



Crown-Indigenous Relations
and Northern Affairs Canada

Relations Couronne-Autochtones
et Affaires du Nord Canada

Water Resources Division
Resource Management Directorate
Nunavut Regional Office
P.O. Box 100
Iqaluit, NU, X0A 0H0

Your file - Votre référence
3AM-IQA1626
Our file - Notre référence
CIDM#1228090

October 5, 2018

Ms. Ida Porter
Licence Administrator
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NU, X0B 1J0
E-mail: licensing@nwb-oen.ca

Re: Crown-Indigenous Relations and Northern Affairs Canada's comments on Baffinland Iron Mines Corporation's Notification of Planned Construction Work, Mary River Mine Run of Mine Stockpile and Sedimentation Pond, Mary River Project (Water Licence 2AM-MRY1325 – Amendment No. 1)

Dear Ms. Porter,

Thank you for your September 24, 2018 invitation for technical review comments on the Notification of Planned Construction Work, Mary River Mine Run of Mine Stockpile and Sedimentation Pond for the Mary River Project, Water Licence 2AM-MRY1325 – Amendment No. 1.

The Water Resources Division of Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) examined the submission and the results of our review are provided in the enclosed memorandum for the Nunavut Water Board's consideration. Comments have been provided pursuant to CIRNAC's mandated responsibilities under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* and the *Department of Indian Affairs and Northern Development Act*.

CIRNAC appreciates the opportunity to participate in this review. If there are any questions or concerns, please contact either me at (867) 975-4282 or bridget.campbell@canada.ca or David Zhong at (867) 975-4555 or david.zhong@canada.ca.

Sincerely,

Bridget Campbell
Water Resource Coordinator

Technical Review Memorandum

To: Ms. Porter, Licence Administrator, Nunavut Water Board

From: Bridget Campbell, Water Resource Coordinator, Water Resources Division, CIRNAC

CC: Spencer Dewar, Director, Resource Management, CIRNAC
Ian Parsons, Manager, Water Resources Division, CIRNAC
Justin Hack, Manager, Field Operations, CIRNAC
Christopher Murray, Environmental & Regulatory Compliance Manager, Baffinland Iron Mines Corporation

Date: October 5, 2018

Re: Notification of Planned Construction Work, Mary River Mine Run of Mine Stockpile and Sedimentation Pond, Mary River Project (Water Licence 2AM-MRY1325 – Amendment No. 1)

Applicant: Baffinland Iron Mines Corporation
Project: Mary River Project
Region: Qikiqtani

A. BACKGROUND

On September 21, 2018, Baffinland Iron Mines Corporation (Baffinland) submitted the above-noted Notification of Planned Construction Work at the Mary River Project (Project) to the Nunavut Water Board (NWB) on Water Licence 2AM-MRY1325 – Amendment No. 1, specifying the planned construction work. The construction of the Run of Mine (ROM) Stockpile Infrastructure will be located at Kilometer 107 (KM107) off the Haul Road at the Mary River Mine Site and includes an access road to the stockpile and upgrades to the sedimentation pond and runoff management diversion berms around the stockpile. Baffinland stated that the sedimentation pond has been identified as 'MS-07' in the Licence, that construction of this facility does not require a Modification to the Licence, and that minor updates to the *Surface Water and Aquatic Ecosystems Management Plan* and the *Fresh Water Supply, Sewage, and Wastewater Management Plan* will be required prior to operation of the facility. Baffinland notes that the construction of the Run of Mine (ROM) Stockpile Infrastructure is an approved part of the Final Environmental Impact Statement (FEIS) and is within the scope of the Project assessed and approved by the Nunavut Impact Review Board.

The details and engineering designs of the planned construction work activities are presented in Attachment 1: For Construction Drawings, (Knight Piésold Ltd., Signed September 18, 2018) and Attachment 2: Design Brief – Mary River Mine Site KM107

Stockpile Access Road and Runoff Management Designs (Knight Piésold Ltd., September 18, 2018) of Baffinland's submission.

B. RESULTS OF REVIEW

The Water Resources Division of Crown-Indigenous Relations and Northern Affairs Canada's (CIRNAC) Nunavut Regional Office reviewed the documents associated with Baffinland's Notification of Planned Construction Work and would like to provide the following comments and recommendations for the Board's consideration.

1. Sedimentation Pond Storage Capacity and Draining Issue

Reference:

- o Notification of Planned Construction Work – Mary River Mine Site Run of Mine Stockpile and Sedimentation Pond, Mary River Project, Water Licence 2AM-MRY1325, Baffinland Iron Mines Corporation, September 21, 2018
- o Attachment 1: For Construction Drawings, (Knight Piésold Ltd., Signed September 18, 2018)
- o Attachment 2: Design Brief – Mary River Mine Site KM107 Stockpile Access Road and Runoff Management Designs (Knight Piésold Ltd., September 18, 2018)

Comment:

CIRNAC reads in the Design Brief that *"The Sedimentation Pond configuration has been developed assuming that the pond is empty when the 10 year rainfall event occurs"* and that *"The Sedimentation Pond will need to be emptied in a timely manner following a storm event or during freshet such that the pond is empty during normal operating conditions."*

In the Design Brief, it is conversely stated that *"When a liner is left exposed, there is potential for degradation of the liner due to UV exposure and physical damage from ice in the pond or falling rock from the adjacent KM107 Stockpile. As such, the pond should only be drained below the spillway invert when there is no ice present."*

If the pond needs to be completely empty to be able to handle a 10-year rainfall event, then it does not have the capacity for the 10-year rainfall event. Severe weather events are generally difficult to predict accurately, and this is especially a concern because emptying the pond takes time. Further, from these contradicting statements it is not clear when the pond should be drained.

Recommendation:

CIRNAC recommends that Baffinland clarify the sedimentation pond water draining issue identified above. CIRNAC also recommends that Baffinland incorporate the possibility for the pond to be filled during a 10-year rainfall event into the design of the pond so that it has sufficient capacity for the 10-year rainfall event.

2. Sedimentation Pond Drawing Clarification

Reference:

- Notification of Planned Construction Work – Mary River Mine Site Run of Mine Stockpile and Sedimentation Pond, Mary River Project, Water Licence 2AM-MRY1325, Baffinland Iron Mines Corporation, September 21, 2018
- Attachment 1: For Construction Drawings, (Knight Piésold Ltd., Signed September 18, 2018)

Comment:

On drawing 320, it is not clear which areas of the sedimentation pond correspond to the provided detail C.

Recommendation:

CIRNAC requests that Baffinland clarify and confirm areas of the sedimentation pond corresponding to the provided Detail C on Drawing 320.

3. Reclamation Security

Reference:

- Notification of Planned Construction Work – Mary River Mine Site Run of Mine Stockpile and Sedimentation Pond, Mary River Project, Water Licence 2AM-MRY1325, Baffinland Iron Mines Corporation, September 21, 2018

Comment:

This infrastructure is not included in the 2018 work plan and reclamation security for this specific activity is not in place.

As construction cannot commence before security has been posted for this infrastructure the proposed project will need to be identified in the work plan for upcoming annual security review.

4. Field Check Design Assumptions of Depth of Overburden

Reference:

- Notification of Planned Construction Work – Mary River Mine Site Run of Mine Stockpile and Sedimentation Pond, Mary River Project, Water Licence 2AM-MRY1325, Baffinland Iron Mines Corporation, September 21, 2018
- Attachment 1: For Construction Drawings, (Knight Piésold Ltd., Signed September 18, 2018)
- Attachment 2: Design Brief – Mary River Mine Site KM107 Stockpile Access Road and Runoff Management Designs (Knight Piésold Ltd., September 18, 2018)

Comment:

CIRNAC notes that an assumption is made in the design of the Access Road on the depth of the overburden before bedrock is encountered. Because understanding the depth of the bedrock is essential to constructing a structurally sound road, CIRNAC would like to know how Baffinland plans to ensure that their designs match the true field conditions.

Recommendation:

CIRNAC recommends that Baffinland have a qualified engineer field check the design assumptions to ensure the design assumptions match the field conditions.

5. Load Calculations

Reference:

- Notification of Planned Construction Work – Mary River Mine Site Run of Mine Stockpile and Sedimentation Pond, Mary River Project, Water Licence 2AM-MRY1325, Baffinland Iron Mines Corporation, September 21, 2018
- Attachment 1: For Construction Drawings, (Knight Piésold Ltd., Signed September 18, 2018)
- Attachment 2: Design Brief – Mary River Mine Site KM107 Stockpile Access Road and Runoff Management Designs (Knight Piésold Ltd., September 18, 2018)

Comment:

The ROM Stockpile Infrastructure outlined in the Notification of Planned Construction Work for the Run of Mine Stockpile and Sedimentation Pond are planned to be built on a steep slope. Placing a heavy load on unconsolidated ground conditions on a slope could result in landslides, slumping of slopes, or otherwise jeopardize the structural integrity of Stockpile Infrastructure. These ground conditions can change rapidly (such as seasonal changes, daily weather, rapid spring thaw) or over time.

It is clear in the Design Report that load calculations for Stockpile Infrastructure incorporate the weight of the Access Road, the Sedimentation Pond at maximum filling elevation, and the Stockpile Berms. However, it is not clear if the weight of the ore in the Stockpile itself was incorporated into this calculation.

Recommendation:

CIRNAC recommends that the weight of the Ore Stockpile be incorporated into the load calculations.

6. Potential for Pooling in Berm

Reference:

- Notification of Planned Construction Work – Mary River Mine Site Run of Mine Stockpile and Sedimentation Pond, Mary River Project, Water Licence 2AM-MRY1325, Baffinland Iron Mines Corporation, September 21, 2018
- Attachment 1: For Construction Drawings, (Knight Piésold Ltd., Signed September 18, 2018)
- Attachment 2: Design Brief – Mary River Mine Site KM107 Stockpile Access Road and Runoff Management Designs (Knight Piésold Ltd., September 18, 2018)

Comment:

CIRNAC notes from the Construction Drawings that a berm will be constructed around the ROM Stockpile. CIRNAC is concerned about the possibility of pooling water in the most southerly section of the Ore Stockpile Berm. General flow direction arrows in the *“For Construction Drawings”* indicate that water will flow towards the berm rather than along the berm. Diversion ditches, on the other hand, could be graded and direct flow to the Sedimentation Pond more efficiently.

CIRNAC reads in the Design Brief, *“Construction of each berm will result in the formation of a channel between the berm and the stockpile, or the berm and the natural ground slope. Where existing ground conditions permit, natural overburden material may be excavated to form part of the channel and any suitable excavated material used to form the berm.”* No design drawings were submitted indicating the channel designs. It is not clear whether these channels will be graded to encourage the flow of drainage water to the Sedimentation Pond.

Recommendation:

CIRNAC recommends Baffinland provide the NWB with the details of the channels to be constructed prior to construction to ensure that they are fit to prevent pooling.