

# Information Requests - Baffinland Mary River Iron Ore Project Final EIS/Type A Water Licence Application

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Aboriginal Affairs and Northern Development Canada

**Submission to the Nunavut Impact Review Board and Nunavut Water Board**

3/30/2012



**Information Requests  
Baffinland Mary River Iron Ore Project  
Final EIS/Type A Water Licence Application**

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**Unless otherwise noted, AANDC requests that all information requests be responded to by April 19<sup>th</sup>.**

## **1.0 EIS METHODOLOGIES**

### **1. Issue: The assessment of the alternative of year round shipping, with periodic suspensions has not been provided.**

#### **Reference:**

FEIS Volume 1, Section 3;  
NIRB Guideline 6.1;  
AANDC DEIS Technical Review Comment No. 11;  
Commitment No. 1.

#### **Observation:**

Commitment No. 1 requires the Proponent to “*Expand alternative assessment to include a rationale for the need for year round shipping. Include discussion on periodic suspensions (i.e. stock piling) and the impact of this approach on the Project economic viability.*” The discussion of periodic suspensions has not been provided and it appears that seasonal shipping has been interpreted as being equivalent to temporary suspension.

As previously identified in AANDC’s DEIS technical comment No. 11, the Proponent was requested “*to provide further detail and evaluation of the potential environmental and social impacts and benefits on the alternative of year round shipping with periodic suspensions during critical wildlife periods*”. As was discussed during the technical session in Iqaluit, AANDC wished to determine what is the Proponent’s tolerance (economic) for “periodic suspensions” during the year (for example a one to two week suspension).

The requirement to examine the alternative of year round shipping with periodic suspensions was also outlined in NIRB Guideline 6.1 (page 17).

#### **Information Request:**

AANDC requests the Proponent provide an assessment of the alternative of year round shipping, with periodic suspensions as per NIRB Guideline 6.1.

#### **Joint Review Process:**

Issue applicable to the NIRB’s Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB’s review of a Type A water licence: ☐Yes ☒No

Applicable NWB Guideline(s): n/a



## **2. Issue: Alternatives analysis has not been expanded as per commitments.**

### **Reference:**

FEIS Volume 1, Section 3.2;

FEIS Volume 3, Section 6.4;

AANDC DEIS Technical Review Comment No. 10,12;

DFO No. 3.1;

Commitment No. 4,8.

NIRB Guideline 6.1

### **Observation:**

Despite Baffinland's March 14, 2012 response to the NIRB regarding this issue ("*if an alternative was not considered technically feasible or economically feasible, it was eliminated from further assessment*") AANDC notes that while interveners were looking for a more quantitative approach to selecting the preferred port alternative, the Proponent has elected to dismiss a more formal comparison of options. AANDC also notes that the Proponent has totally eliminated DEIS Table 3.6.1 which attempted to summarize the alternatives assessment originally conducted in the DEIS. In the DEIS there was an attempt to rank each of the alternatives by the four assessment criteria: technical feasibility, economic feasibility, environmental acceptability, and social/community acceptability. In its place there is an expanded discussion on the technical and economic factors associated with the choice of the preferred alternative (i.e. Steensby Port). The additional information on the cost implications of the Cockburn Lake – Nuviat rail route illustrates the additional financial considerations associated with this port alternative. The FEIS states that the added cost would render the project uneconomic. While the additional information is helpful, there is no information related to how social and community considerations factored into the assessment of alternatives. AANDC suggests the FEIS include sufficient data and analysis of social and economic benefits of project alternatives in order to complete a balanced review of the selected alternatives. AANDC believes that the alternatives assessment table should be re-instated, expanded and improved upon as it provides a suitable framework for summarizing alternatives.

Given that the location of the port is such an important issue, a more robust analysis of alternatives is warranted, although it is acknowledged that this is likely not to result in a change in the Proponent's preferred location.

### **Information Request:**

AANDC requests the Proponent reinstate, expand and improve upon the alternatives assessment table originally used in the DEIS, including consideration of the four assessment criteria: technical feasibility, economic viability, environmental acceptability and social/ community acceptability into its assessment of alternatives.



**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☐Yes ☒No

Applicable NWB Guideline(s): N/A

**3. Issue: Information on the Proponent's experience in mining projects in the same region or similar environments is absent.**

**Reference:**

FEIS Volume 1, Section 1.2.6;

FEIS Volume 10, Appendix 10A-2;

AANDC DEIS Technical Review Comment No. 13;

Commitment No. 144.

**Observation:**

Commitment No. 144 required Baffinland to "outline its experience and track record and identify the safeguards that will be put in place to compensate for any lack of experience in similar environments, more specifically providing updated information in relation to its experience in mining projects in the same region or similar environments". No updated information is provided in Appendix 10A-2 since this document has not been revised since December 2010. The information which is provided in FEIS Volume 1, Section 1.2.6 is very brief and does not reflect the relevant experience presented during the technical sessions in Iqaluit when the new Baffinland team was introduced.

**Information Request:**

AANDC requests the Proponent provide a more detailed description of its experience and track record in projects in the same region or similar environments.

**Joint Review Process:**

☒Yes ☐No

Issue applicable to the NIRB's Part 5 FEIS review:

Issue applicable to NWB's review of a Type A water licence: ☐Yes ☒No

Applicable NWB Guideline(s): n/a

## 2.0 WASTEWATER MANAGEMENT

**4. Issue: It is not clear how existing waste storage ponds will be decommissioned.**



**Reference:**

Fresh Water Supply, Sewage, and Wastewater Management Plan, Sections 5.4.1 and 5.4.6.

**Observation:**

The plan indicates that existing waste storage and stabilization ponds will no longer be required.

**Information Request:**

The proponent is asked to provide a decommissioning strategy or plan for existing waste storage and stabilization ponds.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☐ Yes ☒ No

Issue applicable to NWB's review of a Type A water licence: ☒ Yes ☐ No

**5. Issue: Mass balance modeling estimates of nitrate losses from the use of explosives into the aquatic environment are not provided.**

**Reference:**

FEIS Volume 7, Section 3.4.1.6;  
QIA D-10;  
Commitment No. 263.

**Observation:**

In FEIS Volume 7, Section 3.4.1.6 (page 116) there is a discussion on ANFO (ammonium nitrate/fuel oil) use, but no mass balance modeling is apparent.

In accordance with Commitment No. 263 the Proponent is to “*provide mass balance modeling estimates of nitrate losses from the use of explosives into the aquatic environment, with sufficient detail that modeling methods and assumptions can be assessed. In addition, assess the adverse effects and identify treatment options for nitrate if the mass balance modeling suggests there may be chronic sub-lethal effects on the aquatic biota (for example, hormonal disruption in arctic char)*”.

**Information Request:**

AANDC requests the Proponent provide mass balance modeling of nitrate losses to the aquatic environment or provide a rationale why this is deemed no longer required.



**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Fisheries, Section 39a-h, pages 48-50

### 3.0 WATER MANAGEMENT

**6. Issue: The Proponent's cited FEIS reference does not exist as it relates to Commitment No. 222.**

**Reference:**

FEIS Volume 10, Section 7.4.2.2;  
Commitment No. 222.

**Observation:**

Commitment 222 states Baffinland's commitment to incorporate as-built site drainage plans into a future surface water management plan, once constructed. The reference source cited by the Proponent in the concordance table does not exist. As-built site drainage plans will ensure the surface water management plan addresses actual site conditions after development, conditions which may have altered from the original state.

**Information Request:**

AANDC requests the Proponent identify where Commitment No. 222 is addressed in the FEIS. If it has not been included, the Proponent is requested to provide the site drainage plans as provided for in the commitment.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Description of Undertaking, Section 1d, page 25

**7. Issue: The resultant effects of the redistribution of water on freshwater biota and water quality are not addressed in the Proponent's cited FEIS references.**

**Reference:**

FEIS Volume 7, Sections 2.3.2.1, 3.4.1.2, 3.4.2.1, 4.3.1 and 4.5;  
GN-R84;  
Commitment No. 227.

**Observation:**



Commitment No. 227 states that “*The resultant effects of the redistribution of water on freshwater biota and water quality will be discussed in Sections 3 and 4 of Volume 7.*” Sections 3.4.1.2 and 3.4.2.1 do not address the effects of redistribution of water on freshwater biota and water quality.

It is important that reviewers be able to review this information as redistribution of water within or between watersheds can change flows and lead to altered substrate conditions, increase in erosion and degrade water quality as a result.

**Information Request:**

AANDC requests the Proponent identify where Commitment No. 227 is addressed in the FEIS. If it has not been included, the Proponent is requested to provide the discussion that is detailed in the commitment.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Fisheries, Section 39a-h, pages 48-50

**8. Issue: Project site water balance schematics are incomplete.**

**Reference:**

FEIS Volume 3, Appendix 3B (Fresh Water Supply, Sewage and Wastewater Management Plan), Table 4-1;  
AANDC DEIS Technical Review Comment No. 22;  
Commitment No. 235.

**Observation:**

The Proponent was requested to “update and revise the project site water balances” to address issues identified in AANDC No. 22. While the Proponent-cited reference (Appendix 3B, Table 4-1) does not include the requested schematics, the schematics were located in the appendices of the Surface Water and Aquatic Ecosystems Management Plan as Figures 1 through 7. AANDC notes that no schematics have been prepared for conditions representative of existing conditions as was originally requested in AANDC DEIS Technical Review Comment No. 22. This is considered important information given the numerous diversions proposed and the ultimate intent to return the sites to near original conditions from a hydrologic perspective.

**Information Request:**

AANDC requests the Proponent provide water balance schematics for existing conditions as per AANDC DEIS Technical Review Comment No. 22. The Proponent is requested to provide the project site water balances for existing conditions prior to the close of the FEIS technical review period (with sufficient time for review and feedback by reviewers).





**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Studies, Section 40a, page 50

**9. Issue: Estimate of the quality of the pit lake after closure absent.**

**Reference:**

FEIS Volume 3, Appendix 3B, Attach. 5 (Waste Rock Management Plan), Annex 5;  
EC 5.5 and AANDC No. 68;  
Commitment No. 244.

**Observation:**

In the FEIS the Proponent has provided estimates of expected pit water quality during the 21 year mine life. No estimates of the quality of the future pit lake after closure have been provided including situations where early closure occurs when the pit is not fully developed. Consideration must be given to scenarios in which the mine is shut down after 5, 10, or 15 years of mine operations. The time of filling and pit lake volume could be dramatically reduced, and the exposure and proportion of potentially acid generating (PAG) rock or ore on pit walls may be significantly different than the fully developed open pit configuration. This may lead to poorer projected quality in the future pit lake and environmental releases which may require treatment.

**Information Request:**

AANDC requests the Proponent provide estimates of the quality of the future pit lake after closure including early closure scenarios.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Predicted Environmental Effects, Sec.13, pg 60

## **4.0 VEGETATION**

**10. Issue: Clarification of re-vegetation monitoring and commitment to active re-vegetation trials are required.**

**Reference:**

FEIS Vol. 6, Section 3.2;



FEIS Vol. 3, Appendix 3B, Attachment 10 (Preliminary Mine Closure & Reclamation Plan), Section 5.0;

Volume 10, Appendix10D-11 (Terrestrial Environment Management and Monitoring Plan), Section 3.1.1 and 4.3;

AANDC DEIS Technical Review Comment No. 59, GN R41, GN R43 and GN R47; Commitment No.'s 179 and 206.

**Observation:**

Commitment No. 179 states that within the updated closure plan *“Baffinland will commit to examination of re-vegetation success including the use of plots on previously disturbed sites near Mary River.”* In Section 5.1.1 (page 15) of the February 2012 closure plan, the Proponent limits this examination *“to identify best practices for promoting natural re-vegetation of disturbed areas of the Mine Site that are predisposed to the presence of terrestrial plants”* (i.e., to the exclusion of active reseeding and/or (re)planting options).

This seems to be counter to what was originally proposed in the December 2010 closure plan (DEIS Vol. 10, Appendix 10G, Section 5.1.1, page 5-2) where there was a commitment for research studies using local vegetation test plot trials. These trials included using lichens which have been found to vegetate rocky fields and hilly areas in the Regional Study Area and utilizing local herbs and sedges on disturbed soil areas. This commitment to active revegetation trials no longer appears in the FEIS.

Further, in FEIS Volume 10, Appendix10D-11 (Terrestrial Environment Management and Monitoring Plan), Section 4.3 (Vegetation Monitoring), Table 4-3 (page 18), revegetation has not been identified as a monitoring objective, nor has a monitoring program been delineated to examine revegetation success to replace the program contained in the DEIS. The Proponent argues that *“disturbed terrestrial habitat will not be reseeded during construction, operation and closure”* to reduce the likelihood of invasive plant species becoming established (FEIS Vol. 10, Appendix10D-11, Section 3.1.1, page 7).

**Information Request:**

AANDC requests the Proponent clarify how test plots will be used to promote natural re-vegetation and to further substantiate why reseeding cannot be undertaken in some locations predisposed to terrestrial plants without the risk of introducing invasive species.



**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Predicted Env. Effects & Proposed Mitigation Measures, Section 22c, page 14

## 5.0 ARD/ML MANAGEMENT

**11. Issue: The Proponent's estimates of potentially acid generating (PAG) waste rock are inconsistent and the justification for the estimate of 15% PAG waste rock reported in the document is not clear.**

**Reference:**

FEIS Volume 6, Appendix 6B-1 (pages i and 17);  
FEIS Volume 10, Appendix 10D-5, Section 3.1.3.2 (page 7) and Section 3.4 (page 14).

**Observation:**

AANDC reviewed new information provided in FEIS Volume 10, Appendix 10D-5, Waste Rock Management Plan. Section 3.1.3.2 (Static Testing, page 7) states an estimated 15% of the waste rock is expected to be PAG on the basis of Neutralization Potential Ratio (NPR) less than 2. In the 2011 testing program, it was reported that 18.4% of the samples had NPR less than 2. Further, It was also estimated that a total of 610.5 Mt of waste rock (excluding overburden) will be produced during the life of the mine, of which 144.7 Mt will be PAG waste rock. If this estimate holds, the PAG waste rock will account for 23.7%. Therefore, a 15% estimate of PAG waste rock is too low and not supported by the analyses. This may lead to underestimation of the level of effort required to undertake mitigation measures.

**Information Request:**

AANDC requests the Proponent provide rationale to support the use of 15% estimate of PAG waste rock in the FEIS document.

**Joint Review Process:**



Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Description of the Undertaking, Section 11, page 27; and Studies, Section 24d, page 64

## 6.0 WASTE MANAGEMENT

### 12. Issue: **Incineration Management Plan as per NIRB's Guidelines is absent.**

#### **Reference:**

FEIS Volume 3, Appendix 3B, Attachment 5 (Management Plans);  
FEIS Volume 10, Appendices 10D-1 to 10D-14;  
NIRB Guideline 9.4.7;  
Commitment No. 338.

#### **Observation:**

The Proponent has committed to provide, among others, an Incineration Management Plan as per Commitment No. 338. The Proponent has indicated that this information is available in Volume 3, Appendix 3B and in one of the Appendices to Volume 10 of the FEIS. While a stand-alone Incineration Management Plan was not provided by the Proponent, the required elements for such a plan were provided within the Waste Management Plan with the exception of sufficient information on the management of ship waste. Although Section 4.9 of the Waste Management Plan briefly refers to on-board incineration of ship wastes, the details are not included at the same level of detail as the incineration of land-based wastes. For example, in accordance with NIRB Guideline 9.4.7, it should include an inventory and estimated quantities of ship wastes to be incinerated, proposed incineration technologies to be used, applicable emissions standards, disposal of incineration ashes, and personnel training programs.

#### **Information Request:**

AANDC requests the Proponent develop a complete Incineration Management Plan, as delineated in NIRB Guideline 9.4.7.



**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Predicted Environmental Effects & Proposed Mitigation Measures, Section 27, page 15

## 7.0 HAZARDOUS MATERIALS MANAGEMENT

### 13. Issue: Fuel barge spill scenario for emergency planning is required.

**Reference:**

FEIS Volume 10, Section 6.3.4, Appendices 10C-1 and 10C-3;  
Commitment No. 321.

**Observation:**

In Volume 10, Section 6.3.4, the Proponent indicates its commitment to maintain the necessary equipment and trained personnel to effectively respond to emergencies. However, determination of the equipment and personnel required for an effective response will depend on how well the spill scenarios have been developed.

In the Proponent's Emergency Response and Spill Contingency Plan (Appendix 10C-1) and Oil Pollution Emergency Plan - Steensby Port Fuel Storage Facility (Appendix 10C-3), none of the spill scenarios assessed included a catastrophic spill from the floating fuel barge which is proposed to overwinter in Steensby Port during the early construction phase. Possible spills with the presence of ice in various stages of growth or decline may pose special challenges in clean-up.

Further, the FEIS is not consistent in describing the size of the proposed fuel barge. A 20 ML fuel barge is cited in Table 6-1 of Appendix 10C-1 and in Table 3-1.1 in FEIS Volume 3 (Project Description) while Section 3.2 of Appendix 10C-3 cites an 8 ML vessel.

Although it is understood that the Oil Pollution Emergency Plans (OPEPs) will be submitted to Transport Canada for ultimate review and approval, the information contained within is of relevance to the Part 5 review of this Project and is not contained elsewhere in the FEIS.

**Recommendation:**

The Proponent is requested to clarify whether their spill response planning in terms of manpower and equipment has addressed the possibility of a spill from the fuel barge proposed for overwintering in Steensby Port and to confirm the size of the fuel storage vessel.



**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Emergency Response & Spill Contingency Plan, Sections 21 – 23, pages 62-63; and Studies, Section 24z, page 68

**14. Issue: An enhanced discussion of Baffinland's spill response plan to meet the challenges of the remoteness of the project site and the often severe weather as well as the Proponent's experience pertinent to rail line construction and operation in the Arctic is absent.**

**Reference:**

FEIS Volume 9, Section 3.4;

FEIS Volume 10, Appendix 10C-1, Appendix 10D-9.1 and Appendix 10D-9.2;

CTA – 4;

Commitment No. 333.

**Observation:**

Section 3.4 of Volume 9 and Appendix 10D-9.1 and Appendix 9.2 provide a discussion of the potential for a hazardous material spill as a result of a railway incident. A brief review of these documents did not identify the presence of an enhanced discussion of Baffinland's plan to meet the challenges of the remoteness of the project site and severity of the Arctic climate. The spill scenarios outlined in the Emergency Response and Spill Contingency Plan do not include a railway spill incident, neither does this plan adequately consider the effect of the Arctic weather and the remoteness of the project on response times and methodologies to spills and other emergencies.

**Information Request:**

The Proponent is requested to provide a discussion on the effect of the Arctic climate and the remote location of the Project on response times and methodologies in all spill contingency plans.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Emergency Response & Spill Contingency Plan, Sections 21 – 23, pages 62-63; and Studies, Section 24z, page 68

**15. Issue: The Hazardous Materials Management Plan is incomplete.**



**Reference:**

FEIS Volume 10, Appendix 10C-5 (Hazardous Materials and Hazardous Waste Management Plan);

NIRB Guideline 9.4.9;

Commitment No. 338.

**Observation:**

A review of the revised (January 2012) Hazardous Materials and Hazardous Waste Management Plan identified the following:

- The types of hazardous material identified in Section 3.1 of the Hazardous Materials and Hazardous Waste Management Plan do not include all the chemicals listed as hazardous materials in Annex 4 of the Emergency Response and Spills Contingency Plan.
- Section 4.0, entitled Hazardous Waste Management Approach, does not include a discussion on purchasing controls, as required by the NIRB Guideline 9.4.9.
- The Plan indicates that the Proponent has prepared emergency response procedures for chemical substances spills, as provided in the Emergency Response and Spill Contingency Plan. However, the latter only provides procedures for fuel products, explosives and sewage, and not the other hazardous materials used on the project, even though it is in smaller quantities.

**Information Request:**

The Proponent is requested to include a discussion on Purchasing Controls in the Hazardous Materials and Hazardous Waste Management Plan as per the NIRB Guidelines, and to include a discussion of other hazardous materials that will be used on the project, in addition to fuel products and explosives.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Waste Disposal, Section 15, page 11; Description of Undertaking, Section 1q, page 28; Hazardous Materials, Section 20, page 62; and several others

## 8.0 GEOTECHNICAL DESIGN

### 16. Issue: Preliminary analysis of rail cuts and fills at Cockburn Lake is absent.

**Reference:**

FEIS Volume 3, Appendix 3B, Attachment 4 Railway (*Initial Geotechnical Recommendations - Rock Fill Embankments and Overburden Cuts - Mary River Railway* by Thurber Engineering, November 2011);

AANDC DEIS Technical Review Comment No. 48.





**Observation:**

The FEIS includes new supporting information on rock fill embankments and overburden cuts for the proposed Mary River Railway. Geotechnical recommendations for cuts and fill of railroad embankment adjacent to Cockburn Lake, approximately from Station 94+000 to 108+000 are not supported sufficiently for an area with steep slopes that appear to be near colluvial stability.

The alignment shows that a combination of cuts and fills will be needed to construct the rail embankment in steep cross slopes that may be near stability. The stability sensitive nature of this rail line is deduced from the Proponent's photographs and small contour maps. The recommendations (Thurber's) provided in a simplified sketch in Figure D.6 (Hatch, Potential Embankment Cross Sections) show relative steep cut and fill slopes on existing slopes that may exhibit low factors of safety themselves. The stability of the embankment cuts may be affected by cyclic loading from the train travel, creep and potentially even strength weakening due to ground warming if ice is present in local areas.

**Information Request:**

AANDC requests the Proponent provide additional factual and preliminary analysis that the cuts and fills will be stable over the railroad operational period.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Studies, Section 24k, page 65

**17. Issue: Lack of thermal modeling of the Project infrastructure, including the waste rock dump.**

**Reference:**

FEIS Vol. 3, Appendix 3B, Attachment 5 - Waste Rock Management Plan, Annex 2; Commitment No.'s 108 and 116.

**Observation:**

A qualitative assessment of the thermal regime and its impact on infrastructure is presented by the Proponent. However, a quantitative thermal modeling of the Project infrastructure, including the waste rock dump as outlined in Commitments 108 and 116, has not been conducted to confirm the qualitative assessment.

Construction over ice rich or thaw sensitive permafrost ground is identified as a major problem leading to technical issues with Project infrastructure foundations. Further, the proposed waste rock management scheme relies on permafrost and thermal encapsulation for control of ARD. No thermal modeling has been carried out to confirm the robustness of the designs proposed and how they will perform in the





event of climate warming over the long term (Note: the Proponent states thermal modeling is to be conducted in 2012-2014).

Preliminary modeling results at this point of the review process would demonstrate the robustness of the proposed designs and in the case of the waste rock dump confirm that thermal encapsulation can be maintained over the long term in order to prevent potential degradation of water quality due to ARD without major design changes.

**Information Request:**

AANDC requests the Proponent undertake preliminary thermal modeling of the Project infrastructure particularly for the waste rock dump to confirm the integrity of the designs. Preliminary modeling results should be provided prior to the close of the technical review period.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Studies, Section 24k, page 65

## 9.0 CONSTRUCTION/OPERATIONS

### 18. Issue: Stand-alone document for design criteria for the roads and railroad is absent.

**Reference:**

FEIS Volume 3, Appendix 3B;  
AANDC DEIS Technical Review Comment No. 50.

**Observation:**

Design criteria for foundations, roads and railway are dispersed throughout numerous supporting documents provided in the FEIS and Water Licence application. Consolidating the design criteria in stand-alone Preliminary Design Criteria documents (such as was done in Environmental Design Basis - Appendix 3B – Attachment 3) would facilitate technical review.

**Information Request:**

AANDC requests the Proponent provide stand-alone Preliminary Design Criteria documents for foundation, road and railway construction reflecting their current understanding of the unique site conditions.



**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☐Yes ☒No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Studies and Designs, Section 1a, page 21

## 10.0 CLOSURE AND RECLAMATION

### 19. Issue: **Rehabilitation of water reservoirs needs to be provided.**

**Reference:**

FEIS Volume 3, Appendix 3B (Waste Rock Management Plan - Attachment B - Conceptual Design for Dam);

FEIS Volume 3, Appendix 3B (Preliminary Mine Closure and Reclamation Plan);

AANDC DEIS Technical Review Comment No. 49;

Commitment No. 113.

**Observation:**

The mine site will have seven dams that will collect sediments from the rock waste dump and mine infrastructure including polishing ponds for water treatment plant(s). The dam heights range from 8 to 27m; four dams will be 25 to 27m in height. The dams are constructed to contain sediments and contaminants that may be released from the waste rock dump, mine infrastructure, equipment shops and fuelling areas, etc.

The Proponent did not specifically state which, or if all dams, will be removed at closure and how the rehabilitation of the reservoirs with sediments (sludge) will be handled to ensure that the receiving environment is not affected. Sudden release of sediment fines will result in excessive suspended solids in receiving waters. Even controlled water release may not be adequate for reservoir rehabilitation if the sediments contain significant quantities of contaminants. Safe storage of sediments or providing erosion control measures to protect the sediments could be required.

**Information Request:**

AANDC requests the Proponent provide information on how accumulated sediment/sludge collected in site reservoirs will be managed at closure.



**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Abandonment & Restoration, Sections 41-45, pages 19-20

**20. Issue: Confirmation of RECLAIM version**

**Reference:** FEIS Volume 3, Appendix 3B, Attachment 10 Preliminary Mine Closure and Reclamation Plan

**Observation:** The version of the RECLAIM model used to calculate the security estimate provided is not clear.

**Information Request:** The Proponent is asked to confirm what version of the RECLAIM model was used in the security estimate provided in the water licence application.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☐Yes ☒No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Abandonment & Restoration, Sections 41-45, pages 19-20

**21. Issue: The FEIS does not adequately describe potential economic, social and cultural effects of temporary and permanent mine closure.**

**Reference:**

FEIS Volume 4, Section 4.6.3  
AANDC DEIS Technical Review No. 91, 92  
Commitment No. 98

**Observation:**

In Sec. 4.6.3 under the heading "Temporary Shut-downs or Slow-downs" the FEIS acknowledges that temporary slow-downs or shut-downs may arise because of a variety of factors, including global economic conditions, the price of steel, disruption in ore shipments and labour disruption. However, there is no quantitative or qualitative discussion of the risks/likelihood of closure. For instance, it would be



important to understand how vulnerable the Project will be to fluctuations in demand and price for iron ore as compared to similar operations throughout the world.

Also missing is perspective on the social and cultural effects of project slow down or shut-down may have on dependent communities within the locally affected area. It would be beneficial to have an indication of how, and the likely sequence in which, the different stakeholders (employees, contractors, governments, Inuit organizations, etc.) could expect to be affected during temporary slow-downs or shut-downs. Without further information about the risk and effects of temporary slow-down or shut-downs, AANDC will be unable to evaluate the potential effects on economically dependent communities, organizations and governments.

**Information Request:**

AANDC requests that the Proponent provide an assessment of temporary closure risk and undertake a high-level scenario-based assessment of how stakeholders could be affected by temporary and permanent closure of the mine, including economic, social and cultural effects.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☐Yes ☒No

**22. Issue: The closure plan doesn't address all Project components.**

**Reference:**

FEIS Volume10, Appendix 10G, Table 3-1;  
AANDC DEIS Technical Review Comment No. 63;  
Commitment No. 346f.

**Observation:**

The list of Major Project Components provided in Appendix 10G (Table 3-1) does not include the mine pit and the waste rock dump at the "Mine Site", two of the major project components with significant potential environmental disturbances. In the "Railway" section of the table, maintenance facilities and refueling facilities are not listed. These are historically problem areas for railroads from an environmental perspective.

**Information Request:**

AANDC requests the Proponent review and provide a revised Table 3-1 in Appendix 10G to include all major project components.



**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Abandonment & Restoration, Sections 41-45, pages 19-20

**23. Issue: The closure plan will provide estimates of surface areas to be rehabilitated at final closure.**

**Reference:**

FEIS Volume 10, Appendix 10G, Appendix B, various sections;  
AANDC DEIS Technical Review Comment No. 64;  
Commitment No. 346g.

**Observation:**

To be able to evaluate the Project, it is necessary to know the areal extent of all Project disturbances. This information is also a component of bonding calculations. Appendix B in Appendix 10G does include some information on the area of disturbance. However, disturbance sizes are not consistently given for each project component. For instance, in Section B.1, which deals with the open pit, the area of the final open pit is not given; the discussion of the railway is about removing the bridges, rails and ties, however it does not explain how large the disturbance in the railway right of way will be.

**Information Request:**

AANDC requests the Proponent provide in the closure plan, for the Licence application, the disturbance areas associated with each major project component (Milne Port, Steensby Port, Mine Site, road and railway) and each major facility (e.g., waste rock pile, open pit, camps, tank farms, air strips, etc.) associated with each component. Also provide a table which lists the project component, the area of disturbance, the bond cost for each project component, and the total bond cost.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☐Yes ☒No

Issue applicable to NWB's review of a Type A water licence: ☒Yes ☐No

Applicable NWB Guideline(s): Abandonment & Restoration, Sections 41-45, pages 19-20

**24. Issue: Supporting information on how creeks and rivers will be returned to pre-development conditions is absent.**



**Reference:**

FEIS Volume 10, Appendix 10G, Section 8.12, Section 13 and Appendix C;  
Commitment No. 346v.

**Observation:**

No detail is provided in the Preliminary Mine Closure and Reclamation Plan on how creeks and rivers will be returned to pre-development conditions. While detailed site-specific watercourse crossing designs have not been finalized, generic procedures to return the creeks and rivers to pre-development conditions should be provided to demonstrate removal of bridges and culverts can be carried with due regard to the protection of water quality and fisheries resources. The use of sediment material in reclamation may promote re-vegetation.

**Information Request:**

AANDC requests the Proponent provide a list of criteria and success standards for crossing of rivers and creeks to be used for closure management purposes. Address issues such as: removal and disposal of bridges and other crossing structures; the slopes of the re-graded approaches; how pinch points caused by crossings will be removed; and stream erosion and sediment control measures.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 review:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Issue applicable to NWB's review of a Type A water licence:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No



## 11.0 PROJECT SUSTAINABILITY PLAN

### 25. Issue: The FEIS does not provide a sustainability plan as stated in the commitment list.

#### Reference:

FEIS Volume 10, Section 1.1  
AANDC DEIS Technical Review No. 5  
Commitment No. 319  
NIRB Guideline 2.4

#### Observation:

While the FEIS addresses anticipated short and long term social and economic issues and benefits associated with the proposed Project in Volume 4, the proponent does not summarize in one place how the Project will contribute to Sustainable Development according to the three criteria used by the NIRB: (i) preservation of ecosystem integrity, (ii) respect for intergenerational equity, and (iii) attainment of durable social and economic benefits. While there is considerable content on how the project will contribute to social and economic benefits the topic of intergenerational equity was not addressed. AANDC is committed to sustainable development in northern Canada. The absence of a Sustainability Plan will prevent AANDC from evaluating the Project's contribution to sustainable development, especially as defined by the NIRB.

#### Information Request:

AANDC requests that a Project sustainability plan be prepared that outlines objectives, indicators, and specific measurements. It is further recommended that this plan be implemented as part of long-term environmental and socio-economic monitoring, working closely with the Qikiqtaaluk Socio-Economic Monitoring Committee, with the overall objective of assessing whether the Project is contributing to sustainable development on a local, regional and territorial scale within Nunavut.

#### Joint Review Process:

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☐Yes ☒No



## 12. WATER LICENCE DISTINCTION AND COMPLETION

### 26. Issue: The water licence application lacks clarity because it is not a distinct and stand-alone document.

**Reference:** FEIS Water Licence Application

**Observation:** The water licence application makes references to information that is included only in other parts of the FEIS. This has the potential to create confusion about what is or is not part of the water licence, particularly where the scope of the FEIS differs from the scope of the water licence

**Information Request:** AANDC requests that the water licence application be submitted as a stand-alone document addressing the inconsistencies identified in Annex A.

#### Joint Review Process:

Issue applicable to the NIRB's Part 5 FEIS review: ☐ Yes ☒ No

Issue applicable to NWB's review of a Type A water licence: ☒ Yes ☐ No

### 27. Issue: The water licence application does not include a Supplementary Questionnaire for Mine Development.

#### Reference:

NWB Supplementary Questionnaire for Mine Development

#### Observation:

The supplementary questionnaire identifies information required for the review of the water licence application. By providing the information through the questionnaire, the proponent can ensure that relevant information is not overlooked.

#### Information Request:

AANDC requests that the Supplementary Questionnaire for Mine Development be submitted as part of a stand-alone water licence application.

#### Joint Review Process:

Issue applicable to the NIRB's Part 5 FEIS review: ☐ Yes ☒ No

Issue applicable to NWB's review of a Type A water licence: ☒ Yes ☐ No





## 13. MONITORING, REPORTING AND REVIEWING

### 28. Issue: The Water Licence application does not provide information on the commitments made in the FEIS for monitoring and reporting related to water use and waste deposition.

#### Reference:

FEIS Volume 2, Sections 3.7 and 3.9; FEIS Volume 7, Sections 2.3.1.1, 2.3.2.5, and 3.4.4; FEIS Volume 10

#### Observation:

Commitments to monitoring, reporting, evaluating, reviewing and continuous improvement cited in the FEIS with respect to use of water and deposition of wastes are not included in the water licence application.

#### Information Request:

The proponent is asked to revise the Environmental Monitoring Plan to include a strategy for monitoring, reporting and reviewing data in accordance with commitments made in the FEIS.

#### Joint Review Process:

Issue applicable to the NIRB's Part 5 FEIS review: ☐ Yes ☒ No

Issue applicable to NWB's review of a Type A water licence: ☒ Yes ☐ No

## 14. RESPONSES TO TECHNICAL SUBMISSIONS

### 29. Issue: Responses to technical submissions are requested before final hearing

#### Observation:

In the absence of an advance response from the Proponent, at the final hearing, parties will necessarily have to present and prepare to discuss all issues raised in their technical submissions. It is expected that many issues raised in the technical submissions may be easily and quickly resolved in a Proponent response. Further, an advance response will allow interveners to analyze and be prepared to respond to any proposed solutions or commitments made by the Proponent in response to issues raised.

#### Information Request:

The proponent is asked to provide a detailed response to the technical comments that interveners will submit on May 30<sup>th</sup>, 2012, a minimum of two weeks before final hearings are held.



**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☐Yes ☒No

## 15. COMMUNICATIONS MATERIALS

### 30. Issue: AANDC would appreciate a report of Baffinland's past efforts and future plans with respect to communications and outreach materials for the project.

**Observation:**

It is AANDC's understanding that Baffinland is well aware of the unprecedented scale and nature of its project in the region, and that it has undertaken several initiatives to facilitate a thorough understanding by the public. AANDC would appreciate receiving a description of what these have been and will continue to be, including information on types of materials produced (i.e. for what purpose/goal and for what specific target audience) and translation plans.

**Information Request:**

The proponent is asked to describe its past efforts and future plans with respect to communications materials aimed at members of the public.

**Joint Review Process:**

Issue applicable to the NIRB's Part 5 FEIS review: ☒Yes ☐No

Issue applicable to NWB's review of a Type A water licence: ☐Yes ☒No



## **Annex A: Information Requests to Enhance Stand-Alone Water Licence Application**

Regarding Water Licence Distinction and Completion, and with respect to Issue 27 above, AANDC requests that the following omissions and inconsistencies in the water application be addressed for clarity.

### **General Water Licence Application**

- Block 13 references a table in Attachment 5 of the application. AANDC recommends that this table be included in block 13.
- Block 13: AANDC notes that the drawing references for Railway Construction are mislabelled.
- AANDC recommends inclusion of a table to summarize the quantity and quality of waste in Block 15 rather than referencing the Waste Management Plan.
- The Steensby Port Oil Pollution Emergency Plan (OPEP) mentions an active hunting camp in Steensby Inlet which is likely to be a user of water. Block 18 should include this camp and any other traditional sites that are within the Project area.
- Block 21 references the Mine Closure and Reclamation Plan for security information. The estimated closure and reclamation cost (total costs for IOL and Crown land) should be included in block 21.

### **Management Plans**

- Spill Contingency Plan, Section 4.4: Training exercises should be specific to the Spill Contingency Plan and not the OPEP.
- Spill Contingency Plan, Annex 1 (Site Maps and Drawings) references Appendix 3B, Attachment 9 (Drawings) and Annex 2 (Spill Kits and Contents) references Annex 4 (Bulk Cargo Transfer Procedures/Tug and Ice Management Vessel Fuelling) of the Milne Port OPEP. This plan should be a stand-alone document complete with all referenced materials and this plan should be revised accordingly. It is noted that the reference to Annex 4 of the Milne OPEP is incorrect.
- Spill Contingency Plan, Annex 5 includes MSDS for only 4 of 32 chemicals listed in Annex 4. It is also noted that Annex A of the Hazardous Materials and Waste Management Plan includes only 3 MSDS. AANDC recommends that the Spill Contingency Plan and Hazardous Materials and Waste Management Plan include MSDS for all chemicals and hazardous materials on site, respectively.
- Surface Water and Aquatic Management Plan, Sections 6.8.2 and 7.4.2: Improper referencing of Table 10.1 (Sections 6.8.2 and 7.4.2 references Tables 8.3 and 8.1 respectively). The Quality Assurance/Quality Control (QA/QC) Plan referenced in Section 10.3 should exist as a stand-alone plan.
- Waste Management Plan, Section 4.6: Incomplete sentence. AANDC requests that the reference to the landfill drawing be provided.
- Hazardous Materials and Hazardous Waste Management Plan, Section 4.2: Incomplete sentence. AANDC recommends that this sentence be amended to identify the location of MSDS of hazardous materials on site.
- Hazardous Materials and Hazardous Waste Management Plan, Section 5.2: Table 5-3 is referenced but it appears as though the wrong table was referenced (Table 5-2 appears to contain relevant information).



- Relevant Environmental Protection Plan (EPP) procedures should be included in section 4.6 of the Hazardous Materials and Hazardous Waste Management Plan rather than referencing a section in the FEIS.
- Environmental Protection Plan, Section 2.18: The wrong table is referenced (Table 2.18-3 not 2.18-2)
- Environmental Protection Plan, Section 4.0: This form was given the wrong title (Request for Revision to an Operational Standard not Landfill Facility Inspection Form).
- Section 4.3 (5) of the Environmental Monitoring Plan references Table 2-20 that does not exist in the plan. A reference is required for section 4.2.1.1 and improper references were observed in sections 4.2.1.2 (Table 4-4 not 4-4.19), 4.5 (Appendix A not Annex 1), 4.6.1 (Table 4-10 not 2-19). AANDC recommends that the proper references be identified.
- Preliminary Mine Closure and Reclamation Plan, Table 9-1 is mislabelled in the Table of Contents as Table 8-1.
- Preliminary Mine Closure and Reclamation Plan Section 6.1 references sections 5.2, 5.3, 5.4, and 5.6 but these sections do not exist in the plan. The sections referenced in 7.1 and 8.13 do not apply and require updating. Section 4.1.1, referred to in Section 8.11, does not exist. AANDC recommends that the proper references be identified.
- The drawing referenced in Section B.3 of Appendix B of the Preliminary Mine Closure and Reclamation Plan should be included in the plan.
- Sections B.3.1 and B.3.3 of Appendix B of the Preliminary Mine Closure and Reclamation Plan reference the cost for airstrip lighting in the previous Abandonment and Reclamation (A&R) Plan. AANDC recommends that these costs be included in the current plan.
- The drawing referenced in Section B.4 of Appendix B of the Preliminary Mine Closure and Reclamation Plan should be included in an appendix.

#### Miscellaneous

- It is noted that the Health and Safety Plan, the OPEP for Milne Inlet and the OPEP for Steensby Inlet are not within the scope of a water licence. As such, AANDC recommends that these plans not be included in the water licence application.
- There are several references for document and drawing numbers in the management plans (Attachment 5). In order to make it easier for people to find these documents, AANDC recommends that document and drawing numbers be accompanied by the title and location of each document and/or drawing.
- Environmental Design Basis, Section 6.2.2.2: Table 6-126 is referenced but does not exist (Table 6-12 appears to contain relevant information).
- Potable Water Treatment Plant Design, Table 4-5: Clarification is requested as to whether “km water quality” is for 3km Lake or 32km Lake.