



Appendix 7

Amended Type “B” Water Licence Abandonment and Reclamation (A&R) Strategy and Security
Estimate

Project Memo

H349000

May 13, 2014

TO: E. Madsen

FROM: A. Grzegorzczuk

cc: J. Binns
O. Curran
C. Gonzales
R. Hampton
G. Laliberte
T. Mackay
D. Matthews
J. Millard

Baffinland Iron Mines Corporation Mary River Project

Abandonment and Reclamation of Proposed Type B Water Licence Activities

1. Introduction

The Mary River Project is located on northern Baffin Island, in the Nunavut Territory, in the Canadian Arctic. Baffinland Iron Mines Corporation (Baffinland)'s initial Project consisted of mining iron ore from the reserve at Deposit No. 1 at a production rate of 18 Million tonnes per year (Mt/a). The Nunavut Impact Review Board (NIRB) issued the Project Certificate for this Project on December 28, 2012. On January 13, 2013 Baffinland informed the NIRB that, due to various business drivers, Baffinland was proposing to make changes to the schedule and specific activities in the initial stages of the development associated with the Mary River Project. The proposed changes to the schedule and specific activities, defined as Early Revenue Phase (ERP), consists of the re-introduction of shipment of up to 3.5 million tonnes per annum (Mtpa) of ore via Milne Port, road transport of iron ore from the Mine Site to Milne Port via the Tote Road, and the deferral of the full scale development of the Approved Project (18 Mtpa production, with railway link to Steensby Port and the development of Steensby Port).

The facilities and infrastructure proposed to be constructed for the ERP were considered by the Nunavut Planning Commission and by the NIRB as part of the Early Revenue Phase for the Mary River NIRB Project Certificate review undertaken from July 2013 to March 2014. Approval by the Minister of Aboriginal Affairs and Northern Development ("AANDC") of the amendment to Project Certificate No. 005 was received on April 28, 2014 and approval by the Minister of AANDC as well as the territorial Minister of Environment of amendments to the North Baffin Regional Land Use Plan were received on April 28 2014..

If you disagree with any information contained herein, please advise immediately.

H349000-1000-07-220-0003, Rev. 1



Safety • Quality • Sustainability • Innovation

© Hatch 2014/05

In order to accommodate expected temporary water demands during peak construction activities associated with the ERP at Milne Port, Baffinland is applying for renewal and amendment to existing Type “B” Water Licence 8BC-MRY1314. The specific activities to be undertaken are described in Baffinland’s Type “B” Water Licence amendment application, submitted in May, 2014.

This document describes the Abandonment and Reclamation (A&R) strategy and closure liability estimate for the works proposed under the Type “B” Water Licence (8BC-MRY1314) amendment application. It should be noted 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 are still the overriding project document describing A&R requirements. This Project Memo is intended to provide additional information on how A&R requirements will be handled with specific consideration to the renewal and amendment to Type “B” Water Licence 8BC-MRY1314.

An estimate of the closure A&R liabilities currently held under the existing Type “B” Water Licence (8BC-MRY1314) is presented in Table 8-1 and this cost was captured in the 2013 Marginal Closure Cost (H349000-1000-07-245-0001, Rev C). The additional marginal closure A&R liabilities estimated to be required for activities not accounted for under previous closure security estimates is presented in Table 8-2. This liability amount would have to be provided by Baffinland in the event of approval prior to the activities taking place. Table 8-3 represented the total closure A&R liabilities required if the entire scope of work was conducted under the proposed amended Type “B” Water Licence.

2. Scope

Baffinland is applying for the renewal and amendment of Type “B” Water Licence (8BC-MRY1314) to include additional water use of up to 299 m³/day from two water sources already approved under Baffinland’s Type “A” Water Licence (2AM-MRY1325). Baffinland intends the renewal and amendment of the Type “B” Water Licence to act as a ‘bridging’ water licence until the Type A Water Licence is amended to include the changes to the Mary River Project included in the ERP. At that time, it is anticipated that items in the Type B Water Licence would transition to the Type A Water Licence.

The additional water use is a temporary requirement whilst infrastructure of the ERP is constructed. The average camp occupancy and water use predicted on an annual basis by Baffinland and assessed by the NIRB remains unchanged. However, climatic conditions necessitate a compressed construction schedule during the summer months where daily water take may exceed water allowance under Baffinland’s Type “A” Water Licence (2AM-MRY1325) so it can start to build the port infrastructure required to undertake its Early Revenue Phase of the Mary River Project. The amendment to this Licence would enable Baffinland to draw up to an additional 299 m³/day of water from Philips Creek or km 32 Lake along the Tote Road.

Although additional water use would not require amendment to existing A&R strategies and financial liability estimates, amendment of the Type “B” Water Licence (8BC-MRY1314) would also enable Baffinland to expand its accommodation camps at Milne Port and, if

required for contingency, construction additional off-spec sewage effluent storage capacity in the form of construction of one (1) additional of polishing waste stabilization pond. This additional off-spec sewage effluent storage capacity is only included in Type “B” Water Licence amendment as a contingency if the existing off-spec sewage effluent storage capacity is not deemed sufficient based on current operations. Therefore this A&R strategy and liability estimate applies to all infrastructures, equipment and material associated with scope of work in the Type “B” Water Licence (8BC-MRY1314) amendment application that has not been captured in other Mary River Project A&R security estimates. Note: ERP facilities related to the on land ore stockpiling and loading facilities were captured in 2014 Marginal Closure Cost Estimate (H349000-1000-07-126-0017) and in-water marine infrastructure is captured in a separate A&R security estimate held with the Department of Fisheries and Oceans.

Baffinland would defer to the NWB on where this incremental security amount would be administratively held on the interim until incorporation into the next Annual Security Review process and amendment of Type “A” Water Licence 2AM-MRY 1325 but recognizes the intention will be for all closure and reclamation security associated with the Mary River Project on-land components to be solely held under Type “A” Water Licence 2AM-MRY 1325.

3. Regulatory Context

This A&R strategy and financial liability estimate has been prepared in accordance with the requirements of the QIA Abandonment and Reclamation Policy for Inuit Owned Lands (v.3) and in accordance with the conditions of the Project Certificate No. 005, Type “A” Water Licence (2AM-MRY1325), Type “B” Water Exploration Licence (2BE-MRY1421), QIA Commercial Lease Q13C301, and Class A Crown Land Use Permit, N2007F004. The applicable guidelines and policies, and A&R objectives and criteria adopted for the proposed Type “B” Water Licence work are the same as outlined in the existing Interim Abandonment and Reclamation Plan (BAF-PH1-830-P16-0012) and the approved Preliminary Mine Closure and Reclamation Plan (H337697-0000-07-126-0014).

4. Proposed Type “B” Water Licence ERP Activities

Additional activities related the ERP that would be governed by the amended Type “B” Water Licence and require amendment to existing A&R strategies and financial liability estimates include:

Activities required under renewal and amendment to the Type B Water Licence addresses water use, waste generation and facilities that are not covered under Baffinland’s Type “A” Water 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,

- Additional off-spec sewage effluent storage capacity in the form of construction of one (1) additional of polishing waste stabilization pond, if required, to contain surplus effluent during peak periods at Milne Port.
- Water licencing required in relation to construction and operation of a permanent ore dock, ship loading facility, ore stockpile and associated sedimentation ponds, and ore reclaiming conveying equipment. See Baffinland's Early Revenue Phase for the Mary River NIRB Project Certificate amendment documentation.

The primary driver of the amendment of the Type "B" Water Licence (8BC-MRY1314) is for additional water use at Milne Port from two water sources already approved under Baffinland's Type "A" Water Licence (2AM-MRY1325) and would not require amendment to existing A&R strategies and financial liability estimates as existing infrastructure and equipment would be used.

For information regarding the specific activities to be undertaken under the amended Type "B" Water Licence in relation to ERP work see Baffinland's Type "B" Water Licence Application, dated May 2014 with emphasis on Appendix 3: Project Description and Scope of the Amended Type "B" Water Licence (2BB-MRY1314).

5. Abandonment and Reclamation Scenario

The ERP consists of trucking, stockpiling and shipping of 3.5 MT/a of iron ore from Milne Port. Upon approval of the ERP, construction is anticipated to commence July 2014 and scheduled to be completed in 2017. If Baffinland does choose to make the decision to initiate abandonment and reclamation of proposed Type "B" Water Licence work, as per the QIA Abandonment and Reclamation Policy, the security estimate assumes a hypothetical worst-case bankruptcy scenario where QIA assumes authority over Project components on Inuit Owned Land. The closure costs assume a hypothetical closure date of July 31, 2017.

Note that a decision to implement the A&R strategy for proposed Type "B" Water Licence activities does not mean that Baffinland would abandon its current work program for which it holds valid authorizations, licenses and permits. Security for the existing Project is currently held by QIA and the Crown in the form of letters of credit.

6. Abandonment and Reclamation Activities

Closure and reclamation of proposed Type "B" Water Licence work described in section 4, will include:

- Removing all equipment and materials either off-site or into an on-site landfill at Mary River (for inert, non-hazardous, non-combustible materials).
- Equipment and materials to be taken off-site will be transported overland from its location to Milne Port for staging. Arrangements will be made with a sealift contractor to collect the shipment of materials and equipment at Milne Port and ship material offsite if required.

- Contouring ground surfaces to mimic the natural surrounding topography to allow for natural re-vegetation.
- Re-establish previous drainage patterns.

A detailed reclamation schedule will be developed assuming productive use of resources performed in a logical manner with consideration given to unique challenges of working in the arctic such that reclamation can be accomplished in a timely fashion and in accordance with the approved Abandonment and Reclamation Plan. No items are expected to be left as a result of proposed Type “B” Water Licence activities that will require long term monitoring or management. All Project-related facilities have been designed and constructed to minimize the footprint and to be as temporary in nature as possible. These design and construction considerations have facilitated reclamation plans and minimized the engineering required to support the complete decommissioning and reclamation of the site.

The abandonment and reclamation activities associated with the proposed Type “B” Water Licence work will follow applicable QIA and federal/territorial guidelines and policies, and abandonment and reclamation objectives and criteria outlined in 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.

The proposed Type “B” Water Licence works A&R implementation strategy is broken down into the following principal activities for the purpose of the financial liability estimate:

- Re-grading and scarifying camp pad to restore natural drainage at Milne Port
- Removal and disposal of a non-contaminated building.
- Reclamation of constructed Polishing Waste Stabilization Pond (PWSP) at Milne Port.
- Additional general site cleanup.
- Limited project management and engineering.

7. Schedule of Abandonment and Reclamation Activities

At the earliest, it is expected that A&R activities for the proposed Type “B” Water Licence works would commence during the open water shipping season of 2017, and be completed by the end of the 2018 open water season.

If the full implementation of 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) is initiated, then it is expected that the A&R activities required for the proposed Type “B” Water Licence works would commence concurrently with alignment of similar and/or associated tasks.

If the A&R activities required for the proposed Type “B” Water Licence project works are carried out independently of full site reclamation, the activities would be scheduled as follows:

1. Reclamation of constructed Polishing Waste Stabilization Pond (PWSP) at Milne Port in 2017.

2. All Type “B” Water Licence works camp pad and accommodation camp addition would be reclaimed and water courses returned to their natural drainage pattern in 2018.

Post closure monitoring would continue during open water seasons for three years from 2018-2021 or until approved reclamation objectives have been met. Note: no post closure monitoring requirement is expected based on the proposed Type “B” Water Licence project works.

8. Estimate of Proposed Type “B” Water Licence Works A&R Financial Liability

An estimate of the closure A&R liabilities currently held under the existing Type “B” Water Licence (8BC-MRY1314) is presented in Table 8-1. This amount was captured in the 2013 Marginal Closure Cost (H349000-1000-07-245-0001, Rev C). The additional marginal closure A&R liabilities estimated to be required for activities proposed under amendment of the Type “B” Water Licence (8BC-MRY1314) and not accounted for under previous closure security estimates is presented in Table 8-2. The estimated \$24,807 demonstrated in Table 8-2 that would be required under amendment of the Type “B” Water Licence (8BC-MRY1314) and not accounted for under previous closure security would have to be provided by Baffinland prior to activities taking place in event of water licence approval. As presented in Table 8-3, closure A&R liabilities required for the entire proposed amended Type “B” Water Licence have a estimated associated cost of \$146,826, which represents a \$24,807 marginal increase from previous security estimates for the Type “B” Water Licence (8BC-MRY1314).

The A&R strategy and cost estimate is based on Baffinland's operating and progressive reclamation labour and equipment productivity and experience in North Baffin Island. It is supported by contributions from its consultants, AMEC, Knight Piésold and Hatch, which have extensive Canadian and international closure experience in Arctic and other environments.

Note that if the full implementation of 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) is initiated, then the A&R indirect costs required for the proposed Type “B” Water Licence works associated with camp operation, mobilization and crew transportation would be covered under existing full project closure cost estimates. If the A&R activities required for the proposed Type “B” Water Licence project preparation works are carried out independently of full site reclamation, then the camp operation, mobilization and crew transportation costs would be captured in annual operating costs for the current full project work program which continues. Any unforeseen extra indirect costs are covered in contingency.

Table 8-1: A&R Financial Liability Estimate Breakdown for Existing Activities under Type “B” Water Licence (8BC-MRY1314)

Proposed Type “B” Activity	Required Reclamation Activity	Cost Type	# of Units	Unit	Unit Cost (\$) ^{1, 2}	Total
Construction of camp pad from local borrow sources at Mary River Mine Site.	Re-grading and scarifying camp pad to restore natural drainage	Labour	2	person/day	808.9	\$1,617.80
		Equipment	20	hours	153.69	\$3,073.80
Subtotal						\$4,691.60
Construct a second Polishing Waste Stabilization Pond (PWSP) at Milne Port.	Infill constructed pond	Labour	3	person/day	808.9	\$2,426.70
		Equipment	30	hours	153.69	\$4,610.70
Subtotal						\$7,037.40
Begin development of Q1 Quarry and local borrow sources at Milne Port.	Conduct geotechnical monitoring for required reclamation area	Labour	2	person/day	808.9	\$1,617.80
		Equipment	20	hours	153.69	\$3,073.80
	Grade and Contour Site	Labour	2	person/day	808.9	\$1,617.80
		Equipment	30	hours	153.69	\$4,610.70
	Grade and Contour Site access road	Labour	1	person/day	808.9	\$808.90
		Equipment	10	hours	153.69	\$1,536.90
Subtotal						\$13,265.90
Begin development of Q2 Quarry and local borrow sources at the Mine Site	Conduct geotechnical monitoring for required reclamation area	Labour	2	person/day	808.9	\$1,617.80
		Equipment	20	hours	153.69	\$3,073.80
	Grade and Contour Site	Labour	2	person/day	808.9	\$1,617.80
		Equipment	30	hours	153.69	\$4,610.70
	Grade and Contour Site access road	Labour	1	person/day	808.9	\$808.90
		Equipment	10	hours	153.69	\$1,536.90
Subtotal						\$13,265.90

Proposed Type “B” Activity	Required Reclamation Activity	Cost Type	# of Units	Unit	Unit Cost (\$) ^{1, 2}	Total
Complete earthworks infrastructure including laydowns, camp pad, and fuel tank farm secondary containment structure at Milne Port.	Re-grading and scarifying laydown areas (A&B) at Milne Port to restore natural drainage	Labour	2	person/day	808.9	\$1,617.80
		Equipment	20	hours	153.69	\$3,073.80
	Re-grading and scarifying camp pad area at Milne Port to restore natural drainage	Labour	2	person/day	808.9	\$1,617.80
		Equipment	20	hours	153.69	\$3,073.80
	Remove liner at fuel tank farm secondary containment structure at Milne Port	Labour	10	person/day	808.9	\$8,089.00
		Equipment	40	hours	153.69	\$6,147.60
	Re-grading and scarifying fuel tank farm secondary containment area at Milne Port	Labour	5	person/day	808.9	\$4,044.50
		Equipment	50	hours	153.69	\$7,684.50
Subtotal						\$35,348.80
Construct one 5 ML steel bulk fuel tank at Milne Port.	Decommission, decontaminate and dispose of on-site 5 ML steel bulk fuel tank at Milne Port	Labour	10	person/day	808.9	\$8,089.00
		Equipment	100	hours	153.69	\$15,369.00
Subtotal						\$23,458.00
General	General Site Clean Up. Coarse clean up of streams and clean up residual fine waste on ground.	Labour	8	person/day	808.9	\$6,471.20
		Equipment	8	hours	153.69	\$307.38
Subtotal						\$6,778.58
DIRECT COST SUBTOTAL						\$103,846.18
Project Management (5%)						\$5,192.31
Engineering (2.5%)						\$2,596.15
Contingency (10%)						\$10,384.62
INDIRECT COST SUBTOTAL						\$18,173.08
TOTAL COST						\$122,019.26

NOTES:

- 1 \$153.69/hour based on blended Equipment Rate from 2013 Nuna – Hourly Charge-Out Rates Effective January 1. 2013. Baffinland Iron Mines Corporation, Mary River Project
- 2 \$808.90/person-day based on blended Labour Rate from 2013 Nuna – Hourly Charge-Out Rates Effective January 1. 2013. Baffinland Iron Mines Corporation, Mary River Project at 10 hours/day

Table 8-2: A&R Financial Liability Estimate Breakdown for New Marginal Activities under Proposed Type “B” Water Licence

Proposed Type “B” Activity	Required Reclamation Activity	Cost Type	# of Units	Unit	Unit Cost (\$) ¹ ₂	Total
Construction of camp pad from local borrow sources at Mary River Mine Site.	Re-grading and scarifying camp pad to restore natural drainage	Labour	1	Labour	808.9	\$808.90
		Equipment	10	Equipment	153.69	\$1,536.90
Installation of additional soft wall accommodation camp	Removal and disposal of a non-contaminated building.	Labour	4	Labour	808.9	\$3,235.60
		Equipment	40	Equipment	153.69	\$6,147.60
Subtotal						\$11,729.00
Construct a third Polishing Waste Stabilization Pond (PWSP) at Milne Port (identical size to second PWSP).	Infill constructed pond	Labour	3	person/day	808.9	\$2,426.70
		Equipment	30	hours	153.69	\$4,610.70
Subtotal						\$7,037.40
General	Additional general site cleanup. Coarse clean up of streams and clean up residual fine waste on ground.	Labour	1	person/day	808.9	\$808.90
		Equipment	10	hours	153.69	\$1,536.90
Subtotal						\$2,345.80
DIRECT COST SUBTOTAL						\$21,112.20
Project Management (5%)						\$1,055.61
Engineering (2.5%)						\$527.81
Contingency (10%)						\$2,111.22
INDIRECT COST SUBTOTAL						\$3,694.64
TOTAL COST						\$24,806.84

NOTES:

- \$153.69/hour based on blended Equipment Rate from 2013 Nuna – Hourly Charge-Out Rates Effective January 1, 2013. Baffinland Iron Mines Corporation, Mary River Project
- \$808.90/person-day based on blended Labour Rate from 2013 Nuna – Hourly Charge-Out Rates Effective January 1, 2013. Baffinland Iron Mines Corporation, Mary River Project at 10 hours/day

Table 8-3: A&R Financial Liability Estimate Breakdown for All Activities under Amended Type “B” Water Licence

Cost Type	Existing Type “B” Licence	Marginal Additional Security under Amended Licence	Total
Total	\$122,019.26	\$24,806.84	\$146,826.10
Direct Costs	\$103,846.18	\$21,112.20	\$124,958.38
Indirect Costs	\$18,173.08	\$3,694.64	\$21,867.72

NOTES:

All prices in Canadian Dollars.

9. Closure

We trust this technical memo meets your present requirements. Should you have any questions or comments, please contact the undersigned at your convenience.

Prepared by:

A. Grzegorzcyk
Project Environmental Specialist
Hatch Ltd.
+1 905 855 7600 ext 3525
agrzegorzcyk@hatch.ca

Reviewed by:

T. Mackay
Environmental Manager
Hatch Ltd.
+1 905 403 4200 x 4963
tmackay@hatch.ca

A. Grzegorzcyk

AG:pj