, the panel review conducted of the NWT Diamonds Project was done under the EARP Guidelines Order and not the *Canadian Environmental Assessment Act*.
- Page 2-7, there is no descriptive text that goes along with Plate 2.1-8 of the Pigeon pipe area.
- Page 4-1, BHPB should provide details on the audit outcomes as part of its evaluation of adaptive management systems.

- Page 4-5, Figure 4.2-1 is helpful but is this a complete list of all environmental management plans and the date each was last revised or changed? Some additional information is found in Table 4.3-1 (page 4-8) but this should be done for all the management plans.
- Page 4-17, the discussion does not mention fish habitat which was a major theme during the review of the Interim Closure and Reclamation Plan (ICRP).
- Page 4-20, how well is the internal water channel in Cell B working? This section of the EIR also tends to mix the different issues for Fine Processed Kimberlite (FPK) into Beartooth pit with those from the spill into Fay Bay.
- Page 4-22, did the ice clearing on Cell D during the late winter of 2012 have any effect on nitrate levels?
- Page 4-24, mentions that BHPB intends to increase the height of the fencing around the airport where snow accumulates. This sounds like a good solution. Were other options such as snow removal or additional fencing to capture or reduce snow drifting also considered?
- Pages 4-20 to 4-24 present some useful examples of adaptive management. It would be helpful to draw out the examples of adaptive management more clearly and the lessons learned in a summary that can demonstrate that BHPB has evaluated its adaptive management systems.
- Page 4-26, it would be helpful for BHPB to summarize the results of the Ekati-based Traditional Knowledge (TK) projects or site visits, what was learned and how any new insights or knowledge has improved or changed environmental management. There is nothing in this section about how BHPB intends to gather and use TK in the implementation of the ICRP and its reclamation research plans.
- Page 5-20, it would be more helpful to present the data in the bar graphs on Figure 5.2-10 in a way that reflects the downwind gradient of the various monitoring sites from dust sources.
- Page 5-23, it was the understanding of the Agency that Diavik is also using the CALPUFF model for its air quality monitoring program. Have there been any efforts to coordinate these two adjacent and likely overlapping programs?
- Page 5-24, the Environment Canada study showed elevated levels of dioxins and furans in the upper layers of sediment in Kodiak Lake but there does not appear to be any follow-up work planned by BHPB in terms of benthic life or fish sampling to determine whether these contaminants are entering aquatic ecosystems.
- Page 5-24, an Incinerator Management Plan is mentioned but the Agency would prefer an integrated Waste Management Plan which should cover all waste streams and treatments. Is there a schedule or target date for revisions to plans to cover the operation of the new incinerators?
- Pages 5-28 and 5-29, the discussion on these pages does not mention that dustfall may be a potential cause of the zone of influence for caribou avoidance around the mine site.
- Page 6-4, there should be some discussion of the waste rock piles not freezing (not much is mentioned in s. 7.4.4, including no presentation of data) and what contingencies or additional measures BHPB may be undertaking to better deal with this situation.

- Page 6-7, there is no discussion of what BHPB has done or is doing to make better use of TK in the ICRP implementation and the reclamation research plans.
- Page 6-13, Table 6.5.1 “The Physical or Terrestrial Environment” future actions section mentions that best practices, lessons learned and mitigation measures are to be applied to Pigeon Pit. It would be helpful to have some discussion of how these matters have shaped the plans for Pigeon.
- Page 7-18, Section 7.2.1.2 mentions experience from other Ekati pits will be applied to Pigeon but does not specify what this may be.
- Page 7-21, Section 7.2.1.5 states that ice blockage of the PDC took place in 1999 but snow clearing has avoided a repetition in 2009-11. Presumably the PDC widening is being carried out to reduce this risk permanently into the future?
- Page 7-27, BHPB should not be using its proposed benchmarks for water quality to evaluate the significance of risk to downstream waters until these benchmarks have been accepted by regulatory authorities.
- Page 7-31 mentions that there have been negligible changes to sediment quality and no exceedences of sediment quality guidelines. Is this true for Kodiak Lake sediments where dioxins and furans exceed the CCME guidelines?
- Page 7-37 mentions that there have been no changes in benthos community compositions downstream of the LLCF and no effects detected. Is this true of Kodiak Lake too given the dioxins and furans in the upper most sediment layers?
- Page 7-42 mentions that some of the seeps contain elevated levels of BTEX and hydrocarbons. Is there an explanation for this and any mitigative measures?
- Page 7-67 does not mention the additional revegetation work of the PDC that BHPB intends to carry out in the summer of 2012.
- Page 7-80 does not reference that the Fox waste rock pile is not freezing as expected and there are no contingencies or additional measures outlined.
- Pages 7-86 to 7-89 identifies key environmental risks but changing plankton assemblages and diversity is not identified. Does BHPB believe that this is a residual risk that should be monitored and managed?
- Page 7-89, bottom of the page mentions the proposed response framework from the water licence application. The Agency acknowledges this work but has identified significant deficiencies in terms of the proposed action levels, lead time and lack of specific actions or contingencies.
- Page 8-2, minor error: “*In October 2010, the Thirteenth North American Caribou Workshop was held in Yellowknife, NT.*” This was actually held in Winnipeg.
- Page 8-3, there should be some more recent literature that can be cited on the status of the Bathurst caribou herd.
- Page 8-14, BHPB has not proposed any specific monitoring or research to investigate the cause of the zone of influence for caribou avoidance of the mine site. The Agency is also curious to know whether the method and coverage for the aerial survey program in 2012 is the same as that previously used.
- Page 8-22, the last paragraph of section 8.2.1.6 (hazards to caribou) does not address the concern described in the opening paragraph of the same section about direct ingestion of PK. It is our understanding that BHPB intends to further

- investigate the risk to caribou from uptake of contaminants in revegetated areas of the LLCF and from direct ingestion of PK.
- Page 8-37, BHPB appears to be claiming that wildlife cameras prove that the Misery Road is not a barrier to caribou movement. The road is not a barrier, but it is the degree of filtering that is important and how this may be mitigated. *“The camera monitoring program is not designed to address questions associated with relative distribution or avoidance or to contribute to a broader understanding of the zone of influence. These questions are broader in scale and are best examined using satellite collar data.”* It is good to acknowledge that the cameras cannot address the zone of influence, but the statement that these questions are best examined using satellite collar data is unsubstantiated. Aerial survey data have proven superior to collar data to address this question (Boulanger et al. 2012). *“Initial results [of the camera data] do suggest that Misery Road may not be acting as a barrier to wildlife movements during the snow-free periods.”* (also in Table 8.4-1). It is not a question of barrier or no barrier but the degree of filtering to movement (i.e., how much of a semi-permeable barrier) the roads and associated activities may cause.
 - Pg. 8-41, section 8.4.1 Caribou Migration Routes (also Table 8.5-1): None of the monitoring outlined in this section (and table) actually addresses measuring or managing impacts to caribou migration routes. Broad movements (i.e., where they winter) affect whether substantial numbers may move through the mine site, but the real question is whether the roads and traffic (and mine site) influence movement through the area (next section). The aerial surveys do not contribute to understanding of any impacts on caribou migration routes. Thus this topic is not being addressed in any serious manner.
 - Page 8-45, states *“In response to the mortalities associated with the electric fence in 2009, BHP Billiton painted the tops of fence posts a bright colour to provide a greater colour contrast”*. It would probably be more accurate to replace the second use of “colour” with “visual”.
 - Page 9-1, it is not clear how BHPB ranked or rated the residual risks. Even though the Agency agrees with the top two risks, the evaluation and selection method for determining significance should be explained.
 - Appendix C, the annotated abstract listing may not contain all of the referenced reports from the EIR. For example, Enns (2012) is not found in this list.

The Agency acknowledges that many of the above comments were raised with BHPB during the November 6-7, 2012 EIR workshop and that BHPB agreed to deal with many of these comments, through a close-out report or revisions to the EIR.

2012 Environmental Impact Report Plain Language Summary

We found that the plain language summary is a good reflection of the full technical report. The major issues we identified with the full EIR above, such as reporting on the audit outcomes, lessons learned from the TK projects and outreach, follow-up on the dioxins and furans in Kodiak Lake sediment, the Fox waste rock pile not freezing and the

use of the proposed benchmarks for evaluating water quality changes, apply equally to the plain language summary.

Some further effort to use less technical language and inclusion of a glossary should also be considered

2011 Annual Environmental Report

- Page 12 (2010 Water and Waste Summary Figure) might be expanded to include solid waste and incineration.
- Page 14 describes several internal and external audits and certifications of Ekati. In past reports there has been some description of the findings and improvements made by BHPB and this should be continued.
- Page 24 discusses Phase I of the widening of the PDC but there is no mention of Phase II.
- Page 26 references the Life of Mine Plan found in Figure 5 but there is no statement regarding any changes or variations to this important planning tool. We note that there is no explanation for the blue portion of the bar associated with Beartooth OP.
- Page 32 discusses the changes in the ICRP from 2002 to 2011 but does not mention the requirement to facilitate fish habitat and use of the pit lakes, which was one of the major themes of the most recent ICRP review.
- Page 32, BHPB provides an updated cost estimate for the reclamation liability for Ekati but there are no details as to how this was calculated and whether it actually reflects the approved ICRP.
- Pages 37-39 cover TK project and outreach by BHPB but this section could be improved with a brief summary of how this work has contributed to or improved environmental management at the mine site.
- Page 41 describes permafrost monitoring for the frozen core dams but not the waste rock piles. Data could be presented from the seepage reports on the waste rock piles.
- Page 42 (Table 12) shows that there were no mean monthly air temperatures for the Koala station for January, February, April and May 2012 and for the Polar Lake station from October 2011 to June 2012 but no explanation is provided. Was this due to equipment malfunction or human error?
- Pages 70-71, it is not clear what the numbers in these tables mean. Do the numbers refer to the number of samples taken at each site?
- Page 130 “Northwest Territory’s” should be changed to “Northwest Territories”.

We were not able to locate a plain language version of this document.

We would be pleased to discuss these comments with BHPB and others to ensure improved public reporting and environmental management at Ekati.

Sincerely,

A handwritten signature in black ink, appearing to read "W.A. Ross". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Bill Ross
Chairperson

cc. Society Members
Mark Cliffe-Phillips, Wek'eezhi Land and Water Board