

Appendix 3

Project Description and Scope of the Amended Type “B” Water Licence

Appendix 3 – Project Description

Application for Renewal and Amendment to Type “B” Water Licence 8BC-MRY1314

1.0 Introduction

Baffinland Iron Mines Corporation (“**Baffinland**”) is applying for renewal and amendment to Type “B” Water Licence 8BC-MRY1314 to accommodate expected temporary water demands during peak construction activities associated with the Early Revenue Phase (ERP).

Under its Type “A” Licence 2AM-MRY1325 Baffinland is authorized to obtain 68.5 m³/day from Phillips Creek during the summer period and 68.5 m³/day from km 32 Lake on the Milne Inlet Tote Road during the winter period. The construction activities for the ERP necessitate an additional volume of up to 299 m³/day of water for combined domestic and construction use. With the amended Type “B” Water Licence, the total withdrawal of water from Phillips Creek and km 32 Lake would not exceed 367.5 m³/day combined (68.5 m³/day under Type “A” Licence 2AM-MRY1325 and 299 m³/day under amended Type “B” Water Licence 8BC-MRY1314). Water would be withdrawn from the locations that are authorized under the Type “A” Licence.

The facilities and infrastructure proposed to be constructed for the ERP were considered by the Nunavut Planning Commission (“**NPC**”) and by the Nunavut Impact Review Board (“**NIRB**”) as part of the Early Revenue Phase for the Mary River NIRB Project Certificate review undertaken from July 2013 to March 2014. The NPC and NIRB have provided a recommendation to amend the North Baffin Regional Land Use Plan and amend Project Certificate No. 005 respectively to accommodate activities proposed for the Early Revenue Phase. Approval by the Minister of the amendment to Project Certificate No. 005 is expected by April 30, 2014 and Baffinland intends to proceed with construction of the ERP infrastructure.

As assessed and reviewed during the NIRB review process, it is anticipated that the planned construction activities of the ERP will have minimal additional effects on Nunavut waters and will not generate significant increases in waste, over what was assessed and approved under NIRB Project Certificate No. 005 and the NWB Type A Water Licence 2AM-MRY 1325. Refer to Section 6.0 of this Appendix and Appendix 4 of the Application for Renewal and Amendment of Type “B” Water Licence 8BC-MRY1314 for more information on the supporting hydrological assessment.

The formal application form for the renewal and amendment of Type “B” Water Licence 8BC-MRY1314 is attached in Appendix 1 of the application.

2.0 Construction of the ERP Facilities

The ERP consists of trucking, stockpiling and shipping of 3.5 MT/a of iron ore from Milne Port. With the implementation of the ERP, a permanent ore dock, ship loading facility, ore stockpile and associated sedimentation ponds, and ore reclaiming conveying equipment will be constructed at Milne Port. Upon approval of the ERP, construction is anticipated to commence July 2014 and scheduled to be completed in 2017.

The construction activities during the period of 2014 to 2017 require additional fresh water use for both domestic and construction use.

Fresh Water Use during ERP Construction

Peak fresh water demand for construction/industrial use will occur annually during the period of June to November when fresh water is required for concrete truck wash down, concrete production, compaction of laydown areas and dust suppression at Milne Port and along the Tote Road. In order to maximize earthworks and to allow for concrete production activities during above freezing temperatures, fresh water use for construction/industrial purposes may be up to 249 m³/day for a number of consecutive days in the peak water demand period (see the table below).

Peak domestic use occurs during the sealift activities, from July through to the end September annually. The labour force at Milne Port is expected to occasionally exceed 350 persons during the construction period (short term during the sealift), however on average over the year, there are less than the predicted 225 persons at Milne Port during the construction phase as was predicted and assessed during the Amendment to the FEIS for the proposed Early Revenue Phase. In order to accommodate this larger labour force (approved facilities under the Type “A” Licence 2AM-MRY1325 can accommodate up to 240 individuals), Baffinland will re-open an existing construction 50 person trailer camp facility equipped with a standalone (RBC) sewage treatment plant at Milne Port. This RBC is currently permitted under the current Type “A” Licence. In addition, an additional wing will be added to the existing construction accommodations camp. The domestic water demand for the camps will peak at 108.5 m³/day (see the table below). If there are any periods of maintenance or treated effluent being off specification, then Baffinland will store the off spec effluent in the existing Polishing Waste Stabilization Pond (PWSP). As an additional contingency for potential off spec effluent generated during construction, Baffinland is proposing to build a duplicate PWSP, from the PWSP facility constructed in 2013, as part of this application. Please see Appendix 5 for the plan view and drawings of this proposed PWSP.

The following table summarizes expected maximum water use for the ERP construction period.

Usage	Type “A” Licence 2AM-MRY1325	Type “B” Licence 8BC-MRY1314	Total Expected Water Use (Type “A” + Type “B”)
Domestic	58.5 m ³ /day	50 m ³ /day	108.5 m ³ /day
Construction/Industrial	10 m ³ /day	249 m ³ /day	210 m ³ /day
Total	68.5 m ³ /day	299 m ³ /day	367.5 m ³ /day

Waste Generation

All waste generated by the construction activities will be managed in accordance with the terms and conditions of Type “A” Water Licence 2AM-MRY1325.

3.0 Scope of Amended Type “B” Licence 8BC-MRY1314

The scope of the requested amendment to Type B Licence 8BC-MRY1314 addresses water use, waste generation and facilities that are not covered under Baffinland’s Type “A” Licence. This includes:

- The combined withdrawal not to exceed 299 m³/day of fresh water from Phillips Creek and/or from km 32 Lake (during the summer season) and the withdrawal not to exceed 299 m³/day of fresh water from km 32 Lake during the winter months for both domestic and construction use; and,
- Construction of one (1) additional of polishing waste stabilization pond, if required, to contain surplus effluent during peak periods at Milne Port. See Appendix 5 for detail.

It is important to note that km 32 Lake can support summer and winter water withdrawal (see hydrological assessment in Appendix 4). Therefore, this licence amendment requests the ability to withdraw from km 32 Lake during both the summer and winter months as this source will be more central to some water

uses such as dust suppression along the Tote Road. The total combined amount requested under 8BC MRY1314 would not exceed 299 m³/day from the two water sources throughout the year.

The fresh water withdrawal, the operation of the sewage treatment facilities (both existing and re-commissioned) as well as the PWSP will be subjected to the terms and conditions of Type "A" Licence 2AM-MRY 1325. The updated management plans approved under the Type "A" Licence will also be applicable for this renewed/amended Type "B" Licence.

4.0 Volume of Water Required for the Amended Type "B" Licence 8BC-MRY1314

The additional incremental fresh water volume requested by this amendment is for a water volume of 299 m³/day.

5.0 Term of the Renewed and Amended Type "B" Licence 8BC-MRY1314

Baffinland requests that the amended Type "B" Licence be renewed for a period of three years which covers the expected duration of the construction period of the ERP facility.

Prior to the ERP facility becoming fully operational, Baffinland will submit an application for an amendment to its Type "A" Licence 2AM-MRY1325 in order to roll in to this Type "A" Licence any permanent increase in water requirements and/or other unforeseen amendments that may arise during the construction period.

6.0 Hydrological Overview of Phillips Creek and km 32 Lake Watersheds

Knight Piésold has reviewed the hydrology on Phillip's Creek and km 32 Lake and determined a maximum allowable water take that remains protective to the aquatic ecosystems in Phillip's Creek and km 32 Lake. This memorandum is attached in Appendix 4.

The lowest flow conditions in Phillips Creek occur during September, and the 10-year return period dry mean monthly discharge for September is estimated to be 0.96 m³/s or 83,000 m³/day. It is assumed that a water taking of up to 10% of the discharge would have a negligible impact on the aquatic ecosystem as removing this proportion of water from Phillip's Creek is within the expected daily variation in flow. A water usage of 10% of the September low-flow estimate is 8,300 m³/day. In comparison, Baffinland is only requesting up to an additional water take of 299 m³/day, above the already permitted 68.5 m³/day permitted under its Type "A" Licence.

The total overwinter under-ice water body volume reduction is estimated to be 0.19% under the proposed increased water withdrawal limit from km 32 Lake. In comparison, withdrawal of 68.5 m³/day results in a 0.03% water body volume reduction (as indicated in the FEIS). It should be noted however that an increase to 0.19% water body volume reduction is still well below the DFO limit of 10% extraction from under ice. In summer, the proposed water body volume reduction from withdrawal is below what could be measured (less than 0.3%) and therefore will result in a negligible and immeasurable effect on the downstream aquatic ecosystem. For further detail see the memorandum attached in Appendix 4.

7.0 Details of Impacts

The conclusion of the hydrological assessment presented in Appendix 4 is that the increase water withdrawal of up to 299 m³/day will have no significant effects on the aquatic ecosystems of either Phillips Creek or km 32 Lake. The water withdrawal being proposed for this licence amendment is negligible.

8.0 Proposed Mitigation Measures

All pump intakes used for fresh water withdrawal will be screened in accordance with the Fishery and Ocean Canada (DFO) Freshwater Intake End-of-Pipe Fish Screen Guidelines¹ to prevent entrapment of fish as per Part E, Item 6 of the Type "A" Water Licence (2AM-MRY1325).

As required under Type "A" Licence 2AM-MRY1325, Baffinland will strive to minimize its water use for both construction activities and domestic use. However, the harsh climatic conditions of the Northern Baffin region necessitate greater construction activities during the above freezing periods (concrete production, concrete truck wash, dust suppression), and, the surge in work force during the open water season sealift. These combined activities necessitate increased water consumption over the short summer period.

The RBC sewage treatment facility that will be brought back into commission will operate in accordance with the terms and conditions of Type "A" Licence 2AM-MRY1325. As a contingency measure, a PWSP identical to the existing PWSP constructed in 2013 at Milne Port may be built if the existing PWSP's cannot handle the surges or mechanical down time of the expanded sewage treatment facilities. The new PWSP will be constructed to the same design requirements as the existing PSWP, constructed during the summer of 2013. The PWSP drawings of the existing PWSP are presented in Appendix 5. Should the additional PWSP be required at Milne Port, the effluent will be trucked to and from the facility.

9.0 Closure

Upon completion of the construction of the ERP facilities, the sewage treatment facility that is planned to be put back into commission for the summer season will either be maintained as a redundant system, or decommissioned as part of progressive reclamation initiatives. Similarly the PWSP will either be maintained as a redundant system, or decommissioned as part of progressive reclamation initiatives, if constructed.

At final closure, all ERP facilities will be closed and reclaimed as per the Interim Abandonment and Reclamation Plan (BAF-PH1-830-P16-0012) and the approved Preliminary Mine Closure and Reclamation Plan (H337697-0000-07-126-0014) for the Mary River Project. For further information, an amended Type "B" Water Licence Abandonment and Reclamation (A&R) Strategy and Security Estimate are presented in Appendix 8 of Type "B" Water Licence 8BC-MRY1314 renewal and amendment application.

¹ Fisheries and Ocean Canada, *Freshwater Intake End-of-Pipe Fish Screen Guidelines*. 1995